



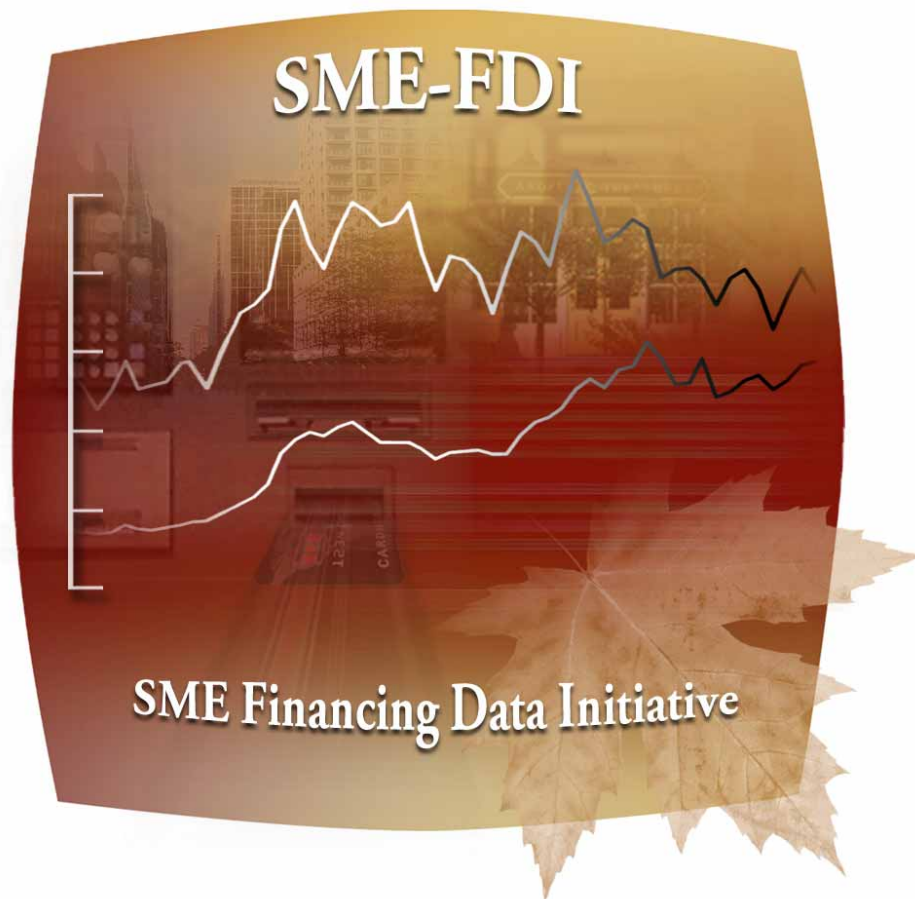
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**DETERMINANTS OF TRADE CREDIT USE BY SMALL AND
MEDIUM-SIZED ENTERPRISES IN CANADA**

WORKING PAPER

DECEMBER 2009



**SMALL BUSINESS AND TOURISM BRANCH
INDUSTRY CANADA**

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Abstract

This paper investigates the determinants of trade credit demand, approval and importance for Canadian small and medium-sized enterprises (SMEs) using firm-level data originating from the Small and Medium-Sized Enterprise Financing Data Initiative 2004. The findings show that firms which experience financing difficulties seek relatively more trade credit. However, these firms receive less trade credit than those that do not report such difficulties and do not rely significantly more on trade credit than on lines of credit. Furthermore, there is evidence that product quality risk plays an important role on the trade credit market. Finally, it seems that bigger SMEs tend to use their asymmetric bargaining position to seek more trade credit.

JEL Classification: G32

I. Introduction

Small and medium-sized enterprises (SMEs) face many challenges. One of them is the access to financing. Since it is particularly difficult to understand the inner workings of an SME — also known as its informational opacity (Berger and Udell, 2006), SMEs face a particularly acute asymmetric information problem when entering a banking relationship: banks know much less about the business than business owners do. Even though this problem also affects bigger businesses, it is more acute for SMEs because they often lack a track record indicating their quality. Banks therefore have difficulty choosing good SMEs (adverse selection), and SMEs cannot commit to a given project (moral hazard). Stiglitz and Weiss (1981) show that these problems can lead to credit rationing: some worthy SMEs might receive no or insufficient financing.

Unfortunately, this credit rationing is hard to assess. It is, for example, difficult to distinguish between a rightfully rejected project and a credit constrained project. Petersen and Rajan (1994) introduce a new way of thinking about credit rationing. They posit that if an SME has a profitable project, it will seek financing following the pecking order theory introduced by Myers and Majluf (1984). According to the pecking order theory, firms will first use cheap financing from retained earnings and work their way to more expensive methods until the interest rate requested exceeds the rate of return of the project. In that sense, if a firm is asking for financing at the most expensive level, this shows that it has been refused financing in the previous cheaper stages even though the rate of return of the project is high. Petersen and Rajan (1994) find that trade credit — term offered by a supplier to delay the payment for merchandise received by the buyer — is the most expensive financing form and could therefore give valuable information on credit constraint.

