

Ha, Tran Manh; Thang, Doan Ngoc; Dat, Luong Van; Dong, Do Phu; Hai, Nguyen Thi Hong

Article

Is government contract a driver of trade credit? The moderating role of bargaining power, financial and institutional constraints

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*Corresponding author: Doan Ngoc Thang, International Business Faculty, Banking Academy of Vietnam, Hanoi, Vietnam
E-mail: ngocthangdoan@hvn.edu.vn

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Collins G. Ntim, Accounting,
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Southampton, UK

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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

Is government contract a driver of trade credit? The moderating role of bargaining power, financial and institutional constraints

Tran Manh Ha¹, Doan Ngoc Thang^{2*}, Luong Van Dat², Do Phu Dong² and
Nguyen Thi Hong Hai²

Abstract: This paper studies the effect of government contracts on trade credit by using cross-country firm-level data. Trade credit is defined as a firm's deferral of payment to its sellers when it buys material inputs. We apply the instrumental variable to take into account the endogeneity problem caused by the simultaneous relationship between government contracts and trade credit. Our empirical results prove that government contracts have negative effects on trade credit. These effects become more pronounced when firms have higher bargaining power and more severe financial and institutional constraints and are located in middle-income countries. Our results are robust for alternative measures of financial and institutional constraints. These findings have important policy implications: Contracting with the government helps firms to reduce their dependence on trade credit by switching to other cheaper forms of financing, especially in the case of firms with high bargaining power and financial and institutional constraints.

Subjects: Politics & Development; Political Economy; Business, Management and Accounting

Keywords: government contract; trade credit; bargaining power; financial constraints; institutional constraints

JEL Classifications: F10; G20; L23

1. Introduction

The literature on public procurement and its effects on business has been growing. The current research shows that firms with government contracts are more conservative (Hui et al., 2012), are less likely to evade tax (Huang et al., 2016), invest less in corporate social responsibility (CSR; Habib

ABOUT THE AUTHORS

Tran Manh Ha is the Head of Academic Affairs. He obtained his Ph.D. from the University of Durham in UK. His research fields include bank risk management, monetary policy and corporate finance.

Doan Ngoc Thang is the Deputy Dean of the International Business Faculty. He obtained his Ph.D. from the GRIPS, Tokyo, Japan. His research fields include international trade, monetary policy and international business.

Luong Van Dat is a lecturer at International Business Faculty. He obtained his MA from Nottingham University. His research fields include logistics and international business.

Do Phu Dong is a lecturer at International Business Faculty. He obtained his MA from UWE, UK. His research fields include trade policy and international business.

Nguyen Thi Hong Hai is the former Head of the International Trade Financing Division. She obtained his Ph.D. from the BAV, Vietnam. Her research fields include international payment and trade finance.

et al., 2015), and mobile equity capital at a cheaper cost (Dhaliwal et al., 2016). However, the relation between public contracts and firms' financing decisions is still ambiguous. Suppliers offer trade credit to allow their customers to delay payment (Huyghebaert, 2006). According to an International Chamber of Commerce ICC (2017) survey, trade credit accounts for about 80% of trade. The prevalence of trade credit calls for the need to study the key drivers of trade credit, as they are considered a particularly expensive form of financing: implicit yearly trade credit interest rates can be up to 40% (Petersen & Rajan, 1997) and 44.6% (Amberg et al., 2021).¹ While the use of trade credit naturally depends on a firm's creditworthiness (Niskanen & Niskanen, 2006), whether the firm is a government contractor may act as a commitment device of creditworthiness. Hence, the purpose of our study is to investigate the nexus between a firm with public procurement and its usage of trade credit in a cross-country context.

In theory, the connection between public procurement and a firm's usage of trade credit is debatable. On the one hand, firms with public procurement tend to demand less trade credit due to their low risks in operation, good financial performance, and capability to approach a source of low-cost capital (Dhaliwal et al., 2016). On the other hand, government contractors demand more trade credit, as firms with government contracts have increased litigation risk (Rainey & Bozeman, 2000) and invest less in physical and intellectual assets through the years (Cohen & Malloy, 2016), which affects their financing costs. Moreover, suppliers are more likely to provide trade credit to firms with government contracts. Indeed, suppliers evaluate their clients' creditworthiness and default risk before offering trade credit (Petersen & Rajan, 1997). In this domain, low risks in operation, good financial performance, and strong credibility place government contractors in a good position to receive more trade credit.

To answer our research question, we use cross-sectional data obtained from the Enterprise Surveys of the World Bank with 33,510 observations, covering 100 countries from 2007 to 2019. Taking into account the endogeneity due to reverse causality by using a sector-region-country average as an instrumental variable, we show a negative connection between government contractors and trade credit. The results imply that government contractors use less trade credit compared to firms without government contracts. The possible interpretations of this finding are that government contractors have a lower level of operational risk because of the transfer of risk to the government, better performance due to the accumulation of knowledge related to the business environment, and lower cost of borrowing from alternative sources. These effects become more evident when firms have higher bargaining power, suffer more severe financial and institutional constraints, or are located in middle-income countries. The reason for this is that firms may receive a bank loan refusal because of their weak financial reports. Government contracts can soften this asymmetric information and boost the firm's capabilities to obtain funds from commercial banks. Additionally, firms with political connections find it easier to access loans. Our results are robust for alternative measures of financial and institutional constraints. Lastly, the government contract-trade credit linkage becomes more evident in middle-income countries.

Our contributions is two-fold. First, our study adds to the growing literature on the determinants of trade credit as a vital method of short-term financing. Previous papers indicate that customer and supplier firm-associated features drive a firm's use of trade credit. Adding to previous research, our paper points out that customer type is a pivotal driving force for firms' use of trade credit. Second, given the heterogeneity of firms across countries, this paper extends Xu and Dao's (2020) work by examining the nexus between government contractors and trade credit in a wider set of cross-country firm-level data and investigating the moderating role of bargaining power, and financial and institutional constraints on such a nexus. This extension provides more insights into the relationship between government contractors and trade credit.

The rest of the paper is organized as follows: Section 2 reviews the literature and develops hypotheses, Section 3 describes our methodology, Section 4 consists of our empirical findings, and Section 5 presents our conclusions.

2. Literature review and hypotheses development

2.1. Trade credit

Trade credit is a payment arrangement between a buyer and a supplier, wherein the seller allows the buyer to pay for the goods or services at a later scheduled date. Huyghebaert (2006) defines trade credit as a buyer's deferment of payment to their suppliers. If the buyer makes the payment after delivery, the seller extends credit to the buyer (Ng et al., 1999). From an accounting perspective, trade credit is a source of account payable for the buyer, while it is a kind of investment for the seller through account receivable (Long et al., 1993). Approximately 80 to 90% of trade flows in the world are based on trade finance, which includes trade credit and insurance/guarantees (ICC, 2017). In particular, nearly one-third of the total financial liabilities in the US are identified as trade credit (Fontaine & Zhao, 2021). In the study by Levine et al. (2018), which covers 3,500 firms across 34 countries, trade credit represents 25% of an average firm's total debt liabilities. Trade credit is an imperative source of short-term financing for a firm to guarantee normal operations to extend its turnover and develop its business (Xu & Dao, 2020).

Researchers have thoroughly investigated the determinants of trade credit. Long et al. (1993) reviewed several papers that explain the reasons why the use of trade credit is based on traditional financial models. For example, Schwartz (1974) developed a finance-based theory that firms with low-cost borrowing will extend credit to firms that bear higher costs charged by financial intermediaries, whereas a tax-based model by Brick and Fung (1984) suggests that firms in relatively high tax brackets gain by offering trade credit to firms in lower tax brackets. In the model based on information costs, Smith (1987) finds that sellers offer credit terms to buyers because they have advantages against financial institutions in identifying the prospective defaults of customers.

Another method to discover why firms use trade credit is to examine the effects of transaction-specific investments and transaction costs. Trade credit occurs when informational asymmetries between buyers and sellers appear, transaction costs are high, or sellers have a high level of specialized investment (Ng et al., 1999). Compared with firms buying services, those buying goods and making a significant investment in tangible inputs greatly rely on trade credit (Fabbri & Menichini, 2010). Additionally, price discrimination is also deemed as one of the important determinants of trade credit (Huyghebaert, 2006; Ng et al., 1999; Petersen & Rajan, 1997). As credit terms are usually offered to buyers depending on their credit quality, trade credit decreases the effective price for low-quality borrowers. Creditworthy customers find trade credit overpriced and repay it as soon as possible, while risky customers with limited access to other sources of financing find it favorable to borrow. Among the many reasons for using trade credit, Huyghebaert (2006) emphasizes that the main factor is to overcome financial constraints. Firms that face difficulties in borrowing from financial institutions opt for trade credit (Petersen & Rajan, 1997).

Overall, the determinants of credit terms for a firm not only stem from the customer's demand but also from the supplier's willingness to grant trade credit (Xu & Dao, 2020). With respect to the customer, the existing literature reveals that the use of trade credit can be determined by firm's access to credit from financial institutions, asset maturity, asset liquidity, and customer firm's investment opportunities (Petersen & Rajan, 1997; Xu & Dao, 2020). With respect to supplier, transaction costs, price discrimination, and relationship-specific investments are reasons why supplier firms provide trade credits (Dass et al., 2015; Petersen & Rajan, 1997; Xu & Dao, 2020).

2.2. Government contract

In terms of government contracts, the government's procurement of goods and services is usually related to a huge amount when compared with the GDP. Indeed, the value of government contracts accounts for 15–20% of the GDP of a country (WTO, 2014) and is even higher in developed countries (Flammer, 2018). Based on the pricing of contracts, government contracts have been categorized into two different types: "cost-plus" and "fixed-

priced” contracts. Of the two, the former is preferred because of the complexity of public procurement (Bajari & Tadelis, 2001).

