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What Determines Interfirm Trade Credit? Empirical Evidence from the ASEAN

Sasidaran GOPALAN

Assistant Professor of Economics, Department of Innovation in Government and Society, College of Business and Economics, United Arab Emirates University, Abu Dhabi, sasi.gopalan@uaeu.ac.ae

Ketan REDDY

Post-Doctoral Research Associate, King's India Institute, King's College London, United Kingdom, p_ketan.reddy@kcl.ac.uk

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Abstract: *This paper empirically examines the link between the heterogeneity of firms and their probability of obtaining interfirm trade credit in Asia, with a specific focus on the Association of Southeast Asian Nations (ASEAN) bloc of economies. In doing so, the paper investigates the following three issues: to what extent firm size plays a role in obtaining trade credit, to what degree a firm's integration into global value chains affects its probability of obtaining trade credit, and the impact of agglomeration on firms' likelihood of obtaining trade credit.*

Keywords: Trade credit; Credit constraints; Small and medium enterprises; ASEAN; Global value chains

1. Motivation and Research Contribution

The importance of international trade to overall economic growth and development of emerging markets and developing economies (EMDEs) – especially those in Asia – cannot be overstated. Over the last few decades, one of the integral aspects of the region's growth story, including that of the Association of Southeast Asian Nations (ASEAN) bloc of economies, has been the role played by trade. This was at least true until the global financial crisis, when regional economies were leading the way in terms of increased trade integration with the rest of the world, including through their systematic engagement in global value chains (GVCs).

The post-global financial crisis phase was characterised by a creeping acceleration of protectionist trends, such as an increase in non-tariff barriers, which consequently slowed down the pace of integration in the region. Although these trends took a turn for the worse when the COVID-19 pandemic struck – aggravated particularly by the widespread disruptions to GVCs – recent empirical research reaffirmed how a systematic policy focus dedicated to resuming trade integration remains one of the most promising ways forward for the region to enact a robust post-pandemic recovery (IMF, 2021).

A fundamental driver of international trade that has been significantly affected by the COVID-19 pandemic is trade finance. A large body of academic and policy work has recognised the pivotal role played by trade financing in enabling international trade, both in developed countries as well as emerging markets and developing economies.[1] Recent available estimates from ICC (2018) suggested that nearly 80% of international trade flows bank on the availability of such trade financing. In fact, augmenting the availability of trade financing must be viewed as an integral part of building a robust 'trade ecosystem' that, in turn, can help countries achieve broad-based sustainable growth (OECD, 2020).

The landscape of trade finance can be complex, with multiple actors involved in the process (Cavoli, Christian, Shrestha, 2021). However, in simple terms, trade finance can be thought of as any form of credit support that is extended to firms that

[1] See, for instance, Petersen and Rajan (1997), Beck, Demirgüç-Kunt, Maksimovic (2008), OECD (2020), and ICC (2018).

will assist them in engaging in international trading activities (i.e. exporting and importing). In other words, as Menichini (2009) stated, 'Trade finance refers to the methods and instruments designed to support importers and exporters throughout the trade cycle'. (p.2). This can take the form of interfirm financing or more conventional bank-intermediated loans to finance import/export. Common trade financing instruments include trade credits and advances, letters of credit, and supply chain financing (IMF, 2019; Cavoli, Christian, Shrestha, 2021).

Interestingly, while trade finance is deemed much safer than other traditional banking products – at least viewed from the perspective of default rates that are less than 1% (ICC, 2018) –a substantial global trade financing gap still exists, estimated to be around $1.7 trillion in 2020 (ADB, 2021). In addition to the fact that more than one-quarter of this trade financing gap is prevalent in the broader Asian region, it has also been noted that the trade finance gap disproportionately affects small and medium-sized enterprises (SMEs).

There is widespread recognition that access to credit remains a major growth constraint for SMEs, especially in Asia (Cavoli, Christian, Shrestha, 2021). This has also been recognised by the *ASEAN Economic Community Blueprint* (ASEAN Secretariat, 2008), which underlined the importance of developing a robust 'financing ecosystem' that would help micro and SMEs. Based on the *ASEAN Economic Community Blueprint*, ASEAN has developed the *Institutional Framework on Access to Finance for MSMEs* (ASEAN Secretariat, 2016), which not only identifies the need to enhance credit access to micro and SMEs but also reiterates the importance of strengthening non-traditional financing sources, such as interfirm trade credit and non-banking channels more broadly.

The related literature has identified that SMEs typically finance their activities by raising their own funds from families and business partners; through payment facilities from suppliers and pre-payments from clients, commonly referred to as interfirm trade credit; or through credit from formal banking and other financial institutions (Dornel, Ali Slimane, Mohindra, 2020). More broadly, SMEs are credit-constrained at two fundamental levels. The first set of constraints arise from the difficulty in establishing and maintaining a relationship with banks (Gopalan and Sasidharan, 2020). The second arises from the inability to secure trade

financing, even if firms manage to establish a fundamental banking relationship (DiCaprio, Yao, Simms, 2017). Both are significant concerns from a policy perspective that warrant a closer examination.

Based on the foregoing discussion, it is not only clear that trade finance is the backbone of the international trading system but also an important vehicle for SMEs to grow and to thrive, which is pivotal when viewed from the prism of achieving greater financial inclusion and Sustainable Development Goals. Despite this importance, academic work on firm-level determinants of trade finance in EMDEs – especially focusing on Asia – is sparse. This is even more so when the issue in question is about SMEs and trade financing.

A large part of this notable paucity of empirical studies can be, in part, attributed to the lack of data availability at the aggregate cross-country level and firm level within a country. However, it is still possible to infer some critical insights on trade financing constraints of firms – and SMEs in particular – by tapping into World Bank Enterprise Surveys (WBES), which offer some valuable information on interfirm trade credit.[2]

At the outset, it must be emphasised that although interfirm trade credit provided by suppliers is part of the trade financing ecosystem, there is no definitive way to establish the proportion of trade credit used for international trading activities from the available WBES data. While firms that are engaged in exporting activities can be identified, the purposes of such interfirm trade credit could be manifold. Notwithstanding this data caveat, this appears to be the best comparable and publicly available data source to date that can be used to undertake any formal empirical examination of issues of trade credit at the firm level, both regionally and globally.

Given this background, this paper empirically examines the link between the heterogeneity of firms and their probability of obtaining interfirm trade credit in Asia, with a specific focus on the ASEAN bloc of economies. In doing so, the paper investigates the following three issues: to what extent firm size plays a significant role in obtaining trade credit, to what degree a firm's integration into GVCs affects

[2] World Bank, Enterprise Surveys, https://www.enterprisesurveys.org/en/enterprisesurveys (accessed 24 November 2021).

its probability of obtaining trade credit, and the impact of agglomeration on a firm's likelihood of obtaining trade credit. In other words, are firms that benefit from agglomeration more dependent on interfirm trade credit, or do those operating in isolation have a greater need for interfirm trade credit?