Trade credit is widely used in Canada. In 2004, it represented 22.9 percent of liabilities in the non-financial industries for a total amount of \$367 650 million (Statistics Canada, 2006, Table 4-1). The 2004 edition of the *Survey on Financing of Small and Medium Enterprises*, a part of the Canadian Small and Medium-Sized Enterprise Financing Data Initiative (SME FDI), allows us to investigate the trade credit market from a new perspective. Following the credit rationing argument of Petersen and Rajan (1994), the first hypothesis is that financially constrained SMEs seek more trade credit and rely more on it. The dummy variable used to test this hypothesis is whether a respondent thought that financing was an obstacle to growth. Our second hypothesis is that trade credit will be used in cases where there could be issues with product quality. Trade credit would facilitate the return of the merchandise as already suggested by Ng, Smith and Smith (1999). Two variables capture issues related with product quality: exporting behaviour and research and development intensity.

Our first contribution to the existing literature is to confirm that financially constrained firms do turn towards trade credit when seeking financing. Second, we find mixed evidence to support the idea that trade credit is used when product quality is an issue. Finally, we give strong support to the asymmetric argument mentioned in Wilson and Summers (2002), according to which large SMEs use their size to impose purchase conditions.

The rest of the paper is structured in the following way: Section II presents relevant theory and previous evidence; Section III discusses data and descriptive statistics; Section IV explains the methodology; Section V provides results; and Section VI presents the conclusion.

II. Theory and Previous Evidence

The literature in the field of trade credit can be divided into three strands. The first one examines trade credit from a monetary policy angle. It aims at identifying whether the trade credit channel can substitute the bank lending channel in times of monetary restriction, thus making the policy less efficient. The second one still examines the relationship between bank and trade credit, but from a credit rationing perspective. SMEs would show on the trade credit market, where information asymmetry is not as acute as on the bank market, that they are creditworthy. Granted trade credit would act as a signal for a good quality, which could then enable SMEs to be financed by the bank market. Finally, the third one goes into more detail to understand how and when certain forms of trade credit are used by SMEs. Only the second and third strands are relevant to this paper.

Based on Stiglitz and Weiss (1981), credit rationing is due to two forms of information asymmetry: adverse selection and moral hazard. Biais and Gollier (1997) use adverse selection to develop a model using the informational advantage of trade credit. In their setting, companies have access to information about other companies at a lower cost than banks do, because they know the market and the products better. This advantage allows them to choose creditworthy firms for trade credit. A company that has received trade credit can then use this signal to access the banking system. In that sense, trade credit is a substitute to bank credit for companies in an early stage, and then becomes a complement in latter stages, because a company would always need to keep the positive signal of trade credit to remain in the banking relationship.

This theoretical construction is verified by Alphonse, Ducret and Séverin (2004). With a sample of 654 American firms from the 1998 Survey of Small Business Financing data, they offer empirical support for Biais and Gollier (1997). Using the size of accounts payable and bank debt to model trade and bank credit usage, they find that the size of total loans affects negatively the usage of trade credit, while the size of accounts payable has a positive impact on the access to the bank loans.

Burkart and Ellingsen (2004) focus their attention on the moral hazard aspect of information asymmetry. Their main argument is that trade credit is costlier to divert than bank loans, so it diminishes the risk of moral hazard problem. Put differently, some firms that would have diverted cash will not do so with trade credit. Consequently, trade credit can alleviate financing problems associated to moral hazard. Using this framework, Burkart and Ellingsen (2004) also argue that bank credit will be used before trade credit because it is cheaper. The business owner will seek trade credit only if the amount loaned by the bank is insufficient to fund the project. In turn, the amount of the loan required by the entrepreneur will depend on his/her wealth. Wealthier entrepreneurs will generally not need as much financing, and so they are less likely to be constrained by banks — therefore they won't resort to trade credit. Less wealthy businesses, however, will need more financing, and will therefore require trade credit because bank credit won't suffice.

Cunningham (2004) confirms these conclusions with annual firm-level data for 28 729 Canadian firms from Statistics Canada's Financial and Taxation Statistics for Enterprises (FTSE), which cover an 11-year period from 1988 to 1998. By splitting the sample into low-wealth and high-wealth groups based on profits, she finds that the former group uses trade and bank credits

as complements, while the latter group does not require as much trade credit measured by the two following ratios: accounts payables to sales and loans to sales.

Instead of discussing a specific theory, Petersen and Rajan (1997) examines the role of potential determinants for trade credit demand such as: customer's credit quality, the relationship with financial institutions, relationship with suppliers and liquidation costs. These determinants are used to explain the accounts payables (trade credit demand) of the 3404 firms contained in the American SSBF survey of 1988–89. Unsurprisingly, they find that suppliers grant more credit to businesses with a higher credit quality, but only those with less access to institutional finance take the financing.

