

Bank Loans versus Trade Credit: Evidence from China

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Abstract

Using a World Bank data of Chinese firms, we investigate the relative importance of bank loans and trade credit in promoting firm performance. To deal with the possible endogeneity issue, we employ distinct and separable instrumental variables for bank loans and trade credit. We find that access to bank loans is central to improving firm performance and growth, while availability of trade credit is much less important. Our results suggest that trade credit cannot effectively substitute for bank loans, and they call for further development of formal financial institutions in China, under which its non-state sector would have grown much faster than it actually did.

Keywords: Bank Loans, Trade Credit, Firm Performance, Firm Growth

JEL Codes: P34, O17, O16, G32

1 Introduction

Formal financial system development such as banking sector development has been shown to be instrumental to improvements in resource allocation efficiency and economic growth (see, for example, King and Levine, 1993; Levine and Zervos, 1998; Guiso, Sapienza, and Zingales, 2002). At the same time, informal financing channels such as trade credit are said to play a critical role in sustaining firm growth (see, among others, Garmaise and Moskowitz, 2003; Guiso, Sapienza and Zingales, 2004). The question, however, becomes which of these two financing channels is more important for firm growth. This is particularly relevant for developing and transition economies where formal

finance is inadequate and informal finance is prevalent. And the answer to this question is critical for policy recommendations for financial development in developing and transition economies.

Developing and transition economies generally lack market-supporting economic institutions such as adequate property rights protection and effective contract enforcement. As a result, formal financing channels such as bank loans could not develop adequately to meet the firms' demand for external finance. One view is that, under these circumstances, informal finance could still develop because it mainly relies on informal networks based on long-term relationships and reputation. Consequently, informal financing channels could potentially provide alternative financing sources for firms having poor access to formal finance so as to support firm growth and expansion. Thus, informal finance should play a pivotal role in sustaining firm operations and growth under weak economic institutions. In contrast, the other view holds that informal financing channels such as trade credit could not fill in the gap left by the formal finance, because the monitoring and enforcement mechanisms required for the functioning of informal finance are even more adversely affected by the poor formal economic institutions, and because informal finance typically has limited size so that it cannot support firm expansion continuously.¹ Hence, access to formal finance is still more important for firm development. Clearly these two competing views have strikingly different implications for the necessity and urgency of promoting formal financial system development in developing and transition economies.

Despite the importance of this question, little systematic research has been conducted.² In this study, we address this issue in the context of China. China provides an ideal setting to investigate the relative importance of formal and informal finance. Even after thirty years of economic reform, China's formal economic institutions remain inadequate (see, for example, Blanchard and Kremer, 1997; Allen, Qian, and Qian, 2005). As a result, China's banking institutions are far from fulfilling the mission of providing sufficient financial resources for firms. Similar to the situations in most of the other developing and transition economies, banks in China primarily serve the financing needs of a small group of elite firms such as large-scale state-owned enterprises, whereas most other firms, especially those medium-

¹Some informal financing channels are illegal or quasi-legal because they charge a higher interest rate than loans made by formal financial institutions. Then the contract enforcement mechanism in informal finance modes becomes even more fragile.

²Ayyagari, Demirguc-Kunt, and Maksimovic (2008) document widespread use of informal financing channels by Chinese firms. They focus on the role of bank loans, not the relative importance of bank loans and trade credit, in enhancing firm performance and firm growth in China.

and small-sized non-state-owned ones, have poor access to bank loans. According to Asian Development Bank (2003), the difficulty in getting access to external finance such as bank loans is a primary serious constraint encountered by private enterprises in China. Under these circumstances, those disfavored firms are believed to extensively use informal financing channels such as trade credit to satisfy their financing needs (Allen, Qian and Qian, 2005; Ayyagari, Demirguc-Kunt, Maksimovic, 2008).

In this study, we use a World Bank data set of 1,566 firms located in 18 cities and 9 manufacturing industries in China to assess the relative importance of bank loans (formal finance) and trade credit (informal finance) in contributing to firm performance and firm growth. From the ordinary-least-squares (OLS) estimations, we find that trade credit is more important to firm performance (labor productivity and return on total assets) and firm growth (re-investment rate and growth of employment) than do bank loans. These results, however, could be biased because bank loans and trade credit are endogenously determined. To deal with the potential endogeneity issue, we employ distinct and separable instrumental variables for bank loans and trade credit. Specifically, we use an indicator of whether a city was British administered in the late Qing Dynasty as an instrument for bank loans, and an indicator of whether the suppliers for a firm are operated by the relatives or friends of the firm owner as an instrument for trade credit. The instrumental variable estimations show that access to bank loans is much more important than availability of trade credit in promoting firm performance and firm growth, which are in sharp contrast to the OLS results and suggest that our earlier results are biased.

Our analysis demonstrates that trade credit is not as important as bank loans in enhancing the performance and growth of Chinese firms. These results suggest that informal finance could not fill in the gap left by the formal finance. For the developing and transition economies, it is an imperative to promote the development of the formal financial system so as to enhance firm performance and firm growth. In the case of China, even though China's non-state sector has achieved an impressive performance in the past decades, it would be an overstatement to say that trade credit can replace bank loans in sustaining a high level of firm growth. It may well be the case that China's non-state sector would have grown much faster than it actually did if bank loans had been more easily available to non-state firms.

The rest of the paper is organized as follows. Section 2 describes data and variables. Section 3 presents the ordinary least squares estimation results, while Section 4 discusses the instrumental variable estimation results. The paper concludes with Section 5.

