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An Analysis of SMEs Funding, Bank Efficiency and Barriers to Lending:

Three Essays

By

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Abstract

This thesis focuses on bank lending to SMEs with consideration of both the demand side and supply side. To this end, three distinctive lines of research are pursued in this thesis. We *start with* analyzing results from a regional survey of 20 banks and 180 SMEs conducted in 2012 in North Vietnam for new insights into the determinants of successful access to bank loans by SMEs. *Secondly*, we examine factors of the business environment that affect SME growth using original datasets obtained from surveys conducted in both Vietnam and the UK in 2012. *Finally*, we extend our research to the supply side with an important question about how banks in East Asia performed throughout the 2007-2008 global financial crisis. Following this, we analyze the impact of liberalization on banking soundness based on a secondary dataset of 10 East Asian countries (1997-2012).

Using different econometric approaches and different samples, we present robust evidence that factors from the business environment drive SMEs' loan access and their growth. *On the demand side*, financing is still the foremost determinant for SME growth. Furthermore, the industrial sector where firms operate has an influence on access to finance as well as growth. *From the supply side*, various sizes and ownership forms differently impact SME lending. In addition, a rise in comparative size (systemic size) significantly reduces bank risk. However, a growth in absolute size (total assets) is associated with greater bank vulnerability due to increasing leverage ratios and costs. Banks tend to favour SMEs who have a close relationship or have collateral to pledge. Importantly, *institutional setting* has a significant impact on behaviours of SMEs and banks. While larger SMEs have better regulatory perceptions, banks of different sizes and ownership structures, have very different perceptions about legal uncertainties and therefore produce various lending requirements which directly affect the availability and affordability of SME lending.

The empirical results give rise to policy implications for transition (and possibly other) countries. *Firstly*, the robustly positive nexuses between the numbers of relationships with banks and loan access suggest that stimulating competition in the banking sector can help firms mitigate stringent terms and conditions for credit approvals. However, greater absolute market power (market share) reduces soundness in the banking sector while greater comparative market power (HHI) fosters it. *Secondly*, the fact that legal uncertainties go hand in hand with a high ratio of collateralized loans with any bank size emphasises the need for improving regulations on collateral and creditor- rights. *Thirdly*, given that the adoption of Basel capital standards is viewed as creating advantages for larger banks over smaller banks, and my results show liberalisation to also favour larger banks, suggests a distortion in financial markets and may produce further instabilities. My results may provide insights for policy makers when considering which areas of banking and finance they should or should not deregulate with a motivation to stimulate competition and enhance stability. *Finally*, this thesis reveals insights into sectors facing barriers to finance and growth, and therefore provides valuable information for policymakers in setting incentives targeted at and tailored to specific groups of SMEs.

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Declaration of Authorship

I, **Son Thi Thanh Nguyen** declare that the thesis entitled

An Analysis of SMEs Funding, Bank Efficiency and Barriers to Lending: Three Essays

and the work presented in the thesis are both my own, and have been generated by me as the result of my own original research. I confirm that:

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Southampton, 16th March 2015

Son Nguyen

Chapter I

INTRODUCTION

1. Aims

This thesis aims to offer new insights into small and medium- sized enterprise (SME) lending, how it is driven by banks and in turn, how it affects the growth of these firms. To this end, this research provides distinctive analyses of the relationship between banks and SMEs, bank efficiency and barriers to SME funding. An additional and unique analysis of the role of the business environment in shaping behaviors of SMEs and banks is also conducted in this thesis.

1.1. Overview

SMEs play a vitally important role in the economies of all countries (Ayyagari et al. 2003; International Financial Corporation, 2006; Wieneke & Gries, 2011). As a result, lending to SMEs and their growth have become major policy concerns (Beck & Demirguc-Kunt, 2006; European Commision, 2009; Rocha, 2012). Motivated by this, Vietnam and the UK have refocused with renewed interest on SME lending and barriers to their development.

In a context where severe financial crises have happened, financial institutions across-nations are under pressure to restructure. In line with this trend, Vietnam and other East Asian countries face an ongoing debate about solving the relationship between liberalization and regulation in order to reduce banking vulnerabilities. There are conflicting views about the impact of liberalization on banking soundness. On the one hand, more freedom is associated with autonomy for banks and therefore, facilitates banking financial strength. On the other hand, an absence of market discipline may create advantages for larger banks over smaller banks and result in market distortions and banking instability. Furthermore, the wider adoption of the Basel Capital Accord (Basel III) raises a concern about the role of liberalization in banking development and financial stability.

In order to gain an insight into the above topical issues, this thesis focuses on three different approaches. *First*, using a survey of primary and original data

obtained from in-depth questionnaires as a starting point, this work contributes to the deeper understanding of the relationship between banks and SMEs in regard to funding. It not only considers factors from the demand side and supply side but also extends this analysis by placing the lending relationship in the interaction with the business environment, especially legal environment. *Second*, using a secondary data set obtained from a national survey, the thesis investigates which factors from the business environment affect SME growth in Vietnam. Parallel with the study on Vietnamese firms, we analyze a data set from SMEs in the UK and compare both sets of results. In line with a large body of literature, our results emphasize the role of finance in SME growth. Specifically, while smaller firms in the UK seek flexibility in finance, smaller businesses in Vietnam struggle for loan access, they accept and have to pay high interest rate. We also add new evidence that reveals the specific mechanisms by which SMEs grow in each country. Whereas systemic changes stimulate SMEs in Vietnam, business strategies enhance their development in the UK. In addition, while larger SMEs in Vietnam expect technical changes to grow, larger firms in the UK invest less in R&D activities compared to smaller ones. *Third*, the thesis extends previous research on the link between institutional settings and banking soundness by using a secondary panel data set for banking systems in 10 East Asian countries. In doing so, we include a full set indices of economic freedom in this thesis.[1] According to our knowledge, there is no previous research which studies the whole dimensions of economic freedom, thereby we provide new evidence as well as recommendations for openness and the supervision of financial intermediaries based on a holistic analysis. Our work offers not only insights for the ongoing concern about SME lending and bank efficiency but also critical assessment for policy makers.

[1] They are economic freedom, business freedom, monetary freedom, financial freedom, investment freedom, trade freedom, government spending, fiscal freedom, labour freedom, freedom from corruption and property rights. We do not have significant results for the two last factors: freedom from corruption and property rights. These indices are provided by the Heritage Foundation.