According to Flammer (2018), trust is the most important factor in purchase decisions. The trust between suppliers and buyers—the governments—is affected by numerous determinants such as the pre-existing relationship between two parties and the signal of trustworthiness (Aguilera et al., 2012). Moreover, governments tend to choose contractors with high credit ratings (Burke et al., 2015). Apart from economic reasons, political connection is significantly important for firms to receive approval from governments. Brown and Huang (2020) pointed out that firms with a higher number of meetings with government bodies tend to receive more government contracts. Further, Flammer (2018) concludes that CSR is a vital determinant of trustworthiness, and thus, firms with a high number of CSR activities tend to receive more contracts from governments. In other words, firms with a good reputation, operates efficiently, and are large are more likely to successfully sign contracts with governments. On the other hand, contractors’ behaviors are positively influenced by governments by signing government contracts. For example, government contractors generally do not avoid taxes (Huang et al., 2016) and follow accounting practices (Hui et al., 2012). Additionally, government contractors keep demand from customers more stable than firms without government contracts (Cao et al., 2013). Regarding CSR, although it is an important factor for purchasing decisions of the government, a firm with government bodies as customers can reduce its investment in CSR compared to other enterprises (McWilliams & Siegel, 2001).

Government contracts bring both advantages and disadvantages to contractors. Regarding benefits, government contractors presented better performances (Nakanishi, 2020) and lower level of payment risks (Dhaliwal et al., 2016). Additionally, coopetition is facilitated between firms operating in an industry by the intervention of government contracts (Nakanishi, 2020). Finally, firms with government contracts find it easier to gain access to numerous funding sources to mitigate financial constraints (Al-Thaqeb & Harper, 2016). Government contracts also have many disadvantages. For example, Rainey and Bozeman (2000) pointed out high levels of corruption and litigation risks in government contracts. Josephson et al. (2019) concluded that reducing competitiveness and rising operating costs are two main problems that firms are expected to deal with when contracting with governments.

Overall, researchers in this field have focused on the characteristics of contractors, the cost and benefit of government contracts, and the linkage between government contracts and the use of trade credit (Xu & Dao, 2020).

2.3. Relationship between government contract and trade credit

Scholars are yet to reach a consensus on the impact of government contracts on trade credit. Government contractors are less likely to use trade credit as a source of finance due to their lower levels of operational risk, higher firm performance, and greater ability to raise funds internally (Xu & Dao, 2020). The government has a lower probability of going bankrupt than other customers and usually has a long-term contract with one supplier. Additionally, in some cases, government contract is a cost-plus type in which operational risks are transferred to the government rather than the government contractor. All these factors bring benefits to the government contractor with low levels of operational risk. Furthermore, other advantages gained from government contracts include valuable knowledge from organizational learning and relationships with other parties, which improve the performance of government contractors (Anderson & Lee, 2016). Government contractors also have greater credibility than other firms (Al-Thaqeb & Harper, 2016; Xu & Dao, 2020) and easy access to other sources (Dhaliwal et al., 2016). There is a differing opinion that government contractors use higher levels of trade credit. Given the lower operational risk, better firm performance, and higher credibility, government contractors are likely to be granted more trade credit compared to other firms. Moreover, firms with political ties have low disclosure of information to avoid scrutiny (Decker, 2011). Thus, government contractors are

imposed higher interest rates by financial institutions (Bliss & Gul, 2012; Liedong & Rajwani, 2018), which in turn makes trade credit worthwhile for these firms (Petersen & Rajan, 1997).

The above divergence can be attributed to differences in studies in terms of sources of data, econometric methods, and selected countries. Xu and Dao (2020) examine US-listed firms and find a negative impact of government contracts on trade credit. Similarly, Houston et al. (2014) use hand-collected data from US firms and find that the cost of bank loans is significantly lower for government contractors, which can make trade credit less favorable. However, this may not be the case found in developing countries. In emerging and developing countries, access to finance and the cost of debt are major financial obstacles for firms (Beck & Demircuc-Kunt, 2006). Liedong and Rajwani (2018) collect surveys from firms in Ghana, while Bliss and Gul (2012) investigate Malaysian listed firms; their results show that politically connected firms are charged higher interest rates by financial institutions. As a result, these firms tend to find other sources of finance with lower costs, including an alternative for trade credit. There is also exciting evidence that firms with political ties are more predominant in countries with high levels of corruption, and political leaders in these countries may be directly involved in the lending process of raising funds for such well-connected firms (Faccio, 2006; Fisman, 2001). Political connections are helpful, as government authorities can directly intervene in bank lending, which occurs in many developing countries (Beck et al., 2006; Dinc, 2005; La Porta et al., 2002).

With this line of discussion, we raise the following hypotheses:

H1a: Government contracts are positively associated with the use of trade credit.

H1b: Government contracts are negatively associated with the use of trade credit.

2.4. The moderating role of bargaining power, and financial and institutional constraints on the relationship between government contracts and trade credit

Concerning bargaining power, Mateut and Chevapatrakul (2018) conclude that buyers with a higher bargaining power tend to receive more trade credit. Fabbri and Klapper (2016) support this conclusion by pointing out that suppliers with low bargaining power generally provide longer trade credit to their customers. However, Mateut and Chevapatrakul (2018) also point out that the larger the credit amount taken by firms, the more difficult it is for these firms to use their bargaining power to access more trade credit from their suppliers.

There are numerous ways to measure bargaining power. According to Uchida (2006), a firm's bargaining power in the case of a loan is determined by three proxies: the lender's competition, the degree of informational asymmetry between two parties, and the borrowers' performances. This power can also be measured by firm size. Indeed, larger firms are expected to have more bargaining power compared to small firms (Cho et al., 2019). In terms of suppliers, a larger firm has a competitive advantage because of factors such as economies of scale, brand (Spekman, 1988), and relationship with raw material providers (Pfeffer and Salancik, 2003). Therefore, large-sized suppliers hold power over their buyers. In contrast, larger buyers tend to have more power over their suppliers (Cho et al., 2019). In their study, Mateut and Chevapatrakul (2018) chose the firm size to measure bargaining power while examining the relationship between trade credit and bargaining power. Therefore, SMEs are expected to have lower bargaining power compared to larger firms.

Regarding the relationship between government contracts and firm sizes, Xu and Dao (2020) concluded that governments tend to choose larger firms as contractors. In addition, Cho et al. (2019) and Mateut and Chevapatrakul (2018) indicate that firms with high bargaining power are likely to receive more government contracts. In conclusion, firms' bargaining power, which is

presented by the firms' size, influences firms' abilities to contract with governments and obtain more trade credit. Based on our discussion, we propose the following hypothesis:

H2a: The effect of government contracts on trade credit is stronger for firms with higher bargaining power.

The use of trade credit is directly related to the financial constraints of customers (Wilner, 2000; Xu & Dao, 2020). Firms with weak financial reports and limited access to bank loans especially consider trade credit as a crucial source of funds (Mateut & Chevapatrakul, 2018). Hoang et al. (2019) point out that the optimal trade credit level is sensitive to firms' financial constraints. In other words, firms with higher financial constraints have a lower optimal trade credit level than those without constraints. The reason firms face difficulties in obtaining bank loans is asymmetric information (Biais & Gollier, 1997; Fazzari & Athey, 1987). The problem of asymmetric information between two parties can be mitigated by building up the trustworthiness by contracting with the government (Flammer, 2018). Even though the quality of government contractors tends to be higher than others and contracting with the government can be a sign of quality, it does not prevent them from falling into financial problems. Regarding confronting financial constraints caused by asymmetric information, government contractors are in a better position to deal with these problems, as they can utilize the trustworthiness obtained from having a government contract. In this domain, government contractors can provide less supplier credit to their customers or ask their customers to offer buyer credits to help them overcome their financial constraints.

Based on the above discussion, we propose the following hypothesis:

H2b: The effect of government contracts on trade credit is stronger for firms with financial credit constraints.

Another focus of our paper is to examine the changes in the impact of government contracts on trade credit when firms face institutional constraints. The literature has highlighted the quality of financial institutions as a main driving force of long-term economic development (Rodríguez-Pose, 2013). Rodríguez-Pose (2013) posits that institutional arrangements hinder the development of a region by interfering with other drivers of economic development. Auriol et al. (2016) and Baldi et al. (2016) investigate the effect of rent-seeking and corruption on public procurement. Firms pay bribes in exchange for a government contract. Hoekman (1998) indicates that international institutions enhance government procurement by increasing transparency and accountability. Moreover, without corruption, firms with high productivity tend to obtain more government contracts. However, corruption, which is a determinant of institutional constraints, has changed the role of firm productivity. In a corrupt country, more productive firms tend to be excluded from government parties (Vendrell-Herrero et al., 2022). Previous studies refer to corruption (Kurer, 1993) and tax (Fisman & Svensson, 2007; Ha et al., 2021) as signals of institutional constraints.

Regarding trade credit, Cull et al. (2009) contend that institutional bias toward state-owned enterprises opens the doors to the use of trade credit among private firms. Amoako et al. (2020) reveal that in weak institutions, personal trust and cultural norms improve the enforcement of trade credit contracts. Acemoglu and Verdier (1998) show that the government's actions indeed cause severe risks to investors in an unstable country. Thus, firms in such a market find it difficult to obtain any trade credit. The above discussions lead to our proposal that institutional constraints may create more burdens for business operations, and, therefore, the comparative advantage of

lower firms compared to their competitors, thereby reducing their probability of obtaining government contracts. Thus, we propose the following hypothesis:

H2c: The effect of government contracts on trade credit becomes stronger if there are institutional constraints.