Danielson and Scott (2004) use similar determinants but, instead of explaining the accounts receivables, they use the opinions on the importance of different sources of funding contained in the 1995 Credit, Banks and Small Business Survey conducted by the American National Federation of Independent Businesses as dependent variable. They find that firms increase their demand for credit cards and trade credit when facing credit constraints. The fact that a firm was refused financing and the opinion that borrowing needs have not always been met in the last three years served as proxy for credit constraint.

So far, we have thought of trade credit as homogenous. In practice, however, trade credit takes at least two forms: net and two-part terms. The net form represents an interest-free loan. In such a case, a supplier allows his or her client to pay within 30/60/90 days with no incentive to do so earlier. When using two-part terms trade credit, the supplier grants a rebate for early payment. For example, the most usual form is 2/10 net 30, which means a rebate of 2 percent if payment is made within 10 days or the payment is expected in full within 30 days. These two kinds of trade credit give very different signals. A company being offered a net term form trade credit is considered financially solid, because the business offering trade credit is confident that their creditor will still be in business when payment is due. A company accepting (paying on the 30th day) a 2/10 net 30 trade credit offer, however, must be in a very difficult situation to have to finance itself at an implicit annualized interest rate of 43.9 percent¹.

¹ A business not taking the 2 percent rebate is implicitly borrowing the amount due for 20 days at a 2 percent interest rate. Annualizing the 2 percent over 20 days gives an annual interest rate of 43.9 percent.

Ng, Smith and Smith (1999) work with this distinction using a sample of 950 questionnaires surveying credit managers using Compustat. They find that when product quality is hard to determine, sellers give net credit to allow proper assessment of the product. In cases where a client's financial status is unknown, two-part terms are preferred to accelerate collection and reduce non-payment risk.

Wilson and Summers (2002) keep this distinction, but add questions concerning the reasons given by small businesses for granting trade credit. Through their analysis of postal questionnaires filled by 500 American businesses, they find that the decision between two-part and net terms depends on product and market characteristics. First, when it takes time to determine the quality of products, net terms are offered instead of cash to enable an easy return of merchandise, which supports the findings of Ng, Smith and Smith (1999). Second, small firms feel obliged to adopt industry practices and grant trade credit to remain competitive.

The empirical literature examines trade credit through two perspectives: its actual usage through accounts payable/receivable and its importance/role according to credit managers. This paper adds a new perspective. In addition to investigating the importance of trade credit, we also look at the decision to seek trade credit. SMEs requesting trade credit, but not obtaining it, were not considered in the previous literature dealing with usage. Indeed, both SMEs that do not request trade credit and those not obtaining it have no accounts payable and are therefore impossible to distinguish. All SMEs requesting trade credit, however, do signal a need and must be studied. Unfortunately, unlike Ng, Smith and Smith (1999), we have no information as to the kind of trade credit requested. This is an important limitation to this study, because different kinds of trade credit are used by different SMEs for different purposes.

III. Data and descriptive statistics

Unlike most of the previous literature relying on the American Survey of Small Business Finances (SSBF), we use the *Survey on Financing of Small and Medium Enterprises 2004*, a part of the Small and Medium-Sized Enterprise Financial Data Initiative (SME FDI), which targets Canadian SMEs and investigates their financing behaviour.² The main objective of this survey,

² Statistic Canada chose 34 363 SMEs from the Canadian Business Registry. Of these 21 710 could be contacted, and 12 047 agreed to complete the phone interview and allowed Statistic Canada to share the information with Industry Canada. This participation rate of 55.4 percent is between the 70 to 80 percent reported in Petersen and Rajan (1997), and the 4 percent used in Danielson and Scott (2004).

conducted by Industry Canada, the Department of Finance and Statistics Canada, was to determine what kind of SMEs request financing in the form of debt, leasing, equity and trade credit, and understand the approval process. The survey also contains some general information concerning the SME, the banking relationship and some financial information.³ Unfortunately, this survey does not allow us to distinguish between the forms of trade credit requested, which is an important drawback for the study of trade credit.

To identify the determinants of trade credit, we use three dependent variables: whether an SME seeks trade credit; receives trade credit; and thinks it is an important financing form for daily business.

The first dependent variable is derived from a question asking whether the “business made any request to purchase any material, equipment or inventory on credit from a supplier in the last 12 months.” Forty seven percent of businesses answered positively. This number is much lower than the 82 percent of SMEs using trade credit in 1987 as reported in Elliehausen and Wolken (1993), but exactly the same as 47 percent of purchases with trade credit reported in Danielson and Scott (2004). A reason for potential differences may be that this variable only captures trade credit that was sought by the credit seeker and not the one that was offered by the supplier.

