"How Do Small Businesses Finance their Growth Opportunities? – The Case of Recovery from the Lost Decade in Japan –" *

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Abstract

Previous studies argue that bank loans are cheaper than trade credit; so unconstrained firms largely depend on bank loans and use trade credit less, especially in financially developed economies. However, the Japanese evidence does not support this view. First, small businesses with higher credit demand increase trade credit more during the period of the recovery from a severe recession. Second, creditworthy firms also increase trade credit to finance their growth opportunities. Third, firms in unstable industries increase trade credit more. This suggests that suppliers are able to offer credit, unlike banks, as they have a relative advantage in day-by-day monitoring.

1 Introduction

We investigate how small businesses finance their growth opportunities in Japan as an example of a financially developed economy. While large firms can easily access capital markets, many small businesses face difficulties. As a result, small businesses largely depend on indirect forms of finance, including bank loans and trade credit.[1] The basic premise of previous studies is that trade credit is the last resort for firm financing. Smith (1987) and Ng et al. (1999) argue that trade credit is an inferior source of finance. According to these studies, the financial cost of trade credit is prohibitively expensive because the annual interest rates exceed 40%. Therefore, after exhausting internal cash, firms with additional needs for financing prefer to use bank credit as a cheap funding source. For example, Petersen and Rajan (1994) conclude that small businesses with short-lived bank relationships use trade credit more, as banks do not offer sufficient credit because of information asymmetry. Nilsen (2002) and Atanasova and Wilson (2003) show that when the credit supplies of banks decrease with tight monetary policy, firms use more trade credit.

In addition, many studies argue that well-developed financial institutions enhance economic growth, because they can allocate resources to firms with growth opportunities (For example, Rousseau and Wachtel (1998) and Levine (2005)). This implies that in financially developed economies with developed banking systems, firms with growth opportunities can use bank loans. However, many studies also argue that firms in countries with poorly developed financial institutions cannot borrow enough from financial institutions, even if they have good growth opportunities and the need for external finance. Therefore, these firms use trade credit as another source of short-term finance for small business. For instance, Ge and Qiu (2007) show that in China, a country with a relatively

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[1] In addition to trade credit and bank loans, small businesses face several choices for financing inventory investment, comprising trade credit, bank loans, the use of cash holdings, collecting trade receivables, and discounting bill receivables.

poorly developed formal financial sector, firms support their growth through trade credit financing because they cannot borrow enough from traditional banks. Fisman and Love (2003) also show that higher rates of industrial growth in countries with weaker financial institutions are associated with greater dependence on trade credit financing. These studies imply that firms with good growth opportunities in financially developed countries use bank loans more with low financial cost, and those in financially developing countries use trade credit more because of unavailability of bank loans.

However, the argument that trade credit is a last resort form of financing has some shortcomings. Previous studies assume that trade credit contracts are only "2-10 net 30" with annual interest rates of 40% or more.[2] On the other hand, according to Miwa and Ramseyer (2008), a wide range of other credit conditions exist, ranging from "0.5-30 net 90" (a 3% annual interest rate) to "5-15 net 30" (a 120% annual interest rate), implying that the cost of trade credit is not always high. Moreover, while the "2-10 net 30" contract applies in some countries (for example, the US and the UK), it does not in Japan.[3] Moreover, Marotta (2005) refute that trade credit financing is more expensive than bank loans using Italian data. Combined, these studies suggest that trade credit is not always an inferior source of financing to bank loans and not a financing last resort.

This study investigates what financial sources small firms with a greater need for external finance use in Japan. In particular, we examine whether trade credit is inferior to bank loans in Japan. If trade credit is inferior to bank loans and only firms with growth opportunities in financially developing countries use trade credit more, those in

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[2]As Petersen and Rajan (1994), the annual interest rates of trade credit is 44.6%. They explain that "the firm is borrowing at 2/98 or 2.04 percent per 20-day period. Since there are 365/20 or 18.25 such periods in a year, this is equivalent to an annual rate of 44.6 percent ([1 + 2/98](365/20) - 1)". (footnote 18 in page 21)

[3]See the report "The Current Status of SME Financing under the Financial Crisis: A summary of the Survey on the Status of Transactions between Businesses and Financial Institutions (Feb. 2008) and the Survey on the Status of Transactions between Businesses and Financial Institutions following the Financial Crisis (Feb. 2009)" (in Japanese) issued in the website of Research Institute of Economy, Trade and Industry (http://www.rieti.go.jp/en/publications/summary/09070006.html).

financially developed countries use bank loans more instead of trade credit. Rajan and Zingales (1998) show that the ratio of domestic credit and stock market capitalization to GDP, as a traditional proxy for financial development, is 1.31 in Japan. This is the third-highest value in their sample of countries, so we interpret Japan as a financially developed country.

We focus on the period of recovery from the "lost decade", the biggest recession since World War II in Japan. Following the asset price bubble of the late 1980s, the Japanese economy experienced a severe recession. The recession worsened in the late 1990s and the GDP growth rate was negative during 1998–1999. In 2000, the economy experienced a mild recovery, but worsened again in 2001–2002. This long post-bubble recession is called the lost decade. After 2003, Japan experienced a long boom period, and many firms had good growth opportunities and needed external finance, so they increased sales and inventory investment. Therefore, during the recovery from the lost decade, small firms faced an exogenous increase in credit demand to finance working capital and investments. Consequently, this period is suitable for investigating the sources of funds that small firms with greater need of finance use in developed countries. If bank loans are indeed superior to trade credit, firms with greater need of external finance will then use bank loans instead of trade credit.

Our findings provide evidence that small firms with a greater need of financing use trade credit more during the period of recovery in Japan. First, the trend in trade payables fluctuates more compared to bank credit. The median annual growth rate of trade credit is positive during the recovery and negative during the recession. In contrast, the median annual growth rate of bank credit is zero during both the recession and the recovery, suggesting that banks merely roll over their loans and do not offer new credit if firms need additional external finance. Instead, trade partners offer more credit to firms with new credit demands during the period of recovery. The results are similar when we limit the sample to firms with increases in sales or inventories. Second, the main reason

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for using trade credit is not the lack of the availability of bank loans. Firms with more collateral are less risky firms, and they can more easily use bank credit. This implies that they use trade credit less when bank credit is superior. However, they use trade credit if they need to increase inventory and have growth opportunities available. Previous studies imply that traditional financial institutions, such as banks, finance firms with high-return projects in financially developed countries. Our data do not support this view and we show that even in developed countries, firms use more trade credit than bank loans.

Third, especially in unstable industries during the lost decade, firms with greater need of finance increase trade credit more. In these industries, creditors required up-to-date information about borrower risk and this called for day-by-day monitoring as business conditions changed rapidly. This implies that firms increase trade credit because trade partners can mitigate the problems of asymmetric information. This observation supports the advantages of information acquisition by trade partners (Petersen and Rajan (1997)). We also suggest that firms can use trade credit more easily than bank credit if they require quick credit (Miwa and Ramseyer (2008)). In general, borrowers in unstable industries face difficulty planning their future credit demand because business conditions are changing rapidly. Therefore, trade partners can offer quicker credit as they merely delay billing these customers.

Our study related to various previous studies. As already discussed, previous studies assume that the cost of trade credit is extremely high compared to the cost of bank loans and investigate the reasons why (Smith (1987), Petersen and Rajan (1994), and Ng et al. (1999)). For example, Wilner (2000) argue that when customers fall into financial distress, suppliers make more concessions during debt renegotiation. To compensate for the losses from making these concessions, suppliers then present higher financial costs. Furthermore, Cunat (2007) claim that suppliers are insurance providers for customers because it is costly to lose their current customers. They show that suppliers offer more trade credit during periods when their customers face temporary liquidity shocks, so that

the suppliers again have higher financial costs. In contrast, Marotta (2005) and Miwa and Ramseyer (2008) do not support the arguments that the cost of trade credit is higher than for bank loans.

Additinally, many studies focus on the empirical investigation of the informational advantages of trade partners. In conventional financial economics, banks mitigate the information gap between lenders and borrowers using their monitoring abilities. According to James (1987), the role of banks is the production of information unavailable to other lenders on borrowers. Recently, some studies (for example, Petersen and Rajan (1997)) argue that trade partners have an information advantage in monitoring the creditworthiness of borrowers because suppliers can acquire information about the business conditions of their customers such as the timing and size of customer orders or by visiting their premises. Empirically, they show that currently unprofitable but growing firms (that is, firms with negative profits and positive sales growth) use trade credit more. These firms cannot acquire enough credit from banks, so they argue that trade partners have an information advantage over banks. However, Burkart and Ellingsen (2004) and Giannetti et al. (2009) are more skeptical about the information advantages of trade partners.

Also, traditional studies, such as Meltzer (1960), show that the trend in trade credit is countercyclical. Similarly, Nilsen (2002) argues that small firms increase their reliance on trade credit during monetary contractions. Furthermore, using semiaggregated data, Choi and Kim (2005) show that net trade credit for S&P 500 firms and smaller firms increases during tighter monetary policy. These studies suggest that trade credit absorbs the negative effects of tighter monetary policy. In contrast, Marotta (1997) find no evidence using Italian data that suppliers offer credit to small firms during a monetary squeeze. Love et al. (2007) also investigate the effect of financial crises on trade credit in emerging economies. They observe the redistribution of bank credit from financially stronger firms to weaker firms using trade credit.

Our study shows that creditworthy small businesses increase trade credit to finance

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their new credit demand, suggesting that trade credit is not inferior to bank loans. We cannot acquire information of the accurate price of trade credit because firms use various and complicated trade credit contracts. To test whether trade credit is inferior to bank loans, it is better to observe the choice of credit when firms face the large and exogenous credit demand. In addition, small businesses in fluctuating industry sectors also use trade credit more and bank loans less during recovery. The reason is that the information asymmetry in these sectors is more severe, suggesting that trade partners offer more credit because they can mitigate the information problem more effectively. Many previous studies focus on the information advantage of trade creditors and banks, but few studies investigate both trade credit and bank loans.[4] We test inferiors and information advantages in trade credit focusing on the effects of the recovery from the severe recession known as the lost decade as an exogenous shock to small businesses. Furthermore, we use small business panel data so we can mitigate the endogeneity problem arising from causality and unobservable omitted variables. Therefore, we consider our results robust. We also find that small businesses decrease trade credit during a recession and increase during a recovery, implying that the trend in trade credit is procyclical.

The paper is organized as follows. Using small business data, Section 2 illustrates the period of recovery from the "lost decade". We provide some simple observations in Section 3. We discuss the empirical results in Sections 4 and 5. Section 6 concludes.

2   Business Fluctuations during 1997–2006

In this section, we illustrate economic conditions in Japan during 1997–2006 using firm-level small business data.

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[4]For example, Petersen and Rajan (1997) show that unprofitable firms with positive sales growth use trade credit more, but do not investigate that these firms use bank loans less.

2.1 Business Cycle after the Late 1990s

Following the asset price bubble of the late 1980s, the Japanese economy experienced a severe recession. Many economists refer to this long recessionary period as the "lost decade".[5] Especially after 1998, the recession became more severe. In late 1997, Yamaichi Shouken, one of the largest securities trading firms in Japan, and the Hokkaido Takushoku Bank, one of Japan's largest banks, went bankrupt. Moreover, many nonfinancial firms struggled with the economic downturn, and the number of firms declaring bankruptcy increased. During this period, the real growth rate of GDP in Japan dropped to around -2.0% in 1998 and -0.1% in 1999, which are the lowest rates of growth since World War II. [6] In 2000, the real growth rate of GDP improved to 2.9%, but the growth rate subsequently fell to 0.2% in 2001 and 0.3% in 2002. After 2003, the real GDP growth rate recovered to around 2%. The period after 2003 is then the period of recovery from the lost decade, and represents the longest period of recovery since World War II.

2.2 Database of Small Businesses

In this study, we use firm-level data on small businesses in Japan from 1996 to 2006. The data are from the Credit Risk Database for Small and Medium Enterprises (CRD). Several financial institutions and credit guarantee corporations under the guidance of the Small Medium Enterprise Agency in Japan established this database. This database is managed by the CRD Association.[7] The data collection process targets firms defined as Small and Medium Enterprises under the Small and Medium Enterprise Basic Law. The dataset in this study includes only corporations that existed for more than three consecutive years in the CRD from 1996 to 2006. We also use only sample of manufacturers, apart from Table

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[5]See Hayashi and Prescott (2002) for a more detailed discussion of the "lost decade".

[6]Using aggregate data, many studies support the observation that credit supplies from banks were squeezed and the financial system collapsed during the late 90s, suggesting that credit crunch for small businesses was a serious problem during this period. However, using firm-level data of small businesses, Tsuruta (2010) does not support this view.