3. Methodology

3.1. Variables

Our study employs cross-sectional data obtained from the Enterprise Surveys of the World Bank.² We eliminate missing observations to clean the data. Then, we winsorize all continuous variables at the 1st and 99th percentile levels of their distribution to mitigate the problem of our results being potentially driven by outliers. In this way, we replace the values less than the 1st percentile with the value of the 1st percentile; the same was done for the 99th percentile. We retain the data of manufacturing firms, as this sector matches the trade theory. The total number of observations is approximately 33,510, covering 100 countries from 2007 to 2019. Table 1 reports the lists of countries. No country is dominant in our sample.

Dependent variable: TC

TC is the share of total purchases of material inputs or services paid after shipment by firms. Alternatively, $TC = \frac{\text{Value of material inputs or services paid after shipment}}{\text{Total value of material inputs or services}}$. This captures a payable account or a trade credit received by the firm. The average share of trade credit is 45%.³ Our measure is similar to that in Zhai and Ma's (2017) work, which uses the data on Chinese SMEs and shows that the average ratio of trade credit to the total value of the material purchase is different across sectors, ranging from 27.5% to 90%.

Independent variable: GC

GC is the dummy variable that takes the value of 1 if a firm is a government contractor and 0 otherwise. In all, 16% of firms in our sample are government contractors. The intensity of involvement with the government will provide useful information, but due to the data limitations, this information is unavailable.

3.2. Control variables

We base on the rich literature on the determinants of trade credit (Hoefele et al., 2016; Petersen & Rajan, 1997; Xu & Dao, 2020) to incorporate variables to control the other effects on trade credit. Size is the number of full-time employees and represents the bargaining power. We expect that the larger the firm, the more likely it would be to enjoy trade credit extensions from suppliers. *LnSale* is the log of the ratio of total sales to full-time employees, and captures labor productivity. Higher profitability shows a firm's observable credit quality. Hence, highly productive firms are more likely to receive trade credit than their less-productive counterparts.

LnAge and *LnManager* are a firm's number of years of establishment and CEO's experience in their current industries, respectively. We computed firm age by subtracting the year of the survey from the year of the establishment of the firm. Young firms have weak relationships with their suppliers and obtain less trade credit. Meanwhile, the CEO's experience is used to reflect their network in their present industry. We predict that firms with experienced managers would be more likely to demand more trade credit terms than those with less experienced managers, as such managers make use of their networks and have better negotiation skills. In the situation where a firm's age is less than one year old, or a firm's CEO had less than one year's experience, we add 1 to the actual number of years before taking the natural logarithm.

Table 1. List of countries

No	Country	Percent	No	Country	Percent
1	AFG	0.38	51	MAR	0.45
2	AGO	0.32	52	MDA	0.23
3	ALB	0.36	53	MDG	0.53
4	ARG	3.52	54	MEX	3.05
5	ARM	0.24	55	MLI	0.37
6	AZE	0.2	56	MMR	1.86
7	BDI	0.17	57	MNE	0.08
8	BEN	0.19	58	MNG	0.31
9	BGD	3.43	59	MOZ	0.02
10	BGR	1.77	60	MRT	0.07
11	BIH	0.27	61	MUS	0.32
12	BLR	0.3	62	MWI	0.3
13	BOL	0.46	63	MYS	1.15
14	BRA	2.43	64	NAM	0.19
15	BTN	0.21	65	NER	0.08
16	BWA	0.23	66	NGA	1.44
17	CHL	1.99	67	NIC	0.65
18	CHN	4.58	68	NPL	1.15
19	CMR	0.51	69	PAK	1.17
20	COL	3.37	70	PAN	0.18
21	CRI	0.7	71	PER	3.36
22	CZE	0.26	72	PHL	3.6
23	DJI	0.09	73	POL	0.31
24	ECU	0.62	74	PRY	0.53
25	EGY	7.64	75	PSE	0.37
26	EST	0.2	76	ROU	0.43
27	ETH	1.29	77	RUS	2.74
28	FJI	0.06	78	SDN	0.01
29	GEO	0.27	79	SEN	0.47
30	GHA	0.9	80	SLB	0.11
31	GIN	0.04	81	SRB	0.28
32	GTM	1.11	82	SVK	0.1
33	HND	0.55	83	SVN	0.21
34	HRV	1.17	84	TCD	0.19
35	HUN	0.16	85	TGO	0.11
36	IDN	5.88	86	THA	1.48
37	IND	6.74	87	TJK	0.17
38	IRQ	1.4	88	TLS	0.19
39	ISR	0.58	89	TUN	0.9
40	JAM	0.23	90	TUR	1.67
41	JOR	0.9	91	TZA	0.49
42	KAZ	0.39	92	UGA	0.49
43	KEN	0.89	93	UKR	0.35
44	KGZ	0.22	94	URY	0.97
45	KHM	0.31	95	UZB	0.36

(Continued)

No	Country	Percent	No	Country	Percent
46	LBN	0.57	96	VEN	0.17
47	LBR	0.22	97	VNM	3.81
48	LSO	0.19	98	YEM	0.86
49	LTU	0.2	99	ZMB	0.92
50	LVA	0.18	100	ZWE	1.85

We also add variables to control the impact of innovation and external linkages on firms' trade credit usage. Innovation is a dummy variable that takes the value of 1 if a firm introduces a new product or process and 0 otherwise. This variable reflects the extent of innovation. More innovative firms are more likely to enjoy trade credit. External linkage is captured by whether a firm had a connection (*Connection*) through the internet and/or a website or the firm's tendency toward the global market, including export intensity (*Exportshare*), import decision (*Import*), foreign ownership (*Foreign*), foreign technology (*Foreigntech*), or an international certificate (*Certification*). As importers tend to receive trade credit extensions from their suppliers than non-importers (Demir & Javorcik, 2018), we expect *Import* to have a positive effect on trade credit usage. Similarly, exporting firms perform better and have higher credibility; therefore, they gain more trade credit. The rest of the international tendency variables are forecast to have a positive relationship with trade credit, as they signal good creditworthiness. The statistical descriptions of the included variables are shown in Table 2.

Table 3 presents a comparison of the variables between government contractors and non-government contractors. The firm characteristics are heterogeneous along with the government contract, except for foreign ownership. The share of trade credit in the case of government contractors is lower than non-government contractors. Firms with government contracts have higher productivity, larger firm size, older firm age, higher manager experience, and higher innovation activities, and are more involved in the foreign market, including more imports,

Table 2. Statistical summary

Variable	Obs	Mean	Std. Dev.	Min	Max
TC	33,510	0.45	0.38	0.00	1.00
GC	33,510	0.16	0.37	0.00	1.00
LnSale	33,510	13.72	2.92	7.82	21.01
LnSize	33,510	3.63	1.41	1.61	7.50
LnAge	33,510	2.75	0.79	0.69	4.52
LnManager	33,510	2.83	0.65	0.69	3.93
Innovation	33,510	0.46	0.50	0.00	1.00
Exportshare	33,510	0.14	0.29	0.00	1.00
Import	33,510	0.53	0.50	0.00	1.00
Foreign	33,510	0.11	0.31	0.00	1.00
Certification	33,510	0.27	0.45	0.00	1.00
Connection	33,510	0.49	0.50	0.00	1.00
Foreigntech	33,510	0.15	0.35	0.00	1.00
FinObstacle	33,510	0.25	0.43	0.00	1.00

Table 3. Government contractors vs non-government contractors

Variable	GC=0				GC=1				Diff	p-value
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Std. Dev.		
TC	28,183	0.453	0.382	5,327	0.449	0.365	5,327	0.365	-0.004	0.045
LnSale	28,183	13.712	2.927	5,327	13.756	3.032	5,327	3.032	0.044	0.032
LnSize	28,183	3.582	1.402	5,327	3.857	1.423	5,327	1.423	0.275	0.000
LnAge	28,183	2.730	0.781	5,327	2.862	0.797	5,327	0.797	0.132	0.000
LnManager	28,183	2.826	0.647	5,327	2.879	0.659	5,327	0.659	0.053	0.000
Innovation	28,183	0.338	0.496	5,327	0.590	0.492	5,327	0.492	0.152	0.000
Exportshare	28,183	0.151	0.306	5,327	0.106	0.225	5,327	0.225	-0.045	0.000
Import	28,183	0.506	0.499	5,327	0.646	0.479	5,327	0.479	0.040	0.000
Foreign	28,183	0.108	0.311	5,327	0.111	0.314	5,327	0.314	0.003	0.563
Certification	28,183	0.263	0.440	5,327	0.340	0.474	5,327	0.474	0.077	0.000
Connection	28,183	0.469	0.500	5,327	0.625	0.484	5,327	0.484	0.155	0.000
Foreigntech	28,183	0.136	0.343	5,327	0.202	0.401	5,327	0.401	0.066	0.000
FinObstacle	28,183	0.240	0.427	5,327	0.278	0.448	5,327	0.448	0.037	0.000

international certifications, communication connections, and foreign technologies. Finally, government contractors suffer fewer financial constraints than non-government contractors.

3.3. Model specification

The benchmark model is specified as follows:

$$TC_{crki} = \beta_0 + \beta_1 GC_{crki} + \beta_2 CONTROL_{crki} + v_j + \gamma_k + \lambda_t + \varepsilon_{crki} \quad (1)$$

where subscript c , r , k , i , and t denote the country, region, sector, firm, and year, respectively. v_c , γ_k , and λ_t are, in turn, country, sector, and year fixed effects. TC_{crki} is the trade credit. GC_{crki} is a government contractor, while $CONTROL_{crki}$ is a set of control variables. ε_{crki} is an error term. The country and sector fixed effects v_c and γ_k were used to reflect the unobservable factors specific to countries and sectors, respectively. Additionally, as the data in our sample was collected in different years, the year fixed effects λ_t were used to capture the macroeconomic variables of the world economy, which changes over time and affects all firms. Standard errors are clustered by sector-region-country.