To model this decision, we consider only the 3585 SMEs that request some form of financing. We therefore ask why do firms which are looking for financing turn towards trade credit. In that sense, we separate the decision to seek trade credit from the one to seek financing.

The second question of interest is “whether any suppliers turned down a request for this type of credit.” Only the SMEs that sought trade credit answered this question (1685 SMEs). Eighty eight percent of SMEs asking for trade credit were always granted trade credit. This acceptance rate is one of the highest of all financing methods (Table 1).

Third, to assess to which extent SMEs rely on trade credit for ongoing business, we use a question that evaluates the importance of trade credit to the SME. Unlike the survey used by Danielson and Scott (2004), business owners did not rank the different financing forms, but rather classified them as being important/necessary or not important/not necessary. Only 2000 SMEs were

³ For more information on this survey, see the following website :

http://www.sme-fdi.gc.ca/eic/site/sme_fdi-prf_pme.nsf/eng/01561.html .

randomly chosen to answer this question. These SMEs probably sought financing in the past, and now rate the importance of trade credit as a financing form. In that sense, just like in the analysis of SMEs seeking trade credit, we avoid the question why financing in itself was important, and focus on the importance of trade credit as a financing mean. Of those that sought trade credit, 75 percent thought it was important, while 50 percent of those that did not seek trade credit found it important. This result shows that some SMEs occasionally request trade credit without finding it important. Conversely, some SMEs did not demand trade credit in 2004, but still found this form of financing important. These SMEs might find it important to offer trade credit or might have received trade credit in the past.

Table 1: Financing Behaviour of SMEs Seeking Financing

	Mean (%)	N
Seek any Financing	100.0	3585
Seek Bank Credit	82.1	3585
Seek Capital Leasing	18.7	3585
Seek Equity	6.5	3585
Seek Trade Credit	47.0	3585
Approval any Financing	80.8	3585
Approval Bank Credit	88.4	2758
Approval Capital Leasing	95.5	671
Approval Equity	63.7	234
Approval Trade Credit	88.6	1685
Importance of Line of Credit	53.7	2000
Importance of Trade Credit	49.5	2000

Note: The sample consists of SMEs that sought any form of financing. For the variable "approval bank credit" the percentage is calculated for those SMEs which received an answer from the bank, thus excluding SMEs that withdrew their demand and those still waiting for an answer. For the variable "importance of line of credit" and "importance of trade credit", the sample consists of all SMEs that answered this question.

To model the three dependent variables (seeking, obtaining and reliance) we use the following explanatory variables:

Credit Constraint

Respondents were asked to identify serious obstacles to growth out of a list of eight possibilities. According to the first hypothesis, SMEs finding that financing is an obstacle to growth will turn to trade credit because they have been constrained at other levels. A similar variable was used in Wilson and Summers (2002) and Danielson and Scott (2004). Of those who apply for financing, only 30 percent of firms identifying financing as an obstacle are given bank financing, while 75 percent of the firms that do not identify financing as an impediment to growth are accepted. We therefore think that this dummy variable will affect positively the demand for trade credit.

Exporter

The fact that a firm is involved in international trade could have two impacts. On one hand, such firms encounter product quality issues because the legal frameworks differ across countries. This makes it even more difficult to exchange products once payment has been made, thus having a positive impact on trade credit demand. On the other hand, international partners do not know if they can trust each other for payment, so a supplier would probably insist on prompt payment, thus denying trade credit requests. In that sense, one can expect a positive sign for request, but a negative one for approval.

Research and Development Intensity

Firms involved in research and development (R&D) probably purchase complex supplies. As they cannot determine at first glance the quality of such products, they will probably ask for trade credit to give themselves the necessary inspection time as posited by Ng, Smith, Smith (1999). The R&D intensity should be positively correlated to demand, approval and importance of trade credit.

Managerial Experience and Age of Owner

The experience of the manager plays an important role in determining the future prospect of the SME, especially for very young SMEs. Managerial experience should have a negative coefficient on demand, but a positive one for approval. More experienced managers should have a better access to financing and therefore will not need trade credit. If they do request trade credit, they will probably be approved due their creditworthiness. Similarly, the age of the owner could be a good proxy for creditworthiness, since an older person will have a proven financial track record. The age of the owner should have a negative impact on demand, but a positive one on approval. We also include the following owner characteristics: visible minority, aboriginal and immigrant that could have an impact on access to financing.

Rural Areas

According to Petersen and Rajan (1995), relationship lending is less present in the competitive metropolitan area because banks need a certain monopolistic position for the investment into this relationship to pay off. In such an urban setting, SMEs could easily move their business to a bank with better conditions once they have reached a certain size, thus making the time and energy investment of the initial bank fruitless. This commitment is much easier to make in a rural setting where competition between banks is lower. Rural and small towns include the population living

in regions outside the commuting zones of larger urban centres (population over 10 000). This variable should have a negative impact on demand and importance of trade credit.