[7]See http://www.crd-office.net/CRD/english/ for more information about the CRD.

1 and Figure 1. The data collected on the 92,995 firms from 1996 to 2001 and 106,182 firms from 1996 to 2001, which includes 91 items of their balance sheets and profit and loss statements data. For the number of employees, the first quartile is 3, the median is 7, and the third quartile is 16. The 99th percentile for employees is 214, suggesting that the share of relatively larger firms in the sample is small.

2.3   Sales and Inventory Growth

We describe the performance of small business during 1997–2006, including the period during and after the lost decade. The trend in the performance of small businesses is consistent with fluctuations in the overall business cycle. However, we can observe some differences across industrial sectors. In Table 1, we show the median sales growth rates by each industry.[8] In 1998, 1999, and 2002, the sales of small businesses fell more than 4%, although the impact of the sales decline varied by industry. In the 1998–1999 recession, the level of sales decline was very serious in manufacturing, especially in the basic material, and processing and assembly sectors. The median growth rate of sales in the basic material sector was -6.03% in 1998 and -9.95% in 1999, both lower than in the nonmanufacturing sectors. In addition, the median growth rate of sales in the processing and assembly sector as the poorest performing sector was -2.50% in 1998 and -12.12% in 1999. Nevertheless, these sectors also recovered rapidly following the recession. In 2000–2001, the processing and assembly sector enjoyed sales growth in excess of 2–4%, despite other industries suffering sales declines. The basic material sector also experienced positive sales growth, and the processing and assembly sector recovered very rapidly after 2002. In fact, the median growth rate of sales was positive in 2003, despite being still negative in many other industries, and some 7.12% in 2004. Firms in the basic material sector also increased sales by 3.59% in 2004.

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[8]We divide the manufacturing sector into three categories, comprising the basic material sector, the processing and assembly sector, and other.

These data suggest that business fluctuations seriously affect manufacturing, particularly the processing and assembly, and basic material sectors. As shown in Table 1, the range between the maximum and minimum median sales growth in the processing and assembly sector during 1997–2006 is the largest, followed by the basic material sector. In Table 2, we show the median growth rate of sales for each type of manufacturing. In some sectors (Iron, Steel and Metal, General Machinery, and Electrical Machinery), median sales dropped about 15% in 1999 and over 10% in 2002. In these sectors, the fluctuations were more serious when compared with other manufacturers. Figure 1 details the ratio of firms that increased inventories by a large amount. We illustrate the ratio of firms whose inventory growth rate exceeded 10%. After 2003, the ratio of firms with higher inventory growth increased, and this appeared to be independent of industry.

These tables suggest that small businesses needed credit to finance inventory investment after 2003, especially in the manufacturing sector, as sales began to grow more quickly. In addition, firms cannot easily anticipate immediate changes in economic situations. Therefore, during the period of recovery after 2003, they needed additional quick money to finance their growth opportunities. To do this, creditors must acquire up-to-date information. However, at the beginning of a recovery, creditors cannot decide the creditworthiness of borrowers, as economic conditions are changing so rapidly.

2.4 Business Fluctuations and Short-term Credit

In unstable industries such as the processing and assembly sector, firms and creditors encounter some problems. First, firms in unstable industries have unexpected credit demands. Generally, firms must finance inventories and trade receivables when sales for firms are growing. Firms with growth opportunities must then finance short-term credit if they do not have sufficient cash holdings. Accordingly, if they can plan when they need credit, they do not require immediate short-term credit. However, it is difficult for firms in unstable industries to predict when they need short-term credit for sales growth because

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growth opportunities can appear suddenly. Second, in these sorts of industries, creditors require day-by-day monitoring of the credit risk of borrowers. As the information gap between creditors and borrowers is severe in unstable industries, only creditors that have updated information about these industries and borrowers can then offer credit.

As discussed, the demand for short-term credit increased during the period of recovery from the lost decade. During this time, if borrowers needed credit immediately, creditors did not have enough time to observe the default risk of the borrowers. Additionally, if creditors do not have updated information about borrowers, they cannot offer credit. Before 2002, the Japanese economy suffered a large and serious recession, so creditors had dated information that may well have judged the borrower's investments as bad, even if they were now profitable. The major creditors for small businesses are banks and trade creditors. Small businesses with growth opportunities use credit from banks or suppliers that can mitigate these problems during the period. [9]

The pecking order theory maintains that in the first instance firms choose internal cash as the cheapest finance source available. Firms exhausting internal cash then use their next cheapest alternative source of funds. On this basis, if trade credit is an extremely expensive source of finance, firms do not use it to finance inventory investment. Previous studies of relationship lending (for example, Petersen and Rajan (1994) and (1997)) argue that small businesses only use trade credit if bank loans are unavailable. This literature then implies that small business (especially creditworthy firms) use bank loans to finance inventory investment and trade credit only if bank loans are unavailable. In addition, many previous papers (for example, James (1987)) have supported information-based theory and focus on the bank role in mitigating the information asymmetry between creditors and borrowers. If true, banks offer more credit for small businesses with credit demand. However, as Petersen and Rajan (1997) have argued, if trade partners have an

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[9]To simplify the discussion, we do not consider other means of financing such as cash holdings, the collection of trade receivables, and the discounting of bill receivables.

information advantage over banks, they offer more credit instead.

3 Overviews of Firm-level Data

Table 3 provides the median trade payables, short-term borrowings, and long-term borrowings ratios normalized by total assets. Most of short and long-term borrowings are from banks, so these are proxies for bank lending. The largest financial sources are long-term borrowings, accounting for more than 40% of total assets. The median short-term borrowings and trade payables are about 10% of total assets. As Miwa and Ramseyer (2008) argue, the amount of trade payables in Japan is higher than that of short-term borrowings. As already mentioned, the CRD is a database drawn from financial institutions, so our data show that the amount of short-term borrowings is higher than trade payables. In Table 4, we show the ratios of cash holdings, trade receivables, and inventories normalized by total assets. The median ratio of cash holdings to total assets exceeds 10%, and this is higher than the ratio of short-term borrowings.[10] The median ratio of trade receivables is larger than that of cash holdings and inventories, accounting for about 19% of total assets. These findings suggest that small businesses have sufficient financial assets and can easily finance inventory investment using cash holdings and by collecting trade receivables. To simplify the discussion, we focus only on trade credit and bank loans in this section.

According to Petersen and Rajan (1997), the firm's investment opportunities determine its credit demands, including asset maturity, liquidity, and access to credit from financial institutions. During the recovery, firm sales grew quickly and inventory investment opportunities expanded. To finance these investment opportunities, firms with higher inventory growth had higher credit demand and needed larger amounts of short-term credit. In this section, we use the inventory growth rate as a proxy for credit demand.

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[10]Japanese small businesses are not extraordinary in this regard. According to Bank of England (2004), total deposits are greater than total borrowing in small firms.

As the amount of inventory in some firms is zero, we define the inventory growth rate as (inventory in year t – inventory in year t-1)/total asset in year t-1. We investigate what sources of finance small businesses with higher credit demands use. We divide our sample into four groups using the inventory growth rate: less than -1%, between -1% and 0%, between 0% and 1%, and more than 1%.

3.1 Trends in Trade Credit and Bank Loans

Table 5 provides the growth rate quartiles for short-term borrowings. Generally, the 25th and 75th percentiles of growth rates will be larger if the inventory growth rates are higher. However, all of the median growth rates are 0.00%, and so do not depend on the inventory growth rate or year. These data show that banks do not increase credit for small firms with positive inventory growth, implying that they tend to roll over loans and not offer new loans to those small businesses with more need of finance.

The trend in trade payables is different from that for short-term borrowings. In Table 6, we provide the first, second, and third quartiles of the trade payables growth rate. This table shows that the distribution of the growth rate is higher when the inventory growth rates are higher. For example, in 2003 the median growth rate of trade payables for firms with the highest inventory growth is 0.462%. However, the growth rate for firms with the lowest inventory growth in the same year is only -0.455%. Additionally, the growth rates of trade payables vary with the economic conditions. During the recession in 1998, 1999, and 2002, the median growth rates of trade payables are either 0.00% or negative, even if the inventory growth rate is in the highest group. In 2000 and 2004, that is, the period of recovery after the recession, the trade payables growth is higher than the rates in the other periods. In Table 7, we use the ratio of the annual change in trade payables to sales as a proxy for trade credit. If we change the proxy, the results are similar.

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3.2 Comparisons by the Level of Sales and Inventory Growth

We find that firms with increasing inventories use more trade credit. As our data are from a firm's balance sheet, increasing inventories arises from both unsold goods and inventory investment. To exclude the presence of unsold goods, we divide the sample by the level of sales growth. Firms with higher sales growth have less unsold inventory, so we can identify those firms with increasing unsold inventories or growth opportunities. In Table 8 and Table 9, we divide the sample into four groups according to sales growth: less than -10%, between -10% and 0%, between 0% and 10%, and more than 10%. Table 8 depicts the growth in median short-term borrowings. The median short-term growth is 0.00% if we limit the sample to firms with higher sales and inventories growth. Table 9 provides the median trade payables growth divided by the level of inventories and sales growth. As shown, the median trade payables growth rate is negative if we limit the sample to firms with higher inventories growth and greater falls in sales, although the trade payables growth rate of firms with increasing inventories and sales is positive. These findings suggest that suppliers decrease credit to firms with increasing unsold inventories.

3.3 Comparisons by Industry

In Panel A of Table 10, we provide the median trade payables growth rate divided by the three types of manufacturers. To simplify, we limit the sample to firms with positive inventories growth. The median trade payables growth is positive in the basic material and processing and assembly sectors in 2000 and again after 2003. However, the median growth rate is smaller for the other manufacturers. These results are similar when we focus on the first and third quartiles of the growth rate of trade payables. As mentioned, the performance of the processing and assembly sector is unstable. These results suggest that firms in unstable industries use more trade credit when they have short-term credit demand. The median short-term borrowings growth rate is 0.00%, except for other

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manufacturers in 1997. This suggests that manufacturers do not increase short-term borrowings, whether in recession or recovery, to invest in inventory.

3.4 Creditworthiness and the Choice of Financial Sources

Previous studies have argued that small businesses use trade credit when they cannot borrow from banks. In Subsection 3.1, we show that small businesses use trade credit to finance inventory investments, but this may arise through the unavailability of bank loans. To investigate whether small businesses use trade credit because of the unavailability of bank loans, we limit the sample to creditworthy firms. Creditworthy firms can easily access bank loans, so they borrow from banks to finance their credit demands if the cost of trade credit is extremely high. We use the ratio of tangible fixed assets to total borrowings as a proxy for creditworthiness because firms with more tangible fixed assets have more collateral assets. Because firms with a lower amount of borrowing can pledge more of their assets to banks, we can consider these firms as creditworthy.[11]

In Table 11, we provide the median trade payables and short-term borrowings growth divided by the level of collateral assets at the previous year. Panel A shows the median trade payables growth rate. On the right-hand side of this table, we specify the sample where the inventory growth rate exceeds 1%. Apart from 1998 and 1999, the median rates are positive, independent of the level of collateral. If we use the sample where the inventory growth is between 0% and 1%, the median trade payables growth also does not depend on the level of collateral assets. Panel B of Table 11 provides the median short-term growth rates, divided by the level of collateral assets. All median growth rates are 0% irrespective of the level of collaterals and the year. These results show that small businesses use trade credit if they have sufficient collateral assets. Creditworthy firms then increase trade credit to finance inventory investment, implying that the use of trade

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[11]The data show that firms with higher fixed tangible assets pay lower interest spreads, so this ratio is a suitable proxy for creditworthiness.

credit is not caused by unavailability of bank loans

4 Econometric Analysis

4.1 Regression

To investigate whether firms use bank loans or trade credit, we estimate the following equation using CRD data.

