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The Determinants of Distribution of Credit: Evidence from Vietnam*

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Abstract

Purpose: The issue of access to credit for private enterprises has been given an increased amount of attention given their crucial role in fueling economic growth. Vietnamese small and medium-sized businesses, however, face many obstacles in accessing financing for profitable investment opportunities, with up to 70% unable to access or obtain bank loans. This paper aims to address the factors affecting the credit accessibility of Vietnamese enterprises, and provide further insights of this issue under the new context of Basel II. **Research design, data and methodology:** We adopt a pooled sections approach to construct a sample of 155 firm observations before and after the implementation of Basel II accord in Vietnam and employing binary logistic regression and interaction terms for data analysis. **Results:** We find that firm characteristics (export participation, female ownership) and proxies for bank-borrower relationship (deposit, overdraft facility) have significant and positive effects on firm's access to credit. Notably, the sign of interaction coefficient shows that the implementation of Basel II tends to benefit small-sized firms in terms of credit accessibility. **Conclusions:** The finding further emphasizes the important role of relationship lending in Vietnam's credit market, which is even more critical for small firms when Basel II is universally applied as the new banking standards in the coming years.

Keywords : access to credit, distribution of credit, small and medium firms, firm characteristics, bank-borrower relationship, Basel II

JEL Classification Code: G21, G14, G18, L25

1. Introduction

It is now widely recognized that small and medium-sized enterprise (SME) sector is an important part of virtually any economy all over the world. Research shows that SMEs account for a majority of all private enterprises, and produce a substantial share of economic output and employment (Li & Rama, 2015). In some developing countries in Asia, nearly 90% of all business entities are categorized as SMEs, supplying up to about 80% of all employment, and producing a great portion of GDP of each country – for example, 46% in Singapore, 57% in Indonesia and around 40% in Vietnam. Nonetheless, SMEs face many obstacles in accessing financing for profitable investment opportunities due to a lack of credible information about themselves. Lenders are often reluctant to make small business loans because SMEs may not have reliable track records, sufficient financial information, or business plan (Berger & Udell, 2002). In Vietnam, these firms are also faced with great difficulties. It is reported there are still 70% of SMEs unable to access or obtain bank loans; among Vietnamese SMEs applying for formal credit, only 10.5% successfully obtain funds that fully satisfy their demand, and a large part manage to obtain only 25% or half of their need (Nguyen & Tang, 2012). As the new Basel Capital Accord's standards (Basel II) have been formally implemented by most major banks in Vietnam's banking system, there are concerns that SME access to credit might be to some extent affected. According to the implementation roadmap laid out by State Bank of Vietnam (SBV), ten banks were chosen to implement Basel II for the

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pilot period from 2016, and the whole commercial banking system have to basically meet the capital requirements until 2020. These standards may change the way banks analyze credits, for example by developing internal credit risk management techniques, which possibly reduces the credit availability to SMEs.

The issue of access to credit for SMEs, therefore, has been extensively investigated with a large body of research's focus on different firm-level determinants of credit constraints such as firm size, age, ownership, or industry (Beck & Demirguc-Kunt, 2006; Bigsten, Collier, Dercon, Fafchamps, Gauthier, Gunning, & Zeufack, 2003; Kira, 2013; Kira & He, 2012; Nguyen, Su & Sharma 2019), while some examine country's macroeconomic and institutional factors (Beck, Demirguc-Kunt, Laeven & Maksimovic, 2006; Kira, 2013). The authors often predicate on the assumption that access to credit for SMEs is restricted due to high information asymmetries, insufficient collaterals and small transaction volumes (Beck & Demirguc-Kunt, 2006; Nguyen, Su, & Sharma 2019). Studies on relationship lending then suggest that the asymmetric information problems of SMEs can be overcome by building long-term relation with banks through interaction over time or multiple financial products (Beck, Degryse, De Haas, & van Horen, 2018; Berger & Udell, 2002; Petersen & Rajan, 1994). However, it is also argued that relationship lending is costly, and consequently, banks either are reluctant to make SME loans, or rely on a number of transaction lending technologies based primarily on "hard" quantitative information, which favor only relatively transparent borrowers. With regard to the introduction of Basel II, previous studies also examine the possible effects of the Basel II accord on SME credit availability, for example in Europe (Saurina & Trucharte, 2004) and the United States market (Altman & Sabato, 2005; Berger, 2006). The issue of credit access for SMEs, however, has not been studied thoroughly in the case of Vietnam and, more importantly, in the condition of Basel II.