Certainly, the lending relationships between banks and SMEs, factors from the business environment and SMEs' growth, and liberalization and supervision in the banking sector, are more than purely of theoretical interest. In SME credit markets, barriers to access external funding are not only results of the characteristics of firms (Scott & Dunkelberg, 2001; Neuberger et al. 2006; Haselmann & Wachtel, 2010) but also link to factors from the supply side (Strahan & Weston, 1996; Cole et al. 2004; De Haas et al. 2010) because banks play an important role in mobilizing and allocating financial resources in society, and have associations with the legal framework (Scott & Dunkelberg, 2001; Neuberger et al. 2006; Haselmann & Wachtel, 2010). Public policy considerations focus on, firstly internal difficulties that SMEs ought to face when they seek external financial support. Afterwards, we extend our analysis to include financial barriers from banks. As a consequence, research on bank competition, efficiency and soundness is also taken into account (Liu et al. 2012; Dima et al. 2014). In sum, all the strands of the literature confirm the key rationale for the distinctive research lines conducted in this thesis.

1.2. Structure of this thesis

This thesis is structured along the above mentioned three distinctive research lines.

Chapter II contains the starting point for analysis of the lending relationship between banks and SMEs using data sets from 180 SMEs and 35 branches of 20 banks. Following a detailed review of a wide strand of the literature on SME financing, this chapter empirically test the hypothesis if successful access to bank loans increase when i) more collateral is pledged and ii) a longer lending relationship is present. This chapter contributes to the literature as several earlier studies on SMEs in Vietnam only focus on the role of collateral, without considering its form, in SME lending. In our research, we extend to banks' preference for various forms of collateral and relationship lending in credit making decisions. Furthermore, we provide evidence that constraints lie with requirements from financial intermediaries, the managerial capacity of SMEs and

weakness of the legal framework. The results reveal that a guarantee from a third party may relax lending terms and conditions. In order to increase banks' confidence, legal framework should be improved in parallel with available technical support, for example helping map out business plans that are associated with convincing evidence for plausibility of loan applications and efficiency in using loans.

Chapter III builds partly upon the initial findings in Chapter II and extends the analysis to factors of the business environment. We control internal and external factors of the business environment in order to test whether the source of SME growth is different in a developing country and an advanced country. Our results reveal that Vietnamese SMEs consider improvements in external factors (for example loans, regulatory improvements and macro- economic support) of the business environment as growth sources while SMEs in the UK identify changes in internal factors (that are human resource, production and managerial strategies) of the business environment as growth determinants. In Vietnam, we find that growth of smaller firms is heavily dependent on finance, especially bank loans. Larger firms with better information access and regulatory perception are likely to have easier loan access and face cheaper interest rates. In contrast, smaller firms in the UK no longer appear to be concerned about loan access, rather they focus on convenience in loan usage. Furthermore, in both countries, location or sector where a firm operates interacts with their development.

Chapter IV presents a different approach to focusing on banking soundness and analyzes its relations with bank competition and efficiency under the impact of economic freedom. This chapter uses panel data for 10 countries in East Asia to evaluate whether liberalization in the legal framework for the banking sector stimulates soundness. To this end, this chapter contains an empirical examination of the hypothesis that competition enhances efficiency and thereby, strengthens soundness. Our results support that overall liberalization strengthens bank soundness. However, financial freedom erodes bank stability because it creates incentives for risk-taking by banks. This reflects a matter of fact, while advance

countries attempt to stimulate competition and efficiency in their financial sectors, developing countries need to target risk management and stability as priorities. Under the impact of openness, banks of various types face both opportunities and challenges which differently impact their competitiveness, efficiency and soundness. We also provide evidence that relative competitiveness, such as comparative size and comparative market power, strengthen bank stability.

Chapter V provides an overall summary to this thesis and suggests policy implications that may arise from it. It also acknowledges the limitations of the presented research and summarizes possible future research, some of which is already being contemplated by the author.

Chapter II

DETERMINANTS OF SUCCESSFUL ACCESS TO BANK LOANS BY VIETNAMESE SMES: NEW EVIDENCE FROM THE RED RIVER DELTA

Determinants of Successful Access to Bank Loans by Vietnamese SMEs: New Evidence from the Red River Delta

Abstract

A key target of Small and Medium sized Enterprise (SME) development is facilitating their access to finance, therefore drivers in SME credit decision making by banks are important to understand in every region and country. This chapter provides an empirical analysis of the factors affecting the availability and affordability of SME loans in Vietnam. We use Two-Stage Least Square (2SLS) and Logit as measures for analysing results from a survey of 20 banks and 180 SMEs conducted in 2012. The results indicate that collateral and relationship lending have positive impacts on successful access. In addition, developing relationships with lenders or seeking a guarantee from a third party can help firms mitigate stringent terms and conditions for credit approvals. On the demand side, the sector where firms operate has an influence on barriers to finance. From the supply side, banks of different sizes and ownership structures, have very different perceptions about legal uncertainties and requirements affecting SME lending.

2. Introduction

The determinants of the availability and affordability of SME loans are a major concern of policy makers and researchers all across the world (Pacific Economic Cooperation Council, 2003; Beck & Demirguc-Kunt, 2006; European Commision, 2009). Over the last two decades, Vietnam has been moving towards a market led economy and is increasingly concerned with having a successful and well-funded SME sector.[2] The Government of Vietnam has regularly identified financing SMEs as a priority amongst its economic goals.[3] The government has issued an array of regulations, removed barriers in financial services, set out diversified incentives and actively collaborated with international counterparts in order to release targeted funding to SMEs or facilitate access to finance for these firms (Vo et al. 2010). However, SMEs appear to be bounded by constraints and have to cover their financial unmet needs through informal types of financing which they are very dependent upon (Nguyen et al. 2009). This study aims to contribute to the empirical literature by investigating the drivers that underpin SME credit decision making by banks in Vietnam.

More specifically, our study aims to examine the impact of (i) SME tailored lending technologies (ii) firm-specific factors and (iii) characteristics of the SME credit market. The existing literature provides some indication that several common tailored technologies are used, namely relationship lending (Comeig et al. 2015) or asset-based lending (Berger & Udell, 2005) because of the apparent obstacles for SMEs when banks adopt other lending technologies (Frame et al. 2001). The strand of literature on SME lending also points out that barriers of

[2] According to the General Statistic Office for the period (2000-2010), SMEs account for approximately 95% of all Vietnamese enterprises; both in terms of number of employees and value of capital.

[3] Little et al. (1987) refer to a common perception that socialist developing countries do not encourage the non-state owned sector. In Vietnam, SMEs account for more than 96% of non-state owned enterprises (Ministry of Planning and Investment, 2011).

access to bank loans not only lie with characteristics of firms (Scott & Dunkelberg, 2001; Neuberger et al. 2006; Haselmann & Wachtel, 2010) but also link to the institutional environment (International Financial Corporation, 2007; Qian & Strahan, 2007). However, there is a paucity of evidence for transition countries while significant differences across banks in developed and developing countries (Beck et al. 2011). This chapter, therefore, seeks to shed some light on factors that hinder SME access to finance in the context of Vietnam.