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\begin{aligned}
Short-term\ Borrowings\ Growth_{it} &= \alpha_1 + \alpha_2 Credit\ Demand_{it} + \mathbf{X}_{it}\alpha_3 \quad (1) \\
&+ \alpha_4 Year\ Dummy_t + \eta_i + \epsilon_{it}
\end{aligned}
$$

X = (Firm scale, Current assets excluding cash, ROA, Collateral assets, Cash holdings, Leverage, Interest rate)

where $\mathbf{X}_{it}$ is a matrix of control variables, η_i is the time-invariant effects of each sample, and ϵ_{it} is the error term of firm i in year t from 2003 to 2006. We specify the trade payables growth rate as the dependent variable and estimate a similar equation to investigate whether firms use bank loans or trade credit.

$$
\begin{aligned}
Trade\ Payables\ Growth_{it} &= \beta_1 + \beta_2 Credit\ Demand_{it} + \mathbf{X}_{it}\beta_3 \quad (2) \\
&+ \beta_4 Year\ Dummy_t + \theta_i + \zeta_{it}
\end{aligned}
$$

X = (Firm scale, Current assets excluding cash, ROA, Collateral assets, Cash holdings, Leverage, Interest rate)

where $\mathbf{X}_{it}$ is a matrix of control variables, θ_i is the time-invariant effects of each sample, and ζ_{it} is the error term of firm i in year t from 2003 to 2006.[12] In addition, we specify

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[12] We assume that the correlation between ζ_{it} and ϵ_{it} is close to zero.

the annual change in the trade payables to current liability ratio and the short-term borrowings to current liability ratio as dependent variables, following to Kashyap et al. (1993) and Borensztein and Lee (2002). This is because total short-term demand affects the growth rates of trade payables and short-term borrowings. By normalizing with current liabilities, we can then account for the increase in the ratio of trade payables or short-term borrowings after eliminating the effects of total short-term demand because current liabilities already reflect these effects. Increases in the trade payables to current liabilities ratio means that firms use trade credit more than bank loans.

4.2   Hypothesis

We hypothesize that if banks offer cheaper credit and have more up-to-date information on borrowers than other creditors, borrowers use bank loans more to finance their credit demand. In this case, the effect of $Credit\ Demand_{it}$ for short-term borrowings growth is positive and larger than the effect for trade payables growth. Further, $Credit\ Demand_{it}$ has a negative effect on the ratio of trade payables to current liabilities. However, if trade creditors have more information and offer credit immediately, borrowers will use trade credit. Accordingly, the coefficient of $Credit\ Demand_{it}$ is positive for the trade payables growth rate and the magnitude is larger. Particularly in unstable industries, firms obtain funds from creditors, who can more easily acquire information.

We also investigate whether credit-constrained firms use more trade credit. If firms use trade credit because of the lower availability of bank loans, credit-constrained firms with greater need of finance will use more trade credit. In addition, wealthy firms increase bank loans to finance their short-term credit demand. Thus, the effects of $Credit\ Demand_{it}$ for trade credit growth are larger in the case of credit-constrained firms. If trade credit is extremely expensive, creditworthy firms use more bank loans, instead of trade credit. As a result, the effects of $Credit\ Demand_{it}$ on bank loans are positive and the effect on trade credit is not significant for wealthy firms if bank loans are superior to trade credit. We

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use the inventory growth rate as a proxy for credit demand. Growing firms also need more working capital and short-term credit, so we employ sales growth as an alternative proxy for credit demand.

We include several control variables in the regressions. The current asset ratio is the ratio of current assets (excluding cash) to total assets. Because firms with a higher current asset ratio finance their working capital needs until maturity, they must increase trade credit and/or short-term bank credit. Thus, we hypothesize that the coefficient on the current asset ratio is positive. Cash to current liabilities ratio represents the liquidity of firms such that firms with a lower level of liquidity are not likely to pay off their credit promptly on the due date. Therefore, the credit risk of these firms is higher and creditors are more likely to reduce credit to these firms. We hypothesize that the coefficient on the cash to current liabilities ratio is positive for trade payables and short-term borrowings growth. The tangible fixed asset ratio is a proxy for collateral assets. According to Miwa and Ramseyer (2008), banks in Japan are secured lenders whereas trade partners are unsecured lenders. As a result, firms that have more tangible fixed assets use more bank loans, so the coefficient on the tangible fixed asset ratio is positive for short-term borrowings.

We can also calculate the average interest rate on bank credit using the firm's balance sheets and profit and loss statements. The interest rate on bank credit has a negative effect on short-term borrowings and a positive effect on trade payables. [13] We hypothesize that the coefficients for the levels and changes in interest rates are negative for short-term borrowings and positive for trade payables. The return on assets (ROA) is an indicator of firm performance. In general, better-performing firms have sufficient cash flow, so they do not need more short-term credit. On the other hand, poorly performing firms are more likely to default, so creditors reduce the credit supply to these firms. In sum, the level of

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[13]Tsuruta (2008) conclude the positive effect of interest rates on bank credit for trade payables using Japanese small business data.

ROA has some effects for trade payables and short-term borrowings, although the signs of the coefficients are ambiguous. We use leverage as a proxy for credit risk. We hypothesize that the coefficients on leverage are negative because the probability of default for more highly leveraged firms is greater. We include the natural logarithm of 1+sales[14], along with year dummies.

5   Empirical Results

5.1   Main Results

In column (1) of Table 13, we provide the results for the estimation of short-term borrowings. The coefficient of inventories growth rates is positive and statistically significant at the 1% level. This implies that firms with increasing inventories borrow more from banks. Similarly, in column (2) of Table 13, we specify the trade payables growth rate as the dependent variable. The coefficient for the inventories growth rate is also positive and statistically significant at the 1% level. However, the result for short-term borrowings is not robust. If we change the proxy for short-term borrowings to the ratio of short-term borrowings to current liabilities, the coefficient for inventories growth becomes negative and statistically significant at the 1% level (column (3)), despite the effect of inventories growth on the ratio of trade payables to current liabilities being positive and statistically significant at 1% level (column (4)). These results suggest that firms increase trade credit more to finance inventories investment. We also find that growing firms increase trade payables, but not short-term borrowings. The effects of sales growth are positive for trade payables and negative for short-term borrowings and statistically significant at the 1% level (columns (1) and (2)). If we change the proxies of short-term borrowings and trade payables, the results are similar (columns (3) and (4)). These findings suggest that firms finance their growth opportunities using trade credit, not bank loans.

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[14]When the sales of firms are zero, we specify one.

The results for the control variables fit our hypotheses apart from some findings. The effects of current assets are significantly positive for short-tem borrowings and negative for trade payables, suggesting that firms with demand for short-term credit increase short-term borrowings more. The coefficients of cash holdings are significantly positive and statistically significant at the 1% level. These findings show that both trade partners and banks decrease credit to firms with lower liquidity (columns (1) and (2)). On the other hand, the coefficient of cash holdings for trade payables to current liabilities is negative, implying that firms with lower liquidity increase the ratio of trade payables to total liabilities (column (4)). The tangible fixed asset ratio, as a proxy for collateral assets, has a negative effect on trade payables and a positive effect on short-term borrowings. Firms with sufficient collateral assets then increase short-term borrowings more and trade payables less. In addition, apart from column (2), the coefficients for the level and change in interest rates are significantly negative for short-term borrowings and positive for trade payables. These results are consistent with our hypothesis. The coefficient of trade payables for ROA is positive and that of short-term borrowings is negative, and both coefficients are statistically significant at 1% level. These imply that profitable firms increase trade credit and decrease short-term borrowings during this period. The effects of leverage are negative for both short-term borrowings and trade payables, implying that banks and trade partners decrease credit for high leveraged firms. The results for the year dummies illustrate the differences between trade payables and short-term borrowings. The coefficient for year dummy for 2004 (that is, the beginning of the recovery), is positive for trade payables and negative for short-term borrowings. That is, at the beginning of the recovery, firms use trade payables more and short-term borrowings less.

As mentioned, unsold products may account for the increase in inventories. The results in Table 13 include the cases of both an increase in unsold products and an increase in inventory investment. To investigate only the effects of inventory growth caused by inventory investment, we add a proxy of inventory increase caused by unsold products.

We use the rate of inventory increase in the case of sales decrease. This variable is defined as "(inventory$_t$-inventory$_{t-1}$)/assets$_{t-1}$ if the inventory growth rate$_t$ is positive and sales growth$_t$ is negative, and zero otherwise. If growing firms with inventory investment use trade credit or bank loans more, and firms with unsold products use trade credit or bank loans less, the coefficients of the inventory increase in the case of sales decrease are negative. Table 14 shows that the coefficients for "inventory increase if sales growth is negative" are statistically negative for trade payables growth at the 1% level. This suggests that growing firms with higher inventory growth increase trade credit more and firms with unsold inventories increase trade credit less (column (2)). The coefficient of the proxy of unsold inventory increases for short-term borrowings is positive and statistically significant at 5% level (column (1)). In columns (3) and (4), we use short-term borrowings and trade payables normalized by current liabilities. The coefficient of "inventory increase if sales growth is negative" for short-term borrowings–current liability is significantly positive. The effect of this variable for the trade payables growth rate is statistically negative at the 1% level, and the coefficients of sales and inventory growth are statistically positive at the 1% level. In summary, our results imply that growing firms with inventory investment increase trade credit use and firms with inventory increase caused by unsold products use trade credit less.

These results may be biased because of endogeneity. This is because the inventories of small businesses are affected by credit constraints, so the direction of causality between inventory growth and short-term borrowings or trade payables growth is ambiguous. In particular, if the growth rates of short-term borrowings and trade payables have a positive effect on the inventory growth rate, the coefficients for the inventory growth rate are upwardly biased. To mitigate the endogeneity bias, we regress equations (2) and (3) using two-stage least-squares with firm fixed effects. We use the current level of inventories normalized by total sales as an instrumental variable for inventories growth. Firms with higher inventories do not need to increase an increase in inventory investment if they

have growth opportunities. Therefore, the current levels of inventories have negative effects for the growth rate of inventories. On the other hand, the correlation between the current level of inventories and the growth rates of trade payables or short-term borrowings are considered to be insignificant. To control heterogeneous effects of current levels of inventories across years, we also use interactive terms between the ratio of inventories to total sales and year dummies in 2003, 2004, and 2005. We show the results of the two-stage least-squares model in Table 15. The coefficients of inventory growth rate is positive for short-term borrowings and trade payables growth rate, and statistically significant at the 1% level. As shown in the bottom of Table 15, P-values of J statistics are 0.1674 and 0.6053, suggesting that the correlations between error terms and inventory growth rates are statistically insignificant. We obtain similar effects if we estimate using instrumental variables, so our results are not biased.

5.2   Comparisons by Industry

To investigate the different effects of credit demand by industry, we divide the sample according to the type of industry in Tables 16–19. In Table 16, we regress the short-term borrowings growth rate as a dependent variable. The coefficients for the inventory growth rate are positive and statistically significant, and do not depend on the industry type. Focusing on the magnitude of the coefficients, we observe some differences across industries. The effect of inventory growth is largest for other manufacturers and second largest for basic materials. These results imply that manufacturers in other sectors use bank loans to finance inventory growth more.

We obtain different results in Table 17 where the dependent variable is changed to trade payables growth. The coefficients for the inventory growth rate are positive and statistically significant at the 1% level. The magnitude of the coefficient for the inventory growth rate is largest for the processing and assembly sectors and smallest for the other sector. Those results are different to the results for short-term borrowings in Table 16,

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suggesting that manufacturers in the processing and assembly sector use trade credit instead of bank loans to finance the increase in inventories. Similarly, the effects of sales growth in the basic material sector and processing and assembly sector are statistically larger than those in the other sectors.

To check robustness, we change the dependent variable to the annual increase in short-tem borrowings and trade payables normalized by current liabilities. The results are shown in Tables 18 and 19. In the short-term borrowings estimation in Table 18, the coefficient of inventory growth and sales growth is negative and statistically significant at the 1% level apart from the result for other industries in column (3). Conversely, in the trade payables estimation in Table 19, the coefficients of sales growth and inventory growth are significantly positive at the 1% level, independent of the type of industry. In addition, the magnitude of coefficients in the basic material sector and processing and assembly sector is statistically larger than in other industries. As discussed, the performance of the basic material sector and the processing and assembly sector is unstable. We conclude that growing firms in unstable industries use trade credit instead of bank loans.

5.3   Wealthy Firms and Trade Credit Use

According to previous work, small businesses with a low availability of bank loans use trade credit more, because the cost of trade credit is extremely high. For example, Burkart and Ellingsen (2004) show that medium- and low-wealth firms use trade credit because they need to ease bank credit rationing. Generally, small businesses with high collateral assets can borrow sufficient money from banks. If small businesses increase trade credit because of the low availability of bank loans, growing small businesses with higher collateral assets use bank credit instead of trade credit. In Table 20 and Table 21, we regress Equations (1) and (2) after dividing the sample by the level of collateral assets. We use the ratio of

tangible fixed assets to total borrowings as a proxy for collateral assets.[15] In the current analysis, we classify firms in the bottom third of the tangible fixed asset ratio as firms with low collateral assets. Similarly, we classify firms in the middle third of the tangible fixed asset ratio as middle collateral asset firms and those in the highest third as high collateral asset firms. [16]

Table 20 shows the results of the estimation for short-term borrowings. The coefficients for the inventory growth rate are significantly positive at the 1% level, independent of the level of collateral assets. However, the coefficients for sales growth are significantly negative, even if the sample is limited to firms with high collateral assets. Our findings show that growing firms decrease short-term borrowings, although they still have growth opportunities. Table 21 shows the results for the estimation of trade credit. Contrary to the results for short-term borrowings, wealthy growing firms use trade credit instead of short-term borrowings. The coefficients for the inventory growth rate are significantly positive at the 1% level and those effects are statistically larger when the amount of collateral is higher. These results are similar to the results for sales growth. In general, these findings do not support the hypothesis that firms use trade credit more because of the lower availability of bank loans.