In this paper, we attempt to address this gap by studying whether the implementation of Basel II capital accord has any possible effect on the access to credit for Vietnamese SMEs, while controlling for other relevant firm-level factors that may influence credit accessibility. We adopt a pooled cross sections approach, whereby two cross-sectional data sets are collected before and after the implementation of Basel II accord in Vietnam. The first data set used is from the 2015 World Bank Enterprise Survey (WBSE), while the second is our recent survey conducted in the quarter of 2019. Our approach offers a number of advantages. First, we use manager/owner's judgment on credit obstacles to derive the firm's status of access to credit. Therefore, unlike previous studies that inferred firm's credit accessibility from hard information such as financial statements, cash flows, a measure of access to credit can be directly constructed from the data, and this subjective scale is preferred in related literature. Second, the data pooled over the two years, specifically of Pre-Basel II and Post-Basel II period, combing with interaction analysis allows us to examine differential effects of Basel II implementation on firm's access to credit based on firm size. Accordingly, we provide novel empirical evidence for the credit issue in the Basel II context, and also highlight the importance of different determinants of firm's access to credit in the particular socio-economic context of Vietnam from the perspective of relationship lending.

The rest of our paper proceeds as follows. Section 2 presents the literature related to firm' access to credit. Section 3 describes the model, data, and variables used in this study. Section 4 present empirical results, and also our discussion. Sector 5 concludes and presents limitations of the study and future research direction.

2. Literature Review

In this paper, our analysis focuses on private debt market as the main source of external financing, because in Vietnam borrowing from financial institutions, especially banks, remains the most important channel of funding for SMEs. Earlier studies have focused on empirically examining the determinants of credit access mainly from the firm-level perspective. Most have suggested that firm characteristics, bank-borrower relationship, and the global capital adequacy accord (Basel II) influence the nature and extent of access to credit for SMEs.

2.1. Firm characteristics

In terms of firm size, using a major firm database in 54 countries with 80% of firms being SMEs, Beck and Demirguc-Kunt (2006) report that SMEs suffer from greater financing obstacles such as collateral, bureaucracies or connections than large firms, and the effect of such obstacles on firm growth are much more severe for SMEs. Similarly, in a study based on direct evidence on whether firms' demand was satisfied in the formal credit market in six African countries, Bigsten et al. (2003) find micro and small firms are much less likely to get a loan than large firms. For Vietnamese SMEs, the current literature is mixed. While Malesky and Taussig (2009), Nguyen and Ramachandran (2006), and Rand (2007) find evidence that firm size is positively associated with access to bank loan, Nguyen, Su, and Sharma (2019) show large firms have a significantly higher likelihood of being credit constrained than smaller businesses. Firm age is also considered a proxy for

information asymmetries. Creditors do not often have much time to evaluate newly-established firms, nor do such firms build long-term relationships with suppliers of finance that can show their credit quality (Oliner & Rudebusch, 1992). Using a sample of 1933 firms located in five East African countries from the WBSE, Kira (2013) finds that most SMEs are affected by financing constraints and that those constraints appear to have a larger effect on young enterprises. In addition, Byiers, Rand, Tarp, and Bentzen (2010) show that well-established firms are easier to monitor, and thus more likely to have access to bank finance or face less constraints. However, based upon data of SME financing in Malaysia Abdullah (2011) finds that there is no statistically significant correlation between SMEs age and their credit accessibility. Similar results are documented in the studies of Nguyen, Su, and Sharma (2019), and Malesky and Taussig (2009) on Vietnamese SMEs.