To this end, we first conduct a survey in the Red River Delta of Vietnam for the period between August and October 2012. This survey is comprised of two questionnaires for banks and SMEs with in-depth questions for quantitative analysis and open questions to identify new determinants of SME lending. Afterwards, we use different estimation procedures to analyse two separate data sets collected from 183 SMEs and 35 branches from 20 different banks. We employ a widely used regression analysis to capture conditional probabilities so-called Ordinary Least Squares (OLS) for binary variables (Long, 1997). We use Durbin–Wu–Hausman test to to check the validity of extra instruments and the obtained estimations are called 2SLS. Because OLS has some well-known shortcomings, we also use Logit analysis to estimate binary dependent variables.

Our results suggest that collateral and relationship lending are viewed as the determinants for successful access. This finding contributes to the literature as prior research only focuses on collateral (International Financial Corporation, 2007; Hainz et al. 2011). Furthermore, while a level playing field for all firms of various sizes is a standard assumption in the literature, many researchers believe that the main barriers for SMEs lie much more in the legal framework (Scott & Dunkelberg, 2001; Neuberger et al. 2006; Haselmann & Wachtel, 2010). Researchers of the Vietnamese banking system have focused on uncertainty in SME lending that arises from legal weakness (Nguyen et al. 2006) or the role of reforms in collateral laws for SME lending (International Financial Corporation, 2007). However, there is no research on the behaviour of firms by size or age and decisions of banks by size or ownership form under the impact of the legal

framework in Vietnam. Therefore, the main contribution of this study is providing an understanding of the links between different groups of firms or banks and the legal environment.

The results have interesting implications for transition (and possibly other) countries given that Governments are implementing incentives to promote their SME sectors. For banks, the fact that legal uncertainties go hand in hand with a high ratio of collateralized loans with any bank size, disagrees with previous research. As aforementioned, Haselmann & Wachtel (2010) find that larger banks with a better perception of collateral laws tend to be more willing to accept pledged assets. Surprisingly, larger banks, with a greater perception of uncertainties, are more willing to accept diversified forms of collateral than smaller banks, such as third-party assets, and assets formed by loans. Finally, our findings are linked to the literature that views SME development as having a direct impact on the success or failure of a country's economy (Ayyagari et al., 2003; International Financial Corporation, 2006; Wieneke & Gries, 2011; European Commission, 2011).

The chapter is organised as follows. Section 2.1 provides a review of the literature on the business environment, SMEs and banks. Section 2.2 presents the methodology employed. Followed by Section 2.3 which describes the data and empirical models, Section 2.4 reports the results and findings. Conclusions are in Section 2.5.

2.1. Literature Review

Relevant studies of the factors affecting successful access to bank loans broadly relates to three strands in the literature. Firstly, literature on the business environment will be traced through the legal framework, degree of competition in credit markets, information availability and economic stability. Next, studies on factors from the demand side, linked with SMEs' borrowing success, will be explored. Finally, we review studies on the relationship between factors from the supply side and successful credit approvals.

2.1.1. Factors from the Business Environment

Lending infrastructure varies from country to country, and, in recent years we have seen a growing literature on its role in making credit available to businesses. Surprisingly, while a level playing field for all firms of various sizes is a standard assumption in the literature, many researchers believe that the main barriers for SMEs lie much more in the *legal framework* than other factors (International Financial Corporation, 2007; Qian & Strahan, 2007; Haselmann & Wachtel, 2010). Skosples (2012) analyses the level of difficulty in obtaining loans considering legal extensiveness and legal effectiveness for all firms in transition economies.[4] He finds heterogeneous effects on firms of different sizes. Small firms significantly encounter financing barriers caused by legal effectiveness in terms of consistency of regulations, efficiency of contract enforcement and treatment in the courts. According to Beck et al. (2008), legal framework has a greater impact on SME lending than firm size or bank ownership.

More specifically in a legal framework, *credit policies* are identified as a conduit through which the Government affects credit availability and affordability (Berger & Udell, 2005). *For example,* credit regulations help to relax stringent financial conditions from lenders by offering incentives, such as interest subsidies or credit guarantee schemes (The Central Institute for Economic Management, 2006; Harvie et al. 2010). To explore the relationship between requirement of collateral and *Government guarantee*, Ono & Uesugi (2009) employed a dummy variable which has a value of 1 if SMEs pledge collateral to their main banks or zero otherwise, for a survey of Japanese firms. Their research shows a weak but significant relationship between collateral requirements and Government guarantees.

Some theoretical frameworks identify *competitiveness* as an important factor that affects banks' lending behavior (Petersen & Rajan, 1995; Haselmann et al. 2004).

[4] Skosples (2012) applies European Bank for Reconstruction and Development (EBRD) standards in which legal extensiveness refers to how easy it is to create, register, and enforce movable assets as collateral, transparency of bankruptcy laws and its effectiveness. Legal extensiveness illustrates creditor rights and legal effectiveness captures transparency and consistency of laws, administrative and judicial procedures. The two indicators have a value ranging from 1 to 4 where the higher value represents better quality.

In the related empirical literature, Mercieca et al. (2009) conclude that competition stimulates the number of SMEs' relationships as the number of banks increase. This may bring about easier access to a wider range of bank services (Neuberger et al., 2006; Mudd, 2013) or a buffer against credit rationing caused by a sole lending bank (Berger et al. 2001). Along these lines, Berger et al. (2004) provides evidence for the role of competitiveness by analyzing data from 74 countries. Using a method to measure competitiveness through a concentration ratio,[5] they report that a higher concentration in the banking sector will pose stronger impediments for SMEs from accessing formal finance. Likewise, Scott & Dunkelberg (2001) propose the natural logarithm of competitiveness as an explanatory variable in their model.[6] Their results on competitiveness tell a more complete story than earlier studies as they find competitiveness of small firms has a negative relationship with: probability of loan denial, soft rationing, interest rates and the probability of collateral assignment.

A key constraint that lending banks face is a *lack of information* about opaque SME borrowers (Frame et al., 2001). It deflates banks confidence in making approvals or distorts their decisions towards demanding more collateral (Berger et al. 2007). Besides, unfavourable changes in the *economic environment* reduce credit availability (Berger et al., 2001).

All in all, the aforementioned literature indicates that various aspects of the lending infrastructure can play important roles in bank credit decision making. However, a certain deal of ambiguity remains linked to different banking systems and observed time periods.

[5] It is calculated by comparing assets of the three largest banks to total assets of the banking sector in each country.

[6] They choose natural logarithms because this method secures ordinal orders while avoiding problems of interpreting high values such as "3" which is three times higher than competition of a value of "1".