2 Data and Variables

The data used in this paper comes from a survey of firms on the investment climate in China conducted by the World Bank and the Enterprise Survey Organization of China in early 2003.³ It covers a total of 1,566 firms from nine manufacturing industries located in eighteen cities.⁴

Our dependent variables are about firm performance and growth. To measure firm performance, we use *Labor Productivity* (measured by the logarithm of total output per worker in 2002) and *ROA* (measured by the ratio of operating profits to total assets in 2002). To measure firm growth, we use *Growth of Employment* (measured by the change in the logarithm of employment from 2001 to 2002) and *Reinvestment Rate* (measured by the share of net profits reinvested in 2002).

Our two key independent variables are *Bank Loans* (measured by the ratio of bank loans to total assets in 2002) and *Trade Credit* (measured by the percentage of the firm's two main inputs purchased with credit in 2002). To deal with the potential endogeneity issue associated with bank loans and trade credit, we use two distinct and separable instrumental variables. Specifically, *British Administration* (a dummy variable indicating whether the respective city was administered by the Great Britain in the late Qing Dynasty) is used as an instrument for *Bank Loans*, and *Relationship* (a dummy variable indicating whether a firm's two main inputs are supplied by relatives or friends of the firm owner in 2002) is used as an instrument for *Trade Credit*. We will discuss these two instrumental variables in detail in Section 4.

Summary statistics of all key variables are given in Table 1.

3 Ordinary Least Squares Estimation

We first conduct OLS regression analysis with the following specification:

³It is a cross-section data set with most of variables about firm operation and performance in 2002 though it also contains some financial information for the period of 2000-2002.

⁴The nine manufacturing industries are: garment & leather products, electronic equipment, electronic parts making, household electronics, automobile & automobile parts, food processing, chemical products & medicine, biotech products & Chinese medicine, and metallurgical products. Meanwhile, eighteen cities are chosen from five geographical regions so as to achieve a representative sample: 1) Northeast: Benxi, Changchun, Dalian, and Harbin; 2) Coastal: Hangzhou, Jiangmen, Shenzhen, and Wenzhou; 3) Central: Changsha, Nanchang, Wuhan, and Zhengzhou; 4) Southwest: Chongqing, Guiyang, Kunming, and Nanning; 5) Northwest: Lanzhou and Xi'an.

$$y_{fic} = \alpha + \beta \cdot \text{Bank Loans}_{fic} + \gamma \cdot \text{Trade Credit}_{fic} + \eta Z_{fic} + \varepsilon_{fic}$$

where y_{fic} is the performance or growth measure of firm f in industry i and city c ; Z_{fic} is a vector of control variables; and ε_{fic} is the error term. Standard errors are clustered at the industry-city level to deal with the possible heteroskedasticity problem.

Table 2 presents the OLS regression results. For each of the four dependent variables, we first include *Bank Loans* and *Trade Credit* separately in the regressions, and then incorporate them together. It is shown that access to bank loans has positive and statistically significant effects on labor productivity and reinvestment rate, while availability of trade credit has positive and statistically significant effects on labor productivity, ROA, and growth of employment. These results imply that trade credit is relatively more important to firm performance and growth than bank loans.

4 Instrumental Variable Estimation

The OLS regression results reported in Table 2 could be seriously biased due to the endogeneity problem associated with bank loans and trade credit. For instance, better performing and faster growing firms are more likely to obtain bank loans and trade credit, implying the possibility of reverse causality. It is also possible that there could be some unobservable variables affecting both firm performance/growth and bank loans/trade credit, leading to spurious correlations. To address these concerns, we take the instrumental variable approach.

4.1 Instrumental Variables: British Administration and Relationship

Here we look for valid instrumental variables that are correlated with the endogenous explanatory variables but should not affect the dependent variables through any channel other than the endogenous explanatory variables. Furthermore, as we have two potentially endogenous variables, we follow Acemoglu and Johnson (2005) to look for distinct and separable instrumental variables, that is, the instruments are able to isolate the two endogenous variables.

First, we use *British Administration*, a dummy variable indicating whether the respective city was administered by the Great Britain in the late Qing Dynasty, as an instrument for *Bank Loans*.

During the late Qing Dynasty (1840-1911), China was defeated in a series of wars against foreign powers, including two Opium Wars with the Great Britain, the Sino-Japanese War of 1894-95, and the Boxer Rebellion. In the wake of military defeats, the Qing government was forced to sign unequal treaties including territorial concessions. The wave of territorial partitioning climaxed at the end of the nineteenth century, with the Great Britain governing regions along the Yangtze River (Guizhou, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Henan, and Zhejiang provinces), France governing Yunnan, Hainan, Guangxi, and the majority of Guangdong province, Germany governing Shandong province, Japan governing Fujian province, and Russia governing Xinjiang, Mongolia, and the three north-eastern provinces (McAleavy, 1967).⁵

Within their domains of control, the foreign powers imposed their own political, economic, judicial and military systems. In particular, the foreign powers had great influences on economic activities by setting up and developing their own banks and issuing currencies (Wang, 1957; Huang, 1994). Nonetheless, there were variations in the development of banks across various foreign powers, with the Great Britain having significantly more banks and branches than other foreign powers (Wang, 1957, 1995a; Zhu, 2004; Yuan, 2005).⁶

⁵Three main reasons account for the geographical pattern of territorial partitioning by the foreign powers. First, the geographic proximity between the foreign powers and China's regions is a primary force in shaping the pattern of territorial concessions (Dougherty and Pfaltzgraff, 2000). For example, Russia, located to the north of China, occupied most of China's northern regions such as Xinjiang, Mongolia, and the three northeastern provinces. France, stepping from its colony of Vietnam that lies to the southwest of China, extended its colonial power to the four southwestern provinces in China, i.e., Yunnan, Hainan, Guangxi, and the majority of Guangdong province (Yang, 2006). Japan, defeated by Russia in its aggression in Northeast China, chose to occupy China's regions such as Taiwan and Fujian that are close to its southern territories. The second reason for the territorial partitioning is for the control of certain products that the foreign powers needed at that time. For example, the Great Britain, which was a big importer of tea and silk from China, chose to occupy those regions in China that produced these two products (Sa and Pan, 1996). Finally, the territorial occupation of Germany, which was late in its occupation of China, was a result of bargaining and negotiation with other foreign powers (China History Society, 1959). Hence, the geographical pattern of territorial concessions had little to do with the industrial development capacity of different regions. It can be regarded as an exogenous process.