Berger and Udell (2002) report that the lack of audited financial statements also causes SMEs to suffer from information asymmetry and thus credit rationing. According to Beck et al. (2018), banks are often discouraged to lend to SMEs due to the relatively limited reliable information. Kira and He (2012) argue that financial statements issued by firms provide creditors with information to evaluate performance and to determine repayment ability; as a result, firms with unclear or hidden financial information are more likely to rely on informal credit. Thus, having financial information checked by external auditors is negatively related with likelihood of being credit rationed (Drakos & Giannakopoulos, 2011). Besides, online presence also helps reduce information asymmetries as lenders may use firm's business information on its website to assess current performance as well as future prospects of borrowers (Asiedu, Kalonda-Kanyama, Ndikumana, & Nti-Addae, 2013). Using presence of firm's website as a proxy for technological capability, they find that enterprises having online addresses report significant lower financial constraints than those do not.

Borrower gender is also considered as an important determinant of credit access. Some studies suggested that female ownership is positively correlated with the likelihood of being credit rationed (Drakos & Giannakopoulos, 2011; Muravyev, Talavera, & Schäfer, 2009). Similarly, Asiedu et al. (2013)'s research on firms across countries and regions shows that the probability of being financially constrained is about 5.2 percentage points higher for female-owned firms than male-owned firms. In contrast, some studies report conflicting results in which gender did not have any significant effect on credit accessibility (Fatoki & Asah, 2011), and other studies even suggest that female-owned firms have an advantage in obtaining formal loans and rely less on informal credit (Chaudhuri & Cherical, 2012). With regards to the SMEs in Vietnam, Rand's (2007) findings are consistent with the former view, while Nguyen, Su, and Sharma (2019) provide support for the latter arguing that female entrepreneurs are better educated and more skilled than male counterparts, so they have a higher probability of access to formal sources. In addition, previous studies also incorporate firm sector and export as dummy variables to examine whether there are differences in access to credit between manufacturing or non-manufacturing, as well as export and non-export firms. For instance, Kira and He (2012) report that most lenders in Tanzania are more likely to provide credit to firms in the industry sector than in other sectors. Beck et al. (2008), however, find no significant difference in debt finance of firms across sectors. The literature also finds that lenders are more willing to extend credit to exporters because firm selling in international markets are thought to be more efficient and competitive (Ganesh-Kumar, Sen, & Vaidya, 2001; Manole & Spatareanu, 2010).

2.2. Bank-borrower relationship

While there exist many lending technologies that can be used to provide credit to firms, relationship lending, nonetheless, plays an important role in small business finance (Berger & Udell, 2002). It may also be relatively more relevant for SMEs in countries like Vietnam where some of the alternative lending technologies are not available, particularly asset-based, or small business credit scoring. The empirical evidence on SME financing demonstrates that the strength of the bank-borrower relationship is positively related to the credit availability and favorable credit terms such as lower loan interest rates and lessened collateral requirements (Beck et al., 2018; Berger & Udell, 2002; Petersen & Rajan, 1994). For the case of Vietnamese enterprises, Nguyen and Ramachandran (2006) and Rand (2007) find that firms having borrowing relationship with banks previously are able to borrow at lower interest rate and a higher probability to obtain loan again. Under relationship lending, lenders build ties with firms to produce private and extract "soft" information about the firm and its owner or general information about the business environment, which may later be used to make credit decisions (Petersen & Rajan, 1994). In doing so, banks may provide deposits and other financial products to borrowers (Petersen & Rajan, 1994). The first type of service is deposit, which is usually considered as informationally intensive service. That the firm has a checking or savings account with its current lender may provide creditors with record of firm' financial health, thus reduce information asymmetry and increase banks' willingness to extend loans (Elsas, 2005). The second type involves the borrowing aspect of financial services, namely overdraft facility. Briefly, overdraft facility flexibly provides

firms with limited short-term credits, whereby banks can monitor the firm' cash flows much more frequently, and also evaluate its credit history. It is considered a proxy for the firm's creditworthiness, and found to affect the availability of credit to SMEs (Le, 2012).