2.1.2. Factors from the Demand Side

Firm size is widely considered to be a determinant of credit availability to SMEs (Scott & Dunkelberg, 2001; Neuberger et al., 2006).[7] The strand of the empirical literature on firm size is decomposed into several distinct approaches. Some researchers use *number of employees* as a regressor in their models, namely (Mercieca et al., 2009) while others focus on *total assets* (Haselmann & Wachtel, 2010).[8]

Standardized credit decision methodologies differ markedly among banks, therefore, many authors take the point of view that we should analyze changes in SME credit availability under the impact of factors from the demand side. On behalf of banks that conduct relationship lending, some scholars suggest lines of research which underscore explanatory variables that capture the "soft" information of borrowers (Petersen & Rajan, 2002) such as *number of lending relationships, length of relationship* and *documents required* (Ono & Uesugi, 2009), geographic *distance* between lender and borrower (Mercieca et al., 2009) and *social relationships* between loan officer and firm manager (Lehmann & Neuberger, 2001). By contrast, studying banks with transaction-lending technologies, some researchers propose factors that are selected from "hard information" of borrowers (Petersen & Rajan, 2002). Partially, they are financial ratios from their financial statements, such as *cash flow* and *profitability* (McKenzie & Wolfe, 2004) or *loan amount used* (Mercieca et al., 2009). In addition to determinants of SME lending, some authors devise a regressor of *collateral* after considering banks that adopt asset-based lending technologies (Berger et al. 2005; Haselmann & Wachtel, 2010). Not surprisingly, factors that entail firm characteristics are widely used, for example, *management* (McKenzie & Wolfe, 2004) or *being a new firm* (DeYoung et al. 2006). Some features are used as control variables in econometric models, namely *sector* (Neuberger et al.,

[7] Bank lending ratio is positively correlated with firm size (Scott & Dunkelberg, 2001), where firm size is measured as the number of full-time employees. However, according to Neuberger et al. (2006), the evidence is mixed.

[8] Haselmann & Wachtel (2010) find a positive relationship between bank lending decisions and firm assets.

2006; Ono & Uesugi, 2009), *ownership, firm age* (Scott & Dunkelberg, 2001; Ono & Uesugi, 2009).[9]

Amongst all the factors, bank relationship serves as a proxy for an effective protection from credit rationing (Berger et al., 2001) because long lasting relationships with customers helps banks resolve asymmetric information and share risks with them (Stiroh & Strahan, 2003). Banks, no matter which size they are, tend to prioritize those customers with whom their mutual *relationships* are strongest (Cole et al., 2004) and subsequently making *more credit available,* charging *lower interest rates* and requiring *less collateral* (Berger & Udell, 2002), lengthening *term loans*(Hernandez- Canovas & Koeter-Kant, 2008). Typically, the literature that focuses on SMEs' characteristics that affect bank credit approvals tends to reflect the borrowers' ability to repay loans.

2.1.3. Factors from the Supply Side

Numerous studies argue that *bank size* plays a decisive role in SME lending in several ways. *Firstly*, bank size affects SME credit through advanced lending technology. For example, large banks tend to have an advantage in processing "hard information", thus they often grant loans on availability of hard information (Berger et al., 2001; Cole et al., 2004). Furthermore, large banks are likely to have a *better understanding of collateral laws*, consequently, they are willing to accept collateral against approvals (Haselmann & Wachtel, 2010). With such methods of credit making decisions, large banks have less opportunity to collect "soft" information from customers, compared to their smaller peers, thus they are likely to be more risk averse to relationship- based lending (Stein, 2000). Nevertheless, this constraint is offset by their larger pool of clients which allows large banks to easily choose *more transparent, older* and *larger firms* with *better financial statements* (Haynes et al. 1999). In the case of lending to less transparent small businesses, large banks require *collateral* (Berger et al., 2001) against loans.[10] By

[9] Scott & Dunkelberg (2001) find a negative relationship between firm age and the probability of loan refusal.

[10] Nevertheless, some authors disagree with the above hypothesis, they argue that large banks are not likely to finance small firms because of higher interest rates and more pledges, they tend to lend to small businesses only when they are *creditworthy* (Cole et al. 2004). Once they lend to small firms, large banks require fewer pledges and charge lower interest rates (Berger et al., 2001).

contrast, small banks are believed to be more benevolent than their larger counterparts and offer SMEs more favourable loan terms and conditions via relationship lending. Scott & Dunkelberg (2001) find that small firms have a significant lower probability of refusal when they seek loans from small banks. In addition, Stiroh & Strahan (2003) point out that SME lending goes hand in hand with the importance of smaller banks in the credit market. However, De la Torre et al. (2008) find that SMEs borrow from banks of various sizes. *Secondly*, *the number of relationships* and *the length of relationship* that a firm has with lending banks are driven by bank size. Firms, who are served by large banks, get used to supplying hard information to lenders, thus they can easily develop new relationships with other banks (Berger et al. 2005).

Another factor that has a large effect on credit making decisions is bank *ownership* structure (De Haas et al., 2010; Beck et al., 2011). Berger & Udell (2005) argue that government policies tend to protect *state ownership* in financial institutions, thus transaction lending is exercised for small businesses. With the aforementioned inherent disadvantages, small businesses face credit rationing from banks where the government plays a role as stakeholder. This hypothesis was additionally confirmed when state-owned banks finished privatization, their lending to small businesses dramatically rose. Horvitz (1959) concludes that SMEs seem to enjoy benefits when they borrow from a bank's head-office because they require less collateral than their branches.

Lending technology is a factor that has a direct impact on SME lending. Not surprisingly, neither financial statement lending nor transaction lending are widely applied to SME borrowers (Berger & Udell, 2005; Frame et al., 2001) because they both require transparency, which are beyond SMEs' capacity, such as adopting sound accounting standards or presenting audited financial statements. Alternatively, some common tailored technologies are used, namely *relationship lending* (Comeig et al., 2015) or a*sset- based lending* (Ono & Uesugi, 2009).

All in all, the strand of the literature that examines bank characteristics that impact upon SME lending tends to focus on their main function as intermediaries. That is, processing data collected from borrowers, combining with information from

the external environment (e.g. macro policies or economic changes) and internal conditions (financial strength or managerial capability) for credit decision making.

2.1.4. The context of Vietnam and Priori

2.1.4.1. Overall the economy of Vietnam

According to The World Bank (2012), the business environment of Vietnam was ranked 98th out of 183 countries in 2012. This report also identified that ineffectiveness in state-owned enterprises, credit institutions and public investments were developmental barriers.

During the recent decades, industrial production and exports have been the key contributing factors of economic growth. Since 2011, the economy has been confronted with macro instabilities arising from declines in productivity, competitive capability and investment. A weak domestic demand, ineffective infrastructure and constrained loan access negatively affected construction and industrial production.