The magnitude of the inventory growth rate to short-term borrowings is smaller for the sample of the wealthiest firms. This shows that they do not use bank loans even though they have sufficient collateral assets. The reason is as follows. Growing firms and firms with more inventory investment need quick credit. Because banks need more time screening firms than do trade partners, they cannot offer quick credit to growing small businesses. Therefore, growing firms use trade credit more, even though they have enough

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[15]Guariglia and Mateut (2006) also use the tangible fixed assets ratio as a criterion of financing constraints.

[16]Using this definition, in this sample, firms whose tangible fixed asset ratio is less than 0.4009 are low collateral firms, firms with a tangible fixed asset ratio between 0.4009 and 0.8106 are middle collateral firms, and those with a tangible fixed asset ratio over 0.810 are high collateral firms.

collateral assets.

6   Conclusions

We investigated how small businesses finance their growth opportunities using firm-level data during the period of recovery from the "lost decade" in Japan. We find the following results. First, small businesses with higher credit demand increase trade credit instead of bank loans. Second, small businesses with greater collateral assets also use trade credit more to finance their working capital. Many previous studies argue that small businesses in financially developed countries use bank loans, and trade credit only if bank loans are unavailable. In addition, firms in financially developing counties use trade credit more as they cannot borrow enough money from banks. Our findings suggest that small businesses in financially developed countries use trade credit more and this is not from the lack of availability of bank loans. Third, small businesses with unstable industries use trade credit more to finance their working capital, suggesting that trade creditors have an advantage in the day-by-day monitoring of borrowers.

Appendix: Definition of Variables

t denotes year t and t-1 denotes year t-1.

Dependent variables

Short-term Borrowings Growth Rate The annual growth rate of a firm's short-term borrowings [(short-term borrowings$_t$ – short-term borrowings$_{t-1}$)/total assets$_{t-1}$].

Trade Payables Growth Rate The annual growth rate of a firm's trade payables [(trade payables$_t$ – trade payables$_{t-1}$)/total assets$_{t-1}$].

Annual Change in Short-term Borrowings – Current Liabilities Ratio The annual change in the ratio of trade payables to current liabilities (short-term borrowings$_t$/current liabilities$_t$ – short-term borrowings$_{t-1}$/current liabilities$_{t-1}$).

Annual Change in Trade Payables – Current Liabilities Ratio The annual change in the ratio of trade payables to current liabilities (trade payables$_t$/current liabilities$_t$ – trade payables$_{t-1}$/current liabilities$_{t-1}$).

Credit Demand

Inventory Growth Rate The annual growth rate of a firm's inventories [(inventories$_t$-inventories$_{t-1}$)/total assets$_{t-1}$].

Sales Growth Rate The annual growth rate of a firm's sales [(sales$_t$-sales$_{t-1}$)/total assets$_{t-1}$].

Cash holdings

Cash–Short-term Loan Ratio Cash/Short-term loans.

Credit risk

Leverage = Total debts/assets in t-1.

Other proxies of the demand for short-term credit

Scale Ln(1+sales$_{t-1}$) in t-1.

Current Asset Ratio The ratio of current assets excluding cash to total assets in t-1.

ROA The ratio of the sum of a firm's operating income, interest receivables, and dividends to total assets in t-1.

Availability of bank loans

Tangible Fixed Asset Ratio The ratio of a firm's tangible fixed assets (the sum of the book value of buildings and land) to total debts in t-1.

Interest Rate The ratio of a firm's interest expenses to the sum of its short-term debt, long-term debt, and discounted notes receivable, minus the prime rate in t-1 (in percentages). We do not have data on the prime rate for each bank. Therefore, we obtained the short-term prime rate at the end of March from the *Financial and Economics Statistics Monthly* issued by the Bank of Japan.

Annual Change in Interest Rate Interest rate$_t$ – Interest rate$_{t-1}$

References

Atanasova, C. V. and N. Wilson, 2003: Bank borrowing constraints and the demand for trade credit: Evidence from panel data. *Managerial and Decision Economics*, **24**(6-7), 503–514.

Bank of England., 2004: *Finance for Small Firms – An Eleventh Report*.

Borensztein, E. and J.-W. Lee, 2002: Financial crisis and credit crunch in Korea: Evidence from firm-level data. *Journal of Monetary Economics*, **49**(4), 853–875.

Burkart, M. C. and T. Ellingsen, 2004: In-kind finance: A theory of trade credit. *American Economic Review*, **94(3)**, 569–590.

Choi, W. G. and Y. Kim, 2005: Trade credit and the effect of macro-financial shocks: Evidence from U.S. panel data. *Journal of Financial and Quantitative Analysis*, **40**, 897–925.

Cunat, V., 2007: Trade credit: Suppliers as debt collectors and insurance providers. *The Review of Financial Studies*, **20**, 491–527.

Fisman, R. and I. Love, 2003: Trade credit, financial intermediary development, and industry growth. *Journal of Finance*, **58(1)**, 353–374.

Ge, Y. and J. Qiu, 2007: Financial development, bank discrimination and trade credit. *Journal of Banking and Finance*, **31**(2), 513–530.

Giannetti, M., M. C. Burkart, , and T. Ellingsen, 2009: What you sell is what you lend? explaining trade credit contracts. *Review of Financial Studies*, Forthcoming..

Guariglia, A. and S. Mateut, 2006: Credit channel, trade credit channel, and inventory investment: Evidence from a panel of uk firms. *Journal of Banking & Finance*, **30**(10), 2835–2856.

Hayashi, F. and E. C. Prescott, 2002: The 1990s in Japan: A lost decade. *Review of Economic Dynamics*, **5**(1), 206–235.

James, C., 1987: Some evidence on the uniqueness of bank loans. *Journal of Financial Economics*, **19**(2), 217–235.

Kashyap, A. K., J. C. Stein, and D. W. Wilcox, 1993: Monetary policy and credit conditions: Evidence from the composition of external finance. *American Economic Review*, **83**(1), 78–98.

Love, I., L. A. Preve, and V. Sarria-Allende, 2007: Trade credit and bank credit: Evidence from recent financial crises. *Journal of Financial Economics*, **83**, 453–469.

Marotta, G., 1997: Does trade credit redistribution thwart monetary policy? evidence from Italy. *Applied Economics*, **29(12)**, 1619–1629.

Marotta, G., 2005: When do trade credit discounts matter? evidence from Italian firm-level data. *Applied Economics*, **37(4)**, 403–416.

Meltzer, A. H., 1960: Mercantile credit, monetary policy, and size of firms. *The Review of Economics and Statistics*, **42**, 429–437.

Miwa, Y. and J. M. Ramseyer, 2008: The implications of trade credit for bank monitoring: Suggestive evidence from Japan. *Journal of Economics & Management Strategy*, **17(2)**, 317–343.

Levine, R., 2005: Finance and growth: Theory and evidence. In *Handbook of Economic Growth*, Aghion, P. and Durlauf, S., editors, volume 1 of *Handbook of Economic Growth*. Elsevier, 865-934.

Ng, C. K., J. K. Smith, and R. Smith, 1999: Evidence on the determinants of credit terms used in interfirm trade. *Journal of Finance*, **54**, 1109–1129.

Nilsen, J. H., 2002: Trade credit and the bank lending channel. *Journal of Money, Credit and Banking*, **34(1)**, 226–253.

Opler, T. C. and S. Titman, 1994: Financial distress and corporate performance. *Journal of Finance*, **49**(3), 1015–40.

Petersen, M. and R. G. Rajan, 1994: The benefits of firm-creditor relationships: Evidence from small business data. *Journal of Finance*, **49**, 3–37.

Petersen, M. and R. G. Rajan, 1997: Trade credit: Theories and evidence. *The Review of Financial Studies*, **10**, 661–691.

Rajan, R. G. and L. Zingales, 1998: Financial dependence and growth. *American Economic Review*, **88**(3), 559–586.

Rousseau, P. L. and P. Wachtel, 1998: Financial intermediation and economic performance: Historical evidence from five industrialized countries. *Journal of Money, Credit and Banking*, **30**(4), 657–78.

Smith, J. K., 1987: Trade credit and informational asymmetry. *Journal of Finance*, **42**, 863–872.

Tsuruta, D., 2008: Bank information monopoly and trade credit: Do only banks have information about small businesses? *Applied Economics*, **40(8)**, 981–996.

Tsuruta, D., 2010: Do financial shocks have negative effects on small businesses? - New evidence from Japan for the late 1990s -. *The B.E. Journal of Economic Analysis & Policy*, Forthcoming.

Wilner, B. S., 2000: The exploitation of relationships in financial distress: The case of trade credit. *Journal of Finance*, **55**, 153–178.

Table 1: Median Growth Rate of Sales (1997–2006), by Industry

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Construction	2.90%	-6.56%	-6.96%	-1.49%	-1.09%	-5.23%	-4.04%	-0.57%	0.37%	0.00%
Manufacture										
Basic Material Sector	3.48%	-6.03%	-9.95%	0.98%	0.34%	-8.00%	-0.35%	3.59%	3.06%	2.33%
Processing and Assembly Sector	5.00%	-2.50%	-12.12%	2.70%	4.19%	-10.26%	2.03%	7.12%	5.61%	4.74%
Others	0.63%	-4.36%	-5.56%	-2.52%	-2.58%	-4.30%	-2.59%	-1.41%	-2.08%	-0.90%
Transportation and Communication	2.19%	-2.78%	-5.16%	0.00%	1.09%	-2.79%	-0.23%	1.53%	2.07%	2.42%
Wholesale trade	1.46%	-5.85%	-5.97%	-1.90%	-1.90%	-4.91%	-2.21%	-0.16%	0.00%	0.00%
Retail trade	-0.75%	-5.62%	-4.51%	-2.61%	-2.73%	-4.52%	-3.69%	-2.67%	-1.92%	-1.12%
Restaurant	-1.00%	-3.25%	-5.15%	-3.75%	-3.50%	-4.00%	-5.20%	-2.76%	-2.88%	-1.58%
Real estate	0.00%	-0.39%	-0.86%	-0.21%	-0.28%	-0.70%	-0.85%	0.00%	-0.28%	0.00%
Service	1.30%	-1.97%	-2.64%	-0.44%	0.00%	-1.73%	-1.64%	0.00%	0.00%	0.37%
Total	1.45%	-4.28%	-5.50%	-1.14%	-0.92%	-4.21%	-2.18%	0.00%	0.00%	0.29%

	Max	Min	Max-Min
Construction	2.90%	-6.96%	9.86%
Manufacture			
Basic Material Sector	3.59%	-9.95%	13.55%
Processing and Assembly Sector	7.12%	-12.12%	19.24%
Others	0.63%	-5.56%	6.19%
Transportation and Communication	2.42%	-5.16%	7.58%
Wholesale Trade	1.46%	-5.97%	7.44%
Retail Trade	-0.75%	-5.62%	4.87%
Restaurant	-1.00%	-5.20%	4.20%
Real Estate	0.00%	-0.86%	0.86%
Service	1.30%	-2.64%	3.94%
Total	1.45%	-5.50%	6.95%

Note: "Max (Min)" shows that the maximum (minimum) number of median sales growth rates in each industry during 1997-2006.