2.3. The implementation of Basel II accord

Furthermore, previous studies also suggest that compliance with the capital adequacy accord (Basel II) by banks, to some extent, influences SME's access to credit. Under Basel II, banks are required to maintain the minimum capital requirements to guard against risk in the creditworthiness of a bank's loan book, as well as market, operational and interest rate risk. It is often argued that banks prefer using the internal ratings-based (IRB) approach for credit risk management, thereby statistical credit scoring models and other automated decision systems are employed to assess the credit risk of borrowers as precisely as possible (Altman & Sabato, 2005). With the use of internal risk measurements, bankers will try to maximize their profits by taking on more customers with low probabilities of default to lower the reserve requirement. Consequently, as SME loans are found to be riskier than corporate ones (Dietsch & Petey, 2004), Basel II might increase the cost of borrowing for SMEs or even reduce the credit availability. Saurina and Trucharte (2004) report that SMEs face more obstacles in accessing to financing when banks apply credit-scoring models and automatically analyze their probabilities of default. Oppositely, Berger (2006) suggests that access to bank financing is likely to become easier and cheaper because larger banks should find SME lending more profitable. Due to its nature of being shorter in maturity and less likely to be affected by systematic risk, Jacobson, Lindé, and Roszbach (2005) suppose banks would lend more to small businesses to reduce the level of capital exposure in their calculation. Berger and Frame, (2007) reach the same conclusion that banks implementing internal rating systems extend more credit to SMEs. These results, however, are conflicting and cannot be directly applied to a developing financial market like Vietnam, which should merit further investigation.

3. Research Methods

3.1. Model

Following Kira and He (2012); Nguyen and Luu (2013), we employed binomial logistic regression to study firm's access to credit. Our full empirical model is as follows:

$$\begin{aligned} Credit_i = \alpha_i + \beta_1 Firm\ size_i + \beta_2 Firm\ age_i \\ + \beta_3 Manufacturing_i + \beta_4 Export_i \\ + \beta_5 Female - owned_i + \beta_6 Audited_i \\ + \beta_7 Tech\ application_i + \beta_8 Deposit_i \\ + \beta_9 Overdraft_i + \beta_{10} Basel\ II_i \\ + \beta_{11} Firm\ size * Basel\ II_i + \varepsilon_i \end{aligned}$$

where $Credit_i$ is the outcome variable that equals unity if the firm reported that access to credit is no or a minor obstacle, and zero otherwise (Beck & Demirguc-Kunt, 2006; Asiedu et al., 2013). The effects of firm-level factors on the dependent variable are captured by a set of parameters from β_1 to β_9 and that of Basel II captured by β_{10}. Central to our analysis, the differential effect of Basel II implementation on firm' access to credit based on firm size is capture by an interaction term, β_{11}, between firm size and Basel II. The application of interaction terms in nonlinear models to study how the effect of one explanatory variable on the explained variable depends on the magnitude or discrete values of another explanatory variable has been considered (Ai & Norton, 2003; Puhani, 2008). Puhani (2008) holds that the sign of the coefficient for interaction term in a nonlinear model with a strictly monotonic index function (e.g, logit, probit and tobit) necessarily indicates the direction of differential effect. Lastly, the parameter, ε_i, captures the error term. Detailed description of all variables are presented in Table 1.

Table 1: Definition and sources of variables

Variable	Definition	Reference
Credit	Equals 1 if the firm finds access to credit no or minor obstacle; 0 otherwise	Asiedu et al. (2013), Beck & Demirguc-Kunt (2006)
Firm size	Size of the firm, measured by the number of full-time employees in the last fiscal year and categorized into 3 groups: Small-, Medium, Large-sized	Beck & Demirguc-Kunt (2006), Bigsten et al. (2003)
Firm age	Age of the firm, measured by the number of years the firm has been in operation, then categorized into 4 groups: 0-5, 5-10, 10-15, more than 15 (years)	Byiers et al. (2010), Kira (2013)
Manufacturing	Equals 1 if the firm is a manufacturing firm, 0 otherwise	Beck et al. (2008), Kira & He (2012)
Export	Equals 1 if the firm exports its main products/services, 0 otherwise	Manole & Spatareanu (2010)

Variable	Definition	Reference
Female-owned	Equals 1 if one of the firm's owners is female, 0 otherwise	Asiedu et al. (2013), Nguyen et al. (2019)
Firm website	Equals 1 if the firm has its own website, 0 otherwise	Asiedu et al. (2013)
Audited	Equals 1 if the firm's financial statements are checked by external auditors, 0 otherwise	Berger & Udell (2002), Kira & He (2012)
Deposit	Equals 1 if the firm has a checking (current) or savings account, 0 otherwise	Mester et al. (2001), Petersen & Rajan (1994)
Overdraft facility	Equals 1 if the firm has an overdraft facility, 0 otherwise	Le (2012), Petersen & Rajan (1994)
Basel II	Equals 1 if the firm is influenced by the Basel II accord, 0 otherwise	Altman & Sabato (2005), Berger (2006)