2.1.4.2. Overview of the banking system in Vietnam

At the end of 2012, the banking system consisted of 5 state-owned banks,[11] 34 joint-stock commercial banks, 2 policy banks,[12] 49 branches of foreign banks, 5 banks with 100% foreign capital, 4 joint-venture banks, 50 representative offices, 18 finance companies, 12 financial leasing companies, 1 central people's credit fund and more than 1,000 local people credit funds. In general, the banking sector has been at the early stage of restructuring in which credit institutions prioritized financial, managerial and administrative improvements. However, small credit institutions were still confronted with weakness, especially in risk management (The State Bank of Vietnam, 2012).

The banking sector had the total chartered capital worth VND 392.15 trillion (equivalent to USD 19,607.5 million), increased 11.29% compared to 2011.[13] Its

[11] Four in five state-owned banks are fully equitized.

[12] They are Social Policy Bank and Vietnam Development Bank. The latter acts as a guarantor for SMEs.

[13] We use an exchange rate: 1USD = 20,000 VND.

total equity was VND 425.9 trillion (equivalent to USD 21,295 million), grew 8.9% compared to 2011. Finally, its total assets worth VND 5,085.7 trillion (equivalent to USD 254,285 million), rose 2.54% compared to 2011 (The State Bank of Vietnam, 2012).
[Insert Figure 2.1 here]

Due to difficulties in doing business in 2012, credit institutions increased loan loss provision and used them to cover bad loans. As a result, financial ratios of the whole banking system were lower than 2011. In detail, ROA decreased from 1% to 0.62%, ROE fell from 11.88% to 6.31%. In contrast, capital adequacy ratio (CAR) rose from 12.92% to 13.75% and gross loans grew from VND 2,839.5 trillion to VND 3,090.9 trillion (equivalent to 8.85%). Furthermore, credit institutions started expanding their network to international market, such as Laos, Cambodia, Myanmar and Singapore.

2.1.4.3. Overview of SME and their loan access

SMEs accounted for approximately 96% in total enterprises in Vietnam, employed over 60% of total employees and contributed about 48% of GDP.[14] However, SMEs demonstrated less capital sensitivity and lower productivity compared to average.
[Insert Figure 2.2 here]
[Insert Figure 2.3 here]

Services and construction had the highest SME percentage in total enterprises (over 98%), next was agriculture with approximately 96% while industry had the lowest proportion of 94% (General Statistics Office, 2013).

Following an approach that underscores SMEs role (Ayyagari et al. 2003; European Commission 2011), the Vietnamese Government has issued an array of regulations to release targeted funding at SMEs or to facilitate access to finance

[14] Information about SMEs is unavailable although these firms account for more than 96% of non-state owned enterprises in Vietnam. Therefore, it is common to use data of non-state owned enterprises as a proxy for calculating SMEs in Vietnam. This research adopts the same assumption.

for these firms (Vo et al., 2010). One of the key regulations was Decree 178/1999/ND-CP on loan security by which the banks lend to SMEs with or without collateral providing that the borrowers' projects or business plans are viable.[15] Besides, the Government stimulate establishment of Credit Guarantee Funds in provinces by a set of regulations.[16] These legal documents aimed at addressing the major financial constraint of SMEs which is to blame for a lack of valuable assets to pledge. In additional, the Government has launched regulations that totally support SMEs, for example Decree 56/2009/ND-CP by which they define SMEs and offer financial incentives for these firms. More specifically, Decision 03/2011/QD-TTg lists seven targeted sectors, namely Agriculture, forestry and fisheries; Processing industry, manufacturing (especially for exporting); Production of natural gas; Provide water and waste management activities; Construction; Motorcycles and other motor vehicles; and Transport and storage.

As a result of Government action, SMEs lending flourished over the period 2006-2010 with an annual growth rate of 91%. In 2011, credit extension to these firms was doubled, from VND 391.38 trillion to VND 853.37 trillion on despite a slight decline in total lending due to an unfavourable business environment. This sector annually contributes more than 45% to GDP while the percentage of SME lending to total loans was 12.34%, 15.81% and 35.61% in 2006, 2010 and 2011, respectively. In fact, the Government often uses banks, especially state-owned banks, as a tool to release financial incentives to targeted SMEs, for example Decision 2072/QD-TTg (2009) on interest subsidy for medium and long-term loans. However, the majority of SME borrowers are not eligible for this subsidy. As a result, SMEs face a severe shortage of external financing (Harvie et al., 2010; The Central Institute for Economic Management, 2006). Moreover, short-term loans present the majority of SME borrowings.

[15] Before issuance of Decree 178/1999/ND-CP, extension of loans without collateral or using assets forming by loans as collateral to customers shall be subject to the Government's regulations according to Article 52 of Law on Credit Institutions (1997).

[16] Decree No. 90/2001/ND-CP on establishment of Credit Guarantee Fund; Decision 14/2009/QD-TTg and following documents on guarantee for enterprises borrowing loans from banks and accordingly, the Vietnam Development Bank plays a role as a guarantor.

[Insert Figure 2.4 here]

[Insert Figure 2.5 here]

As can be seen in Figure 2.6, state-owned banks possesses nearly a third of pledged loans versus more than 60% belonging to joint-stock banks. It is likely that the group of joint-stock banks more often require collateral against loan approval in comparison with their counterparts. In 2011, while pledged loans accounted for 44.48% in total lending, pledged loans in SMEs lending was nearly double (about 77%). These figures are consistent with conclusions by (RAM Consultancy Services, 2005) which highlights that loans for SMEs have more stringent requirements.

[Insert Figure 2.6 here]

Among the blockages to SME lending, lacking collateral is viewed by many as the main impediment (The State Bank of Vietnam, 2011). Therefore, a guarantee scheme establishing Credit Guarantee Funds in the provinces, which help to partially loosen collateral requirements, is identified as an effective tool (Ministry of Planning and Investment, 2011; The Central Institute for Economic Management, 2006). Yet achievement of guarantee scheme has not been in line with original expectations. In addition, the Vietnam Development Bank (VDB) is assigned by the Government to act as a guarantor for SMEs,[17] while these firms search for external financial support. However, there is a big gap between the value of applications and approved amounts. For example, total value of Notice of acceptance and Letter of guarantee was VND 287.50 billion, equivalent to 0.03% of SMEs lending in 2011. In brief, SMEs appear to be bounded by funding constraints and SMEs cover their unmet financial needs with informal types of financing (Nguyen et al., 2009).

[Insert Figure 2.7 here]

[Insert Figure 2.8 here]

[Insert Figure 2.9 here]

[17] By the end of 2011, the VDB has signed guarantee agreements with more than 30 large banks in Vietnam (Ministry of Planning and Investment, 2011).