⁶This could be explained by the better protection of creditors under the Great Britain's common law system than under the civil law system of other foreign powers such as France,

The presence of foreign banks had significant impacts on the local communities, which persisted over time despite several dramatic changes in political regimes in the subsequent decades.⁷ As domestic banks were dwarfed by foreign banks and did not develop well, the subsequent development of China’s banking sector was largely built upon the foundation of foreign banks. It is documented that the foreign banks, including their businesses and personnel, were taken over by the national banks of the Republic of China, which were subsequently taken over by the state-owned banks of the People’s Republic of China in 1949 (Zhang, 1957; Huang, 1994; Yuan, 2005). Meanwhile, local people got used to borrowing money from foreign banks for their businesses (Wang, 1995b, 1997; Xiong and Xue, 2007), and such bank lending and borrowing habits may persist over time.

Thus it is expected that the access to bank loans in modern China is positively correlated with the influence of the Great Britain in the late Qing Dynasty. Hence we use *British Administration* as an instrument for *Bank Loans*. Specifically, in our sample, nine out of the eighteen cities (Changsha, Chongqing, Guiyang, Hangzhou, Nanchang, Shenzhen, Wenzhou, Wuhan, and Zhengzhou) were administered by the Great Britain, and the rest of the sample cities were administrated by France or Russia.

Next, we use *Relationship*, a dummy variable indicating whether a firm’s two main inputs are supplied by the relatives or friends of the firm owner in 2002, as an instrument for *Trade Credit*. As shown by McMillan and Woodruff (1999), suppliers are more likely to offer trade credit to their customers when they belong to the same networks, such as families, friends, and business associations. This is because any default by the customers would lead to the spread of bad words among members of the same networks causing severe damages to the customers. Thus it is expected that the availability of trade credit is positively correlated with *Relationship*.

4.2 Regression Results

The first stage of the two-stage-least-squares (2SLS) regressions are:

$$\begin{aligned} \text{Bank Loans}_{fic} &= c_1 + \delta_1 \cdot \text{British Administration}_c + \gamma_1 \cdot \text{Relationship}_{fic} + \eta_1 Z_{fic} + \varepsilon_{fic1} \\ \text{Trade Credit}_{fic} &= c_2 + \delta_2 \cdot \text{British Administration}_c + \gamma_2 \cdot \text{Relationship}_{fic} + \eta_2 Z_{fic} + \varepsilon_{fic2} \end{aligned}$$

Russia, Japan and Germany, and is consistent with the findings in the literature on law and finance, e.g., La Porta et al. (1997, 1998), Levine (1998), Levine, Loayza and Beck (2000), Beck, Demirguc-Kunt and Levine (2003).

⁷Indeed, there is a growing body of literature on the persistence of culture, beliefs, and ideologies over time (e.g., Bisin and Verdier, 2000; Dohmen et al., 2006; Tabellini, 2007a, 2007b, 2008).

As shown in Panels B-C of Table 3, *Bank Loans* is positively and significantly related to *British Administration* but not to *Relationship* (Panel B), while *Trade Credit* is positively and significantly associated with *Relationship* but not with *British Administration* (Panel C). These results suggest that the two instruments are strong and separable for the two endogenous variables.

Panel A of Table 3 presents the second-stage results of the 2SLS estimations. Clearly, *Bank Loans* has positive and statistically significant impacts on *Labor Productivity*, *ROA*, and *Reinvestment Rate*, while *Trade Credit* does not have any significant impact on firm performance and growth. These results show that access to bank loans is more important for firm growth and performance than availability of trade credit. And they are in sharp contrast to those of the OLS estimations in Section 3, suggesting that the OLS results are indeed biased due to the endogeneity problem and should be interpreted with caution.

Checks on the identification strategy. The validity of the instrumental variable estimation hinges upon two conditions: (i) the relevance of the instruments to the endogenous variables, and (ii) the exclusion restriction that the instruments affect the outcome variables only through the endogenous variables. Both the rationales put forward in Section 4.1 and the results of Table 3 (Panels B-C) have addressed the first requirement.

With regard to the exclusion restriction, we use the semi-reduced form estimation pioneered by Acemoglu and Johnson (2005). The rationale for this estimation strategy is as follows. In the scenario where the endogenous variable has no effect on the outcome variable, the instrumental variable should also have no effect in the reduced form regression in which the outcome variable is regressed directly on the instrumental variable. Otherwise, it implies that there are other channels through which the instrumental variable can influence the outcome variable. In the setting of two endogenous variables and two instrumental variables, this estimation strategy is referred to as “semi-reduced form estimation”, for the validity of the instrumental variable is checked one by one. Specifically, in Columns 1-4 of Table 4 *British Administration* is used as the explanatory variable instead of *Bank Loans* while *Trade Credit* remains instrumented by *Relationship*. And in Columns 5-8 *Relationship* is used as the explanatory variable instead of *Trade Credit* while *Bank Loans* remains instrumented by *British Administration*.

Note that in Table 3, *Bank Loans* has no significant effect on growth of employment. In the corresponding semi-reduced form estimation (Column 3 of Table 4), *British Administration* indeed has no significant effect on growth of employment. Note also that in Table 3, *Trade Credit* does not have significant effects on any measure of firm performance and growth. In the corresponding semi-reduced form estimations (Columns 5-8 of Table

4), *Relationship* indeed does not have any impacts on firm performance and growth.