Age and Size of the SME

The longer a firm exists and the bigger it is, the more it can signal that it can weather tough economic conditions and that deserves a good credit rating. Furthermore, by staying in business, a firm can signal that it doesn't adopt opportunistic behaviour. According to Biais and Gollier (1994) and Burkart and Ellingsen (2004), these two elements would make it easier for companies to access conventional credit markets. Age and size should have a negative impact on demand, but a positive one on approval.

When comparing the SMEs that request some other form of financing and those that request trade credit, we find some small differences. SMEs seeking trade credit face slightly greater financing difficulties than the ones requesting any financing form, though not as much as ones seeking leasing (Table 2). SMEs seeking trade credit have on average more employees than the ones requesting any financing, and are somewhat older. SMEs demanding leasing have even more employees and are older than those requesting trade credit. Manufacturing and retail are the two economic sectors where trade credit is most prevalent and professional services and tourism are the two sectors where it is the least. There is no apparent regional pattern.

Table 2: General Characteristics of SMEs Seeking Financing

		Any financing (N=3585)	Bank credit (N=2942)	Trade credit (N=1685)	Leasing (N=671)
Finance Constraint	Financing Difficulties (binary)	37.6%	38.1%	39.7%	43.4%
Product Quality	Exporting (binary)	17.5%	17.2%	19.9%	20.3%
	R&D Expenditure	3.8%	3.7%	3.7%	4.1%
Owner Information	Average Age of Owner (yrs)	48.7	48.7	48.8	48.1
	Experience (yrs)	11.9	12.0	12.2	12.0
	Visible Minority (binary)	6.8%	7.0%	6.7%	4.6%
	Immigrant (binary)	1.9%	1.9%	1.4%	1.0%
	Aboriginal (binary)	2.8%	2.8%	2.9%	2.4%
Business Information	Rural (binary)	33.4%	33.5%	33.6%	32.9%
	Average Age of SME (yrs)	12.0	12.1	12.1	12.5
	Size (Full-Time Equivalent Employee)	12.0	12.1	13.8	19.8
Regions	Atlantic	13.6%	13.6%	12.8%	12.7%
	Quebec	24.5%	25.0%	21.8%	27.6%
	Ontario	23.0%	23.2%	23.9%	21.2%
	Prairies	22.7%	22.5%	23.6%	21.0%
	British Columbia	13.0%	12.8%	14.5%	15.2%
	Territories	3.2%	3.0%	3.4%	2.4%
Sectors	Agriculture/Primary	16.5%	16.2%	16.9%	13.7%
	Manufacturing	12.6%	12.7%	15.3%	15.1%
	Wholesale/Retail	16.6%	16.9%	17.7%	13.1%
	Professional Services	7.6%	8.0%	5.5%	6.9%
	Knowledge-based Industries	8.3%	7.8%	7.7%	8.9%
	Tourism	11.7%	11.9%	8.7%	9.5%
	Other	26.7%	26.3%	28.2%	32.8%

IV. Methodology

The logit model we test has four major explanatory components: credit constraint, product quality, owner characteristics and business characteristics:

$$TradeCredit = \beta_1 CreditConstr + \beta_2 Quality + \beta_3 Owner + \beta_4 SME + \beta_5 Control + \varepsilon$$

First, we explain trade credit demand as a function of credit constraint. The indicator of credit constraint is whether a business self-reported that financing was an obstacle to growth.

Second, product quality should affect the trade credit demand. SMEs involved in international trade will demand more time to inspect merchandise, as they do not necessarily know the reputation of their partner. Similarly, SMEs investing intensely in research and development may purchase

complex goods whose quality cannot be assessed immediately. Such firms will also wish more time to inspect the merchandise.

Finally, we use the following owner characteristics: the age and experience of the owner, visible minority, immigrant and aboriginal, and business characteristics: rural setting, age of the SME, full-time equivalent, sales and debt-to-equity ratio. As to the control variables, we use regions and industries to take the stratification of the survey into account as suggested by Thomas (1993).

We use the same general model for trade credit demand, approval and importance and estimate all equations using a logistic equation due to the binary dependent variables. In the case of trade credit approval we utilize a Heckman correction to an OLS regression to account for potential selection bias. We apply the same model to the three dependent variables, because the insights remain the same. For example, if a client would like a longer period to inspect the goods, it is in the interest of the supplier to accept the request to make the sale. Furthermore, Petersen and Rajan (1997) argue that healthy firms help firms that experience financing difficulties to foster a better relationship. In that sense, a firm that is credit constrained will turn to trade credit, and be helped in that the demand will probably be approved.

To further investigate the relationship between bank lending and trade credit, we also model seeking and approval decision for bank credit. In that case, the same independent variables are used as in the trade credit case, but we also add variables pertaining to the loan requested. The variables added are: collateral required, purpose of loan and kind of loan.