The paper is structured as follows: Section 2 offers a review of the selected literature concerning determinants of trade credit at the firm level. Section 3 outlines the data and empirical method adopted in this paper, while Section 4 details the results of the estimation. Section 5 concludes the paper with a summary and discussion of the findings.

2. Review of Selected Literature

The literature has devoted considerable attention to understanding firms' access to credit in general, both in developed economies as well as EMDEs. While the two most common forms of financing available to firms are bank credit from formal financial institutions and interfirm trade credit from firms and suppliers, much of the extant literature has focussed on formal bank financing and the constraints faced by firms, particularly SMEs, in accessing it. Empirical studies exploring the factors that determine trade credit are sparse, with available studies largely limited to an analysis of selected advanced economies, owing to data constraints.

Notwithstanding the scarcity of literature, extant studies on trade credit can be broadly classified into two related streams. The first set deals with establishing the importance of trade credit, focussing on why firms seek trade credit. The second set attempts to understand firm-specific characteristics that matter in obtaining trade credit.

The literature governing credit constraints at the firm level notes that SMEs, in general, face significant challenges in establishing and maintaining relationships with banks, that is, in accessing formal bank credit (Gopalan and Sasidharan, 2020). So, when the inadequacy of assets adversely affects a firm's probability of obtaining bank credit, it can resort to obtaining interfirm trade credit for its financing needs, implying a substitutability between trade credit and bank credit (Petersen and

Rajan, 1997; Berger and Udell, 1998). This is also largely true when a firm is denied access to a formal source of finance, which leaves the firm more reliant on trade credit, especially when there is no alternative source of finance (Coleman, 2005). In contrast to the substitutable nature of trade and bank credit, some studies have pointed out how both these financing sources can also exhibit a complementary relationship. For instance, when firms can obtain trade credit initially, they can use it as a possible signalling mechanism to obtain bank credit (Andrieu, Staglianò, Van Der Zwan, 2018; Berger and Udell, 1998; Del Gaudio et al., 2021; Giannetti et al., 2011).

The importance of trade credit in firm operations broadly stems from operating efficiencies and cost improvements enabled by the use of trade credit (García-Teruel and Martinez-Solano, 2010). Yet another key aspect of trade credit is that it fosters long-term relationships with suppliers and customers (Ng et al., 1999). The literature also shows the use of trade credit by firms during economic downturns (Davis and Yeoman, 1974; Petersen and Rajan, 1997; Nilsen, 2002).

The available literature has emphasised financial motives as a key determinant of trade credit. Financial motives arise from the ability of creditworthy firms or suppliers to possess an informational advantage about their customers or firms relative to traditional banking and financial institutions. This is akin to the established literature on how most SMEs possess only ‘soft’ information, which acts as a barrier to receiving credit from traditional banking and financial institutions, while those that have ‘hard’ information (i.e. audited statements) overcome that advantage. In the context of trade credit provision, it can be argued that SMEs that do not have hard information can actually use trade credit as a signal to seek formal banking credit. This highlights the importance of greater information availability on the creditworthiness of smaller firms and how firms without such information can still benefit from interfirm trade credit when the suppliers have an informational advantage.

Probing the determinants of trade credit in a sample of over 47,000 SMEs in selected European countries over 1996–2002, García-Teruel and Martinez-Solano (2010) found that there are several common factors that bind SMEs seeking trade credit. For instance, the study pointed out how suppliers who can raise financing

from capital markets grant more trade credit to other firms (i.e. customers). The study also showed how firms with alternative sources of finance are less likely to seek trade credit, implying a substitutability in the relationship between traditional bank credit and trade credit.

In a more recent study in Asia, Wignaraja and Jinjarak (2015) explored the factors that shape the probability of obtaining trade credit for firms from China, Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam. The study showed how firm ownership, structure, age, size, and trade participation emerge as key factors affecting a firm's probability of obtaining trade credit, with older firms, exporting firms, and foreign-owned firms more likely to obtain trade credit.

Against this background, we advance the literature on determinants of trade credit for the case of ASEAN economies, which remains unexplored. We also add to the classical debate on whether trade credit and bank credit are substitutes or complements.

3. Data and Empirical Methodology

To empirically address the proposed research questions outlined in Section 1, the rich, comprehensive, firm-level data from the WBES are used. The WBES is a pooled database consisting of different waves of country-specific surveys that provide detailed firm-specific information on a variety of variables, such as infrastructure, finance, trade, regulations, taxes and business licensing, corruption, crime, informality, innovation, and firm perceptions about obstacles to operations.[3] This wide array of information is collected via face-to-face interviews with firm managers and owners. Given that the survey contains sensitive information such as bribery, firm identity is concealed, and all firms are identified using unique firm-level identification. Moreover, the WBES for a particular economy happens at different intervals; the same firms from the previous round of surveys are usually not surveyed. As a result, the construction of panel data becomes strenuous. Therefore, the data used for the empirical analysis in this study are pooled and cross-sectional in nature.

Overall, the WBES provides information on over 174,000 firms across 151 economies. However, in this study, firms from the ASEAN bloc of economies are the focus; hence, the sample is restricted to the surveys of firms from the ASEAN region.

Yet another important aspect of the WBES database is that the survey has adopted a standard questionnaire from 2006 that enables consistent cross-country comparison. The time period for this study is from 2009 to 2020, which is driven purely by data availability for the ASEAN economies, especially given that there is considerable variation in terms of the sample observations (Table 1).[4]

[3] For more details on the enterprise surveys, refer to IFC (2021), *Enterprise Surveys Indicator Descriptions*, https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/Indicator-Description.pdf (accessed 4 January 2022).

[4] Surveys were also conducted amid the COVID-19 pandemic, which could offer specific insights about trade credit during the pandemic. However, the country sample for this additional data is mostly from outside of Asia.

Table 1: World Bank Enterprise Survey Data Availability for ASEAN Economies

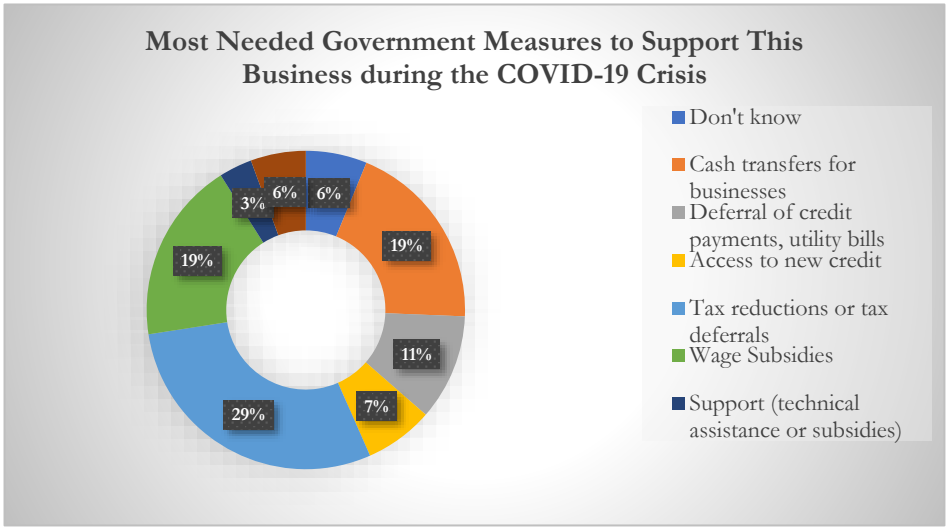
Country	Year	Observations
Cambodia	2016	134
Indonesia	2009	984
	2015	1,063
Lao People's Democratic Republic	2009	147
	2012	91
	2016	108
	2018	131
Malaysia	2015	544
Myanmar	2014	299
	2016	355
Philippines	2009	797
	2015	925
Thailand	2016	680
Viet Nam	2009	723
	2015	669
Total		7,650

ASEAN = Association of Southeast Asian Nations.
Note: All observations correspond to the manufacturing sector.
Source: World Bank, Enterprise Surveys, https://www.enterprisesurveys.org/en/enterprisesurveys (accessed 24 November 2022).