While there is strong evidence suggesting that the geographical pattern of territorial concessions had little to do with the industrial development capacity of different regions, one may still be concerned about the validity of the instrumental variable for *Bank Loans* (i.e., *British Administration*). For example, some cities administered by the Great Britain may have great prospects for economic growth, while some cities not administered by the Great Britain may have very poor development potentials. As a result, our estimation results could be driven by a small number of observations located in those cities. To rule out this concern, we conduct robustness checks using two subsamples: a subsample excluding firms located in coastal British-administered cities (i.e., Hangzhou and Wenzhou) and a subsample excluding firms located in inland non-British-administered cities (i.e., Lanzhou and Xi'an).⁸ As shown in Table 5, our main results on the relative importance of bank loans over trade credit remain robust in these two subsamples.

Meanwhile, it could be argued that the instrumental variable for *Trade Credit* (i.e., *Relationship*) may not be truly exogenous. For example, less profitable firms may have to rely more on their relatives and friends for supplying the inputs. To rule out this concern, we include the variable *Lagged ROA* and repeat the analysis. As shown in Table 6, our main results on the relative importance of bank loans over trade credit remain robust to this additional control. Furthermore, we also regress *Relationship* on a list of firm characteristics (including lagged profitability, firm size, firm age, and percentage of shares being held by parties other than government agencies), CEO characteristics (including his education, managerial experience, and government experience), and industry and city dummies. It is found that none of these variables has any statistically significant effect, suggesting that there is no predictable determinant for the reliance on the relatives and friends for supplying the inputs (results available upon request).⁹

For further checks on identification strategy, we directly control for some potential channels other than the endogenous variables through which the instrumental variables may affect firm performance and growth. Specifically,

⁸Because of the pattern of uneven regional development in China, coastal cities have typically grown faster and been better developed than inland cities. Hence, firms located in these two types of cities could potentially drive our results.

⁹In a further check, we compare the profitability of firms located in British-administrated cities with that of firms relying on their relatives and friends for supplying the inputs. It is found that though the former group has a higher mean value of profitability (0.062 ± 0.031) than the latter group (0.050 ± 0.019), there is no statistically significant difference between these two values (t value is 0.0996 with p -value 0.9207).

for the instrumental variable of *Bank Loans – British Administration*, we control for the effectiveness of contract enforcement, the security of property rights protection and the degree of economic development.¹⁰ For the instrumental variable of *Trade Credit – Relationship*, we control for the quality and delivery of inputs. We find that our main results on the relative importance of bank loans over trade credit remain robust to these controls (results available upon request).

4.3 Robustness Checks

First, as a legacy of gradual reforms in China, private enterprises are discriminated against but state-owned enterprises are favored by the state-owned banking system. Thus our above results on the relative importance of bank loans over trade credit could be overly estimated by including state-owned enterprises in the regressions, although state-owned enterprises only account for a small proportion of our sample firms. To address this concern, we test the robustness of our results by focusing on a subsample of private enterprises only, with the results reported in Table 7. It turns out that access to bank loans is still more important to firm performance and growth than does availability of trade credit.

Second, one may be concerned that our results could be driven by a few outliers. To address this possibility, we follow the methodology of Hadi (1992, 1994) in identifying the outliers in the multivariate data and exclude these outliers in the analysis.¹¹ The results are shown in Table 8. Clearly our results remain robust to this exercise, implying that the concern of outliers is not relevant in our case.

5 Conclusion

Formal finance has been found to be important for firm growth. However, for most of the developing and transition economies where economic institutions are poor, formal financial institutions are underdeveloped, and it is suggested that firms instead use informal finance for their operations and expansions.

¹⁰For a survey on the role of legal origin (specifically Great Britain’s common law system) in affecting economic institutions, see La Porta, Lopez-de-Silanes, and Shleifer (2008).

¹¹For a sample with n observations and p variables, the method works by first identifying a base cluster of $p + 1$ observations based on the minimization of a covariance-matrix distance on the variables with their medians removed. Then it chooses $p + 2$ observations that are closest in the covariance-matrix sense to the center of the base cluster. This procedure continues until some optimal stopping rule is met.

The question is whether informal finance can adequately substitute the role of formal finance to meet the capital needs of firms.

In this paper, using a World Bank data set on Chinese firms, we systematically investigate the relative importance of bank loans and trade credit in promoting firm performance and growth. To deal with the possible endogeneity issue, we employ distinct and separable instrumental variables for bank loans and trade credit. We find that access to bank loans is central to improving firm performance and spurring firm growth, while availability of trade credit is typically much less important. Our results suggest that trade credit cannot effectively substitute for bank loans, and informal finance cannot well accommodate the financing needs of the fast-growing non-state firms in contemporary China. Moreover, our results call for further development of formal financial institutions in China, under which China's non-state sector would have grown much faster than it actually did.

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Table 1: Summary Statistics

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. *British Administration* is a dummy variable indicating whether the respective city was administered by Great Britain in the late Qing Dynasty. *Relationship* is a dummy variable indicating whether the firm's two main inputs are supplied by relatives or friends of the firm owner in 2002. *Lagged ROA* is measured as the ratio of operating profits to total assets in 2001. *Legal System* is measured as the firm's perception of the likelihood of legal system to uphold private contracts in 2002. *Helping Hand* is measured as the firm's perception of the likelihood of local government officials acting as helping rather than hindering hand in 2002. *Logarithm of GDP per capita* is measured as the logarithm of GDP per capita in 2002. *Inadequate Quality* is measured as the percentage of inputs that were returned to their suppliers due to inadequate quality in 2002. *Delivery Loss* is measured as the percentage of sales that was lost due to the delivery delays in 2002. *Percentage of Private Ownership* is measured as by the percentage of ownership held by parties other than government agencies. *Firm Size* is measured as the logarithm of employment in 2002. *Firm Age* is measured as the logarithm of the years of establishment by the end of 2002. *Education* is measured as years of schooling by the end of 2002. *Tenure* is measured as years of being CEO by the end of 2002. *Deputy CEO Before* is a dummy variable indicating whether the CEO used to be the firm's deputy CEO. *Government Cadre* is a dummy variable indicating whether the CED used to be a government official.