V. Results

a) Trade Credit Demand

Credit Constraint

As expected, firms which identify financing as an impediment to growth seek 17 percent⁴ more trade credit than others (Table 3, I-III). This finding is consistent with the pecking order theory, which states that SMEs exhaust other financing methods before resorting to expensive trade credit. Interestingly, this variable plays no significant role in the bank credit seeking behaviour

⁴ All odds ratios are calculated based on e^{β_i} .

(Table 4, I-II). This shows that these firms are not more prone to seeking all forms of financing, but they specifically seek trade credit.

Product Quality

As predicted, exporting SMEs have a higher propensity to seek trade credit (Table 3, II). SMEs involved in international trade have less information about business partners, and would therefore require some time to scrutinize the quality of their merchandise because they do not know the reputation of their business partner. Furthermore, the complications associated with returning paid merchandise are greater when dealing with companies across borders. R&D expenditure, however, has no significant impact on trade credit seeking. We expected a positive sign because these businesses receive complex supplies and need some time to assess the quality of the goods. Furthermore, if these supplies are part of the R&D effort, the SME probably has little experience evaluating their quality, so they would need more time and therefore would demand trade credit.

Asymmetric Bargaining

We find some support for this idea introduced by Wilson and Summers (2002). SMEs with more employees demand trade credit significantly more often (Table 3, I-III). It could be that bigger SMEs are credit-rationed because banks wanting to spread the default risk over many clients would prefer lending smaller amounts thus attracting smaller SMEs. However, when we model the credit approval decision, we find that bigger SMEs are significantly more likely to receive bank credit (Table 4, III-IV). These businesses are therefore probably not credit constrained.

Table 3: Factors Explaining which SMEs Seek Trade Credit

	I	II	III
Financing Difficulties (binary)	0.18 ** (0.02)	0.16 ** (0.02)	0.17 ** (0.02)
Exporting (binary)	0.16 (0.11)	0.19 ** (0.05)	0.14 (0.16)
R&D Expenditure	-0.40 (0.47)	-0.46 (0.40)	
Age of Owner	0.00 (0.36)	0.00 (0.49)	
Experience of Owner	0.02 *** (0.00)	0.03 *** (0.00)	0.02 *** (0.01)
Visible Minority (binary)	-0.05 (0.72)	0.05 (0.71)	
Immigrant (binary)	-0.50 * (0.06)	-0.52 ** (0.05)	
Aboriginal (binary)	-0.12 (0.59)	0.02 (0.94)	
Rural (binary)	0.10 (0.20)	0.05 (0.54)	
Log Age of SME	-0.11 ** (0.02)	-0.12 *** (0.01)	-0.10 ** (0.02)
Log Full-time Equivalent Employee	0.22 *** (0.00)	0.21 *** (0.00)	0.21 *** (0.00)
Region	Yes	No	Yes
Industry	Yes	Yes	Yes
<i>Hosmer and Lemeshow</i>	0.228	0.670	0.112
<i>Likelihood Ratio</i>	183.39	154.14	175.82
<i>Sample Size</i>	3585	3585	3585

Note: All regressions are logistic. All columns use a sample of businesses that sought any form of financing. (p-value) * corresponds to 10% significance, ** 5% and *** 1%.

Table 4: Determinants of the Bank Credit Market

	Seek		Approval	
	I	II	III	IV
Financing Difficulties (binary)	0.13 (0.17)	0.14 (0.12)	-2.36 *** (0.00)	-2.36 *** (0.00)
Exporting (binary)	-0.12 (0.35)		0.09 (0.65)	
R&D Expenditure	0.24 (0.74)		0.13 (0.89)	
Age of Owner	0.00 (0.25)		0.01 * (0.08)	
Experience of Owner	0.01 (0.18)		0.01 (0.41)	
Visible Minority (binary)	0.17 (0.37)		-0.04 (0.88)	
Immigrant (binary)	0.09 (0.79)		0.20 (0.68)	
Aboriginal (binary)	0.11 (0.69)		-1.00 *** (0.00)	-1.07 *** (0.00)
Rural (binary)	0.04 (0.70)		0.14 (0.42)	
Log Age of SME	0.09 (0.14)	0.09 * (0.08)	0.06 (0.55)	0.14 * (0.10)
Log Full-time Equivalent Employee	-0.04 (0.28)	-0.04 (0.24)	0.22 *** (0.00)	0.23 *** (0.00)
Collateral: Personal Propriety (binary)			-0.71 *** (0.00)	-0.72 *** (0.00)
Collateral: Commercial Propriety (binary)			0.01 (0.97)	0.03 (0.87)
Cosignature (binary)			-0.53 *** (0.01)	-0.54 *** (0.01)
Purpose: Fixed Asset			0.49 *** (0.01)	0.47 *** (0.01)
Purpose: Working Capital			0.12 (0.54)	0.11 (0.56)
Purpose: R and D			-0.53 ** (0.05)	-0.48 * (0.07)
Purpose: Debt Consolidation			-0.92 *** (0.00)	-0.90 *** (0.00)
Demand Loan			0.27 (0.34)	0.29 (0.31)
Term Loan			0.35 ** (0.05)	0.37 ** (0.03)
Mortgage			0.50 ** (0.04)	0.56 ** (0.02)
Region	Yes	No	Yes	No
Industry	Yes	Yes	Yes	Yes
<i>Hosmer and Lemeshow</i>	0.120	0.501	0.190	0.249
<i>Likelihood Ratio</i>	25.78	16.94	518.539	510.17
<i>Sample Size</i>	3585	3585	2758	2758