Trade Credit and COVID-19

Interfirm trade credit is a channel through which firms often meet their working capital needs. The literature has documented that interfirm trade credit – often referred to as trade credit – can be supplementary or complementary to the line of credit that firms obtain from banks or other formal institutions (Petersen and Rajan, 1997; Berger and Udell, 1998; Andrieu, Staglianò, Van Der Zwan, 2018; Del Gaudio et al., 2021; Giannetti et al., 2011).

Due to the COVID-19 pandemic, the importance of trade credit has multiplied significantly. In this regard, having access to trade credit is pivotal in determining the flexibility of a firm in managing its working capital needs and also in making it more robust to withstand the unprecedented shocks induced by the pandemic (Boissay, Patel, Shin, 2020). Considering that during the global financial crisis, riskier firms obtained more trade credit (Carbo-Valverde, Rodriguez-Fernandez, Udell, 2016), it is likely that firms that have found it strenuous to survive during the pandemic also sought more trade credit. In this regard, using the COVID-19 survey data from the World Bank Enterprise Survey, when firms were asked about 'most needed government measures to support this business over COVID-19 crisis', almost 11% of the 13,380 surveyed firms sought trade credit (Figure below). Within the sample of exporting firms (3,492), 8.6% (302) deferred credit payments and 6.0% (212) sought new credit. It is also important to note that since the first wave of the pandemic, 24.0% of a sample of 2,792 firms deferred on their payments, and 23.0% of 2,549 firms deferred since the second wave, providing indicative evidence of the importance of trade credit. Hence, interfirm trade credit is an important factor for firms in terms of working capital management and tackling global economic shocks such as the COVID-19 pandemic.



Note: The COVID-19 survey information from World Bank Enterprise Survey is only available for the following countries (of which none are in East Asia): Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Chad, Croatia, Cyprus, Cyprus TCC, Czech Republic, El Salvador, Estonia, Gauteng, Georgia, Greece, Guatemala, Guinea, Honduras, Hungary, Italy, Jordan, Kazakhstan, Latvia, Lebanon, Lithuania, Malta, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Nicaragua, Niger, North Macedonia, Panama, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Somalia, Togo, Zambia, and Zimbabwe.

Source: World Bank, Enterprise Surveys, https://www.enterprisesurveys.org/en/enterprisesurveys (accessed 16 December 2021).

The database provides necessary information in the form of firm-specific indicators such as firm age, firm size, ownership affiliation, international trade status, financial constraints, and firm dependence on trade credit. This repository of firm-level information enables the examination of factors affecting the probability of firms obtaining trade credit in the ASEAN region.

3.1. Empirical Model

The empirical nexus between firms' heterogeneity and their probability of obtaining trade credit is examined by estimating the following parsimonious model of determinants of trade credit:

$$Trade\ Credit_{ict} = \Phi\big(\alpha + \beta_1 SME_{ict} + \beta_2 Age_{ict} + \beta_3 Productivity_{ict} + \beta_4 Constrained_{ict} + \beta_5 Audit_{ict} + \beta_6 Foreign_{ict} + \beta_7 Sole_{ict} + \beta_8 Export_{ict} + \gamma_t + \lambda_j + \zeta_c + \mu_{ict}\big) \quad (1)$$

In Equation (1), *i* stands for the firm, *j* for the industry of operation, *c* for the country, and *t* for time. The focal variable, as specified in the equation, is trade credit, an indicator variable that takes the value of 1 if a minimum of one-third of firm working capital is purchased on credit or is advanced from suppliers or customers, and 0 otherwise. Given the binary nature of the trade credit measure, the equation above is estimated using a probit model.

The equation also highlights various firm-specific factors that drive a firm towards obtaining trade credit. These factors include firm size *(SME)*, which is a dummy variable taking the value of 1 if a firm is either a small firm (i.e. employs <20 workers) or medium-sized firm (i.e. employing 20–99 workers) and 0 otherwise. Firm size is controlled for since small, medium, and large firms have different levels of internal and external financing options, which determine their varying needs for trade credit (Rahman, Rozsa, Cepel, 2018).

Next, the age of the firm is controlled for, since younger firms are more credit-constrained than older and experienced firms (Huyghebaert, Van de Gucht, Van Hulle, 2007; Minetti and Zhu, 2011) and are more likely to be dependent on trade credit as an alternative source of finance. However, Cuñat (2007) established a non-linear relationship between firm age and use of trade credit. Hence, the impact of firm's age on use of trade credit by ASEAN firms remains an empirical question. The age of the firm is measured as the number of years that the firm has been in operation.

A firm's productivity is also controlled for since it can be argued that a firm's performance may impact its dependence on trade credit. Productivity of the firm is measured as the log of output per worker.

Beyond these factors, an important insight from the literature governing various facets of trade credit concerns the fact that financially constrained firms often tend to use trade credit as a substitute for traditional bank financing, whereas firms with greater demand for finance tend to treat trade credit as a complement to traditional bank credit (Schwartz, 1974). So, when a firm is denied access to a formal source of finance, it is more reliant on both free and costly trade credit, given the absence of an alternative source of finance (Coleman, 2005). Hence, it becomes important to examine whether trade credit is a substitute or a complement for manufacturing firms in the ASEAN region.

To do this, a firm's financial constraints are controlled for *(Constrained)*. Firms' financial constraints are captured using an indicator variable that takes the value of 1 if a firm does not have a line of credit from a formal source, either because the firm's application was rejected or the firm was discouraged and did not apply for a loan due to complex application procedures, unfavourable interest rates, high collateral requirements, insufficient loan size, or a belief that the application would be rejected. The indicator variable takes the value of 0 otherwise.[5]

On a related front, while extending trade credit to firms, external lenders may provide trade credit to firms that can reduce information asymmetry between the lender firm and the receiving firm. In this regard, firms that have their financial statements audited by an external auditor provide a positive signal, which improves their chances of obtaining trade credit (Rahman, Rozsa, Cepel, 2018). Therefore, auditing of firms' financial statements is accounted for by using firms' responses to the survey question, 'Were financial statements checked and certified by an external auditor in the last fiscal year?' Hence, *Audit* is a dichotomous variable, taking the value of 1 when the firm has an audited statement, and 0 otherwise.