Variable	Obs	Mean	Std. Dev.	Min	Max
Labor Productivity	1,557	4.322	1.562	-3.989	11.893
ROA	1,547	0.021	0.761	-16.820	20.870
Growth of Employment	1,563	0.052	0.480	-2.303	5.333
Reinvestment Rate	1,406	0.188	0.329	0.000	1.000
Bank Loans	1,529	0.058	0.136	0.000	0.952
Trade Credit	1,368	0.357	0.373	0.000	1.000
British Administration	1,566	0.510	0.500	0.000	1.000
Relationship	1,442	0.021	0.123	0.000	1.000
Lagged ROA	1,542	0.041	0.735	-6.417	20.571

Table 2: OLS Regressions

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. Standard errors, clustered at the industry/city level, are presented in the parenthesis. *, **, *** represent significance at 10%, 5%, 1% level respectively. Constant terms are included in the regressions but not reported (available upon request).

	1	2	3	4	5	6
Panel A: Dependent Variable	Labor Productivity			ROA		
Estimation	OLS			OLS		
Bank Loans	2.049*** (0.320)		1.838*** (0.322)	0.073 (0.050)		0.041 (0.061)
Trade Credit		0.914*** (0.127)	0.837*** (0.130)		0.102** (0.049)	0.106** (0.050)
No. of Observation	1,521	1,364	1,333	1,511	1,356	1,326
R-squared	0.0319	0.0515	0.0808	0.0002	0.0022	0.0025
Panel B: Dependent Variable	Growth of Employment			Reinvestment Rate		
Estimation	OLS			Tobit		
Bank Loan	0.112 (0.082)		0.134 (0.083)	0.817*** (0.174)		0.738*** (0.173)
Trade Credit		0.087** (0.038)	0.083** (0.039)		-0.015 (0.090)	-0.054 (0.090)
No. of Observation	1,526	1,367	1,336	1,374	1,226	1,199
R-squared/Pseudo R2	0.0010	0.0049	0.0067	0.0070	0.0000	0.0059

Table 3: 2SLS Regressions

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. *British Administration* is a dummy variable indicating whether the respective city was administered by Great Britain in the late Qing Dynasty. *Relationship* is a dummy variable indicating whether the firm's two main inputs are supplied by relatives or friends of the firm owner in 2002. Standard errors, clustered at the industry/city level, are presented in the parenthesis. *, **, *** represent significance at 10%, 5%, 1% level respectively. Constant terms are included in the regressions but not reported (available upon request).

	1	2	3	4
	Panel A: Second Stage of 2SLS			
Dependent Variable	Labor Productivity	ROA	Growth of Employment	Reinvestment Rate
Bank Loans	15.543*** (5.906)	2.499* (1.325)	1.246 (1.341)	5.181** (2.393)
Trade Credit	1.208 (1.707)	0.073 (0.179)	0.391 (0.535)	0.107 (1.053)
No. of Observation	1,303	1,296	1,306	1,172
	Panel B: First Stage of 2SLS, dependent variable is Bank Loans			
British Administration	0.037*** (0.010)	0.037*** (0.010)	0.037*** (0.010)	0.037*** (0.010)
Relationship	0.007 (0.030)	0.007 (0.030)	0.007 (0.030)	0.007 (0.030)
No. of Observation	1,410	1,410	1,410	1,410
R-squared	0.0176	0.0176	0.0176	0.0176
	Panel C: First Stage of 2SLS, dependent variable is Trade Credit			
British Administration	0.051 (0.033)	0.051 (0.033)	0.051 (0.033)	0.051 (0.033)
Relationship	0.276** (0.106)	0.276** (0.106)	0.276** (0.106)	0.276** (0.106)
No. of Observation	1, 337	1, 337	1, 337	1, 337
R-squared	0.0122	0.0122	0.0122	0.0122

Table 4: 2SLS Regressions, Semi-reduced Form

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. *British Administration* is a dummy variable indicating whether the respective city was administered by Great Britain in the late Qing Dynasty. *Relationship* is a dummy variable indicating whether the firm's two main inputs are supplied by relatives or friends of the firm owner in 2002. Standard errors, clustered at the industry/city level, are presented in the parenthesis. *, **, *** represent significance at 10%, 5%, 1% level respectively. Constant terms are included in the regressions but not reported (available upon request).

Dependent Variable	1 Labor Productivity	2 ROA	3 Growth of Employment	4 Reinvestment Rate	5 Labor Productivity	6 ROA	7 Growth of Employment	8 Reinvestment Rate
Bank Loans					16.173*** (5.172)	2.465** (1.376)	1.732** (0.823)	5.643*** (2.135)
British Administration	0.544** (0.209)	0.092** (0.046)	0.040 (0.046)	0.143* (0.082)				
Trade Credit	1.494 (1.543)	0.101 (0.154)	0.383 (0.474)	0.797 (0.987)				
Relationship					0.377 (0.368)	0.008 (0.042)	0.084 (0.115)	-0.110 (0.263)
No. of Observation	1,333	1,325	1,336	1,198	1,405	1,397	1,408	1,264

Table 5: 2SLS Regressions, Sub-sample without Special Cities

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. *British Administration* is a dummy variable indicating whether the respective city was administered by Great Britain in the late Qing Dynasty. *Relationship* is a dummy variable indicating whether the firm's two main inputs are supplied by relatives or friends of the firm owner in 2002. Coastal British administrated cities are Hangzhou and Wenzhou, whereas inland non-British administrated cities are Lanzhou and Xi'an. Standard errors, clustered at the industry/city level, are presented in the parenthesis. *, **, *** represent significance at 10%, 5%, 1% level respectively. Constant terms are included in the regressions but not reported (available upon request).