Note: Both regressions are logistic. Column I and II model the likelihood of seeking bank credit (=1). The sample consists of all firms that requested some form of financing. Column III and IV model the likelihood for firms of being approved (=1). The sample consists of firms that applied for bank credit and had received an answer at the time of the survey. Adding the financial information makes the sample drop to approximately 600 observations, and these variables are not significant. (p-value) * corresponds to 10% significance, ** 5% and *** 1%.

Another explanation would be that they simply have more contact with other businesses. If trade credit demand is random, then a bigger SME has a greater chance of demanding trade credit because it would usually have more trade partners. We control for this element by taking into consideration sales (regression not reported), but the number of full-time equivalent employee remains significant and positive. Bigger SMEs therefore do not seek trade credit simply because they have more sales. A final explanation is their market power. Bigger firms are also bigger clients, and they are probably aware of it. In that sense, they can insist on net trade credit from their supplier. Since there are more small SMEs than big ones, we assume that big SMEs mostly trade with small SMEs. Market power is probably the explanation for the sign and significance of these coefficients.

b) Trade Credit Approval

In the previous section, we saw that credit-rationed SMEs seek more trade credit. The question now is whether suppliers accept those requests. If they do, then trade credit could alleviate credit rationing for SMEs. In the case for product quality, purchasers seek trade credit to protect themselves, but suppliers might also not know their clients and would prefer not to grant trade credit and receive immediate payment. It is therefore interesting to see the outcome of this bargaining game.

A potential problem in the analysis of trade credit approval is the self-selection bias: only firms that think they will receive the financing apply. We use a Heckman procedure to control for the trade credit seeking behaviour. We find a non-significant lambda indicating that there is no sample selection problem (Table 5, III). All results are reported in Table 5.

Table 5: Factors Explaining Trade Credit Approval

	I	II	III
Financing Difficulties (binary)	-1.41 *** (0.00)	-1.41 *** (0.00)	-0.14 *** (0.00)
Exporting (binary)	-0.49 ** (0.02)	-0.47 *** (0.01)	-0.05 ** (0.03)
R&D Expenditure	-0.27 (0.83)		
Age of Owner	0.00 (0.72)		
Experience of Owner	-0.02 (0.45)		
Visible Minority (binary)	0.06 (0.85)		
Immigrant (binary)	-0.69 (0.22)		
Aboriginal (binary)	0.11 (0.81)		
Rural (binary)	0.25 (0.20)		
Log Age of SME	0.34 *** (0.00)	0.34 *** (0.00)	0.03 *** (0.00)
Log Full-time Equivalent Employee	-0.01 (0.86)		-0.01 (0.36)
Region	Yes	Yes	No
Industry	Yes	No	Yes
P-value of lambda			0.45
<i>R-Square</i>			0.06
<i>Hosmer and Lemeshow</i>	0.21	0.21	
<i>Likelihood Ratio</i>	118.35	113.35	
<i>Sample Size</i>	1685	1685	1685

Note: Column I and I are logistic regressions predicting approval (=1). Column III is an OLS regression using the Heckman correction to take into effect the sample selection of SMEs applying for trade credit. Both samples consist of businesses which sought trade credit. (p-value) * corresponds to 10% significance, ** 5% and *** 1%.

Credit Constraint

We find that firms that report having financing difficulties are significantly less often approved for trade credit (Table 5, I-II). SMEs reporting financing difficulties are 75 percent less likely to be approved. This finding does not coincide with the ones from Petersen and Rajan (1997), who argue that healthy firms invest in their relationship with weaker ones by helping them out in difficult times. However, when comparing the coefficients for this variable in the equations for trade credit approval (-1.41, Table 5 I-II) and bank credit approval (-2.36, Table 4 III-IV), financing difficulties play a significantly smaller role in trade credit approval than in bank credit approval.

Product Quality

Exporting SMEs are 40 percent less likely to be approved when demanding trade credit (Table 5, I).

It would seem that suppliers have a greater bargaining power, probably because they have more to lose. The worst outcome for a supplier is not being paid, while for the client, the worst outcome is a bad quality.