In addition, the ownership aspect of the firm is controlled for. Specifically, the model is augmented by controlling for two factors: foreign ownership of the firm, and the group affiliation of the firm. The underlying rationale is that foreign-

[5] The WBES also provides information on the reasons firms do not apply for a line of credit. Reasons fall broadly into six categories: (i) no need for a loan; (ii) application procedures were complex; (iii) interest rates were not favourable; (iv) collateral requirements were too high; (v) size of loan and maturity were insufficient; or (vi) did not believe it would be approved. Table A1 in the annex details this information for firms in each country across different survey rounds.

owned firms may use their network ties, which may positively impact their ability to obtain trade credit. Similarly, firms affiliated with an ownership group reap the benefits of network ties compared to solely owned firms.

Finally, a firm's export status is also controlled for, since firms involved in international markets have a greater need for finance and may have a greater dependence on trade credit. Firm exports are captured using a dummy variable that equals 1 if the company exports directly or indirectly and 0 otherwise.

In addition to firm-level controls, following the literature, macroeconomic controls are accounted for in the form of gross domestic product (GDP) per capita *(GDP PC)* and the status of formal finance proxied by the percentage of working capital financed by banks *(Bank Finance)*. In the probit model, time (γ_t), industry (λ_j) and country fixed effects (ζ_c) are added that account for the change in firm trade credit over the year, across the industry, and across countries. Table 2 provides the definitions and data sources of the variables used in the analysis. Table 3 summarises the expected direction of the relationship between trade credit and other key variables specified in Equation (1).

Table 2: Variable Definitions and Data Sources

Variable	Description	Source
Trade credit	= 1 if firm has at least 33% of working capital purchased on credit/advances from suppliers/customers; 0 otherwise	World Bank Enterprise Surveys
SME	= 1 if a firm is a small (<20 workers) or medium (20–99 workers) firm; 0 otherwise	World Bank Enterprise Surveys
Age	Log of number of years firm has been in operation	World Bank Enterprise Surveys
Productivity	Log of output/worker	World Bank Enterprise Surveys

Constrained	= 1 if firm does not have a line of credit or did not apply; 0 otherwise	World Bank Enterprise Surveys
Audit	= 1 if firms' financial statements are checked by an external auditor; 0 otherwise	World Bank Enterprise Surveys
Foreign	= 1 if 50% or more is owned by foreign firm; 0 otherwise	World Bank Enterprise Surveys
Sole	= 1 if sole proprietorship; 0 otherwise	World Bank Enterprise Surveys
Export	= 1 if a firm exports; 0 otherwise	World Bank Enterprise Surveys
GDP PC	constant 2015 $	World Development Indicators
Bank finance	% of firms using banks to finance working capital	World Development Indicators

GDP PC = gross domestic product per capita, SME = small or medium-sized enterprise.
Sources: World Bank, Enterprise Surveys, https://www.enterprisesurveys.org/en/enterprisesurveys (accessed 24 November 2021); and World Bank, World Development Indicators, https://databank.worldbank.org/source/world-development-indicators (accessed 24 November 2021).

Table 3: Explanatory Variables and Expected Relationship with Trade Credit

Variable	Expected Relationship with Trade Credit	Rationale
SME	Negative	Larger firms have an advantageous position to obtain trade credit.
Age	Positive or negative	Older firms are less credit-constrained and can use it as a channel for obtaining higher trade credit. Alternatively, young firms are more financially constrained and are more likely to resort to trade credit as a means of meeting their financing needs.
Productivity	Positive	Well-performing firms can mitigate their financial needs through trade credit.
Constrained	Positive	Financially constrained firms may resort to trade credit as an alternative source of financing.
Audit	Positive	Positive signalling mechanisms by reducing information asymmetry between the lending firms and the borrowing firms.
Foreign	Positive	Benefits of network ties
Sole	Negative	Lack of network ties
Export	Positive	Export participation requires greater need for finance; hence, a firm may have greater dependence on trade credit.

SME = small or medium-sized enterprise.
Source: Authors.

3.2. Summary Statistics

Table 4 reports the descriptive statistics of the variable of interest and all other control variables. The table also gives an overview of variable construction. It is observed that less than 8% of firms obtained trade credit. Almost 70% of the sample firms are SMEs, highlighting the prominence of SMEs in the ASEAN region. The table also shows that the majority of firms are financially constrained, with nearly 64% not having a line of credit from a formal source.

In terms of ownership structure, over 11% of firms are foreign-owned, and less than 4% are unaffiliated with any business group. Moreover, 31% of the firms are involved in exporting activities, whereas 40% have had their financial statements audited in the last financial year.

Further, given that firms from different ASEAN economies were surveyed in different time periods, the sample is grouped into two periods, 2009–2014 and 2015–2018. Table A2 in the annex provides the summary statistics of the key variables across these time periods. One of the notable observations is that there seems to be a significant increase in firm dependence on trade credit between the first and second periods. Interestingly, this also coincides with firms reporting to be more financially constrained in 2015–2018 relative to 2009–2014, highlighting a possible positive association between financial constraints and a relatively greater dependence on trade credit.

Table 4: Summary Statistics

Variable	Description	Obs.	Mean	Std. Dev.	Min.	Max.
Trade Credit	= 1 if firm has at least 33% of working capital purchased on credit/advances from suppliers/customers; 0 otherwise	7,650	0.078	0.269	0	1
SME	= 1 if a firm is a small (<20 workers) or medium (20–99 workers) firm; 0 otherwise	7,650	0.691	0.462	0	1
Age	Log of number of years firm has been in operation	7,650	2.75	0.646	0.693	5.088
Productivity	Log of output/worker	7,650	16.082	3.297	3.189	26.894
Constrained	= 1 if firm does not have a line of credit or did not apply; 0 otherwise	7,650	0.637	0.480	0	1
Audit	= 1 if firm financial statements are checked by an external auditor; 0 otherwise	7,650	0.405	0.491	0	1
Foreign	= 1 if 50% or more is owned by foreign firm; 0 otherwise	7,650	0.113	0.316	0	1
Sole	= 1 if sole proprietorship; 0 otherwise	7,650	0.036	0.186	0	1
Export	= 1 if a firm exports; 0 otherwise	7,650	0.311	0.463	0	1
GDP PC	constant 2015 $	7,650	3,216.145	2,232.121	1,077.856	9,955.243
Bank finance	% of firms using banks to finance working capital	7,650	24.66	12.379	4.7	47

GDP PC = gross domestic product per capita, SME = small or medium-sized enterprise.

Sources: World Bank, Enterprise Surveys, https://www.enterprisesurveys.org/en/enterprisesurveys (accessed 24 November 2021); and World Bank, World Development Indicators, https://databank.worldbank.org/source/world-development-indicators (accessed 24 November 2021).