In our model, there is a simultaneity between trade credit and government contract that caused our results to be biased. So far, we have argued that government contractors affect the use of trade credit. When firms receive more trade credit from their suppliers, they tend to offer trade credit term to their customers—the government customers. In this vein, firms implement a matching maturity strategy between contract terms of receivables and payables (Demirgüç-Kunt & Maksimovic, 1999; Fabbri & Klapper, 2016). To deal with the estimation bias caused by the endogeneity problem, we rely on Fisman and Love (2003) to apply the sector-location average approach. In particular, we separate government contractors operating in the c -th country in the r -th region in k -th sector (GC_{crki}) into two components:

$$GC_{crki} = GC_{crki} + GC_{crk} \quad (2)$$

where GC_{crki} refers to an idiosyncratic element and GC_{crk} is the average number of government contractors that is common to all firms in the c -th country in the r -th region in k -th sector. We assume that the sector-region-country average government contract is independent of using trade credit. We then use the sector-region-country average as our instrument. Our model with the instrumental variable can be expressed as follows:

$$TC_i = \beta_0 + \beta_1 GC_i^{IV} + \beta_2 CONTROL_i + v_c + \gamma_k + \lambda_t + \varepsilon_i \quad (3)$$

where GC_i^{IV} is the fitted value from the first-stage regression where government contract are regressed on sector-region-country government contract average and other control variables.

We first tested the association between government contracts and trade credit without controlling for the endogeneity bias. We then apply the sector-region-country average method to fix the endogeneity bias. We also run a regression of the equation (3) with sub-sample by size and financial constraints to examine the role of bargaining power and self-ration constraints.

4. Empirical results

4.1. Benchmark results

This section presents the estimation results. Table 4 illustrates the benchmark results without controlling the endogeneity problem by using both pooled OLS and GMM estimators. It shows a negative relationship between trade credit and government contracts. This result is aligned with Xu and Dao (2020), who find that government contractors demand less trade credit because of the following reasons: lower level of operational risk because of shifting risk from the contractor to the government, firms' better performance due to an increase in knowledge, and lower cost of borrowing from other sources. Having a contract with the government reduces the receipt of trade credit by 2% in column (1) with pooled OLS and 3% in column (2) with a GMM estimator.

Table 4. Benchmark results without controlling endogeneity problem

	(1)	(2)
	Pooled OLS	GMM
VARIABLES	TC	TC
GC	-0.02*** (0.005)	-0.03*** (0.005)
LnSale	0.01*** (0.001)	0.01*** (0.001)
LnSize	0.03*** (0.002)	0.03*** (0.002)
LnAge	0.01*** (0.003)	0.02*** (0.003)
LnManager	-0.00 (0.003)	0.03*** (0.003)
Innovation	0.02*** (0.004)	0.02*** (0.004)
Exportshare	-0.01** (0.007)	-0.02** (0.008)
Import	0.02*** (0.004)	0.03*** (0.004)
Foreign	0.02*** (0.006)	0.02** (0.007)
Certification	0.01** (0.005)	0.04*** (0.005)
Connection	0.01 (0.004)	0.09*** (0.005)
Foreigntech	-0.00 (0.005)	-0.02*** (0.006)
Constant	-0.27 (6,380.063)	0.04*** (0.014)
Observations	33,435	33,510
R-squared	0.288	

Standard errors in parentheses
 *** p < 0.01, ** p < 0.05, * p < 0.1

As the endogeneity problem leads to biased estimation, from now, we report the estimation results after controlling for the endogeneity issue. We fix the endogeneity bias by employing the sector-location average of government contracts as an instrumental variable (GC^{IV}). We conduct endogeneity tests for the validity of instrumental variables and report the results in Table 5. First, the Hausman test of endogeneity shows significant χ^2 in the model using GC. The results show that the endogeneity of government contracts may lead to a problem in our study. Thus, the potential endogeneity should not be disregarded. Second, the LM statistics of the under-identification test indicate that the χ^2 statistics are significant, implying that our instrumental variable is appropriate. Finally, we determine the significant Cragg-Donald Wald F-statistic, which reveals that our instrumental variables are strong enough to reduce the endogeneity problem. These tests provide evidence that our instrumental variable is valid.

Table 5. Endogeneity test

GC (First stage model)	Coefficient
	GC
Hausman test of endogeneity [χ^2]	35.468 (0.000)
LM statistic (Under-identification test)	3258.688 (0.000)
Cragg-Donald Wald F-statistic (Weak identification test)	1.4e04 (0.000)

Note: We report endogeneity tests of GC on TC from the specification using 2SLS. p-values are in brackets.

Table 6 reports the benchmark results after controlling for endogeneity problems using two-stage regression. The negative relationship between government contracts and trade credit becomes more pronounced. In particular, the magnitude of the effect on trade credit increases nearly 1.5 times compared to the case without controlling for the endogeneity bias. This result supports hypothesis H1b.

Regarding the control variables in Table 6, the coefficients of the variable *LnSale* are positive and statistically significant, suggesting that the higher the company's productivity, the more trade credit they are granted. With a 1% growth in a firm's performance, a firm's ability to receive credit terms increases by 1%. Given liquidity, higher productivity leads to higher production, which is associated with a higher production cost that requires an increase in trade credit (Bougheas et al., 2009). Similarly, if the firm size, measured by the number of full-time employees, increases by 1%, the percentage share of total purchases after shipment goes up by 3%. This is consistent with the findings of Petersen and Rajan (1997) who show that larger firms have a higher credit quality and can, thus, ask for more trade credit extensions from suppliers. Moreover, more innovative firms are likely to receive trade credit. This finding aligns with that of Shahzad et al. (2021).

The orientation toward the foreign market plays a critical role in driving the usage of trade credit. Firms that have import activities, are owned by foreign investors, and have foreign certificates, tend to receive more trade credit. Global sourcing contains higher risks than domestic purchases. Trade credit reduces the commercial risks of late shipping or wrong delivery, as the importers check the quality of the goods before making payment (Ng et al., 1999). This result is also consistent with Demir and Javorcik (2018), as importers tend to receive more trade credit extensions from their suppliers than non-importers. International certificates reveal high-quality products, while foreign ownerships support firms to connect with a wider network to seek potential investment. These factors enhance firms' reputations. If the product being sold is certified, product risk and asymmetric information are lower. When products are sold with a warranty, the buyer can return the goods without incurring extra costs in case the quality of the goods does not meet the contract requirement. Thus, firms that have a good sign of creditworthiness increase their probability of receiving more trade credit from suppliers. Once the information for creditworthiness is available in general, firms can obtain credit from a broader set of suppliers and increase the level of trade credit they receive (Fisman & Raturi, 2004).

4.2. The moderating role of bargaining power, financial, and institutional constraints

Next, we run a regression of the data in the sub-sample by size and report the results in Table 7. According to the Enterprise Surveys conducted by the World Bank, a firm is defined as small if they have less than 19 employees, medium if they have 20–99 employees, and large if they have more than 100 employees. The t-test used to check the difference in GC between two subgroups shows that it is statistically different at the 1% level. While having a government contract decreases the use of trade credit for both SMEs and large-sized firms, the effects are more prominent in large-sized firms. This confirms hypothesis H2a. Further, government contractors can enjoy easy access

Table 6. Benchmark results with controlling endogeneity problem: two-stage regression

	(1)	(2)
	first stage	second stage
VARIABLES	GC	TC
GC ^{IV}	0.98*** (0.009)	
GC		-0.03*** (0.010)
LnSale	0.00*** (0.001)	0.01*** (0.001)
LnSize	0.01*** (0.002)	0.03*** (0.002)
LnAge	0.01*** (0.002)	0.01*** (0.003)
LnManager	0.00 (0.003)	-0.00 (0.003)
Innovation	0.04*** (0.004)	0.02*** (0.004)
Exportshare	-0.07*** (0.007)	-0.02** (0.007)
Import	0.02*** (0.004)	0.02*** (0.004)
Foreign	-0.02*** (0.006)	0.02*** (0.006)
Certification	0.02*** (0.005)	0.01** (0.005)
Connection	0.03*** (0.004)	0.01 (0.004)
Foreigntech	0.03*** (0.005)	-0.00 (0.005)
Constant	-0.01 (0.347)	0.14 (0.370)
Observations	33,435	33,435
R-squared	0.328	0.288

Standard errors in parentheses

*** p < 0.01, ** p < 0.05, * p < 0.1

to other sources of financing, as they can provide credibility and certification for government contractors (Al-Thaqeb & Harper, 2016). Larger firms also have better access to conventional forms of financing, such as bank loans, as they tend to have a high level of creditworthiness (Petersen & Rajan, 1997). Another explanation for the lower demand for trade credit by government contractors is that they can raise funds from other sources with lower costs (Dhaliwal et al., 2016). Moreover, lower levels of risk and better firm performance allow investors to see the stability of internal cash flows generated by firms with government contracts (Xu & Dao, 2020).

Furthermore, we examine the moderating role of financial constraints on the effect of government contracts on trade credit. Jappelli (1990) underscores the perception of discouraged borrowers. This concept is reinforced by the vast empirical literature to support the use of answers to survey questions to realize the financially-constrained firms rather than using firm characteristics

(Minetti et al., 2019; Nucci et al., 2021). Based on this research, we employ the information in the survey in which the self-evaluation of financial constraints is addressed in one question. Firms are asked to report the level of difficulty they face when accessing the source of finance. We re-classify the answers on a 5-point Likert scale into three groups: no obstacle, modest obstacle (consisting of minor or moderate obstacles), and severe obstacle (including major and very severe obstacles). We denote financial unconstraint if the firm states the first two classifications and financial constraint if the firm suffers from the last one. The t-test used to examine the difference of GC between financial constraint samples indicates that it is statistically different at the 1% level.