Sub-sample Dependent Variable	Without Coastal British Administrated Cities				Without Inland Non-British Administrated Cities			
	Labor Productivity	ROA	Growth of Employment	Reinvestment Rate	Labor Productivity	ROA	Growth of Employment	Reinvestment Rate
Bank Loans	20.151** (9.322)	2.324* (1.232)	0.445 (2.048)	5.698 (3.925)	13.811** (6.669)	3.005* (1.550)	2.492** (0.960)	4.897* (2.568)
Trade Credit	-0.512 (2.725)	-0.070 (0.141)	0.609 (0.867)	-0.520 (1.658)	1.736 (1.195)	-0.008 (0.180)	-0.211 (0.148)	-0.232 (0.898)
No. of Observation	1,194	1,188	1,197	1,066	1,150	1,145	1,152	1,023

Table 6: 2SLS Regressions, Inclusion of Lagged Profitability

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. *British Administration* is a dummy variable indicating whether the respective city was administered by Great Britain in the late Qing Dynasty. *Relationship* is a dummy variable indicating whether the firm's two main inputs are supplied by relatives or friends of the firm owner in 2002. *Lagged ROA* is measured as the ratio of operating profits to total assets in 2001. Standard errors, clustered at the industry/city level, are presented in the parenthesis. *, **, *** represent significance at 10%, 5%, 1% level respectively. Constant terms are included in the regressions but not reported (available upon request).

Dependent Variable	1 Labor Productivity	2 ROA	3 Growth of Employment	4 Reinvestment Rate
Bank Loans	15.291** (5.907)	2.293* (1.358)	1.086 (1.354)	5.101** (2.398)
Trade Credit	1.226 (1.707)	0.060 (0.176)	0.408 (0.535)	0.112 (1.055)
Lagged ROA	0.036 (0.080)	0.255 (0.603)	0.010 (0.009)	0.084*** (0.031)
No. of Observation	1,293	1,292	1,295	1,162

Table 7: 2SLS Regressions, Sub-sample of Private Enterprises

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. *British Administration* is a dummy variable indicating whether the respective city was administered by Great Britain in the late Qing Dynasty. *Relationship* is a dummy variable indicating whether the firm's two main inputs are supplied by relatives or friends of the firm owner in 2002. Private enterprise is defined as those whose percentage of private ownership is great than 0.5. Standard errors, clustered at the industry/city level, are presented in the parenthesis. *, **, *** represent significance at 10%, 5%, 1% level respectively. Constant terms are included in the regressions but not reported (available upon request).

	1	2	3	4
Dependent Variable	Labor Productivity	ROA	Growth of Employment	Reinvestment Rate
Bank Loans	14.392** (6.186)	3.145* (1.650)	0.751 (1.491)	4.725* (2.625)
Trade Credit	1.058 (1.757)	-0.033 (0.209)	0.318 (0.561)	0.104 (1.080)
No. of Observation	1,063	1,058	1,066	965

Table 8: 2SLS Regressions, Outliers

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. *British Administration* is a dummy variable indicating whether the respective city was administered by Great Britain in the late Qing Dynasty. *Relationship* is a dummy variable indicating whether the firm's two main inputs are supplied by relatives or friends of the firm owner in 2002. Outliers are identified using Hadi (1992, 1994)'s methodology. Standard errors, clustered at the industry/city level, are presented in the parenthesis. *, **, *** represent significance at 10%, 5%, 1% level respectively. Constant terms are included in the regressions but not reported (available upon request).

Dependent Variable	1 Labor Productivity	2 ROA	3 Growth of Employment
Bank Loans	11.949** (5.885)	0.280 (0.240)	0.149 (0.411)
Trade Credit	1.225 (2.140)	0.174 (0.143)	0.166 (0.143)
No. of Observation	934	905	914

Appendix 1: 2SLS Regressions, Other Channels for British Administration

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. *British Administration* is a dummy variable indicating whether the respective city was administered by Great Britain in the late Qing Dynasty. *Relationship* is a dummy variable indicating whether the firm's two main inputs are supplied by relatives or friends of the firm owner in 2002. *Legal System* is measured as the firm's perception of the likelihood of legal system to uphold private contracts in 2002. *Helping Hand* is measured as the firm's perception of the likelihood of local government officials acting as helping rather than hindering hand in 2002. *Logarithm of GDP per capita* is measured as the logarithm of GDP per capita in 2002. Standard errors, clustered at the industry/city level, are presented in the parenthesis. First stages of 2SLS include same controls as those in the second stages but results are not reported to save space (available upon request). *, **, *** represent significance at 10%, 5%, 1% level respectively. Constant terms are included in the regressions but not reported (available upon request).