Table 2: Median Growth Rate of Sales in Manufacture (1997–2006)

Sector	Industry	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
B&M	Lumber and Wood Products - except Furniture	4.10%	-18.34%	-10.48%	-1.38%	-3.29%	-7.92%	-3.76%	-0.46%	-2.54%	-2.73%
B&M	Pulp - Paper and Paper Products	1.46%	-5.64%	-6.44%	0.16%	-1.94%	-6.13%	-0.59%	0.98%	-0.55%	0.00%
B&M	Chemical and Allied Products	2.36%	-3.79%	-3.98%	1.51%	0.00%	-4.83%	0.88%	1.25%	1.61%	1.79%
B&M	Petroleum and Coal Products	6.09%	-6.37%	-6.65%	5.83%	2.88%	-8.82%	1.69%	-2.83%	4.89%	7.19%
B&M	Plastic Products - except Otherwise Classified	3.90%	-3.88%	-7.08%	2.83%	0.00%	-9.20%	1.68%	3.58%	2.07%	2.38%
B&M	Rubber Products	1.10%	-5.44%	-8.30%	2.40%	-1.17%	-8.62%	2.32%	3.50%	2.76%	4.64%
B&M	Ceramic - Stone and Clay Products	1.21%	-8.05%	-6.35%	-0.58%	-3.81%	-5.61%	-5.73%	-2.64%	-2.17%	-0.50%
B&M	Iron, Steel, and Metal	5.06%	-5.50%	-14.76%	1.90%	3.04%	-10.14%	1.56%	7.42%	7.35%	4.96%
P&A	General Machinery and Precision Instruments	5.97%	-2.25%	-15.54%	2.79%	5.29%	-11.99%	1.74%	8.52%	6.94%	5.44%
P&A	Electrical Machinery - Equipment and Supplies	4.76%	-3.36%	-15.30%	4.02%	4.86%	-17.50%	1.95%	7.12%	3.83%	3.88%
P&A	Transportation Equipment	5.27%	-5.21%	-10.86%	0.34%	2.02%	-4.42%	2.67%	4.67%	6.00%	6.56%
Other	Food	0.00%	-1.89%	-2.82%	-2.72%	-2.86%	-2.19%	-2.13%	-1.50%	-2.52%	-1.23%
Other	Textile Mill Products	-0.54%	-7.93%	-9.14%	-5.08%	-5.79%	-5.70%	-4.68%	-3.19%	-3.81%	-1.65%
Other	Furniture and Fixtures	3.05%	-13.40%	-11.33%	-1.20%	-1.76%	-8.57%	-4.27%	-1.43%	-2.26%	-0.87%
Other	Printing and Allied Industries	2.16%	-3.85%	-6.04%	-2.54%	-1.63%	-4.41%	-3.01%	-2.46%	-2.42%	-1.34%
Other	Leather Tanning - Leather Products and Fur Skins	-2.45%	-9.73%	-8.75%	-5.33%	-0.21%	-6.91%	-5.08%	-2.31%	-4.21%	0.00%
Other	Others	2.04%	-5.73%	-8.05%	-0.35%	-0.91%	-7.57%	-1.49%	1.44%	0.42%	1.01%

Sector	Industry	Max	Min	Max-Min
B&M	Lumber and Wood Products - except Furniture	4.10%	-18.34%	22.44%
B&M	Pulp - Paper and Paper Products	1.46%	-6.44%	7.90%
B&M	Chemical and Allied Products	2.36%	-4.83%	7.19%
B&M	Petroleum and Coal Products	7.19%	-8.82%	16.01%
B&M	Plastic Products- except Otherwise Classified	3.90%	-9.20%	13.10%
B&M	Rubber Products	4.64%	-8.62%	13.26%
B&M	Ceramic - Stone and Clay Products	1.21%	-8.05%	9.26%
B&M	Iron, Steel, and Metal	7.42%	-14.76%	22.18%
P&A	General Machinery and Precision Instruments	8.52%	-15.54%	24.06%
P&A	Electrical Machinery - Equipment and Supplies	7.12%	-17.50%	24.62%
P&A	Transportation Equipment	6.56%	-10.86%	17.42%
Other	Food	0.00%	-2.86%	2.86%
Other	Textile Mill Products	-0.54%	-9.14%	8.60%
Other	Furniture and Fixtures	3.05%	-13.40%	16.45%
Other	Printing and Allied Industries	2.16%	-6.04%	8.21%
Other	Leather Tanning - Leather Products and Fur Skins	0.00%	-9.73%	9.73%
Other	Others	2.04%	-8.05%	10.09%

Note: 'B&M' is Basic Material Sector. 'P&A' is Processing and Assembly Sector. "Max (Min)" shows that the maximum (minimum) number of median sales growth rates in each industry during 1997-2006.

Table 3: The Median Ratios of Trade Payables and Short- and Long-term Borrowings
(Normalized by Total Assets)

	Trade Payables	ST Borrowings	LT Borrowings
1996–2002	0.0979	0.1191	0.4023
2003–2006	0.0849	0.1000	0.4248
Total	0.0919	0.1107	0.4118

Table 4: The Median Ratios of Cash Holdings, Trade Receivables, and Inventories
(Normalized by Total Assets)

	Cash Holdings	Trade Receivables	Inventories
1996–2002	0.1280	0.1927	0.0582
2003–2006	0.1223	0.1916	0.0577
Total	0.1256	0.1922	0.0580

Figure 1: The Ratio of Firms whose Inventory Growth Rate exceeds 10%
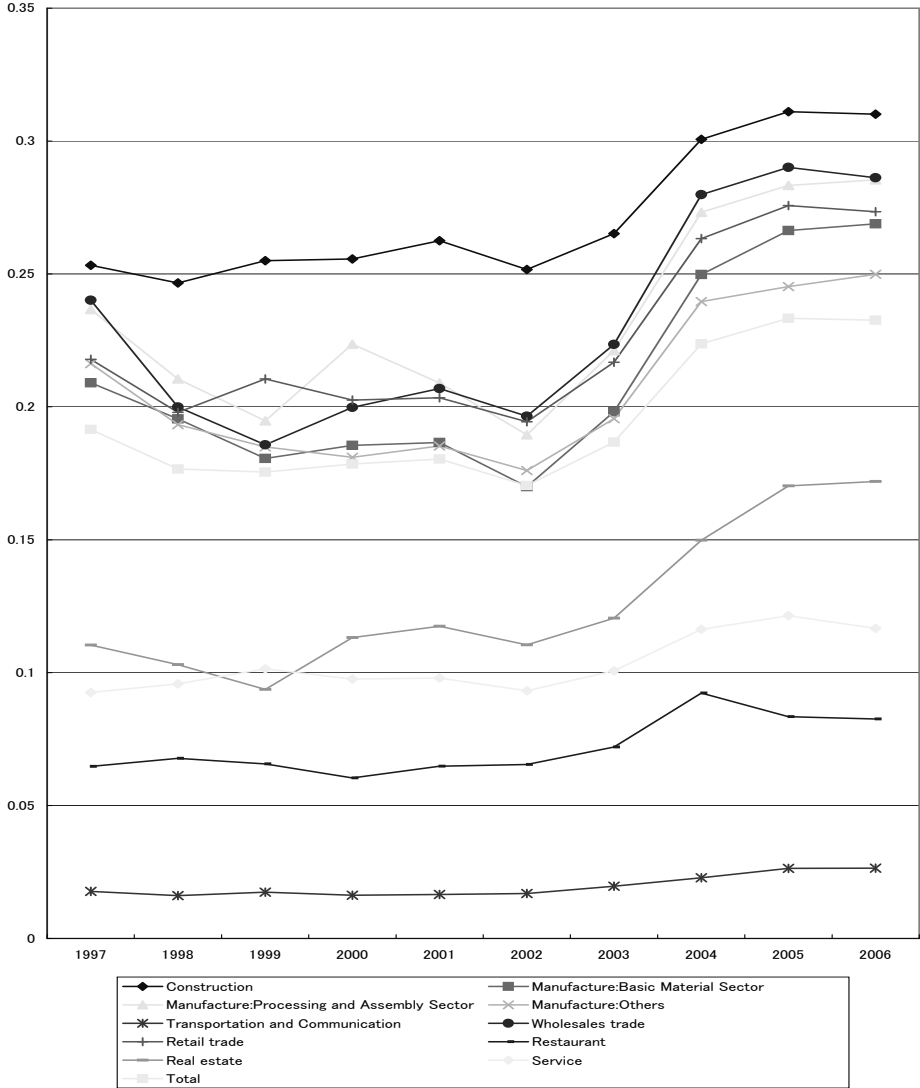
Table 5: Inventory Growth and Short-term Borrowings Growth in Manufacturing

	Inv. Growth ≤ -1%			-1% < Inv. Growth ≤ 0%			0% < Inv. Growth ≤ 1%			1% < Inv. Growth		
	p25	p50	p75	p25	p50	p75	p25	p50	p75	p25	p50	p75
1997	-3.390%	0.000%	2.444%	-2.169%	0.000%	2.371%	-1.629%	0.000%	2.762%	-1.541%	0.000%	5.025%
1998	-3.514%	0.000%	2.214%	-2.165%	0.000%	2.017%	-1.830%	0.000%	2.398%	-1.680%	0.000%	4.688%
1999	-4.032%	0.000%	1.582%	-2.711%	0.000%	1.722%	-2.358%	0.000%	1.765%	-2.521%	0.000%	3.723%
2000	-3.000%	0.000%	2.200%	-1.748%	0.000%	2.222%	-1.611%	0.000%	2.197%	-1.373%	0.000%	4.190%
2001	-3.166%	0.000%	1.842%	-2.074%	0.000%	1.905%	-1.622%	0.000%	1.994%	-1.584%	0.000%	4.019%
2002	-3.003%	0.000%	2.146%	-1.885%	0.000%	2.027%	-1.635%	0.000%	2.086%	-1.480%	0.000%	4.269%
2003	-3.711%	0.000%	1.523%	-2.229%	0.000%	1.551%	-1.913%	0.000%	1.654%	-1.832%	0.000%	3.958%
2004	-3.835%	0.000%	0.976%	-2.400%	0.000%	1.084%	-2.255%	0.000%	1.130%	-2.199%	0.000%	3.115%
2005	-3.575%	0.000%	1.174%	-2.163%	0.000%	1.000%	-1.911%	0.000%	1.257%	-1.974%	0.000%	3.030%
2006	-3.333%	0.000%	1.357%	-1.852%	0.000%	1.266%	-1.645%	0.000%	1.471%	-1.672%	0.000%	3.189%

Note: Inv. Growth (Inventory Growth Rate) is defined as (Inventory$_t$ - Inventory$_{t-1}$)/ Total Assets$_{t-1}$

Table 6: Inventory Growth and Trade Payables Growth in Manufacturing

	Inv. Growth ≤ -1%			-1% < Inv. Growth ≤ 0%			0% < Inv. Growth ≤ 1%			1% < Inv. Growth		
	p25	p50	p75	p25	p50	p75	p25	p50	p75	p25	p50	p75
1997	-3.847%	-0.388%	1.896%	-1.623%	0.000%	1.206%	-1.402%	0.066%	2.167%	-1.320%	1.016%	5.463%
1998	-6.741%	-2.292%	0.037%	-3.122%	-0.394%	0.168%	-3.084%	-0.542%	0.782%	-3.319%	-0.171%	2.880%
1999	-5.645%	-1.546%	0.464%	-2.479%	-0.174%	0.339%	-2.560%	-0.294%	0.885%	-2.956%	0.000%	3.037%
2000	-3.226%	-0.310%	1.667%	-1.154%	0.000%	1.179%	-1.047%	0.169%	2.232%	-1.183%	0.973%	5.226%
2001	-4.120%	-0.749%	1.108%	-1.829%	0.000%	0.625%	-1.771%	0.000%	1.419%	-1.831%	0.394%	4.467%
2002	-5.037%	-1.213%	0.564%	-2.265%	-0.113%	0.302%	-2.268%	-0.205%	0.926%	-2.746%	0.000%	2.912%
2003	-3.404%	-0.455%	1.271%	-1.381%	0.000%	0.814%	-1.351%	0.000%	1.569%	-1.589%	0.462%	4.255%
2004	-2.830%	-0.097%	1.905%	-1.074%	0.000%	1.047%	-1.022%	0.113%	1.929%	-1.033%	0.924%	5.019%
2005	-3.351%	-0.406%	1.352%	-1.322%	0.000%	0.754%	-1.248%	0.000%	1.585%	-1.414%	0.506%	4.199%
2006	-3.248%	-0.352%	1.289%	-1.192%	0.000%	0.829%	-1.111%	0.025%	1.578%	-1.145%	0.649%	4.161%