2.1.4.4. Priori

In the context of Vietnam and based on previous studies, we predict that factors from the legal environment, namely effectiveness of regulations or incentives of SME lending have positive links with SMEs opportunities of obtaining loans. Besides, with such levels of competitiveness, an increase in SME lending will occur because SMEs have more opportunities to develop multi-relationships with banks while banks relax conditions of credit extension to attract new clients. We also anticipate that asset-based lending will be commonly used due to the absence of either effective channels of credit information or insurance for loans. However, the difficulty arises from opacity and may be offset by "guanxi connections" in Vietnamese society via the application of a relationship-lending approach.[18] Similarly, Williams & Nguyen (2005) mentioned to a fact that Asian banking is dominated by strong relationships between lenders and borrowers. Therefore, we anticipate that close relationships with lending banks or loans officers may help loosen requirements for bank loans. Furthermore, relationship lending implies that older firms will have a greater advantage in borrowing from banks in comparison to younger firms.

Using original Vietnamese primary data collected in 2012 on access to finance, we find that new and small firms, in terms of capital, tend to face more constraints. For banks, their form of ownership may be the key barrier to SME lending. We assume that joint-stock banks that are more flexible may play a more important role in SME loan availability although state-owned banks are often used by the Government to launch their incentives for these firms. Under the effect of high competitiveness, small and young firms will have easier access to bank loans because banks will loosen requirements for credit approval to attract borrowers. In addition, we highlight that the sector that SMEs operate in will affect their success of borrowing due to the impact of Government initiatives for several sectors.

[18] "Guanxi connections" refer to benefits gained from social connections.

We follow a strand of the literature which focuses on the legal framework and that finds a gap between legal perception and legal application (Skosples, 2012). Because the legal framework has significant implications for institutional structure and consequently for lending technology (Berger & Udell, 2005) we seek to investigate which type of technology in SME lending is dominant in the Vietnamese banking system. Specifically, is it asset-based lending or relationship lending?

2.2. Methodology

We use different estimation procedures to explore and assess the relationships between predictors and successful access to bank loans.

2.2.1. OLS model (Ordinary Least Squared model)

Because the dependent variable *y* is qualitative which takes two possible values: zero (failure to access banks loans) and one (success in obtaining bank loans which covers cases of always being successful or sometimes being rejected), we first utilize linear probability models, which are specific models of OLS for binary variables and can be used as a way to describe conditional probabilities (Long, 1997):

$$y_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_k x_{ki} + u_i$$

Where y_i is a binary variable and u_i, i=1,…n are independent error components.

Because y receives two values, 0 or 1:

$$E(y_i \mid x_{1i}, \ldots, x_{ki}) = 1*\Pr(y_i = 1 \mid x_{1i}, \ldots, x_{ki}) + 0*\Pr(y_i = 0 \mid x_{1i}, \ldots, x_{ki})$$

$$= \Pr(y_i = 1 \mid x_{1i}, \ldots, x_{ki})$$

In which

$$\Pr(y_i = 1 \mid x_{1i}, \ldots, x_{ki}) = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_k x_{ki}$$

performs the probability of success is linear.

In the linear probability model, the coefficients Bj for j=1, …, k measure the change in the probability of success when xj changes while other things are in *ceteris paribus* assumption.

$$\Delta \Pr(y_i = 1 \mid x_1, x_2, \ldots, x_k) = \beta_j \Delta x_j$$

This will bring about the fitted line:

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x_{1i} + \hat{\beta}_2 x_{2i} + \cdots \hat{\beta}_k x_{ki}$$

in which $\hat{y}$ is the "predicted probability of success".

2.2.2. Logit

Although Linear Probability Models are widely used, they do have shortcomings, for example this model introduces errors which are identified as violating the homoskedasticity and normality of errors assumptions of OLS regression. As a result, standard errors and hypothesis tests are invalid (Long, 1997), Logit or Probit are used to estimate binary dependent variables where the response probability is non-linear. This research will employ Logit regression analysis:

$\Pr(y_i = 1 \mid x_1, x_2, \ldots, x_k) = G(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_k x_{ki})$

Where G is a given function with S- shape taking value between (0,1):

$0 < G(z) < 1$ for all real number z

We have logit model:

$G(z) = \exp(z)/[1+\exp(z)]$ – Cumulative distribution function

$g(z) = \exp(z)/[1+\exp(z)]$ – probability density function

We can also rewrite the logit model as a latent variable model:

$$\begin{aligned}\Pr(y_i = 1 \mid x_{1i}, \ldots, x_{ki}) &= \Pr(y_i^* > 0 \mid x_{1i}, \ldots, x_{ki}) \\ &= \Pr[u > -(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_k x_{ki}) \mid x_{1i}, \ldots, x_{ki}] \\ &= 1 - G[-(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_k x_{ki})] \\ &= G(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_k x_{ki})\end{aligned}$$

2.2.3. Discriminant Function Analysis

With survey data from collection, we apply multivariate statistical techniques for analysing to compare groups of enterprises or banks that are classified by different categories. In detail, we use a t-test for variables that are normally distributed and a non-parametric log-rank test for variables that violate conditions for normality.

2.3. Variables and Data

Vietnam is considered to be "a unique natural laboratory" which is suitable for testing hypotheses on SME lending due to an "absence of market institutions" (Le et al. 2006). Because cross-national data for a holistic picture of SME lending

could not be collected, we explore this issue via a survey that was carried out in Vietnam for the period between August and October 2012. This survey consists of two questionnaires of which questions were designed based on a deductive approach via reviewing the literature (Saunders & Thornhill, 2003) and an interpretivist position (Collis & Hussey, 2009) via conducting a pilot survey with SMEs' owners/managers and bank loan officers in December 2011.

The shortcomings due to an absence of cross-national data were offset by in-depth questions for quantitative analysis and open questions in order to explore and identify new factors affecting SME's success in obtaining bank loans. However, the ontological position of this step is subjectivism since the factors may vary from one opinion to another. Once obtained these determinants were then compared to the set of factors identified in the literature review.

2.3.1. Categories for Choosing Enterprises and Banks for the Survey Analysis

Enterprises taking part in this study are those registered under the Law of Enterprises in Vietnam and classified into SMEs according to Decree 56/2009/ND-CP.

[Insert Figure 2.10 here]

According to the Decree 56/2009/ND-CP, enterprises are SMEs when: i) their number of employees less than 100 (in commerce and services) or less than 300 (in industry and construction); or ii) total assets less than VND 50 billion (in commerce and services) or VND 100 billion (in industry and construction).