4. Empirical Results

4.1. Determinants of Trade Credit in ASEAN

In this section, the empirical results of the estimation as specified in Equation (1) are documented. Table 5 reports the marginal effects.[6]

From the table, it is observed that more productive firms have greater access to trade credit. This highlights that firm performance plays an important signalling role to the supplier of trade credit; as a result, better-performing firms are more likely to obtain trade credit.

Arguably, the most significant result to emerge pertains to the positive and significant relationship between financial constraints and trade credit. Firms that are more financially constrained because of their lack of access to bank credit are more likely to obtain trade credit. This is strongly suggestive of how firms use bank credit and trade credit as substitutes in the ASEAN region. As the results show, the likelihood of financially constrained firms obtaining trade credit appears to be 1.6%–3.0% more than firms that are not financially constrained. These findings are also broadly in line with the literature, which has highlighted that firms with lower liquidity generally resort to the use of more trade credit (Elliehausen and Wolken, 1993; Petersen and Rajan, 1997).

Beyond the substitutable nature of trade credit and bank credit, the results also reiterate the importance of easing information asymmetry, which increases the probability of firms obtaining trade credit. Firms having their financial statements audited seem more likely to obtain trade credit compared to those that do not. Intuitively, the positive and significant coefficient on the audit variable highlights that firms that get their financial statements audited provide hard information to lenders, which helps them mitigate traditional concerns of information asymmetry (Rahman, Rozsa, Cepel, 2018).

[6] The benchmark results shown in Table 5 are consistent when estimated with a logit model as shown in Table A3, underlining the robustness of the results.

Table 5: What Determines Trade Credit in ASEAN?

Trade Credit	(1) Baseline	(2) Industry Fixed Effects	(3) Industry and Year Fixed Effects	(4) Industry, Year, and Country Fixed Effects	(5) Full Model
SME Dummy	–0.00644	–0.00394	–0.00179	–0.00332	–0.00344
	(0.00759)	(0.00764)	(0.00767)	(0.00774)	(0.00763)
Log Age	0.0126**	0.0132***	0.0112**	0.000859	–0.000489
	(0.00494)	(0.00500)	(0.00506)	(0.00520)	(0.00513)
Productivity	0.00373***	0.00346***	0.00379***	0.00785***	0.00630***
	(0.000940)	(0.000974)	(0.000993)	(0.00186)	(0.00185)
Constrained	0.0299***	0.0268***	0.0262***	0.0195***	0.0164**
	(0.00673)	(0.00674)	(0.00676)	(0.00683)	(0.00676)
Audit	0.0356***	0.0370***	0.0382***	0.0339***	0.0267***
	(0.00671)	(0.00677)	(0.00687)	(0.00784)	(0.00778)
Foreign	–0.0286***	–0.0313***	–0.0286***	–0.0283**	–0.0257**
	(0.0109)	(0.0110)	(0.0110)	(0.0111)	(0.0110)
Sole	–0.0338*	–0.0303	–0.0286	–0.0234	–0.0256
	(0.0185)	(0.0186)	(0.0186)	(0.0184)	(0.0182)
Export	0.0105	0.00781	0.00848	0.0183**	0.0187**
	(0.00743)	(0.00757)	(0.00756)	(0.00774)	(0.00764)

Table 5 Continued: What Determines Trade Credit in ASEAN?

Trade Credit	(1) Baseline	(2) Industry Fixed Effects	(3) Industry and Year Fixed Effects	(4) Industry, Year, and Country Fixed Effects	(5) Full Model
GDP PC					–0.000612***
					(0.000145)
Bank Finance					0.00733***
					(0.000863)
Industry Fixed Effects	-	Yes	Yes	Yes	Yes
Year Fixed Effects	-	-	Yes	Yes	Yes
Country Fixed Effects	-	-	-	Yes	Yes
Observations	7,650	7,650	7,650	7,650	7,650

GDP PC = gross domestic product per capita.

Notes:

1. Age and productivity of the firm is measured in logs.
2. Productivity is measured as output per worker.
3. Standard errors in parentheses.
4. *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors.

Exporting also emerges as an important facilitator of trade credit as evidenced by the positive and significant coefficient on that variable. The marginal effects reported show an advantage of 1.8% for exporting firms in terms of their probability of obtaining trade credit relative to domestic firms.

The age of a firm returns a positive and significant coefficient, suggesting that older and experienced firms are in better positions to obtain trade credit from suppliers/customers. The coefficient, however, turns insignificant in the presence of macro controls and industry, time, and country fixed effects.[7] The finding is also consistent with the related literature. For instance, Andrieu, Staglianò, and Van Der Zwen (2018) showed the insignificant impact of a firm's age in determining the success of trade credit using a sample of European SMEs, while Fisman and Raturi (2004) had a similar finding for firms from five former British colonies in Sub-Saharan Africa.

Interestingly, the coefficient on the SME dummy is statistically insignificant across all specifications, signalling that firm size does not appear to be a determining factor for obtaining trade credit, at least with respect to manufacturing firms in the ASEAN region. This is similar to the findings obtained by Wignaraja and Jinjarak (2015), who also reported an insignificant coefficient of firm size on trade credit for Chinese and South Asian firms.

Further, contrary to the literature, the study found that foreign firms are less likely to obtain trade credit in the ASEAN region compared to domestic firms. The negative relationship between foreign ownership and trade credit highlights the possibility that foreign-owned firms are generally larger and enjoy network benefits, which put them in a better position to self-finance or to gain access to formal finance. However, in terms of the other ownership variable, as expected, it is found that sole proprietorship firms are less likely to obtain trade credit, and firms affiliated with business groups reap the advantages associated with network ties in terms of obtaining trade credit.

[7] As mentioned earlier, studies have also documented a non-linear relationship between age and trade credit (Cuñat, 2007). In this regard, the inclusion of a quadratic term for age does not seem to alter the baseline findings, and the coefficient remains insignificant for both age and its quadratic form.

Finally, amongst the country-level controls, the *Bank Finance* variable is positive and significant.[8] This implies that overall improvements in banking infrastructure of a country – which translates into improved access to formal sources of finance – can assist firms in obtaining trade credit, suggesting a general complementary relationship between trade credit and bank credit. However, as shown earlier, these results are in contrast with the benchmark findings, where the firm-level measure of bank credit suggests a substitutability between trade credit and bank credit, with more financially constrained firms more likely to obtain trade credit. These two results are reconciled by arguing that the overall complementary nature of trade credit and bank credit at the macro level in the ASEAN region may just be indicating a plausible threshold effect. At its core, firms treat trade credit and bank credit as substitutes, but as there is greater financial sector development (that encompasses a robust banking sector), the two evolve into a complementary relationship.[9]

4.2. Trade Credit and Global Value Chains

Another key finding is that exporting firms are more likely to obtain trade credit. This is in line with Demir and Javorcik (2018), who highlighted that as firms experience an increase in competitive pressure through trade, they increase the use of trade credit as a mechanism to reduce the price of exports and to tackle increasing competition.