Table 7: Inventory Growth and Trade Payables–Sales Ratio in Manufacturing

	Inv. Growth ≤ -1%			-1% < Inv. Growth ≤ 0%			0% < Inv. Growth ≤ 1%			1% < Inv. Growth		
	p25	p50	p75	p25	p50	p75	p25	p50	p75	p25	p50	p75
1997	-3.208%	-0.594%	0.917%	-1.439%	0.000%	0.763%	-1.483%	0.000%	1.317%	-1.298%	0.388%	2.824%
1998	-3.899%	-1.144%	0.350%	-1.912%	-0.125%	0.406%	-1.974%	-0.271%	0.804%	-1.839%	0.000%	2.082%
1999	-2.906%	-0.418%	1.134%	-1.166%	0.000%	0.917%	-1.221%	0.000%	1.415%	-1.156%	0.341%	2.755%
2000	-2.361%	-0.190%	1.340%	-0.951%	0.000%	1.049%	-0.886%	0.139%	1.728%	-0.909%	0.625%	3.321%
2001	-3.121%	-0.601%	0.805%	-1.490%	0.000%	0.567%	-1.547%	-0.053%	1.074%	-1.376%	0.205%	2.592%
2002	-2.970%	-0.482%	0.954%	-1.319%	0.000%	0.685%	-1.341%	0.000%	1.279%	-1.333%	0.209%	2.486%
2003	-2.474%	-0.311%	1.078%	-1.073%	0.000%	0.782%	-1.177%	0.000%	1.344%	-1.093%	0.337%	2.681%
2004	-2.364%	-0.215%	1.178%	-0.949%	0.000%	0.828%	-1.067%	0.010%	1.323%	-1.022%	0.394%	2.677%
2005	-2.761%	-0.431%	0.859%	-1.151%	0.000%	0.611%	-1.225%	0.000%	1.106%	-1.264%	0.184%	2.180%
2006	-2.594%	-0.377%	0.901%	-1.034%	0.000%	0.668%	-1.085%	0.000%	1.119%	-1.106%	0.287%	2.376%

Table 8: Growth Rates of Short-term Borrowings, by Sales and Inventory Growth

Inventory Growth	below -1%				-1% to 0%			
Sales Growth	below -10%	-10% to 0%	0% − 10%	over 10%	below -10%	-10% − 0%	0% − 10%	over 10%
1997	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1998	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1999	0.00%	0.00%	-0.15%	-0.27%	0.00%	0.00%	0.00%	0.00%
2000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2001	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2005	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2006	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Inventory Growth	0% − 1%				over 1%			
Sales Growth	below -10%	-10% to 0%	0% − 10%	over 10%	below -10%	-10% − 0%	0% − 10%	over 10%
1997	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1998	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1999	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2001	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2005	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2006	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 9: Growth Rates of Trade Payables, by Sales and Inventory Growth

Inventory Growth	below -1%				-1% to 0%			
Sales Growth	below -10%	-10% to 0%	0% − 10%	over 10%	below -10%	-10% − 0%	0% − 10%	over 10%
1997	-2.92%	-1.05%	-0.11%	0.69%	-0.74%	-0.17%	0.00%	0.22%
1998	-4.42%	-2.27%	-0.94%	0.00%	-1.50%	-0.54%	0.00%	0.00%
1999	-3.08%	-1.09%	-0.21%	0.31%	-0.84%	-0.14%	0.00%	0.00%
2000	-1.85%	-0.71%	0.00%	1.02%	-0.26%	0.00%	0.00%	0.39%
2001	-2.45%	-1.07%	-0.35%	0.33%	-0.65%	-0.22%	0.00%	0.00%
2002	-2.73%	-1.07%	-0.22%	0.22%	-0.59%	-0.20%	0.00%	0.00%
2003	-1.93%	-0.77%	-0.05%	0.77%	-0.35%	-0.05%	0.00%	0.11%
2004	-1.68%	-0.55%	0.00%	0.86%	-0.29%	0.00%	0.00%	0.22%
2005	-1.66%	-0.78%	-0.16%	0.41%	-0.29%	-0.06%	0.00%	0.02%
2006	-1.80%	-0.74%	-0.02%	0.28%	-0.31%	-0.05%	0.00%	0.10%

Inventory Growth	0% − 1%				over 1%			
Sales Growth	below -10%	-10% to 0%	0% − 10%	over 10%	below -10%	-10% − 0%	0% − 10%	over 10%
1997	-0.80%	-0.19%	0.31%	1.37%	-0.74%	0.00%	1.12%	4.03%
1998	-2.04%	-0.75%	0.00%	0.70%	-2.00%	-0.40%	0.41%	3.65%
1999	-1.18%	-0.21%	0.15%	1.02%	-1.06%	0.00%	0.82%	3.58%
2000	-0.52%	0.00%	0.56%	1.50%	-0.43%	0.14%	1.32%	4.41%
2001	-0.96%	-0.37%	0.03%	0.79%	-0.83%	-0.08%	0.83%	3.61%
2002	-0.94%	-0.23%	0.14%	0.94%	-1.02%	0.00%	0.68%	3.14%
2003	-0.64%	-0.10%	0.19%	0.97%	-0.54%	0.00%	0.81%	3.28%
2004	-0.52%	-0.04%	0.32%	1.11%	-0.42%	0.00%	1.16%	3.62%
2005	-0.70%	-0.11%	0.15%	1.04%	-0.72%	0.00%	0.70%	3.08%
2006	-0.58%	-0.02%	0.17%	1.05%	-0.45%	0.00%	0.75%	3.03%

Table 10: Growth Rates of Trade Payables and Short-term Borrowings, by Industry

Panel A: Median Trade Payables Growth

Industry	0% < Inventory Growth ≤ 1%				1% < Inventory Growth			
	Basic Material	Processing and Assembly	Others	Total	Basic Material	Processing and Assembly	Others	Total
1997	0.14%	0.29%	0.00%	0.06%	1.04%	2.01%	0.48%	1.01%
1998	-0.84%	-0.57%	-0.27%	-0.53%	-0.68%	0.00%	0.00%	-0.19%
1999	-0.40%	-0.50%	-0.11%	-0.29%	-0.03%	0.00%	0.00%	0.00%
2000	0.30%	0.41%	0.00%	0.17%	0.91%	2.40%	0.20%	0.99%
2001	-0.09%	0.00%	0.00%	0.00%	0.23%	1.02%	0.24%	0.41%
2002	-0.38%	-0.16%	-0.12%	-0.20%	-0.02%	0.00%	0.00%	0.00%
2003	0.04%	0.14%	0.00%	0.00%	0.60%	1.18%	0.04%	0.48%
2004	0.29%	0.34%	0.00%	0.12%	1.28%	1.89%	0.21%	0.96%
2005	0.10%	0.05%	0.00%	0.00%	0.84%	1.14%	0.00%	0.51%
2006	0.11%	0.13%	0.00%	0.03%	0.77%	1.37%	0.18%	0.65%

Panel B: Median Short-term Borrowings Growth

Industry	0% < Inventory Growth ≤ 1%				1% < Inventory Growth			
	Basic Material	Processing and Assembly	Others	Total	Basic Material	Processing and Assembly	Others	Total
1997	0.00%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%
1998	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1999	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2001	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2005	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2006	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 11: Growth Rates of Trade Payables and Short-term Borrowings, by Amount of Collateral Assets

Panel A: Median Trade Payables Growth

	0% < Inventory Growth ≤ 1%				1% < Inventory Growth			
Collateral Assets	Low	Middle	High	Total	Low	Middle	High	Total
1997	0.00%	0.10%	0.09%	0.07%	1.12%	0.94%	1.03%	1.01%
1998	-0.56%	-0.61%	-0.50%	-0.55%	-0.07%	-0.27%	-0.16%	-0.18%
1999	-0.38%	-0.28%	-0.29%	-0.30%	-0.05%	0.00%	0.00%	0.00%
2000	0.11%	0.13%	0.20%	0.17%	1.03%	0.95%	0.95%	0.97%
2001	0.00%	-0.03%	0.00%	0.00%	0.23%	0.40%	0.46%	0.38%
2002	-0.19%	-0.28%	-0.16%	-0.21%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	0.00%	0.34%	0.38%	0.68%	0.46%
2004	0.01%	0.09%	0.16%	0.12%	0.81%	0.85%	1.08%	0.92%
2005	0.00%	0.00%	0.02%	0.00%	0.28%	0.50%	0.68%	0.50%
2006	0.00%	0.00%	0.08%	0.03%	0.51%	0.58%	0.83%	0.65%

Panel B: Median Short-term Borrowings Growth

	0% < Inventory Growth ≤ 1%				1% < Inventory Growth			
Collateral Assets	Low	Middle	High	Total	Low	Middle	High	Total
1997	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1998	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1999	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2001	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2005	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2006	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 12: Summary Statistics

	Obs	Mean	Std.Dev.	Min	1%	50%	99%	Max
Short-term Borrowings Growth	322,271	-0.0010	0.1005	-0.6447	-0.3294	0.0000	0.3492	0.7074
Trade Payables Growth	322,740	0.0039	0.0630	-0.2935	-0.1763	0.0000	0.2373	0.4674
Annual Change in Trade Payables-Sales	321,972	-0.0006	0.0393	-0.2160	-0.1254	0.0000	0.1243	0.2219
Annual Change in Short term Borrowing-C. Liabilities	324,636	0.0015	0.1352	-1.0000	-0.4127	0.0000	0.4268	1.0000
Annual Change in Trade Payables-C. Liabilities	324,636	-0.0080	0.1671	-1.0000	-0.5987	0.0000	0.5311	1.0000
Inventory Growth Rate	324,636	0.0027	0.0380	-0.1919	-0.1131	0.0000	0.1460	0.2621
Sales Growth	324,636	0.0310	0.3804	-16.9492	-1.0178	0.0085	1.3075	2.4563
Current Asset Ratio	324,636	0.3736	0.1973	0.0000	0.0381	0.3478	0.8778	1.0000
Cash-C.Liability Ratio	324,636	0.6519	1.0370	0.0000	0.0047	0.3347	5.4667	11.7778
Tangible Fixed Asset Ratio	324,636	0.7881	0.9208	0.0000	0.0111	0.6134	4.8397	12.6449
Interest Rate	324,636	2.2471	1.2230	0.0000	0.0000	2.1680	6.2290	12.0000
Annual Change in Interest Rate	324,636	-0.0381	0.9250	-11.8577	-2.8439	-0.0309	2.7704	11.8628
ROA	324,636	0.0098	0.1035	-0.7310	-0.3872	0.0187	0.2694	0.4083
Leverage	324,636	0.9510	0.5101	0.0259	0.2224	0.8773	3.2071	5.5636
ln(1+sales)	324,636	12.0940	1.5250	0.0000	9.1073	11.9512	15.9461	18.3620

Table 13: Credit Demand and Growth of Trade Credit and Short-term Borrowings

Dependent Variable	(1) Short-term Borrowings	(2) Trade Payables	(3) ST Borrowings – C. Liability	(4) Trade Payables – C. Liability
Inventory Growth Rate	0.14452***	0.26189***	-0.04593***	0.19672***
	(0.00573)	(0.00356)	(0.00989)	(0.00825)
Sales Growth	-0.00636***	0.04632***	-0.04343***	0.02357***
	(0.00067)	(0.00042)	(0.00115)	(0.00096)
Current Asset Ratio	0.03243***	-0.10362***	0.18796***	-0.20361***
	(0.00350)	(0.00217)	(0.00601)	(0.00501)
Cash-C.Liability Ratio	0.01819***	0.00464***	0.05367***	-0.02314***
	(0.00039)	(0.00024)	(0.00067)	(0.00056)
Tangible Fixed Asset Ratio	0.01385***	-0.00453***	0.03564***	-0.01056***
	(0.00052)	(0.00032)	(0.00090)	(0.00075)
Interest Rate	-0.00601***	0.00084***	-0.00967***	0.00255***
	(0.00045)	(0.00028)	(0.00078)	(0.00065)
Annual Change	-0.01608***	-0.00021	-0.02300***	0.00567***
in Interest Rate	(0.00031)	(0.00019)	(0.00053)	(0.00045)
ROA	-0.03373***	0.01725***	-0.02271***	0.05888***
	(0.00278)	(0.00170)	(0.00474)	(0.00395)
Leverage	-0.02641***	-0.00960***	0.00996***	0.00720***
	(0.00184)	(0.00111)	(0.00307)	(0.00256)
ln(1+sales)	-0.00274**	-0.01888***	0.03300***	-0.03130***
	(0.00107)	(0.00065)	(0.00183)	(0.00152)
year=2004	-0.00433***	0.00311***	-0.00885***	0.00577***
	(0.00051)	(0.00032)	(0.00089)	(0.00074)
year=2005	-0.00327***	-0.00007	-0.00878***	-0.00199***
	(0.00053)	(0.00033)	(0.00092)	(0.00077)
year=2006	-0.00170***	0.00164***	-0.00754***	0.00177**
	(0.00056)	(0.00035)	(0.00097)	(0.00081)
Observations	322,271	322,740	324,636	324,636
R-squared	0.04	0.11	0.06	0.03