	1	2	3	4	5	6	7	8	9	10	11	12
	Panel A: Second Stage of 2SLS											
Dependent Variable	Labor Productivity			ROA		Growth of Employment			Reinvestment Rate			
Bank Loans	13.166** (5.768)	13.259** (5.708)	13.165** (5.751)	2.911* (1.659)	2.831* (1.608)	2.882* (1.633)	1.287 (1.283)	1.255 (1.282)	1.255 (1.272)	5.559** (2.182)	5.483** (2.160)	5.565** (2.210)
Trade Credit	0.983 (1.989)	1.015 (1.995)	0.483 (2.065)	0.075 (0.215)	0.092 (0.208)	0.140 (0.218)	0.535 (0.720)	0.539 (0.724)	0.499 (0.803)	-0.679 (1.118)	-0.698 (1.111)	-0.684 (1.195)
Legal System	-0.168 (0.195)	-0.311 (0.205)	-0.265 (0.202)	-0.165 (0.139)	-0.152 (0.129)	-0.158 (0.131)	-0.096* (0.055)	-0.107* (0.056)	-0.104* (0.062)	0.076 (0.107)	0.030 (0.112)	0.025 (0.118)
Helping Hand		0.441*** (0.139)	0.431*** (0.138)		-0.093 (0.080)	-0.090 (0.079)		0.024 (0.041)	0.023 (0.040)		0.260** (0.107)	0.263** (0.109)
Logarithm of GDP per capita			0.292 (0.199)			-0.045* (0.025)			0.017 (0.068)			-0.033 (0.102)
No. of Observation	1,148	1,125	1,125	1,143	1,120	1,120	1,151	1,128	1,128	1,041	1,021	1,021
	Panel B: First Stage of 2SLS, dependent variable is Bank Loans											
British Administration	0.037*** (0.010)	0.038*** (0.010)	0.037*** (0.010)	0.037*** (0.010)	0.038*** (0.010)	0.037*** (0.010)	0.037*** (0.010)	0.038*** (0.010)	0.037*** (0.010)	0.037*** (0.010)	0.038*** (0.010)	0.037*** (0.010)
Relationship	0.013 (0.038)	0.012 (0.038)	0.009 (0.038)	0.013 (0.038)	0.012 (0.038)	0.009 (0.038)	0.013 (0.038)	0.012 (0.038)	0.009 (0.038)	0.013 (0.038)	0.012 (0.038)	0.009 (0.038)
No. of Observation	1,234	1,210	1,210	1,234	1,210	1,210	1,234	1,210	1,210	1,234	1,210	1,210
R-squared	0.0267	0.0272	0.0290	0.0267	0.0272	0.0290	0.0267	0.0272	0.0290	0.0267	0.0272	0.0290
	Panel C: First Stage of 2SLS, dependent variable is Trade Credit											

British Administration	0.036 (0.034)	0.037 (0.034)	0.032 (0.035)	0.036 (0.034)	0.037 (0.034)	0.032 (0.035)	0.036 (0.034)	0.037 (0.034)	0.032 (0.035)	0.036 (0.034)	0.037 (0.034)	0.032 (0.035)
Relationship	0.286*** (0.110)	0.283*** (0.109)	0.259*** (0.111)	0.286*** (0.110)	0.283*** (0.109)	0.259*** (0.111)	0.286*** (0.110)	0.283*** (0.109)	0.259*** (0.111)	0.286*** (0.110)	0.283*** (0.109)	0.259*** (0.111)
No. of Observation	1,175	1,152	1,152	1,175	1,152	1,152	1,175	1,152	1,152	1,175	1,152	1,152
R-squared	0.0141	0.0152	0.0239	0.0141	0.0152	0.0239	0.0141	0.0152	0.0239	0.0141	0.0152	0.0239

Appendix 2: 2SLS Regressions, Other Channels for Relationship

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. *British Administration* is a dummy variable indicating whether the respective city was administered by Great Britain in the late Qing Dynasty. *Relationship* is a dummy variable indicating whether the firm's two main inputs are supplied by relatives or friends of the firm owner in 2002. *Inadequate Quality* is measured as the percentage of inputs that were returned to their suppliers due to inadequate quality in 2002. *Delivery Loss* is measured as the percentage of sales that was lost due to the delivery delays in 2002. Standard errors, clustered at the industry/city level, are presented in the parenthesis. First stages of 2SLS include same controls as those in the second stages but results are not reported to save space (available upon request). *, **, *** represent significance at 10%, 5%, 1% level respectively. Constant terms are included in the regressions but not reported (available upon request).

	1	2	3	4	5	6	7	8
	Panel A: Second Stage of 2SLS							
Dependent Variable	Labor Productivity		Dependent Variable		Labor Productivity		Dependent Variable	
Estimation	OLS		Estimation		OLS		Estimation	
Bank Loans	15.851*** (5.942)	16.305*** (6.086)	2.525* (1.334)	2.348* (1.215)	1.324 (1.333)	1.345 (1.405)	5.011** (2.378)	4.642* (2.440)
Trade Credit	1.141 (1.677)	0.467 (1.833)	0.073 (0.176)	0.080 (0.213)	0.369 (0.531)	0.410 (0.620)	0.123 (1.037)	0.306 (1.119)
Quality	-1.556* (0.788)	-1.433* (0.830)	-0.107* (0.062)	-0.225* (0.118)	-0.314** (0.152)	-0.348* (0.183)	-0.032 (0.459)	-0.138 (0.499)
Delivery Loss		1.474 (1.224)		1.396 (1.305)		0.163 (0.294)		0.754 (0.686)
No. of Observation	1,295	1,276	1,289	1,270	1,298	1,279	1,166	1,149
	Panel B: First Stage of 2SLS, dependent variable is Bank Loans							
British Administration	0.036*** (0.010)	0.037*** (0.010)	0.036*** (0.010)	0.037*** (0.010)	0.036*** (0.010)	0.037*** (0.010)	0.036*** (0.010)	0.037*** (0.010)
Relationship	0.008 (0.030)	0.011 (0.031)	0.008 (0.030)	0.011 (0.031)	0.008 (0.030)	0.011 (0.031)	0.008 (0.030)	0.011 (0.031)
No. of Observation	1,396	1,374	1,396	1,374	1,396	1,374	1,396	1,374
R-squared	0.0189	0.0199	0.0189	0.0199	0.0189	0.0199	0.0189	0.0199
	Panel C: First Stage of 2SLS, dependent variable is Trade Credit							
British Administration	0.048 (0.033)	0.047 (0.033)	0.048 (0.033)	0.047 (0.033)	0.048 (0.033)	0.047 (0.033)	0.048 (0.033)	0.047 (0.033)
Relationship	0.282*** (0.107)	0.261** (0.111)	0.282*** (0.107)	0.261** (0.111)	0.282*** (0.107)	0.261** (0.111)	0.282*** (0.107)	0.261** (0.111)
No. of Observation	1,329	1,310	1,329	1,310	1,329	1,310	1,329	1,310
R-squared	0.0185	0.0177	0.0185	0.0177	0.0185	0.0177	0.0185	0.0177