In this regard, over the past 2 decades, international trade has become even more competitive with the rise of GVCs. In the presence of GVCs, firms – especially from developing regions – are usually suppliers of parts and components rather than the entire product. Moreover, the entry point for most firms from developing countries into GVCs is via low value-added tasks (Taglioni and

[8] Alternatively, instead of using country-level control variables, country *x* year fixed effects were included to account for country-time heterogeneity. The results are qualitatively similar and are available upon request.

[9] That said, some caution should be exercised in reading too much into this result, because the *Bank Finance* variable is only at the country level, whereas both trade credit and financial constraints are captured at the firm level.

Winkler, 2016). Hence, to remain a part of supply chains and to reap its benefits, firms must maintain their competitiveness.

To this end, firms are classified based on their modes of international trade participation, and then the impact on trade credit is examined. As a result, the trade participation measure (*trade*) is an ordinal variable that takes the value of 1 if a firm is a pure importer (i.e. only imports but does not export); the variable takes the value of 2 if the firm is a pure exporter. The value of 3 is assigned to the *trade* variable if a firm is a GVC firm (i.e. a firm that exports and imports simultaneously) that exports less than 10% of its sales. The ordinal variable takes the value of 4 if the GVC firm exports more than 10% of its sales. The restriction of 10% on exports enables a distinction between firms that are involved in GVCs but are not intensive GVC players. This measure of identifying various modes of trade participation is in line with Gopalan, Reddy, and Sasidharan (2022) who used this metric to examine how the impact of digitalisation varies based on the level and degree of participation of a firm in the global market.

Table 6: Trade Credit and Global Value Chain Participation

Trade Credit	(1) Baseline	(2) Industry Fixed Effects	(3) Industry and Year Fixed Effects	(4) Industry, Year, and Country Fixed Effects	(5) Full Model
SME	–0.00629	–0.00426	–0.00170	–0.00319	–0.00297
	(0.00768)	(0.00773)	(0.00777)	(0.00786)	(0.00775)
Age	0.0127**	0.0133***	0.0113**	0.00109	–0.000282
	(0.00494)	(0.00500)	(0.00506)	(0.00519)	(0.00513)
Productivity	0.00370***	0.00344***	0.00376***	0.00780***	0.00623***
	(0.000940)	(0.000975)	(0.000993)	(0.00187)	(0.00185)
Constrained	0.0297***	0.0267***	0.0260***	0.0193***	0.0162**
	(0.00672)	(0.00673)	(0.00675)	(0.00682)	(0.00676)
Audit	0.0350***	0.0368***	0.0378***	0.0336***	0.0262***
	(0.00676)	(0.00682)	(0.00692)	(0.00787)	(0.00781)
Foreign	–0.0297***	–0.0315***	–0.0293***	–0.0293***	–0.0271**
	(0.0112)	(0.0113)	(0.0113)	(0.0113)	(0.0112)
Sole	–0.0341*	–0.0303	–0.0288	–0.0237	-0.0263
	(0.0185)	(0.0186)	(0.0186)	(0.0184)	(0.0183)
Trade	**0.00346**	**0.00213**	**0.00274**	**0.00559****	**0.00607****
	(0.00262)	(0.00265)	(0.00265)	(0.00270)	(0.00267)
					–0.000615***

Table 6 Continued: Trade Credit and Global Value Chain Participation

Trade Credit	(1) Baseline	(2) Industry Fixed Effects	(3) Industry and Year Fixed Effects	(4) Industry, Year, and Country Fixed Effects	(5) Full Model
GDP PC					(0.000145)
					0.00735***
Bank Finance					(0.000864)
Industry Fixed Effects	-	Yes	Yes	Yes	Yes
Year Fixed Effects	-	-	Yes	Yes	Yes
Country Fixed Effects	-	-	-	Yes	Yes
Observations	7,650	7,650	7,650	7,650	7,650

GDP PC = gross domestic product per capita, SME = small or medium-sized enterprise.
Notes:
1. Age and productivity of the firm is measured in logs.
2. Productivity is measured as output per worker.
3. Standard errors in parentheses.
4. *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors.

Table 6 reports the results, and a positive and significant coefficient is observed on the *trade* variable. Given the ordinal nature of the variable, the results indicate that as firms experience greater integration with GVCs (i.e. transition from being an importer to exporter to participating in a GVC to finally becoming intensively linked with GVCs), their probability of obtaining trade credit increases. This is also suggestive of the fact that access to trade credit from suppliers or purchasers acts as a source of finance that is cheaper than bank loans and enables firms to increase their competitiveness.

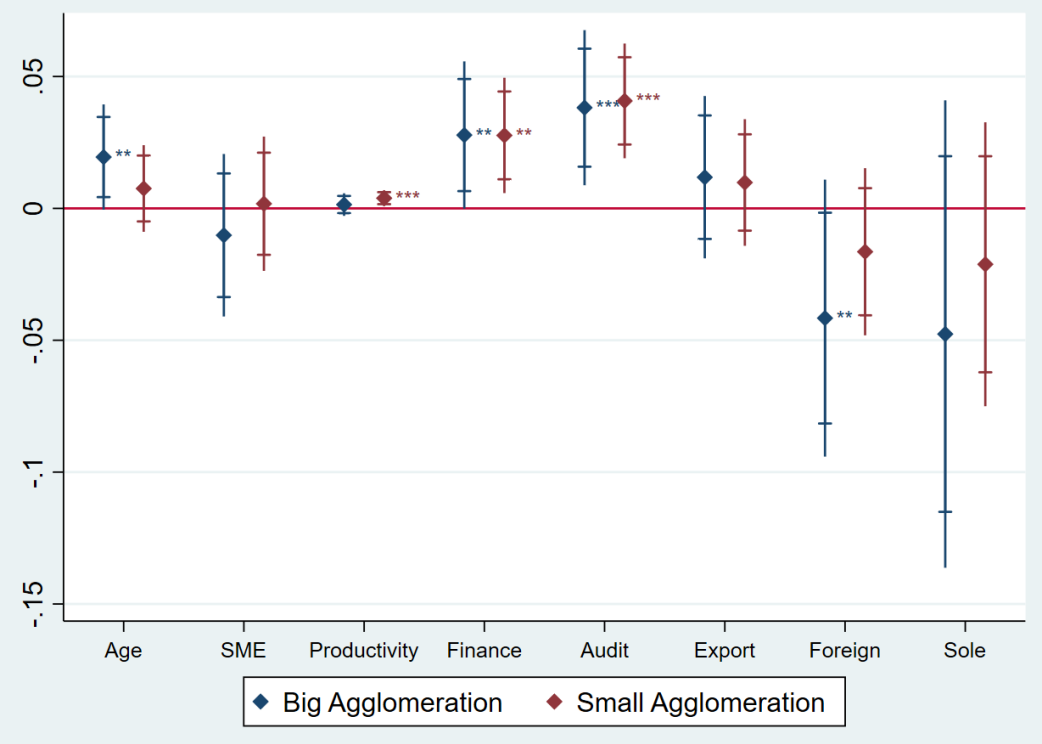
The statistical significance and sign of other determinants of trade credit are similar to that obtained in the baseline estimates. Firms that are more productive tend to have a higher probability of obtaining trade credit. Similarly, there is also evidence of substitutability between bank credit and trade credit with firms that are more financially constrained and tend to have a higher likelihood of obtaining trade credit. Further, consistent with before, domestic firms – as well as those with audited financial statements – have a higher probability of obtaining trade credit.