Note: This Table presents estimates of fixed effects regressions with *Short-term Borrowings Growth Rate* (Column 1), *Trade Payables Growth Rate* (Column 2), *Annual Change in Short-term Borrowings – Current Liabilities Ratio* (Column 3), and *Annual Change in Trade Payables – Current Liabilities Ratio* (Column 4) as dependent variables. *Short-term Borrowings Growth Rate* is the annual growth rate of a firm's short-term borrowings from year t-1 to t [(short-term borrowings$_t$ – short-term borrowings$_{t-1}$)/total assets$_{t-1}$]. *Trade Payables Growth Rate* is the annual growth rate of a firm's trade payables from year t-1 to t [(trade payables$_t$ – trade payables$_{t-1}$)/total assets$_{t-1}$]. *Annual Change in Short-term Borrowings – Current Liabilities Ratio* is the annual change in the ratio of trade payables to current liabilities from year t-1 to t (short-term borrowings$_t$/current liabilities$_t$ – short-term borrowings$_{t-1}$/current liabilities$_{t-1}$). *Annual Change in Trade Payables – Current Liabilities Ratio* is the annual change in the ratio of trade payables to current liabilities from year t-1 to t (trade payables$_t$/current liabilities$_t$ – trade payables$_{t-1}$/current liabilities$_{t-1}$). *Inventory Growth Rate* is the annual growth rate of a firm's inventories from year t-1 to t [(inventories$_t$-inventories$_{t-1}$)/total assets$_{t-1}$]. *Sales Growth Rate* is the annual growth rate of a firm's sales from year t-1 to t [(sales$_t$-sales$_{t-1}$)/total assets$_{t-1}$]. *Current Asset Ratio* is the ratio of current assets excluding cash to total assets in year t-1. *Cash–C.Liabilitye Ratio* is the ratio of cash holdings to current liabilities in year t-1. *Tangible Fixed Asset Ratio* is the ratio of a firm's tangible fixed assets (the sum of the book value of buildings and land) to total debts in t-1. *Interest rate* is the ratio of a firm's interest expenses to the sum of its short-term debt, long-term debt, and discounted notes receivable for each year in year t-1. *Annual Change in Interest Rate* is *Interest rate$_t$* minus *Interest rate$_{t-1}$*. *ROA* is the ratio of the sum of a firm's operating income, interest receivables, and dividends to total assets in year t-1. *Leverage* is the ratio of total liabilities to total assets in year t-1. *Ln(1+Sales)* is the natural log of (1+firm sales) in year t-1. *Year=t* is a dummy variable that is equal to one if the year is t; zero otherwise. The reference year is 2003. * represents significance at the 10% level, ** at the 5% level, and *** at the 1% level. When variables include outliers, they are truncated at the 0.5 percentile or the 99.5 percentile of the sample.

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Table 14: Credit Demand, Sales Growth, and Growth of Trade Credit and Short-term Borrowings

Dependent Variable	(1) Short-term Borrowings	(2) Trade Payables	(3) ST Borrowings – C. Liability	(4) Trade Payables – C. Liability
Inventory Growth Rate	0.13655***	0.30102***	-0.06633***	0.22280***
	(0.00686)	(0.00427)	(0.01185)	(0.00989)
Inventory Increase	0.03086**	-0.14967***	0.07887***	-0.10085***
if Sales Growth is Negative	(0.01462)	(0.00905)	(0.02525)	(0.02106)
Sales Growth	-0.00602***	0.04464***	-0.04257***	0.02246***
	(0.00069)	(0.00043)	(0.00118)	(0.00098)
Current Asset Ratio	0.03235***	-0.10322***	0.18776***	-0.20335***
	(0.00350)	(0.00217)	(0.00601)	(0.00501)
Cash-C.Liability Ratio	0.01819***	0.00465***	0.05367***	-0.02314***
	(0.00039)	(0.00024)	(0.00067)	(0.00056)
Tangible Fixed Asset Ratio	0.01385***	-0.00454***	0.03564***	-0.01057***
	(0.00052)	(0.00032)	(0.00090)	(0.00075)
Interest Rate	-0.00601***	0.00084***	-0.00966***	0.00255***
	(0.00045)	(0.00028)	(0.00078)	(0.00065)
Annual Change	-0.01608***	-0.00021	-0.02299***	0.00566***
in Interest Rate	(0.00031)	(0.00019)	(0.00053)	(0.00045)
ROA	-0.03373***	0.01726***	-0.02271***	0.05888***
	(0.00278)	(0.00170)	(0.00474)	(0.00395)
Leverage	-0.02644***	-0.00946***	0.00988***	0.00730***
	(0.00184)	(0.00111)	(0.00307)	(0.00256)
ln(1+sales)	-0.00279***	-0.01864***	0.03286***	-0.03113***
	(0.00107)	(0.00065)	(0.00183)	(0.00152)
year=2004	-0.00432***	0.00306***	-0.00882***	0.00574***
	(0.00051)	(0.00032)	(0.00089)	(0.00074)
year=2005	-0.00325***	-0.00012	-0.00875***	-0.00203***
	(0.00053)	(0.00033)	(0.00092)	(0.00077)
year=2006	-0.00168***	0.00156***	-0.00750***	0.00171**
	(0.00056)	(0.00034)	(0.00097)	(0.00081)
Observations	322,271	322,740	324,636	324,636
R-squared	0.04	0.12	0.06	0.03

Note: This Table presents estimates of fixed effects regressions with *Short-term Borrowings Growth Rate* (Column 1), *Trade Payables Growth Rate* (Column 2), *Annual Change in Short-term Borrowings – Current Liabilities Ratio* (Column 3), and *Annual Change in Trade Payables – Current Liabilities Ratio* (Column 4) as dependent variables. *Short-term Borrowings Growth Rate* is the annual growth rate of a firm's short-term borrowings from year t-1 to t [(short-term borrowings$_t$ – short-term borrowings$_{t-1}$)/total assets$_{t-1}$]. *Trade Payables Growth Rate* is the annual growth rate of a firm's trade payables from year t-1 to t [(trade payables$_t$ – trade payables$_{t-1}$)/total assets$_{t-1}$]. *Annual Change in Short-term Borrowings – Current Liabilities Ratio* is the annual change in the ratio of trade payables to current liabilities from year t-1 to t (short-term borrowings$_t$/current liabilities$_t$ – short-term borrowings$_{t-1}$/current liabilities$_{t-1}$). *Annual Change in Trade Payables – Current Liabilities Ratio* is the annual change in the ratio of trade payables to current liabilities from year t-1 to t (trade payables$_t$/current liabilities$_t$ – trade payables$_{t-1}$/current liabilities$_{t-1}$). *Inventory Increase if Sales Growth is Negative* is Inventory Growth Rate from year t-1 to t if the Inventory Growth Rate is positive and *Sales Growth Rate* from year t-1 to t is negative, and zero otherwise. The definitions of other independent variables are in the footnote of Table 13. * represents significance at the 10% level, ** at the 5% level, and *** at the 1% level. When variables include outliers, they are truncated at the 0.5 percentile or the 99.5 percentile of the sample.

Table 15: Credit Demand and Growth of Trade Credit and Short-term Borrowings
(IV Regression)

	(1)	(2)
Dependent variable	Short-term Borrowings	Trade Payables
Inventory Growth Rate	0.13632***	0.15550***
	(0.01623)	(0.01013)
Sales Growth	-0.00666***	0.04379***
	(0.00069)	(0.00044)
Current Asset Ratio	0.03253***	-0.10876***
	(0.00369)	(0.00229)
Cash-C.Liability Ratio	0.01822***	0.00462***
	(0.00039)	(0.00024)
Tangible Fixed Asset Ratio	0.01387***	-0.00449***
	(0.00052)	(0.00032)
Interest Rate	-0.00595***	0.00070**
	(0.00045)	(0.00028)
Annual Change	-0.01607***	-0.00045**
in Interest Rate	(0.00031)	(0.00019)
ROA	-0.03309***	0.02250***
	(0.00281)	(0.00173)
Leverage	-0.02687***	-0.01100***
	(0.00186)	(0.00112)
ln(1+sales)	-0.00403***	-0.02873***
	(0.00132)	(0.00082)
year=2004	-0.00439***	0.00328***
	(0.00051)	(0.00032)
year=2005	-0.00322***	0.00036
	(0.00053)	(0.00033)
year=2006	-0.00170***	0.00225***
	(0.00056)	(0.00035)
Observations	320,560	321,001
J Statistics	5.06	1.85
P-value of J stat	0.1674	0.6053

Note: This Table presents estimates of fixed effects IV regressions with *Short-term Borrowings Growth Rate* (Column 1) and *Trade Payables Growth Rate* (Column 2). *Short-term Borrowings Growth Rate* is the annual growth rate of a firm's short-term borrowings from year t-1 to t [(short-term borrowings$_t$ – short-term borrowings$_{t-1}$)/total assets$_{t-1}$]. *Trade Payables Growth Rate* is the annual growth rate of a firm's trade payables from year t-1 to t [(trade payables$_t$ – trade payables$_{t-1}$)/total assets$_{t-1}$]. *Inventory Growth Rate* is the annual growth rate of a firm's inventories from year t-1 to t [(inventories$_t$-inventories$_{t-1}$)/total assets$_{t-1}$], which is treated as an endogenous variable. We use the current level of inventories normalized by total sales in year t-1, and interactive terms of this inventories-total sales ratio and year dummies in 2003, 2004, and 2005 as instrumental variables for inventories growth. The definitions of other independent variables are provided in the footnote of Table 13. * represents significance at the 10% level, ** at the 5% level, and *** at the 1% level. When variables include outliers, they are truncated at the 0.5 percentile or the 99.5 percentile of the sample.

Table 16: Credit Demand and Growth of Short-term Borrowings, by Industry

	(1)	(2)	(3)
Dependent Variable	Short-term Borrowings Growth Rate		
Industry	Basic Material	Processing and Assembly	Others
Inventory Growth Rate	0.13211***	0.10581***	0.19782***
	(0.01004)	(0.01057)	(0.00970)
Sales Growth	-0.01098***	-0.00298**	-0.00685***
	(0.00121)	(0.00117)	(0.00120)
Current Asset Ratio	0.03745***	0.00596	0.05533***
	(0.00607)	(0.00657)	(0.00605)
Cash-C.Liability Ratio	0.01772***	0.01611***	0.01846***
	(0.00068)	(0.00075)	(0.00067)
Tangible Fixed Asset Ratio	0.01078***	0.01553***	0.01590***
	(0.00080)	(0.00104)	(0.00095)
Interest Rate	-0.00630***	-0.00763***	-0.00532***
	(0.00076)	(0.00087)	(0.00077)
Annual Change	-0.01527***	-0.01802***	-0.01581***
in Interest Rate	(0.00052)	(0.00060)	(0.00053)
ROA	-0.04082***	-0.02474***	-0.03366***
	(0.00484)	(0.00525)	(0.00481)
Leverage	-0.02619***	-0.02850***	-0.02717***
	(0.00330)	(0.00388)	(0.00292)
ln(1+sales)	-0.00165	-0.00281	-0.00443***
	(0.00190)	(0.00218)	(0.00172)
year=2004	-0.00220***	-0.00394***	-0.00546***
	(0.00085)	(0.00107)	(0.00085)
year=2005	-0.00164*	-0.00572***	-0.00245***
	(0.00088)	(0.00112)	(0.00088)
year=2006	-0.00018	-0.00134	-0.00318***
	(0.00092)	(0.00118)	(0.00093)
Observations	107,589	81,433	118,238
R-squared	0.04	0.04	0.04

Note: This Table presents estimates of fixed effects regressions with *Short-term Borrowings Growth Rate* as dependent variables. *Short-term Borrowings Growth Rate* is the annual growth rate of a firm's short-term borrowings from year t-1 to t [(short-term borrowings$_t$ – short-term borrowings$_{t-1}$)/total assets$_{t-1}$]. The definitions of other independent variables are provided in the footnote of Table 13. * represents significance at the 10% level, ** at the 5% level, and *** at the 1% level. When variables include outliers, they are truncated at the 0.5 percentile or the 99.5 percentile of the sample.