Appendix 3: 2SLS Regressions, With Controls

Note: *Labor Productivity* is measured as the logarithm of total output per worker in 2002. *ROA* is measured as the ratio of operating profits to total assets in 2002. *Growth of Employment* is measured as the logarithm change in employment from 2001 to 2002. *Reinvestment Rate* is measured as the share of net profits reinvested in 2002. *Bank Loans* is measured as the ratio of bank loans to total assets in 2002. *Trade Credit* is measured as the percentage of inputs purchased with credit for the firm's two main inputs in 2002. *British Administration* is a dummy variable indicating whether the respective city was administered by Great Britain in the late Qing Dynasty. *Relationship* is a dummy variable indicating whether the firm's two main inputs are supplied by relatives or friends of the firm owner in 2002. *Percentage of Private Ownership* is measured as by the percentage of ownership held by parties other than government agencies. *Firm Size* is measured as the logarithm of employment in 2002. *Firm Age* is measured as the logarithm of the years of establishment by the end of 2002. CEO characteristics include: *Education* is measured as years of schooling by the end of 2002; *Tenure* is measured as years of being CEO by the end of 2002; *Deputy CEO Before* is a dummy variable indicating whether the CEO used to be the firm's deputy CEO; and *Government Cadre* is a dummy variable indicating whether the CEO used to be a government official. Standard errors, clustered at the industry/city level, are presented in the parenthesis. First stages of 2SLS include same controls as those in the second stages but results are not reported to save space (available upon request). *, **, *** represent significance at 10%, 5%, 1% level respectively. Constant terms are included in the regressions but not reported (available upon request).

	1	2	3	4	5	6
	Panel A: Second Stage of 2SLS					
Dependent Variable	Labor Productivity			ROA		
Estimation	OLS			OLS		
Bank Loans	14.316** (5.692)	14.857*** (5.441)	14.194*** (5.162)	2.841* (1.480)	2.978* (1.572)	4.304** (2.007)
Trade Credit	0.872 (1.404)	0.483 (1.515)	0.392 (1.531)	0.044 (0.200)	-0.055 (0.244)	0.013 (0.216)
Percentage of Private Ownership	0.137 (0.165)	0.209 (0.158)	0.236 (0.144)	0.046 (0.042)	0.047 (0.035)	0.053 (0.036)
Firm Size	-0.006 (0.135)	-0.034 (0.123)	-0.024 (0.130)	-0.040** (0.019)	-0.039* (0.022)	-0.067** (0.033)
Firm Age	-0.441*** (0.094)	-0.396*** (0.090)	-0.395*** (0.086)	-0.001 (0.029)	0.001 (0.029)	0.008 (0.031)
F-statistic for CEO Characteristics		[3.46]**	[2.61]**		[0.66]	[0.77]
F-statistic for Industrial Dummies			[3.50]***			[0.74]
No. of Observation	1,303	1,280	1,280	1,295	1,273	1,273
	Panel B: Second Stage of 2SLS					
Dependent Variable	Growth of Employment			Reinvestment Rate		
Estimation	OLS			Tobit		
Bank Loans	1.218 (1.345)	1.220 (1.393)	2.286 (2.018)	5.425** (2.656)	5.234* (2.733)	7.112** (3.355)
Trade Credit	0.316 (0.547)	0.321 (0.592)	0.358 (0.585)	0.077 (1.098)	0.079 (1.161)	0.125 (1.144)
Percentage of Private Ownership	0.106*** (0.030)	0.093*** (0.027)	0.097*** (0.028)	-0.044 (0.115)	-0.081 (0.112)	-0.060 (0.111)
Firm Size	-0.020 (0.023)	-0.011 (0.021)	-0.035 (0.035)	-0.067 (0.073)	-0.047 (0.069)	-0.092 (0.085)
Firm Age	-0.061*** (0.018)	-0.072*** (0.014)	-0.065*** (0.019)	-0.170*** (0.061)	-0.203*** (0.064)	-0.194*** (0.065)
F-statistic for GM Characteristics		[3.25]**	[2.77]**		[4.45]***	[4.76]***
F-statistic for Industrial Dummies			[0.49]			[1.21]
No. of Observation	1,306	1,283	1,283	1,171	1,149	1,149
	Panel C: First Stage of 2SLS, dependent variable is Bank Loans					

British Administration	0.028*** (0.010)	0.027*** (0.010)	0.023** (0.010)	0.028*** (0.010)	0.027*** (0.010)	0.023** (0.010)
Relationship	0.003 (0.030)	0.004 (0.030)	-0.002 (0.029)	0.003 (0.030)	0.004 (0.030)	-0.002 (0.029)
No. of Observation	1,409	1,381	1,381	1,409	1,381	1,381
R-squared	0.0558	0.0525	0.0636	0.0558	0.0525	0.0636
Panel D: First Stage of 2SLS, dependent variable is Trade Credit						
British Administration	0.026 (0.028)	0.025 (0.028)	0.010 (0.028)	0.026 (0.028)	0.025 (0.028)	0.010 (0.028)
Relationship	0.258*** (0.096)	0.243** (0.095)	0.240** (0.094)	0.258*** (0.096)	0.243** (0.095)	0.240** (0.094)
No. of Observation	1,336	1,311	1,311	1,336	1,311	1,311
R-squared	0.0493	0.0557	0.0676	0.0493	0.0557	0.0676