4.3. Agglomeration Effects

While exploring the determinants of trade credit, an important issue is the agglomeration phenomenon. Agglomeration of firms and their effects have been studied in the literature, which documented the benefits of cost-sharing, information spill-overs, and access to skilled and unskilled labour pool for firms that are geographically concentrated (Giuliani, Pietrobelli, Rabellotti, 2005; Rice, Venables, Patacchini, 2006). As agglomeration impacts the day-to-day operation of firms, how it impacts a firm's ability to obtain trade credit is also examined.

The sample is divided into two sub-samples, one consisting of firms from small agglomerates and the other belonging to large agglomerates. To identify firm affiliation to a big or small agglomerate, survey information is exploited pertaining to operating location. Therefore, the agglomeration identifier is a binary variable that takes the value of 1 if a firm is operating in the capital city or in a city with over 1 million residents, and 0 otherwise (Paunov and Rollo, 2016). Following this distinction, Equation (1) is used for the two sub-samples, and the coefficient plot capturing the marginal effects is shown in Figure 1.

Figure 1: Agglomeration Effects



SME = small or medium-sized enterprise.
Notes:
1. Age and productivity of the firm is measured in logs.
2. Productivity is measured as output per worker.
3. Standard errors in parentheses.
4. *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors.

The coefficients are marginal effects obtained from the final specification incorporating macro controls, industry fixed effects, year fixed effects, and country fixed effects. From the figure, it is observed that the age of the firm is positive and a significant factor for trade credit if the firm operates in a big agglomerate. The coefficient is insignificant for firms from small agglomerates, documenting the heterogeneous impact of age, conditional on the size of the agglomerate in which a firm operates. In contrast to age, the coefficient plot shows that labour productivity, captured by output per worker, is a positive and significant determinant of trade credit for small agglomerate firms and not so much for firms operating in big agglomerations. Both financial constraints and audits have a positive and significant impact on the probability of obtaining trade credit for firms irrespective of location advantages.

Hence, the results indicate that firms from both big and small agglomerates use trade credit as a substitute for financial constraints. Moreover, having financial statements audited is an important signalling mechanism to the purchaser/supplier, as it enables a greater probability of obtaining trade credit for firms.

5. Conclusion

Trade credit remains a dependable and crucial source of financing for many firms, especially SMEs. This is true for most emerging market and developing economies in Asia and elsewhere. Despite the documented importance of trade credit in the literature, studies examining the factors that determine the availability of interfirm trade credit – especially in Asia – are sparse. This paper has attempted to fill this gap by empirically examining the link between firm heterogeneity and the probability of obtaining interfirm trade credit in Asia, with a focus on the ASEAN bloc of economies.

First, this study finds that a host of firm-specific characteristics matter in obtaining trade credit. Specifically, firm productivity matters in securing trade credit, highlighting the importance of productivity gains. Second, trade credit and traditional bank credit tend to be substitutes, highlighting the need for countries in the region to focus on developing their financial sectors in a way that would allow a more complementary relationship between different forms of financing. Third, neither the size nor the age of a firm turns out to be as important as assumed in the literature on trade credit in the ASEAN context. Fourth, exporting firms tend to have greater success in obtaining trade credit than non-exporting firms. Related to this, firms that plug themselves into GVCs tend to benefit from having a higher likelihood of accessing trade credit compared to those that do not. Finally, firms from both big and small agglomerates use trade credit as a substitute for financial constraints.

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Annex Tables

Table A1 documents firm responses to the World Bank Enterprise Survey question concerning the main reason an establishment did not apply for a new line of credit.

Table A1: Reasons for Not Having Access to Finance by Country

Main Reason	Freq.	Percent	Cum.
Cambodia 2016			
No need for a loan - establishment had sufficient capital	58	60.42	60.42
Application procedures were complex	14	14.58	75.00
Interest rates were not favourable	12	12.50	87.50
Collateral requirements were too high	4	4.17	91.67
Size of loan and maturity were insufficient	4	4.17	95.83
Did not think it would be approved	1	1.04	96.88
Other	3	3.13	100.00
Total	96	100.00	
Indonesia 2009			
Don't know (spontaneous)	28	3.72	3.72
No need for a loan - establishment had sufficient capital	241	32.05	35.77
Application procedures were complex	104	13.83	49.60
Interest rates were not favourable	116	15.43	65.03
Collateral requirements were too high	132	17.55	82.58
Size of loan and maturity were insufficient	47	6.25	88.83
Did not think it would be approved	54	7.18	96.01
Other	30	3.99	100.00
Total	752	100.00	
Indonesia 2015			
Don't know (spontaneous)	7	0.78	0.78
No need for a loan - establishment had sufficient capital	357	39.76	40.53
Application procedures were complex	53	5.90	46.44
Interest rates were not favourable	231	25.72	72.16
Collateral requirements were too high	90	10.02	82.18
Size of loan and maturity were insufficient	51	5.68	87.86
Did not think it would be approved	37	4.12	91.98
Other	72	8.02	100.00
Total	898	100.00	

Lao People's Democratic Republic 2009			
Don't know (spontaneous)	1	0.79	0.79
No need for a loan - establishment had sufficient capital	64	50.79	51.59
Application procedures were complex	34	26.98	78.57
Interest rates were not favourable	4	3.17	81.75
Collateral requirements were too high	3	2.38	84.13
Size of loan and maturity were insufficient	6	4.76	88.89
Did not think it would be approved	9	7.14	96.03
Other	5	3.97	100.00
Total	126	100.00	

Main Reason	Freq.	Percent	Cum.
Lao People's Democratic Republic 2012			
Don't know (spontaneous)	1	1.72	1.72
No need for a loan - establishment had sufficient capital	40	68.97	70.69
Application procedures were complex	4	6.90	77.59
Interest rates were not favourable	5	8.62	86.21
Collateral requirements were too high	3	5.17	91.38
Size of loan and maturity were insufficient	2	3.45	94.83
Other	3	5.17	100.00
Total	58	100.00	
Lao People's Democratic Republic 2016			
Don't know (spontaneous)	1	1.23	1.23
No need for a loan - establishment had sufficient capital	35	43.21	44.44
Application procedures were complex	14	17.28	61.73
Interest rates were not favourable	9	11.11	72.84
Collateral requirements were too high	4	4.94	77.78
Size of loan and maturity were insufficient	2	2.47	80.25
Did not think it would be approved	6	7.41	87.65
Other	10	12.35	100.00
Total	81	100.00	
Lao People's Democratic Republic 2018			
Don't know (spontaneous)	4	3.77	3.77
No need for a loan - establishment had sufficient capital	73	68.87	72.64
Application procedures were complex	6	5.66	78.30
Interest rates were not favourable	6	5.66	83.96
Collateral requirements were too high	5	4.72	88.68
Size of loan and maturity were insufficient	1	0.94	89.62
Did not think it would be approved	5	4.72	94.34
Other	6	5.66	100.00
Total	106	100.00	
Malaysia 2015			
Don't know (spontaneous)	6	1.65	1.65
No need for a loan - establishment had sufficient capital	192	52.89	54.55
Application procedures were complex	25	6.89	61.43
Interest rates were not favourable	51	14.05	75.48
Collateral requirements were too high	24	6.61	82.09
Size of loan and maturity were insufficient	8	2.20	84.30
Did not think it would be approved	5	1.38	85.67
Other	52	14.33	100.00
Total	363	100.00	