We run a regression of equation (3) in each sub-sample by self-rating and present the results in Table 8. It is now evident that the effect of government contracts on the use of trade credit is particularly strong in financially constrained firms than in financially-unconstrained ones. A possible explanation may be that firms may face bank loan rejection due to weak financial reports. Government contracts can mitigate this asymmetric information and enhance a firm's

Table 7. Regression results with subsample by size

	(1)	(2)
	SMEs	Large-sized firms
VARIABLES	TC	TC
GC ^{IV}	-0.04*** (0.012)	-0.1** (0.002)
LnSale	0.01*** (0.002)	0.01*** (0.002)
LnSize	0.04*** (0.003)	0.01*** (0.004)
LnAge	0.01*** (0.003)	0.01* (0.005)
LnManager	-0.00 (0.004)	0.01 (0.006)
Innovation	0.02*** (0.005)	0.03*** (0.009)
Exportshare	-0.01 (0.009)	-0.02 (0.011)
Import	0.01*** (0.005)	0.03*** (0.009)
Foreign	0.02** (0.009)	0.02* (0.009)
Certification	0.01 (0.006)	0.01* (0.008)
Connection	0.01** (0.005)	-0.02* (0.009)
Foreigntech	0.01 (0.007)	-0.01* (0.008)
Constant	-0.16 (0.366)	-0.09 (0.351)
Observations	24,973	8,462
R-squared	0.271	0.322

Standard errors in parentheses
 *** p < 0.01, ** p < 0.05, * p < 0.1

Table 8. Regression results with subsample by financial constraints

	(1)	(2)
	No financial constraints	Financial constraints
VARIABLES	TC	TC
GC ^{IV}	-0.03*** (0.012)	-0.05*** (0.011)
LnSale	0.01*** (0.002)	0.01*** (0.003)
LnSize	0.03*** (0.002)	0.03*** (0.004)
LnAge	0.01*** (0.003)	0.00 (0.005)
LnManager	-0.00 (0.004)	0.00 (0.006)
Innovation	0.02*** (0.005)	0.02** (0.009)
Exportshare	-0.01 (0.008)	-0.04*** (0.016)
Import	0.02*** (0.005)	0.01 (0.008)
Foreign	0.02*** (0.007)	0.03** (0.014)
Certification	0.01** (0.005)	-0.00 (0.011)
Connection	0.00 (0.005)	0.01 (0.009)
Foreigntech	-0.01 (0.006)	0.02** (0.012)
Constant	-0.19 (0.403)	-0.68 (0.417)
Observations	25,203	8,232
R-squared	0.295	0.277

Standard errors in parentheses
 *** p < 0.01, ** p < 0.05, * p < 0.1

capabilities to receive funds from financial institutions (Flammer, 2018). Moreover, firms that have relationships with governments have better access to loans (Claessens et al., 2008; Fan et al., 2008) and enjoy more favorable access to equity markets (Boubakri et al., 2012; Francis et al., 2009).

Thus, we build the financial constraints based on a firm's self-evaluation regarding its level of financial obstacle. We extend this by combining the self-evaluation with information from the clarification of why a firm does not have credit lines or loans from financial institutions. Indeed, we construct a new financial constraint such that a firm confronts severe obstacles and has no loans from a financial institution because it did not submit for a loan due to one or more of the following reasons that hindered it from doing so: very complex procedures (Johnson et al., 1996), less competitive interest rates (Frangos et al., 2012; Schwartz, 1974) or expectation that the loan submission would be denied due to their financial constraints (Mateut & Chevapatrakul, 2018).

Table 9. Regression results with subsample by alternative measure of financial constraints

	(1)	(2)
	No financial constraints	Financial constraints
VARIABLES	TC	TC
GC ^{IV}	-0.02*	-0.08***
	(0.011)	(0.021)
LnSale	0.01***	0.01***
	(0.002)	(0.002)
LnSize	0.03***	0.03***
	(0.002)	(0.004)
LnAge	0.01***	0.01***
	(0.003)	(0.005)
LnManager	-0.01	0.00
	(0.004)	(0.006)
Innovation	0.01***	0.02**
	(0.005)	(0.009)
Exportshare	-0.01	-0.03*
	(0.008)	(0.016)
Import	0.02***	0.01
	(0.005)	(0.009)
Foreign	0.03***	0.01
	(0.007)	(0.014)
Certification	0.01	0.01
	(0.005)	(0.011)
Connection	0.00	0.02*
	(0.005)	(0.009)
Foreigntech	-0.00	0.00
	(0.006)	(0.012)
Constant	0.02	0.15
	(0.327)	(0.473)
Observations	24,978	8,457
R-squared	0.296	0.254

Standard errors in parentheses

*** p < 0.01, ** p < 0.05, * p < 0.1

In our sample, 25.3% of firms confronted these new financial constraints compared to 24.6% in our benchmark financial constraints. The new estimation results reported in [Table 9](#) align with our main findings. These results support hypothesis H2b.

In the following analysis, we investigate the effects of specific kinds of institutional constraints. In this study, we define an institutional constraint based on a firm's self-assessment of the degree of obstacles influencing its business operations. We used four types of institutional constraints: corruption, political instability, tax administration, and business licensing. Under each type of constraint, we classify a firm as confronting that specific constraint if the firm stated it as a major or very severe obstacle, and as not confronting that constraint if the firm stated it as a minor or moderate obstacle or no obstacle at all.

Table 10. Regression results with subsample by institutional constraints

VARIABLES	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Corruption		Political		Political		Political		Tax		Tax		License		License	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
GC ^{IV}	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC
	-0.02**	-0.04**	-0.03***	-0.04*	-0.03***	-0.04*	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.08***	-0.03***	-0.03***	-0.05**	-0.05**
	(0.012)	(0.017)	(0.012)	(0.019)	(0.012)	(0.019)	(0.012)	(0.019)	(0.011)	(0.011)	(0.011)	(0.022)	(0.011)	(0.011)	(0.024)	(0.024)
LnSale	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.003)	(0.003)
LnSize	0.03***	0.03***	0.03***	0.02***	0.03***	0.02***	0.03***	0.02***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)	(0.004)
LnAge	0.01***	0.00	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01	0.01***	0.01***	0.00	0.00
	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)	(0.006)
LnManager	-0.01	0.00	0.00	-0.01***	0.00	-0.01***	0.00	-0.01***	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00	0.00	0.00
	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.003)	(0.003)	(0.003)	(0.007)	(0.003)	(0.003)	(0.008)	(0.008)
Innovation	0.02***	0.02***	0.02***	0.01*	0.02***	0.01*	0.02***	0.01*	0.02***	0.02***	0.02***	0.02**	0.02***	0.02***	0.03***	0.03***
	(0.005)	(0.008)	(0.005)	(0.008)	(0.005)	(0.008)	(0.005)	(0.008)	(0.005)	(0.005)	(0.005)	(0.010)	(0.005)	(0.005)	(0.012)	(0.012)
Exportshare	-0.01	-0.04***	-0.01	-0.04***	-0.01	-0.04***	-0.01	-0.04***	-0.01*	-0.01*	-0.01*	-0.02	-0.01	-0.01	-0.05***	-0.05***
	(0.009)	(0.013)	(0.009)	(0.013)	(0.009)	(0.013)	(0.009)	(0.013)	(0.008)	(0.008)	(0.008)	(0.017)	(0.008)	(0.008)	(0.020)	(0.020)
Import	0.02***	0.02**	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.01	0.02***	0.02***	0.02	0.02
	(0.005)	(0.007)	(0.005)	(0.007)	(0.005)	(0.007)	(0.005)	(0.007)	(0.005)	(0.005)	(0.005)	(0.009)	(0.005)	(0.005)	(0.011)	(0.011)
Foreign	0.02***	0.03**	0.03***	0.01	0.03***	0.01	0.03***	0.01	0.02***	0.02***	0.03**	0.03**	0.02***	0.02***	0.03	0.03
	(0.008)	(0.011)	(0.008)	(0.011)	(0.008)	(0.011)	(0.008)	(0.011)	(0.007)	(0.007)	(0.014)	(0.014)	(0.007)	(0.007)	(0.017)	(0.017)
Certification	0.02***	-0.01	0.01**	0.01	0.01**	0.01	0.01**	0.01	0.01**	0.01**	0.01	0.01	0.01**	0.01**	0.01	0.01
	(0.006)	(0.008)	(0.006)	(0.009)	(0.006)	(0.009)	(0.006)	(0.009)	(0.005)	(0.005)	(0.011)	(0.011)	(0.005)	(0.005)	(0.013)	(0.013)
Connection	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01
	(0.005)	(0.007)	(0.005)	(0.008)	(0.005)	(0.008)	(0.005)	(0.008)	(0.005)	(0.005)	(0.010)	(0.010)	(0.005)	(0.005)	(0.012)	(0.012)

(Continued)

Table 10. (Continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Corruption		Political		Tax		License	
Foreigntech	-0.01 (0.007)	0.01 (0.009)	-0.00 (0.006)	0.00 (0.010)	-0.01 (0.006)	0.02 (0.012)	-0.01 (0.006)	0.01 (0.014)
Constant	-0.69* (0.386)	-0.37 (0.462)	-0.57 (0.483)	-0.84* (0.452)	-0.38 (0.463)	-0.08 (0.328)	-0.33 (0.368)	0.22 (0.482)
Observations	22,024	11,411	22,410	11,025	26,538	6,897	28,768	4,667
R-squared	0.287	0.306	0.290	0.292	0.285	0.319	0.286	0.338

Standard errors in parentheses
 *** p < 0.01, ** p < 0.05, * p < 0.1

We run a regression of each sub-sample of institutional constraints. The results are reported in Table 10. This analysis is essential for examining the moderating effects of the level of constraint on an association between government contracts and trade credit. The results indicate that the impacts of government contracts on trade credit are stronger if firms recognize corruption, political instability, tax administration, and business licensing as major or severe obstacles to their current business operation. The t-test statistics used to check the difference in GC between different subgroups suggest that they are all statistically different at the 1% level. Our empirical results support our previous prediction (hypothesis H2c) of the negative effect of institutional constraints by emphasizing that a higher severity level of institutional constraint leads to additional challenges for a firm's operations. Specifically, in a country with severe corruption, a government contract reduces the use of trade credit to 4%. Weaker institutions may cause greater institutional inefficiencies, and therefore, lead to barriers to obtaining trade credit. Indeed, Jovanovic (1982) shows that being a government contractor is a determinant of firms with economic efficiency. In the context of corruption, Vendrell-Herrero et al. (2022) conclude that this is not a credible signal. Therefore, government contractors tend to receive fewer trade credits from business partners.