As a matter of course, there are SMEs those satisfy both (i) and (ii) (we call them *SMEs* in this study); and those satisfy (i) but their total assets are higher than limitation in (ii). In other word, the latter have employee size of SMEs but their total assets are as high as large enterprises (we define them *large SMEs*). As a result, we employ winsorized data at the level of 10% for total assets to eliminate outliers in regressions.

We exclude agricultural enterprises because they have distinct characteristics, such as most of them are households or they are regular targets of the Government' support. This study also excludes foreign-owned SMEs or joint-ventures because their governance, characteristics or business environment are different from domestic enterprises (Wald, 1999). Furthermore, to avoid dispersion in our small scale survey, we only select enterprises in industry, construction, commerce and services.

We choose the Red River Delta to study because of the following reasons. *First*, this areas accounts for a third of total enterprises with the second highest density nationwide (General Statistics Office, 2013). *Second*, the density of SMEs in Red River Delta is the highest in Vietnam (Ministry of Planning and Investment, 2011). *Third*, this area attracts approximately 30% of total employees (General Statistics Office, 2013). *Finally*, the Red River Delta covers some dynamic provinces, such as: the capital of Hanoi, Hai Phong, Quang Ninh, Hai Duong, and Bac Ninh.[19]

[Insert Figure 2.11 here]

[Insert Figure 2.12 here]

As aforementioned, this study aims at investigating drivers of bank making decision in SME credit. Therefore, we exclude those enterprises that never apply for bank loans. We assume that the refusal of loan usage arises from the following internal factors. *First*, firm owners may have a bias against borrowing in any form, therefore their business depends on internal funding. *Another* assumption is that the owners may have difficulties in understanding banking services due to their limited education or slim chances to access bank services, therefore their business depends on informal type of funding.[20] *In addition*, banks may have

[19] According to Ministry of Planning and Investment (2011), the Red River Delta includes: Hanoi, Ha Tay, Vinh Phuc, Bac Ninh, Quang Ninh, Hai Duong, Hai Phong, Hung Yen, Thai Binh, Ha Nam, Nam Dinh and Ninh Binh.

[20] The first and the second assumption were confirmed when we conducted interviews for a pilot in Phong Khe (a district in Bac Ninh) and Dan Phuong (a district in the outskirts of Hanoi). Five firm owners refused to take part in the survey because they did not have financial needs. We asked ten other firm owners who showed desire for external funding. All of them neither fully understand bank loans, nor terms and conditions of borrowing, nor questions in our questionnaires because of their limited education or slim chances to access bank services. In brief, bank services and related issues are too

barriers to meet financial needs in some areas where funding decisions must be made in a very short time to seize business opportunity.[21] *Finally*, there are firm owners do not perceive need to grow or accept to share firm control to external financiers (Berggren et al. 2000).

Therefore, we interview those who have already applied for bank loans to study. These enterprises may have been successful or not in obtaining bank loans. We divide them into three groups based on their application results: always rejected; always approved; and mixed, both rejected and approved. Consequently, 183 completed questionnaires from over 400 sent out were received.

Our results can be briefly described as follow. Firms those are always rejected in loan application account for 19.1%. Next, firms whose applications are always accepted present 26.8%. Firms those receive mixed results are approximately a half of total responses. Most of firms are in trade (48%) while industrial firms have the lowest percentage (15%). Firms in services and construction account for 27% and 29%, respectively. In terms of ownership, state-own firms are 44% while limited and private companies stand at 40%. Old firms and young firms have the same proportions of 43%. In contrast, the percentage of SMEs is twice as much as proportion of large SMEs (53% versus 23%).

In terms of banks, this chapter refers to those that are registered and subjected to the Law of Credit Unions in Vietnam. Also, foreign-owned banks and joint-venture banks are excluded because of their distinct characteristics compared to domestic banks. Of 100 copies of the questionnaire sent to banks, we received 35 completed questionnaires that met our quality criteria inspection.

At the end of 2012, a total of 50 banks operate in Vietnam (see 2.1.4.2 for more details). We are only interested in commercial state-owned banks and joint-stock

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complicated for them. Our findings are in line with Little et al. (1987) in reporting a small number of interviewed SMEs who had never been funded nor even heard of the programs that target them.

[21] Little et al. (1987) conduct a survey and find that borrowers' identify the strengths of informal funding as: speed, approachability, minimal paperwork and no collateral requirements.

banks. Overall, we received data from 35 branches belonging to 20 banks of our target group. They include four commercial state-owned banks that are the biggest in terms of total assets and 16 joint-stock banks.[22] In total responses, state-own banks account for 26% while responses from joint-stock banks are two times higher. In terms of scale, large banks stand for a quarter of total responses, the group of the smallest banks is 37% while the group of medium size presents 23%.

2.3.2. How to establish models and choose suitable variables

In order to classify interviewed enterprises, we ask a question at the beginning of the questionnaire: *"Into which group does your enterprise fall when applying for loans?"* The answers are: *Always rejected/ Some loans are approved and some are rejected/ Always successful.* When we process data, this answer is presented by a binary variable *state-01,* under a label "access to bank loans", *always rejected* was coded by 0, *and otherwise* is 1. This variable is employed as the dependent variable in OLS and Logit models for analysing the sample of enterprises. We conduct a Wald test to choose the most suitable models.

Because there are many potential factors that may affect SMEs' successful access to bank loans, we conduct a Wald test to choose the most suitable models. First, we run the dependent variable *state-01* with every variable that results from the questionnaire. We choose the better models based on values of R-square, t-test and p-value. Then, we use these better models as nested models in comparison with other models by imposing restrictions on the parameters (equal to zero) of the second. For example, we include firms' total assets and years in operation in a regression with their successful access to bank loans *state-01* in the nested model. In the second model, we additionally incorporate number of lending banks and value of real estate as collateral. With chi-square >0, p-value <0.05, we can reject the null hypothesis that the nested model is better than the second model.

[22] 30 observations are a number that is sufficient for the central limit theorem to hold.

For banks, we employ role of collateral in the credit making decision and ratio of collateralized loans to total loans as dependent variables in OLS models. Similarly, we apply a Wald test to choose the better models.

In order to compare between groups of banks or enterprises using a t-test or log-rank test, we divide them into different groups. First, banks are divided by *ownership* (state-owned banks and joint-stock banks) or by *size* based on their *equity* (*Group 1* includes banks with equity greater than VND billion 20,000 (equivalent to USD 10 million). Group 1 and group of state-owned banks are the same group; *Group 2* includes banks with equity from between VND 8,000-20,000 billion (that is USD 4- 10 million); *Group 3* includes banks with equity less than VND billion 8,000. Afterwards, enterprises are also classified by *age* (old enterprises with more than seven years in operations and otherwise as young firms) or by *total assets* (we call *SMEs* those have total assets and employee size satisfies the Decree 56/2009/ND-CP; and *large SMEs* those have employee size satisfies the Decree but total assets are as high as large enterprises).