Table 17: Credit Demand and Growth of Trade Payables, by Industry

	(1)	(2)	(3)
Dependent Variable	Trade Payables Growth Rate		
Industry	Basic Material	Processing and Assembly	Others
Inventory Growth Rate	0.27940***	0.31424***	0.20533***
	(0.00645)	(0.00732)	(0.00546)
Sales Growth	0.05208***	0.04603***	0.04068***
	(0.00078)	(0.00082)	(0.00069)
Current Asset Ratio	-0.11702***	-0.12820***	-0.07125***
	(0.00390)	(0.00453)	(0.00338)
Cash-C.Liability Ratio	0.00466***	0.00484***	0.00458***
	(0.00043)	(0.00051)	(0.00037)
Tangible Fixed Asset Ratio	-0.00480***	-0.00481***	-0.00424***
	(0.00051)	(0.00071)	(0.00053)
Interest Rate	-0.00031	0.00211***	0.00127***
	(0.00049)	(0.00060)	(0.00043)
Annual Change	-0.00107***	-0.00004	0.00081***
in Interest Rate	(0.00033)	(0.00041)	(0.00030)
ROA	0.02624***	0.01809***	0.00725***
	(0.00306)	(0.00357)	(0.00268)
Leverage	-0.01541***	-0.01760***	-0.00296*
	(0.00207)	(0.00258)	(0.00160)
ln(1+sales)	-0.02116***	-0.02393***	-0.01347***
	(0.00120)	(0.00147)	(0.00095)
year=2004	0.00357***	0.00524***	0.00169***
	(0.00054)	(0.00073)	(0.00048)
year=2005	0.00102*	-0.00005	-0.00040
	(0.00057)	(0.00076)	(0.00049)
year=2006	0.00211***	0.00393***	0.00065
	(0.00059)	(0.00081)	(0.00052)
Observations	107,780	81,243	118,529
R-squared	0.12	0.14	0.09

Note: This Table presents estimates of fixed effects regressions with *Trade Payables Growth Rate* as dependent variables. *Trade Payables Growth Rate* is the annual growth rate of a firm's trade payables from year t-1 to t [(trade payables$_t$ – trade payables$_{t-1}$)/total assets$_{t-1}$]. The definitions of other independent variables are provided in the footnote of Table 13. * represents significance at the 10% level, ** at the 5% level, and *** at the 1% level. When variables include outliers, they are truncated at the 0.5 percentile or the 99.5 percentile of the sample.

Table 18: Credit Demand and Annual Change in ST Borrowings–Current Liabilities (Compared by Industries)

	(1)	(2)	(3)
Dependent Variable	Annual Change in ST Borrowings-C.Liability		
Industry	Basic Material	Processing and Assembly	Others
Inventory Growth Rate	-0.06315***	-0.10967***	0.03378**
	(0.01752)	(0.01823)	(0.01648)
Sales Growth	-0.04867***	-0.04108***	-0.04018***
	(0.00209)	(0.00200)	(0.00203)
Current Asset Ratio	0.18566***	0.18233***	0.19138***
	(0.01055)	(0.01129)	(0.01018)
Cash-Short Term Loan Ratio	0.04901***	0.04938***	0.05416***
	(0.00118)	(0.00129)	(0.00112)
Tangible Fixed Asset Ratio	0.02857***	0.04150***	0.03891***
	(0.00140)	(0.00181)	(0.00162)
Interest Rate	-0.00888***	-0.01252***	-0.00946***
	(0.00133)	(0.00151)	(0.00130)
Annual Change	-0.02103***	-0.02579***	-0.02305***
in Interest Rate	(0.00091)	(0.00103)	(0.00090)
ROA	-0.03000***	-0.01736*	-0.01583*
	(0.00834)	(0.00896)	(0.00808)
Leverage	0.00339	0.01168*	0.01024**
	(0.00557)	(0.00640)	(0.00483)
ln(1+sales)	0.03422***	0.04343***	0.02250***
	(0.00328)	(0.00369)	(0.00287)
year=2004	-0.00673***	-0.01091***	-0.00854***
	(0.00148)	(0.00185)	(0.00145)
year=2005	-0.00771***	-0.01357***	-0.00740***
	(0.00154)	(0.00193)	(0.00150)
year=2006	-0.00708***	-0.00953***	-0.00840***
	(0.00162)	(0.00204)	(0.00159)
Observations	108,291	81,970	119,061
R-squared	0.02	0.03	0.02

Note: This Table presents estimates of fixed effects regressions with *Annual Change in Short-term Borrowings – Current Liabilities Ratio* as dependent variables. *Annual Change in Short-term Borrowings – Current Liabilities Ratio* is the annual change in the ratio of trade payables to current liabilities from year t-1 to t (short-term borrowings$_t$/current liabilities$_t$ – short-term borrowings$_{t-1}$/current liabilities$_{t-1}$). The definitions of other independent variables are in the footnote of Table 13. * represents significance at the 10% level, ** at the 5% level, and *** at the 1% level. When variables include outliers, they are truncated at the 0.5 percentile or the 99.5 percentile of the sample.

Table 19: Credit Demand and Annual Change in Trade Payables–Current Liabilities (Compared by Industries)

	(1)	(2)	(3)
Dependent Variable	Annual Change in Trade Payables-C.Liability		
Industry	Basic Material	Processing and Assembly	Others
Inventory Growth Rate	0.20052***	0.19377***	0.17745***
	(0.01492)	(0.01540)	(0.01352)
Sales Growth	0.02518***	0.02072***	0.02302***
	(0.00178)	(0.00169)	(0.00166)
Current Asset Ratio	-0.19938***	-0.22264***	-0.18097***
	(0.00898)	(0.00954)	(0.00835)
Cash-Short Term Loan Ratio	-0.02103***	-0.01800***	-0.02359***
	(0.00101)	(0.00109)	(0.00092)
Tangible Fixed Asset Ratio	-0.00787***	-0.01265***	-0.01141***
	(0.00119)	(0.00153)	(0.00133)
Interest Rate	0.00126	0.00363***	0.00440***
	(0.00113)	(0.00127)	(0.00107)
Annual Change	0.00416***	0.00552***	0.00776***
in Interest Rate	(0.00077)	(0.00087)	(0.00074)
ROA	0.06172***	0.06336***	0.04938***
	(0.00711)	(0.00757)	(0.00663)
Leverage	0.01213**	0.00117	0.00810**
	(0.00475)	(0.00541)	(0.00396)
ln(1+sales)	-0.03442***	-0.03760***	-0.02423***
	(0.00279)	(0.00312)	(0.00235)
year=2004	0.00649***	0.00557***	0.00491***
	(0.00126)	(0.00156)	(0.00119)
year=2005	-0.00069	-0.00195	-0.00245**
	(0.00132)	(0.00163)	(0.00123)
year=2006	0.00285**	0.00106	0.00228*
	(0.00138)	(0.00173)	(0.00130)
Observations	108,291	81,970	119,061
R-squared	0.02	0.03	0.02

Note: This Table presents estimates of fixed effects regressions with *Annual Change in Trade Payables – Current Liabilities Ratio* as dependent variables. *Annual Change in Trade Payables – Current Liabilities Ratio* is the annual change in the ratio of trade payables to current liabilities from year t-1 to t (trade payables$_t$/current liabilities$_t$ – trade payables$_{t-1}$/current liabilities$_{t-1}$). The definitions of other independent variables are in the footnote of Table 13. * represents significance at the 10% level, ** at the 5% level, and *** at the 1% level. When variables include outliers, they are truncated at the 0.5 percentile or the 99.5 percentile of the sample.

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Table 20: Credit Demand and Growth of Short-term Borrowings
(Compared by the Amount of Collateral Assets)

	(1)	(2)	(3)
Dependent Variable	Short-term Borrowings Growth Rate		
Collateral	Low	Middle	High
Inventory Growth Rate	0.13635***	0.12286***	0.12528***
	(0.01046)	(0.01073)	(0.01046)
Sales Growth	-0.00726***	-0.00443***	-0.00596***
	(0.00123)	(0.00138)	(0.00117)
Current Asset Ratio	0.08729***	0.10204***	0.04711***
	(0.00727)	(0.00781)	(0.00632)
Cash-Short Term Loan Ratio	0.02614***	0.02435***	0.01338***
	(0.00086)	(0.00077)	(0.00057)
Tangible Fixed Asset Ratio	0.27625***	0.18351***	0.00804***
	(0.01136)	(0.00590)	(0.00043)
Interest Rate	-0.00758***	-0.00731***	-0.00736***
	(0.00107)	(0.00094)	(0.00057)
Annual Change	-0.01984***	-0.01531***	-0.01192***
in Interest Rate	(0.00073)	(0.00064)	(0.00038)
ROA	-0.04708***	-0.04267***	-0.02081***
	(0.00495)	(0.00578)	(0.00514)
Leverage	0.00355	-0.01105*	-0.06005***
	(0.00297)	(0.00575)	(0.00527)
ln(1+sales)	-0.00439*	-0.00546**	-0.00037
	(0.00240)	(0.00218)	(0.00140)
year=2004	-0.00610***	-0.00522***	-0.00113*
	(0.00118)	(0.00087)	(0.00067)
year=2005	-0.00495***	-0.00400***	0.00020
	(0.00125)	(0.00092)	(0.00070)
year=2006	-0.00229*	-0.00184*	0.00139*
	(0.00134)	(0.00098)	(0.00076)
Observations	102,203	108,297	111,771
R-squared	0.05	0.05	0.04

Note: This Table presents estimates of fixed effects regressions with *Short-term Borrowings Growth Rate* as dependent variables. *Short-term Borrowings Growth Rate* is the annual growth rate of a firm's short-term borrowings from year t-1 to t [(short-term borrowings$_t$ – short-term borrowings$_{t-1}$)/total assets$_{t-1}$]. The definitions of other independent variables are in the footnote of Table 13. We divide the sample by the level of collateral assets. We use the ratio of tangible fixed assets to total borrowings as a proxy for collateral assets.We classify firms in the bottom third of the tangible fixed asset ratio as firms with low collateral assets, those in the middle third of the tangible fixed asset ratio as middle collateral asset firms, and those in the highest third as high collateral asset firms. Using this definition, in this sample, firms whose tangible fixed asset ratio is less than 0.4009 are low collateral firms, firms with a tangible fixed asset ratio between 0.4009 and 0.8106 are middle collateral firms, and those with a tangible fixed asset ratio over 0.810 are high collateral firms. * represents significance at the 10% level, ** at the 5% level, and *** at the 1% level. When variables include outliers, they are truncated at the 0.5 percentile or the 99.5 percentile of the sample.

Table 21: Credit Demand and Growth of Trade Payables
(Compared by the Amount of Collateral Assets)

	(1)	(2)	(3)
Dependent Variable	Trade Payables Growth Rate		
Collateral	Low	Middle	High
Inventory Growth Rate	0.23417***	0.26846***	0.31458***
	(0.00644)	(0.00632)	(0.00714)
Sales Growth	0.04258***	0.04902***	0.05691***
	(0.00077)	(0.00082)	(0.00081)
Current Asset Ratio	-0.09525***	-0.18798***	-0.18777***
	(0.00444)	(0.00460)	(0.00433)
Cash-C.Liability Ratio	0.00584***	-0.00028	0.00099**
	(0.00051)	(0.00044)	(0.00039)
Tangible Fixed Asset Ratio	-0.05060***	-0.08518***	-0.00499***
	(0.00695)	(0.00346)	(0.00029)
Interest Rate	0.00119*	0.00190***	0.00100***
	(0.00066)	(0.00055)	(0.00038)
Annual Change	-0.00057	0.00023	-0.00003
in Interest Rate	(0.00044)	(0.00037)	(0.00026)
ROA	0.01396***	0.02667***	0.00912***
	(0.00298)	(0.00338)	(0.00348)
Leverage	0.00396**	-0.07351***	-0.12604***
	(0.00176)	(0.00335)	(0.00359)
ln(1+sales)	-0.02033***	-0.02187***	-0.00721***
	(0.00142)	(0.00128)	(0.00095)
year=2004	0.00228***	0.00393***	0.00209***
	(0.00072)	(0.00051)	(0.00045)
year=2005	-0.00193**	0.00044	-0.00067
	(0.00076)	(0.00054)	(0.00048)
year=2006	-0.00040	0.00248***	-0.00050
	(0.00082)	(0.00058)	(0.00051)
Observations	102,652	108,532	111,556
R-squared	0.11	0.14	0.15

Note: This Table presents estimates of fixed effects regressions with *Trade Payables Growth Rate* as dependent variables. *Trade Payables Growth Rate* is the annual growth rate of a firm's trade payables from year t-1 to t [(trade payables$_t$ – trade payables$_{t-1}$)/total assets$_{t-1}$]. The definitions of other independent variables are in the footnote of Table 13. We divide the sample by the level of collateral assets. We use the ratio of tangible fixed assets to total borrowings as a proxy for collateral assets.We classify firms in the bottom third of the tangible fixed asset ratio as firms with low collateral assets, those in the middle third of the tangible fixed asset ratio as middle collateral asset firms, and those in the highest third as high collateral asset firms. Using this definition, in this sample, firms whose tangible fixed asset ratio is less than 0.4009 are low collateral firms, firms with a tangible fixed asset ratio between 0.4009 and 0.8106 are middle collateral firms, and those with a tangible fixed asset ratio over 0.810 are high collateral firms.