Table 11. Government contractor's performance

VARIABLES	(1) Profitmargin
GC ^{IV}	0.04*** (0.011)
LnSize	-0.00 (0.002)
LnAge	0.00 (0.003)
LnManager	-0.01** (0.004)
Innovation	-0.02*** (0.005)
Exportshare	0.01 (0.008)
Import	-0.00 (0.005)
Foreign	0.03*** (0.007)
Certification	0.02*** (0.006)
Connection	0.01*** (0.005)
Foreigntech	0.02*** (0.006)
Constant	0.54 (0.368)
Observations	29,685
R-squared	0.020

Standard errors in parentheses
 *** p < 0.01, ** p < 0.05, * p < 0.1

4.3. Further analysis

So far, we have documented a negative association between government contracts and trade credit, arising from at least two potential sources. The first source is the direct channel from the government, i.e., the contract's feature with the government is different from that with private sectors. The second source is the indirect channel through the signaling role of the government contracts. Having contracts with the government can reflect the quality of the contractors. In this section, we make some effort to separate these two channels.

In the first channel, government contractors have lower operational risks, as their customers (i.e., the government) are less likely to go bankrupt, compared to other customers. Further, the long-term nature of government contracts causes a low likelihood of the government changing to a new contractor, which further reduces the operational risk of government contractors and thereby the firms' operational costs. These lower costs coupled with the knowledge accumulated from government contracts allow firms to achieve better corporate performance. To examine this channel, we run a regression of firm productivity on GC. We compute profit margin (*Profitmargin*) as a ratio of profit to total sales and use it as a proxy for firm productivity.⁴ We report the estimation results in Table 11. Consistent with our prediction, GC is positively correlated with

Table 12. Government contractor's quality

VARIABLES	(1) Certification	(2) Audit
GC ^{IV}	0.07*** (0.024)	0.21*** (0.023)
LnSale	0.05*** (0.006)	0.06*** (0.006)
LnSize	0.34*** (0.008)	0.31*** (0.008)
LnAge	0.14*** (0.013)	0.05*** (0.012)
LnManager	-0.01 (0.016)	0.00 (0.014)
Innovation	0.16*** (0.022)	0.13*** (0.019)
Exportshare	0.46*** (0.033)	0.05 (0.032)
Import	0.14*** (0.022)	0.08*** (0.019)
Foreign	0.25*** (0.029)	0.33*** (0.030)
Connection	0.58*** (0.021)	0.23*** (0.019)
Foreigntech	0.28*** (0.024)	0.18*** (0.025)
Constant	-3.54*** (0.403)	-1.69** (0.720)
Observations	33,283	33,428

Standard errors in parentheses

*** p < 0.01, ** p < 0.05, * p < 0.1

Profitmargin, revealing that government contractors exhibit better corporate performance than non-government contractors.

In the second channel, we examine the signaling role of the government contract by checking whether contracting with the government is associated with higher quality. We expect that higher-quality firms have an internationally recognized quality certification (*Certification*) or an annual financial statement checked and certified by an external auditor (*Audit*). The regression results of GC on these quality variables confirm our expectations (see, [Table 12](#)).

Finally, the relationship between trade credit and government contracts may vary across income groups due to a number of reasons, such as differences in cultures (El Ghoul & Zheng, 2016). In our sample, lower middle-income countries (LMIC) account for 49.3%, followed by upper middle-income countries (UMIC) (39.28%), high-income countries (HIC) (6.33%), and low-income countries

Table 13. Regression results with subsample by income groups

	(1)	(2)	(3)	(4)
	LIC	LMIC	UMIC	HIC
VARIABLES	TC	TC	TC	TC
GC ^{IV}	-0.05 (0.034)	-0.03** (0.016)	-0.05*** (0.016)	0.04 (0.039)
LnSale	0.00 (0.006)	0.02*** (0.002)	0.03*** (0.003)	0.04*** (0.008)
LnSize	0.02** (0.008)	0.03*** (0.002)	0.04*** (0.003)	0.02*** (0.007)
LnAge	0.03** (0.012)	0.01*** (0.004)	0.00 (0.004)	-0.01 (0.011)
LnManager	-0.01 (0.013)	-0.00 (0.004)	-0.00 (0.005)	0.00 (0.013)
Innovation	0.03 (0.020)	0.02*** (0.006)	-0.00 (0.007)	0.00 (0.017)
Exportshare	-0.01 (0.035)	-0.02* (0.010)	-0.01 (0.013)	0.02 (0.027)
Import	0.03 (0.018)	0.02** (0.006)	0.04*** (0.007)	0.01 (0.019)
Foreign	0.06** (0.023)	0.03*** (0.009)	0.02** (0.011)	0.02 (0.025)
Certification	-0.05** (0.026)	-0.00 (0.007)	0.01 (0.008)	0.00 (0.018)
Connection	-0.00 (0.021)	-0.00 (0.007)	0.01 (0.007)	0.02 (0.019)
Foreigntech	-0.03 (0.024)	0.00 (0.008)	0.00 (0.009)	-0.03 (0.021)
Constant	-0.19 (0.322)	-0.80** (0.331)	0.11 (0.322)	-0.11 (0.360)
Observations	1,598	15,449	12,345	1,991
R-squared	0.167	0.232	0.246	0.149

Standard errors in parentheses
 *** p < 0.01, ** p < 0.05, * p < 0.1

(LIC) (5.08%). We run a regression of each sub-sample of income groups and report the results in [Table 13](#). The effect of government contracts on trade credit becomes evident in LMIC and UMIC, whereas it plays no role in LIC and HIC.

5. Conclusion

In this paper, we examine whether public procurement affects firms' use of trade credit as a type of short-term financing. We use rich data from World Bank Enterprises Survey with 33,510 observations, covering 100 countries from 2007 to 2019. Our empirical results show that government contractors negatively impact the level of trade credit that firms receive. These effects are particularly strong when firms have higher bargaining power and more severe financial and institutional constraints. These findings suggest that government contracts affect firms' short-term financing decisions. Our study generalizes Xu and Dao's (2020) findings of a negative relationship found in a developed country to a broader context of cross-country data and different constraints facing firms. Moreover, as our research period corresponds to the recent financial crisis in which most central banks conducted contractionary monetary policy, trade credit may play an important role in absorbing the effect of a credit contraction (Choi & Kim, 2005). During this period, instead of increasing public procurement, which harms the use of trade credit, governments should formulate and implement policies that can improve the business environment to boost enterprises' productivity and attract foreign investments, leading to higher use of trade credit. Next, while Xu and Dao (2020) study the US, one of the most developed countries, our paper investigates the relationship between government contracts and trade credit in a large sample of countries (100 countries), including low-, lower middle-, upper middle-, and high-income countries. We confirm that the negative relationship is also true for a large set of countries. Furthermore, this effect becomes more pronounced for lower middle- and upper middle-income countries. Lastly, governments should have special mechanisms to support their contractors who deal with financial and institutional constraints to increase their opportunities to gain trade credit. In terms of managerial implications, government contractors, especially large-sized firms, can utilize more in their relationship with governments to ask for more trade credit to reduce transaction costs.

A drawback of our paper is that we do not distinctly investigate whether firms have contracts with local or central authorities. The effects of each kind of government body may be diverse. We leave this drawback for future studies that could distinguish between trade credit for firms with contracts with local and central authorities. Another drawback of our paper is that our study uses cross-sectional data, and so, we cannot control the factors that change over time and affect each country. The use of panel data can help to fix this problem. Lastly, our paper compares the use of trade credit between all government contractors and non-contractors, without considering the duration of the relationship between the firms and the government customers. It calls for future research to reveal whether the length of government customer-supplier relationships matters.

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Author details

Tran Manh Ha¹
Doan Ngoc Thang²
E-mail: ngocthangdoan@hvn.edu.vn
ORCID ID: <http://orcid.org/0000-0003-4395-9476>
Luong Van Dat²
Do Phu Dong²
Nguyen Thi Hong Hai²

¹ Banking Academy of Vietnam, Hanoi, Vietnam.

² International Trade Financing Department, International Business Faculty, Banking Academy of Vietnam, Hanoi, Vietnam.

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Notes

1. In this paper, trade credit refers to account payables, as this is a vital form of short-term financing that a firm receives from its trading partners.
2. The data that support the findings of this study are available from the corresponding author upon reasonable request.
3. In Xu and Dao (2020), the average of trade credit is only 11.23% in the U.S. listed firms, but they define trade credit measure as the ratio of account payable to the book value of total assets. The average trade credit taken to assets ratio is about 25% in

Mateut and Chevapatrakul (2018) and 23.6% in Boissay and Gropp (2013) for French manufacturing.

4. As the survey contains no information on the total asset or equity, we cannot compute returns on assets (ROA) or returns on equity (ROE). In addition, as the information of cost is omitted in many observations, the number of observations decreases significantly.