Note: Information on variables is from World Bank Enterprise Survey (2015); the categorization of firm size follows the SME definition of World Bank

3.2. Data

Our sample is constructed by combing two similar cross-sectional data sets in the sense that they both cover information regarding some identical aspects of firms, but in two different years. The first data set used is from the latest WBSE of Vietnamese firms conducted in 2015 – which is called Pre-Basel II period since between 2014 and 2016 no bank in Vietnam has formally adopted Basel II accord yet, while the other data set covers firms from our recent survey in the second quarter of 2019 – which we call Post-Basel II period due to the official adoption of Basel II accord by Vietnam's banking sector. Drawing on the questionnaire of the 2015 WBSE for Vietnam about firm-level information and business environment, we undertake a survey of firms in the second quarter of 2019 when most of major banks in Vietnam have basically adopted Basel II accord according to the implementation schedule as provided by SBV. This ensures the consistency of variables in our pooled sample. The questionnaire was then randomly administered to 200 owners/managers of firms, all of which located in the northern area of Vietnam and concentrating mainly on two industry clusters Hanoi and Vinh Phuc. To protect anonymity, we keep names of the owner/manager and the firm in secret, but require them to specify their main bank lender, for the purpose of confirming whether their banks have adopted Basel II requirements. By the end of survey, we received 120 (60%) valid responses, of which 70 (35%) specified their banks have not yet applied Basel II, so only only 55 (27.5%) left can be used. Next step, we randomly choose firms from the WBSE's dataset having the same characteristics as the firms we have surveyed based primarily on criteria such as firm size, age, industry, and ownership. In the end, we managed to construct a pooled sample of 155 firm observations for analysis. Details of firms in our sample are presented in the following Table 2.

Table 2: Profile of firms in our sample

Variables		Pre-Basel II (n = 100)	Post-Basel II (n = 55)	Total (n = 155)
		Count (%)	Count (%)	Count (%)
Age (years)	Less than 5	8 (8)	9 (16)	17 (11)
	5-10	34 (34)	34 (62)	68 (44)
	10-15	39 (39)	9 (16)	48 (31)
	More than 15	19 (19)	3 (5)	22 (14)
Size (number of full-time employees)	Small	24 (24)	32 (58)	56 (36)
	Medium	50 (50)	16 (29)	66 (43)
	Large	26 (26)	7 (13)	33 (21)
Manufacturing		63 (63)	18 (33)	81 (52)
Exporting		22 (22)	15 (27)	37 (24)
Firm website		60 (60)	21 (38)	81 (52)
Female-owned		52 (52)	19 (35)	71 (46)
Audited		33 (33)	25 (45)	58 (37)
Deposit		52 (52)	54 (98)	106 (68)
Overdraft facility		26 (26)	49 (89)	75 (48)
Access to credit		32 (32)	35 (64)	67 (43)

Note: Percentages are presented in parentheses.

4. Results and Discussion

In Table 3, we present the results of two regression models on firm's access to credit. In the first logistic regression, we include all firm-level variables and also the term for Basel II accord, while the second additionally allows for the interaction effects based on firm size. The LR test for the joint significance of interaction terms is statistically significant at 5%, showing that the model 2 is more appropriate based on the data. This conclusion is further validated by the larger Pseudo R^2 of model 2. These two model, nonetheless, do not report remarkably different results in terms of individual coefficients.

In terms of firm size, neither of the models show significant results for the differences in access to credit among firms of different size, which can be easily identified

by relatively large standard errors. Although the first regression reports a positive coefficient on small firm meaning that this type of firm has higher access to credit than the large counterpart, this result is not far from significance and not found consistent in the other model. These results rather support a negative relation between firm size and credit accessibility, as indicated in the theory of information asymmetry. Small enterprises are supposed to be more informational opaque than the larger ones, and thus more limited in their ability to get credit from banks. Vietnamese firms, who are more disadvantaged in terms of size, are also found to be more credit constrained when it comes to external financing (Malesky & Taussig, 2009; Nguyen & Ramachandran, 2006; Rand, 2007).