Age of the Small and Medium-sized Enterprise

Older SMEs face a higher approval rate. Such SMEs are probably considered more trustworthy by their business partners.

c) Importance of Trade Credit in Daily Business

Finally, to check for reliance on trade credit, we use a variable measuring the importance of trade credit for SMEs in keeping business in operation (Table 6). Unfortunately, this variable does not differentiate between the importance of granting and/or receiving trade credit. We must therefore be careful when interpreting the results.

To have a benchmark to compare reliance on trade credit, we also modeled reliance on lines of credit. Both financing technologies are tailored for short term financing and are therefore suitable for comparison.

Credit Constraint

We already know that SMEs experiencing financing issues seek more trade credit. Such SMEs also rely 63 percent (Table 6, I-II) more on both trade credit and 47 percent (Table 6, III-IV) more on lines of credit. Even though the coefficient for trade credit is greater than the one for line of credit, the difference is not significant. It seems that SMEs with financing difficulties simply rely more on short term financing but not explicitly on trade credit.

Table 6: Factors Explaining the Importance of Financing Forms

	Trade Credit		Line of Credit	
	I	II	III	IV
Financing Difficulties (binary)	0.50 *** (0.00)	0.49 *** (0.00)	0.39 *** (0.00)	0.39 *** (0.00)
Exporting (binary)	0.37 *** (0.01)	0.39 *** (0.01)	0.16 (0.28)	
R&D Expenditure	-1.78 ** (0.04)	-1.87 ** (0.03)	-0.47 (0.58)	
Age of Owner	-0.01 * (0.08)	-0.01 (0.11)	-0.01 *** (0.00)	
Experience of Owner	0.02 * (0.10)	0.02 * (0.10)	0.02 (0.18)	
Visible Minority (binary)	0.18 (0.41)		-0.04 (0.86)	
Immigrant (binary)	-0.39 (0.31)		-0.29 (0.45)	
Aboriginal (binary)	0.41 (0.31)		0.35 (0.39)	
Rural (binary)	0.09 (0.46)		0.52 *** (0.00)	0.72 *** (0.00)
Log Age of SME	-0.08 (0.21)	-0.08 (0.21)	0.23 *** (0.00)	0.27 *** (0.00)
Log Full-time Equivalent Employee	0.45 *** (0.00)	0.44 *** (0.00)	0.47 *** (0.00)	0.46 *** (0.00)
Region	Yes	No	Yes	No
Industry	Yes	Yes	Yes	No
<i>Hosmer and Lemeshow</i>	0.359	0.520	0.556	0.107
<i>Likelihood Ratio</i>	349.9	340.47	314.23	252.68
<i>Sample Size</i>	2000	2000	2000	2000

Note: The regressions are logistic and predict the likelihood of finding trade credit important (=1). The sample consists of businesses which answered the second module. (p-value) * corresponds to 10% significance, ** 5% and *** 1%.

Product Quality

For both export and R&D investment, the coefficients explaining trade credit reliance are significant, while they are not significant for explaining reliance on lines of credit. Issues in product quality therefore seem to play a bigger role than credit constraint for reliance on trade credit and not just on short term financing. While exporting SMEs rely more on trade credit, as was suspected, R&D intensive SMEs rely surprisingly less on trade credit.

Asymmetric Bargaining

SMEs with more employees rely more on trade credit significantly more. This result confirms our idea that trade credit is often motivated by asymmetric bargaining reasons.

Conclusion

This paper investigates the Canadian trade credit market using the SME FDI 2004. We have three dichotomous dependent variables to quantify the trade credit demand: whether a SME seeks trade credit, receives it and finds it important. These variables are explained by the following trade credit determinants: credit constraint, product quality, owner and business characteristics. The first objective of this paper was to see whether financially constrained SMEs relied more on trade credit. The evidence supports this hypothesis. As in the current literature, we give strong support to the idea that trade credit is used as last resort financing. The second objective was to examine the role of product quality issues in trade credit. We find mixed evidence. Only exporting SMEs seek more trade credit and rely more on it. Finally, the data shows the presence of asymmetric bargaining. Indeed, bigger SMEs request trade credit more often and rely more on it. Since the number of employees of a SME is not a significant determinant of trade credit approval, it seems that this pressure from bigger SMEs does not affect the small SMEs that would have to provide financing to remain competitive.

From a policy viewpoint, our findings are relevant for the promotion of the development of SMEs. The objective of policies relating to SME financing is to target financially constrained SMEs and help them overcome these difficulties. We now know that these SMEs use more trade credit and rely more on it. Policies facilitating trade credit would therefore specifically assist them. An example of such a policy would be to give higher priority to suppliers in case of bankruptcy as already suggested by Gosselin, Papillon and Deschênes (2007). Such a measure would diminish the risk associated to trade credit and thus increase approval rates. At the same time, such legislation would reduce renegotiation costs associated with financial distress as reported by Wilner (2000), since bankruptcy would not be as costly to the supplier. Another possibility would be for the government to guarantee trade credit to SMEs. Such measures could increase credit specifically to financially constrained SMEs, and improve their financial situation.

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