References

- Acemoglu, D., & Verdier, T. (1998). Property rights, corruption and the allocation of talent: A general equilibrium approach. *The Economic Journal*, 108(450), 1381–1403. <https://doi.org/10.1111/1468-0297.00347>
- Aguilera, R. V., Desender, K. A., & Kabbach de Castro, L. R. (2012). A bundle perspective to comparative corporate governance. Clarke, T., Branson, D. *The SAGE Handbook of Corporate Governance* (Sage), 379–405. <https://uk.sagepub.com/en-gb/eur/the-sage-handbook-of-corporate-governance/book230401>.
- Al-Thaqeb, S. A., & Harper, J. T. (2016). Is government a unique customer? The Impact of Government as a Major Customer on Corporate Cash Holdings (Oklahoma State University). <https://shareok.org>.
- Amberg, N., Jacobson, T., & von Schedvin, E. (2021). Trade credit and product pricing: The role of implicit interest rates. *Journal of the European Economic Association*, 19(2), 709–740. <https://doi.org/10.1093/jeea/jvaa007>
- Amoako, I. O., Akwei, C., & Damoah, I. (2020). “We know their house, family, and workplace”: Trust in entrepreneurs’ trade credit relationships in weak institutions. *Journal of Small Business Management*, 1–30. <https://doi.org/10.1111/jsbm.12488>
- Anderson, J., & Lee, R. P. (2016). The Influence of Political Ties on Government Contracts and Firm Performance AMA Winter Educators’ Conference Proceedings Georgia, USA 27), 5–14. <https://www.nheducatorresources.com/eds/detail?db=eue&an=120167853>.
- Auriol, E., Straub, S., & Flochel, T. (2016). Public procurement and rent-seeking: The case of Paraguay. *World Development*, 77, 395–407. <https://doi.org/10.1016/j.worlddev.2015.09.001>
- Bajari, P., & Tadelis, S. (2001). Incentives versus transaction costs: A theory of procurement contracts. *Rand Journal of Economics*, 32(3), 387–407. <https://doi.org/10.2307/2696361>
- Baldi, S., Bottasso, A., Conti, M., & Piccardo, C. (2016). To bid or not to bid: That is the question: Public procurement, project complexity and corruption. *European Journal of Political Economy*, 43, 89–106. <https://doi.org/10.1016/j.ejpoleco.2016.04.002>
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2006). Bank supervision and corruption in lending. *Journal of Monetary Economics*, 53(8), 2131–2163. <https://doi.org/10.1016/j.jmoneco.2005.10.014>
- Beck, T., & Demirgüç-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, 30(11), 2931–2943. <https://doi.org/10.1016/j.jbankfin.2006.05.009>
- Biais, B., & Gollier, C. (1997). Trade credit and credit rationing. *Review of Financial Studies*, 10(4), 903–937. <https://doi.org/10.1093/rfs/10.4.903>
- Bliss, M. A., & Gul, F. A. (2012). Political connection and cost of debt: Some Malaysian evidence. *Journal of Banking & Finance*, 36(5), 1520–1527. <https://doi.org/10.1016/j.jbankfin.2011.12.011>
- Boissay, F., & Gropp, R. (2013). Payment defaults and interfirm liquidity provision*. *Review of Finance*, 17(6), 1853–1894. <https://doi.org/10.1093/rof/rfs045>
- Boubakri, N., Guedhami, O., Mishra, D., & Saffar, W. (2012). Political connections and the cost of equity capital. *Journal of Corporate Finance*, 18(3), 541–559. <https://doi.org/10.1016/j.jcorpfin.2012.02.005>
- Bougheas, S., Mateut, S., & Mizen, P. (2009). Corporate trade credit and inventories: New evidence of a trade-off from accounts payable and receivable. *Journal of Banking & Finance*, 33(2), 300–307. <https://doi.org/10.1016/j.jbankfin.2008.07.019>
- Brick, I. E., & Fung, W. K. H. (1984). The effect of taxes on the trade credit decision. *Financial Management*, 13(2), 24. <https://doi.org/10.2307/3665443>
- Brown, J. R., & Huang, J. (2020). All the president’s friends: Political access and firm value. *Journal of Financial Economics*, 138(2), 415–431. <https://doi.org/10.1016/j.jfineco.2020.05.004>
- Burke, Q., Convery, A., & Skaife, H. A. (2015). Government contracting and the continuation as a going concern. Working paper Miami University. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2388989.
- Cao, J., Hsieh, S., & Kohlbeck, M. (2013). *Major customers and management earnings forecasts*. Working paper. Florida Atlantic University.
- Cho, W., Ke, J. F., & Han, C. (2019). An empirical examination of the use of bargaining power and its impacts on supply chain financial performance. *Journal of Purchasing and Supply Management*, 25(4), 100550. <https://doi.org/10.1016/j.pursup.2019.100550>
- Choi, W. G., & Kim, Y. (2005). Trade credit and the effect of Macro-Financial shocks: Evidence from U.S. panel data. *The Journal of Financial and Quantitative Analysis*, 40(4), 897–925. <https://doi.org/10.1017/S0022109000002027>
- Claessens, S., Feijen, E., & Laeven, L. (2008). Political connections and preferential access to finance: The role of campaign contributions. *Journal of Financial Economics*, 88(3), 554–580. <https://doi.org/10.1016/j.jfineco.2006.11.003>
- Cohen, L., & Malloy, C. J. (2016). Mini West Virginias: Corporations as Government Dependents 2758835 (SSRN)<https://dx.doi.org/10.2139/ssrn.2758835>.
- Cull, R., Xu, L. C., & Zhu, T. (2009). Formal finance and trade credit during China’s transition. *Journal of Financial Intermediation*, 18(2), 173–192. <https://doi.org/10.1016/j.jfi.2008.08.004>
- Dass, N., Kale, J. R., & Nanda, V. (2015). Trade credit, relationship-specific investment, and product market power. *Review of Finance*, 19(5), 1867–1923. <https://doi.org/10.1093/rof/rfu038>
- Decker, S. (2011). Corporate political activity in less developed countries: The volta river project in Ghana, 1958–66. *Business History*, 53(7), 993–1017. <https://doi.org/10.1080/00076791.2011.618223>
- Demir, B., & Javorcik, B. (2018). Don’t throw in the towel, throw in trade credit! *Journal of International Economics*, 111, 177–189. <https://doi.org/10.1016/j.jinteco.2018.01.008>
- Demirgüç-Kunt, A., & Maksimovic, V. (1999). Institutions, financial markets, and firm debt maturity. *Journal of Financial Economics*, 54(3), 295–336. [https://doi.org/10.1016/S0304-405X\(99\)00039-2](https://doi.org/10.1016/S0304-405X(99)00039-2)
- Dhaliwal, D., Judd, J. S., Serfling, M., & Shaikh, S. (2016). Customer concentration risk and the cost of equity capital. *Journal of Accounting and Economics*, 61(1), 23–48. <https://doi.org/10.1016/j.jaccoco.2015.03.005>
- Dinc, I. (2005). Politicians and banks: Political influences on government-owned banks in emerging markets. *Journal of Financial Economics*, 77(2), 453–479. <https://doi.org/10.1016/j.jfineco.2004.06.011>