Myanmar 2014			
Don't know (spontaneous)	4	1.51	1.51
No need for a loan - establishment had sufficient capital	183	69.06	70.57
Application procedures were complex	33	12.45	83.02
Interest rates were not favourable	18	6.79	89.81
Collateral requirements were too high	17	6.42	96.23
Size of loan and maturity were insufficient	8	3.02	99.25
Did not think it would be approved	2	0.75	100.00
Total	265	100.00	

Main Reason	Freq.	Percent	Cum.
Myanmar 2016			
Don't know (spontaneous)	1	0.34	0.34
No need for a loan - establishment had sufficient capital	180	60.61	60.94
Application procedures were complex	54	18.18	79.12
Interest rates were not favourable	18	6.06	85.19
Collateral requirements were too high	9	3.03	88.22
Size of loan and maturity were insufficient	9	3.03	91.25
Did not think it would be approved	10	3.37	94.61
Other	16	5.39	100.00
Total	297	100.00	
Total	511	100.00	
Philippines 2015			
Don't know (spontaneous)	17	3.01	3.01
No need for a loan - establishment had sufficient capital	479	84.93	87.94
Application procedures were complex	11	1.95	89.89
Interest rates were not favourable	25	4.43	94.33
Collateral requirements were too high	9	1.60	95.92
Size of loan and maturity were insufficient	3	0.53	96.45
Did not think it would be approved	4	0.71	97.16
Other	16	2.84	100.00
Total	564	100.00	
Thailand 2016			
Don't know (spontaneous)	4	0.79	0.79
No need for a loan - establishment had sufficient capital	233	46.14	46.93
Application procedures were complex	84	16.63	63.56
Interest rates were not favourable	97	19.21	82.77
Collateral requirements were too high	27	5.35	88.12
Size of loan and maturity were insufficient	29	5.74	93.86
Did not think it would be approved	29	5.74	99.60
Other	2	0.40	100.00
Total	505	100.00	
Viet Nam 2009			
No need for a loan - establishment had sufficient capital	177	63.21	63.21
Application procedures were complex	49	17.50	80.71
Interest rates were not favourable	15	5.36	86.07
Collateral requirements were too high	17	6.07	92.14
Size of loan and maturity were insufficient	6	2.14	94.29
Did not think it would be approved	2	0.71	95.00

Other	14	5.00	100.00
Total	280	100.00	
Viet Nam 2015			
Don't know (spontaneous)	2	0.53	0.53
No need for a loan - establishment had sufficient capital	295	78.46	78.99
Application procedures were complex	21	5.59	84.57
Interest rates were not favourable	22	5.85	90.43
Collateral requirements were too high	13	3.46	93.88
Size of loan and maturity were insufficient	4	1.06	94.95
Did not think it would be approved	7	1.86	96.81
Other	12	3.19	100.00
Total	376	100.00	

Source: World Bank, Enterprise Surveys, https://www.enterprisesurveys.org/en/enterprisesurveys (accessed 24 November 2022).

Table A2: Descriptive Statistics

2009–2014						2015–2018					
Variable	Obs.	Mean	Std. Dev.	Min.	Max.	Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Trade Credit	3,041	0.065	0.247	0	1	Trade Credit	4,609	0.087	0.282	0	1
SME	3,041	0.717	0.451	0	1	SME	4,609	0.691	0.462	0	1
Age	3,041	2.635	0.686	0.693	4.682	Age	4,609	2.825	0.606	.693	5.088
Productivity	3,041	16.655	2.626	8.367	26.894	Productivity	4,609	15.704	3.624	3.189	26.749
Constrained	3,041	0.610	0.488	0	1	Constrained	4,609	0.655	0.475	0	1
Audit	3,041	0.414	0.493	0	1	Audit	4,609	0.399	0.490	0	1
Foreign	3,041	0.139	0.346	0	1	Foreign	4,609	0.095	0.293	0	1
Sole	3,041	0.041	0.198	0	1	Sole	4,609	0.032	0.177	0	1
Export	3,041	0.319	0.466	0	1	Export	4,609	0.306	0.461	0	1

SME = small or medium-sized enterprise.
Source: Authors.

Table A3: Robustness – Results Using a Logit Model

Trade Credit	(1) Baseline	(2) Industry Fixed Effects	(3) Industry and Year Fixed Effects	(4) Industry, Year, and Country Fixed Effects	(5) Full Model
SME dummy	–0.00568	–0.00302	–0.00119	–0.00137	–0.00126
	(0.00753)	(0.00760)	(0.00762)	(0.00771)	(0.00761)
Log age	0.0130***	0.0140***	0.0122**	0.000647	–0.000388
	(0.00497)	(0.00506)	(0.00512)	(0.00524)	(0.00518)
Productivity	0.00407***	0.00382***	0.00411***	0.00816***	0.00680***
	(0.000952)	(0.000985)	(0.000994)	(0.00180)	(0.00178)
Constrained	0.0315***	0.0283***	0.0273***	0.0198***	0.0173**
	(0.00688)	(0.00689)	(0.00691)	(0.00695)	(0.00689)
Audit	0.0362***	0.0372***	0.0377***	0.0345***	0.0277***
	(0.00675)	(0.00681)	(0.00690)	(0.00785)	(0.00782)
Foreign	–0.0301***	–0.0327***	–0.0304***	–0.0299***	–0.0269**
	(0.0111)	(0.0112)	(0.0112)	(0.0113)	(0.0113)
Sole	–0.0342*	–0.0296	–0.0281	–0.0217	–0.0227
	(0.0192)	(0.0191)	(0.0192)	(0.0190)	(0.0188)
Export	0.0111	0.00882	0.00945	0.0182**	0.0181**
	(0.00736)	(0.00751)	(0.00749)	(0.00772)	(0.00763)
Gross domestic product per capita					–0.000596***
					(0.000155)
Bank finance					0.00731***
					(0.000903)
Industry Fixed Effects		Yes	Yes	Yes	Yes
Year Fixed Effects			Yes	Yes	Yes
Country Fixed Effects				Yes	Yes
Observations	7,650	7,650	7,650	7,650	7,650

SME = small or medium-sized enterprise.
Notes:
1. Standard errors in parentheses.
2. *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors.

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