Table 3: Logistic regression on firm's access to credit

	Model 1	**Model 2**
Small	0.601 (0.653)	-0.296 (0.786)
Medium	-0.621 (0.541)	-0.536 (0.636)
Less than 5 years	1.471 * (0.881)	1.160 (0.937)
5-10 years	1.044 (0.692)	1.031 (0.714)
10-15 years	0.595 (0.659)	0.765 (0.673)
Manufacturing	-0.142 (0.424)	-0.356 (0.443)
Export	1.016 * (0.550)	1.293 ** (0.616)
Female-owned	0.867 ** (0.408)	0.920 ** (0.425)
Audited	-0.630 (0.435)	-0.252 (0.460)
Firm website	0.558 (0.422)	0.424 (0.441)
Depository service	1.172 ** (0.490)	1.074 ** (0.488)
Overdraft facility	0.897 * (0.499)	0.755 (0.502)
Basel II	0.074 (0.604)	-1.202 (1.124)
Small x Basel II		2.866 ** (1.283)
Medium x Basel II		0.143 (1.331)
Observations	155	155
Log-Likelihood	-86.804	-82.637
Pseudo R^2	0.181	0.220

Note: The dependent variable is firm's access to credit. Statistical significance at the 10%, 5% and 1% level indicated by *, ** and ***, respectively; Standard errors are presented in parentheses

With respect to firm age, we find that all of the coefficients are positive but only the coefficient for firms less than 5 years in the first model is significant. This coefficient, however, enters insignificantly in the main model due to a much lower coefficient and a larger standard error. The positive coefficients on different categories of firm age suggest that less mature firms report higher access to credit, or more precisely, less degree of credit constraints. While most previous studies suggest that older firms can show past business information, prove their credit quality, and are more likely to engage in long-term relationships with their banks, thus improving their credit accessibility (Byiers et al., 2010; Kira, 2013), the results may suggest that younger firms in Vietnam have more opportunities to borrow than older firms. This can be due to the widespread and popular financial assistance services among Vietnamese SMEs recently, which seems to result from new regulations of the government, to help and incentivize start-up and young enterprises. Nonetheless, it should be noted that except for the coefficient for the youngest group in the first model, those for the other groups are all non-significant at 5%, as have been found in the studies of of Abdullah (2011) and Nguyen, Su, and Sharma (2019).

Both of the regression results document a significant positive relation between export participation and access to credit. As suggested by previous studies, exporters are more efficient and profitable compared to non-exporter and thus get easier access to credit (Ganesh-Kumar et al., 2001; Manole & Spatareanu, 2010). Thus, our results provide evidence that exporting activities can help to alleviate information asymmetries, and improve firms' access to external finance. Notably, we also find a positive coefficient on the female ownership significant at the 5% level. This suggests that firms managed or owned by women are more likely to have access to external finance compared to male-owned firms. There can be a few explanations for this result. First, female managers are considered to manage firms' finance more conservatively and less inclined to take risks (Sundén & Surette, 1998). Bank officials perceived less moral hazard, and are therefore more willing to lend to female-owned firms. Second, in the context of Vietnam it can be seen that male credit officials dominate, thus female-owned firms may have a gender advantage in the relationship lending compared to their male counterparts (Bellucci, Borisov, & Zazzaro, 2010). This advantage may help smooth the contracting process, leading to looser credit terms for female-owned firms. Additionally, it may also be argued that female entrepreneurs are better educated and more skilled than their male counterparts, thereby having a higher probability of access to formal sources (Nguyen, Su, & Sharma, 2019). For the remaining firm characteristics variables, we do not find evidence for the differences between manufacturing and non-manufacturing firms, and

the same goes for firms with audited financial statements and website application since the coefficients for these characteristics are not at all significant at 5% level.