- El Ghouli, S., & Zheng, X. (2016). Trade credit provision and national culture. *Journal of Corporate Finance*, 41, 475–501. <https://doi.org/10.1016/j.jcorpfin.2016.07.002>
- Fabbri, D., & Menichini, A. M. C. (2010). Trade credit, collateral liquidation, and borrowing constraints. *Journal of Financial Economics*, 96(3), 413–432. <https://doi.org/10.1016/j.jfineco.2010.02.010>
- Fabbri, D., & Klapper, L. F. (2016). Bargaining power and trade credit. *Journal of Corporate Finance*, 41, 66–80. <https://doi.org/10.1016/j.jcorpfin.2016.07.001>
- Faccio, M. (2006). Politically connected firms. *American Economic Review*, 96(1), 369–386. <https://doi.org/10.1257/000282806776157704>
- Fan, J. P. H., Rui, O. M., & Zhao, M. (2008). Public governance and corporate finance: Evidence from corruption cases. *Journal of Comparative Economics*, 36(3), 343–364. <https://doi.org/10.1016/j.jce.2008.05.001>
- Fazzari, S. M., & Athey, M. J. (1987). Asymmetric information, financing constraints, and investment. *The Review of Economics and Statistics*, 69(3), 481–487. <https://doi.org/10.2307/1925536>
- Fisman, R. (2001). Estimating the value of political connections. *American Economic Review*, 91(4), 1095–1102. <https://doi.org/10.1257/aer.91.4.1095>
- Fisman, R., & Love, I. (2003). Trade credit, financial intermediary development, and industry growth. *The Journal of Finance*, 58(1), 353–374. <https://doi.org/10.1111/1540-6261.00527>
- Fisman, R., & Raturi, M. (2004). Does competition encourage credit provision? Evidence from African trade credit relationships. *The Review of Economics and Statistics*, 86(1), 345–452. doi:10.1162/003465304323023859.
- Fisman, R., & Svensson, J. (2007). Are corruption and taxation really harmful to growth? Firm level evidence. *Journal of Development Economics*, 83(1), 63–75. <https://doi.org/10.1016/j.jdeveco.2005.09.009>
- Flammer, C. (2018). Competing for government procurement contracts: The role of corporate social responsibility. *Strategic Management Journal*, 39(5), 1299–1324. <https://doi.org/10.1002/smj.2767>
- Fontaine, P., & Zhao, S. (2021). Suppliers as financial intermediaries: Trade credit for undervalued firms. *Journal of Banking & Finance*, 124, 106043. <https://doi.org/10.1016/j.jbankfin.2021.106043>
- Francis, B. B., Hasan, I., & Sun, X. (2009). Political connections and the process of going public: Evidence from China. *Journal of International Money and Finance*, 28(4), 696–719. <https://doi.org/10.1016/j.jimonfin.2009.01.002>
- Frangos, C., Fragkos, K., Sotiropoulos, I., Manolopoulos, G., & Valvi, A. (2012). Factors affecting customers' decision for taking out bank loans: A case of Greek customers. *Journal of Marketing Research and Case Studies* 2012, 1–16. <https://doi.org/10.5171/2012.927167>
- Ha, L. T., Nam, P. X., & Thanh, T. T. (2021). Effects of bribery on firms' environmental innovation adoption in Vietnam: Mediating roles of firms' bargaining power and credit and institutional constraints. *Ecological Economics*, 185, 107042. doi:10.1016/j.ecolecon.2021.107042.
- Habib, A., Hasan, M. M., Bhuiyan, M., & Uddin, B. (2015). *Customer Concentration, Corporate Social Responsibility and Idiosyncratic Risk*. March 29, 2015. doi:10.2139/ssrn.2586588.
- Hoang, C., Xiao, Q., & Akbar, S. (2019). Trade credit, firm profitability, and financial constraints: Evidence from listed SMEs in East Asia and the pacific. *International Journal of Managerial Finance*, 15(5), 744–770. <https://doi.org/10.1108/IJMF-09-2018-0258>
- Hoefele, A., Schmidt-Eisenlohr, T., & Yu, Z. (2016). Payment choice in international trade: Theory and evidence from cross-country firm-level data. *Canadian Journal of Economics/Revue Canadienne D'économique*, 49(1), 296–319. <https://doi.org/10.1111/caje.12198>
- Hoekman, B. (1998). Using international institutions to improve public procurement. *The World Bank Research Observer*, 13(2), 249–269. <https://doi.org/10.1093/wbro/13.2.249>
- Houston, J. F., Jiang, L., Lin, C., & Ma, Y. (2014). Political connections and the cost of bank loans: Political connections and the cost of bank loans. *Journal of Accounting Research*, 52(1), 193–243. <https://doi.org/10.1111/1475-679X.12038>
- Huang, H. H., Lobo, G. J., Wang, C., & Xie, H. (2016). Customer concentration and corporate tax avoidance. *Journal of Banking & Finance*, 72, 184–200. <https://doi.org/10.1016/j.jbankfin.2016.07.018>
- Hui, K. W., Klasa, S., & Yeung, P. E. (2012). Corporate suppliers and customers and accounting conservatism. *Journal of Accounting and Economics*, 53(1–2), 115–135. <https://doi.org/10.1016/j.jacc.2011.11.007>
- Huyghebaert, N. (2006). On the determinants and dynamics of trade credit use: Empirical evidence from business startups. *Journal of Business Finance & Accounting*, 33(1–2), 305–328. doi:10.1111/j.1468-5957.2006.001364.x.
- ICC. (2017). Rethinking trade & finance 2017. ICC Publication 884E, (1), 1–264. <https://cdn.iccwbo.org/content/uploads/sites/3/2017/06/2017-rethinking-trade-finance.pdf>.
- Jappelli, T. (1990). Who is credit constrained in the U. S. economy? *The Quarterly Journal of Economics*, 105(1), 219. <https://doi.org/10.2307/2937826>
- Johnson, M. D., Nader, G., & Fornell, C. (1996). Expectations, perceived performance, and customer satisfaction for a complex service: The case of bank loans. *Journal of Economic Psychology*, 17(2), 163–182. [https://doi.org/10.1016/0167-4870\(96\)00002-5](https://doi.org/10.1016/0167-4870(96)00002-5)
- Josephson, B. W., Lee, J.-Y., Mariadoss, B. J., & Johnson, J. L. (2019). Uncle Sam rising: Performance implications of business-to-government relationships. *Journal of Marketing*, 83(1), 51–72. <https://doi.org/10.1177/0022242918814254>
- Jovanovic, B. (1982). Selection and the evolution of industry. *Econometrica*, 50(3), 649–670. <https://doi.org/10.2307/1912606>
- Kurer, O. (1993). Clientelism, corruption, and the allocation of resources. *Public Choice*, 77(2), 259–273. Scopus. <https://doi.org/10.1007/BF01047869>
- La Porta, R., Lopez-De-Silanes, F., & Shleifer, A. (2002). Government ownership of banks. *The Journal of Finance*, 57(1), 265–301. <https://doi.org/10.1111/1540-6261.00422>
- Levine, R., Lin, C., & Xie, W. (2018). Corporate resilience to banking crises: The roles of trust and trade credit. *Journal of Financial and Quantitative Analysis*, 53(4), 1441–1477. <https://doi.org/10.1017/S0022109018000224>
- Liedong, T. A., & Rajwani, T. (2018). The impact of managerial political ties on corporate governance and debt financing: Evidence from Ghana. *Long Range Planning*, 51(5), 666–679. <https://doi.org/10.1016/j.lrp.2017.06.006>
- Long, M. S., Malitz, I. B., & Ravid, S. A. (1993). Trade credit, quality guarantees, and product marketability.

- Financial Management*, 22(4), 117. <https://doi.org/10.2307/3665582>
- Mateut, S., & Chevapatrakul, T. (2018). Customer financing, bargaining power and trade credit uptake. *International Review of Financial Analysis*, 59, 147–162. <https://doi.org/10.1016/j.irfa.2018.07.004>
- McWilliams, A., & Siegel, D. (2001). Corporate social responsibility: A theory of the firm perspective. *Academy of Management Review*, 26(1), 117–127. <https://doi.org/10.5465/amr.2001.4011987>
- Minetti, R., Murro, P., Rotondi, Z., & Zhu, S. C. (2019). Financial constraints, firms' supply chains, and internationalization. *Journal of the European Economic Association*, 17(2), 327–375. <https://doi.org/10.1093/jeea/jvx056>
- Nakanishi, Y. (2020). Interplay between cooperation and institutions: How Japanese airlines enhance bargaining power. *Journal of Co-Operative Organization and Management*, 8(2), 100120. <https://doi.org/10.1016/j.jcom.2020.100120>
- Ng, C. K., Smith, J. K., & Smith, R. L. (1999). Evidence on the determinants of credit terms used in interfirm trade. *The Journal of Finance*, 54(3), 1109–1129. <https://doi.org/10.1111/0022-1082.00138>
- Niskanen, J., & Niskanen, M. (2006). The determinants of corporate trade credit policies in a bank dominated financial environment: The case of Finnish small firms. *European Financial Management*, 12(1), 81–102. <https://doi.org/10.1111/j.1354-7798.2006.00311.x>
- Nucci, F., Pietrovito, F., & Pozzolo, A. F. (2021). Imports and credit rationing: A firm-level investigation. *The World Economy* 44 11 3141–3167 <https://onlinelibrary.wiley.com/doi/abs/10.1111/twec.13059>
- Petersen, M. A., & Rajan, R. G. (1997). Trade credit: Theories and evidence. *The Review of Financial Studies*, 10(3), 661–691. <https://doi.org/10.1093/rfs/10.3.661>
- Pfeffer, J., & Salancik, G. R. (2003). *The external control of organizations: A resource dependence perspective*. Stanford University Press.
- Rainey, H. G., & Bozeman, B. (2000). Comparing public and private organizations: Empirical research and the power of the a priori. *Journal of Public Administration Research and Theory*, 10(2), 447–470. <https://doi.org/10.1093/oxfordjournals.jpart.a024276>
- Rodríguez-Pose, A. (2013). Do institutions matter for regional development? *Regional Studies*, 47(7), 1034–1047. <https://doi.org/10.1080/00343404.2012.748978>
- Schwartz, R. A. (1974). An economic model of trade credit. *The Journal of Financial and Quantitative Analysis*, 9(4), 643. <https://doi.org/10.2307/2329765>
- Shahzad, U., Liu, J., Mahmood, F., & Luo, F. (2021). Corporate innovation and trade credit demand: Evidence from China. *Managerial and Decision Economics*, 42(6), 1591–1606. <https://doi.org/10.1002/mde.3329>
- Smith, J. K. (1987). Trade credit and informational asymmetry. *The Journal of Finance*, 42(4), 863–872. <https://doi.org/10.1111/j.1540-6261.1987.tb03916.x>
- Spekman, R. E. (1988). Strategic supplier selection: Understanding long-term buyer relationships. *Business Horizons*, 31(4), 75–81. [https://doi.org/10.1016/0007-6813\(88\)90072-9](https://doi.org/10.1016/0007-6813(88)90072-9)
- Uchida, H. (2006). Empirical determinants of bargaining power Regional Finance Workshop of the Research Institute of Economy, Trade, and Industry (RIETI) 01 May 2006 doi:<https://dx.doi.org/10.2139/ssrn.954534> Japan. . .
- Vendrell-Herrero, F., Darko, C., & Vaillant, Y. (2022). Firm productivity and government contracts: The moderating role of corruption. *Socio-Economic Planning Sciences*, 81 100899 . <https://doi.org/10.1016/j.seps.2020.100899>
- Wilner, B. S. (2000). The exploitation of relationships in financial distress: The case of trade credit. *The Journal of Finance*, 55(1), 153–178. <https://doi.org/10.1111/0022-1082.00203>
- WTO. (2014). *WTO | 2014 News items—Montenegro and New Zealand to join the WTO's Agreement on Government Procurement*. https://www.wto.org/english/news_e/news14_e/gpro_29oct14_e.htm
- Xu, H., & Dao, M. (2020). Government contracts and trade credit. *Advances in Accounting*, 49, 100473. <https://doi.org/10.1016/j.adiac.2020.100473>
- Zhai, P., & Ma, R. (2017). Does ownership structure affect trade credit policy in small-and medium-sized firms? Evidence from China. *Ensayos Sobre Política Económica*, 35(83), 130–138. <https://doi.org/10.1016/j.espe.2017.01.001>



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