Regarding bank-borrower relationship, we find evidence for the positive effects of bank proximity on access to credit when controlling for all of the firm characteristics. The positive and significant coefficient of depository service suggests that firms having an account from which banks can keep track of their inward and outward cash flows report higher access to credit. Hence, our results confirm the role of relationship lending in firm financing suggesting that information financial service, such as deposits, helps banks reduce transaction costs and improve the accuracy of the firm's information, in turn increasing firm's probability to obtain bank loans (Elsas, 2005; Petersen & Rajan, 1994). This information service may be more important in Vietnam, where the financial market has yet developed and information asymmetric problems remain severe. Consistent with the findings of Le (2012), we find that the coefficient on overdraft facility is significantly positive at 5% in the model 1, indicating firms using this service report higher accessibility to credit. As discussed earlier, this service can affect firm's borrowing in two ways. First, when banks know more about firms' credit history, the problem of information asymmetry is significantly eliminated, and more creditworthy firms will receive bank loans. Second, banks can spread any fixed costs of producing information about the firm over multiple products, and are more likely to engage in lending relationship with the firm.

Finally, the results show that small firms report higher access to credit than do their large counterparts under the implementation of Basel II accord as the interaction coefficient for small firm enters positively and significantly at 5%. Meanwhile, the sign of the dummy variable for Basel II is negative but not significantly at 5%. This suggests that the current adoption of the adequacy accord by most major banks while in general posing relatively higher degree of credit obstacles for enterprises tends to benefit small-sized firms. This finding is consistent with those of previous findings. For example, Jacobson et al. (2005) argue with the introduction of Basel II, banks would lend more to small businesses as SME loans are shorter in maturity and less likely to be affected by systematic risk, thus require less capital exposure for any given probabilities of default in the calculation of capital requirement. This means, under Basel II, small firm loans seem more profitable compared to corporate loans. Furthermore, Altman and Sabato (2005) hold that Basel II provides banks with incentives to manage small firms on a pooled basis for cost reduction by using internal ratings or some other automated decision system. This would lead to increases in both the amount of credit availability and potentially cheaper credit due to higher competition in the banking system (Berger, 2006; Berger & Frame, 2007). The authors, nonetheless, analyze the potential effects of Basel II predicating on the assumption that small business credit scoring is viable, which means banks have enough data about SMEs including a number of characteristics about the principal owner and business that are believed to predict loan performance. Given that, SMEs might have a better chance of gaining fair treatment from lenders such as less collateral requirements and lower average cost of capital.

5. Conclusions

In this paper, we explore firm-level factors that may affect their access to credit and whether the implementation of Basel II accord has any influences on that access of SMEs. Our results support a positive relation between export participation, female ownership and access to credit. Consistent with previous studies, we find the bank-borrower relationship may positively affect firm's probability to obtain bank loans through interaction over multiple financial services such as deposit and overdraft facility. Finally, we document a differential effect of the Basel II accord on firm's access to credit, in which small firms report significant higher access than do their large counterparts, through the positive sign of interaction term.

Our research has contributed in several ways. We provide theoretical implications by highlighting the importance of gender and export status in firm's access to credit in the particular socio-economic context of Vietnam. From the perspective of relationship lending, our results provide support the significant role of bank-borrower proximity, which has been proved critical for informational-opaque small businesses. Importantly, by using a unique dataset covering two periods before and after banks apply the regulations of Basel II, our study is the first one to provide empirical evidence for the issue of SME access to credit under the new context. Drawing on these findings, we may also provide managerial implications for SMEs. As the availability of credit increases as the firm increases ties to its bank, managers should consider adopting financial services in their daily operations to reduce the unnecessary transaction costs and secure easier access to credit when lending to SMEs businesses is considered more profitable in the regime of Basel II.

This study is, however, subject to several limitations. First, our approach of combining firm observations from two surveys to make a pooled data for analysis may lead to biased results. Though we have try our best to sample firms having the most similar characteristics, firms in different years may be affected by unobserved factors that we cannot incorporate in the model. The second limitation deals with our data collection procedure. The firms surveyed were located only in the northern area of Vietnam, mainly in

Hanoi and Vinh Phuc. Therefore, the result of the research can be affected by sampling bias, and generalization of the results should be made with strict caution, especially to countries with different levels of financial market's development. Dynamic analysis with panel data settings is suggested to shed further light on how the implementation of Basel II accord may affect Vietnamese firms and credit market as a whole.

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