[Table 2.1 here]
[Table 2.2 here]

2.4. Results

2.4.1. Main Results

The main results are presented in Table 2.5 and Table 2.6 (see Table 2.3 and 2.4 for Description of variables). Through the estimated results, our hypotheses will be rejected or accepted and an interpretivist approach will be applied to explain the results. Moreover, cross-sectional analyses will be conducted by comparing and contrasting the differences in loan access between SMEs and in granting loans to SMEs among banks.

In Table 2.5, we not only identify firm size as an important driver in SMEs lending (Scott & Dunkelberg, 2001), we also employ predictor variables identified in prior research and add some additional variables linked with successful loan access, such as real estate, frequency of using bank services or a dummy variable for being a state-owned bank and added because they are major

factors affecting SME lending in Vietnam (International Financial Corporation, 2007).

2.4.1.1. Factors from the Demand side

Consistent with literature on SMEs (Neuberger et al., 2006) and our priors, and defined as either total assets or number of employees, firm size positively affects the success of obtaining loans. Rows 14, 24 and 25 in Table 2.5 exhibit weak positive signs in growth of successful loan access when firm size increases by one VND billion or one person.[23]

[Table 2.5 here]

+ Relationships with Banks

While some authors suggest that multi-bank relationships may result in credit rationing (Petersen & Rajan, 1994), others show that SMEs reap some benefit from multi-bank relationships (Stefano et al. 2015). In our study, row 1 of Table 2.5 provides strong evidence for a positive link between the number of bank relationships maintained by SMEs and credit availability. Specifically, OLS Specifications (1)-(6) illustrate a growth from 13-37%; and Specification (8) imply that SME borrowers are likely to enjoy about 80.8% of success (failure rate is 19.2%) for one extra relationship with banks.

A high number of lending relationships reflects a high level of competitiveness in the Vietnamese banking sector.[24] There are a number of ways to explain this: *Firstly*, most financial institutions tend to locate and widen their branch networks in just two main economic centers, namely Hanoi and Hochiminh city.[25] *Secondly*, competition not only happens between banks but also between branches of the

[23] In row 14, Specification (5) has coefficient = 0.05 or when total assets grows a unit, $\Delta y = 0.07^* (log(x+1) - logx) = 0.07^* \log((x+1)/x)$; Specification (9) exhibits odd ratio is 1.07 or probability of success to probability of failure caused by logarithm total assets is 51.69%/ 48.31%. The difference between success and failure is 3.38%. In row 24, $\Delta y = 0.05^* \log((x+1)/x)$.

[24] In Germany and the UK, the average number of lending relationships is 1.36 (standard deviation 0.93) and 1.01 (standard deviation 0.32), respectively (Mercieca et al. 2009). In Vietnam, these figures are 1.61 (standard deviation 1.15).

[25] According to Bank scope, the number of banks who register the location of their head offices in Hanoi is 17 banks and Hochiminh city is 19 banks from a total number of 50 banks in Vietnam in 2012.

same bank.[26] As a result, banks widen their market penetration by searching for good customers in distant places. Row 5 and 9 show evidence of a slight positive relationship between the distance from lender to borrower and the probability of success in achieving bank loans. These results agree with are in contrast to Mercieca et al. (2009), who find a negative link between distance and borrowing success.[27]

+ Financial Statements and Requirements for Audited Financial Statements

Rand (2006) infers that credit availability will increase when the financial strength of an SME is stronger. Similarly, in Table 2.5 rows 14, 19 and 23 provide slight positive coefficients between log total-assets, log fixed-assets and equity with successful access to bank loans.[28] Row 6 shows a negative relationship between requirement for audited financial statements and credit availability with coefficients about 20-30%. This finding matches previous research on the role of relationship lending in SME financing (Comeig et al., 2015). When SME customers are asked for audited financial statements, banks are applying a transaction based lending technique which are believed to create credit barriers to SMEs (Berger & Udell, 2005; Frame et al., 2001). Therefore, Bartoli et al. (2013) suggest that banks start combining transaction based lending with relationship lending to reduce credit rationing for SMEs.

Following this literature that focuses on transaction based lending, row 10-13 investigate impacts of banking service usages. While row 13 exhibits a negative and significant relation between frequency of using bank services in the main banks with loan access, rows 10-12 show light positive links between frequency

[26] In a bank, each branch independently operates as a business to make profit or fulfil financial targets which are assigned by their head office. As a result, branches in a bank compete with their peers, especially when they locate in the same geographical areas (Source: Information from interviews conducted in 2012).

[27] In row 5, when *limit of distance that borrower consider as an obstacle* increases one km, the chance of obtaining loans increases about 0.2-0.5%. In row 9, for Specification (3), Δy = 0.10* log ($(x+1)/x$); for Specification (9), probability of success/ probability of failure when logarithm of distance limit increases one unit is 61.24%/38.76%.

[28] In row 14, Δy = 0.05* log ($(x+1)/x$); and probability of success to probability of failure caused by logarithm of total assets is 51.69%/ 48.31% (see Footnote 26 for details). In row 19, Δy= 0.06* log ($(x+1)/x$) and 0.08* log ($(x+1)/x$).

of using non-credit services or current account and loan access.[29] These results supply unclear evidence on the role of transaction based lending in credit approval. However, banks place this lending technology in the third most important in row 2 of Table 2.7.

In order to differentiate loyal customers from new customers, row 7 provides evidence for the relationship between the numbers of years with the main banks with credit approval. For each extra year of relationship length, firms' success will increase 13%. This finding is in line with Williams & Nguyen (2005) who conclude that Asian banks have strong relationships with borrowers, they tend to share risks and profits with their customers. Likewise, Stefano et al. (2015) believe that longer banking relationships stimulate loan access, especially for large firms with the relationships above seven years. In brief, a better relationship, in both, longer relationships or more frequently using non-credit services, helps overcome borrowing barriers. However, some customers, who are asked for audited financial statement despite of their long relationship with the main bank (3 years or more), face failure probability of 0.33 (see row 8). These customers may not only fail in taking advantage of relationship lending but also do not succeed in developing understanding and trust to banks.

<u>+ Collateral</u>

According to results in row 16 of Table 2.5, banks' approval is significantly affected by the provision of collateral.[30] Firms tend to have more borrowing advantages when they provide more collateral (Comeig et al., 2015). Specifically, our results on dummy variables show that firms, which have collateralized loans accounted for at least 60% of total loans, still face failure probability of 61% (see row 18) however when the ratio is at least 84%, success will increases 27% (see row 21). Moreover, the Vietnam Development Bank plays a role of being a

[29] In row 10, odd ratio is 1.87 or ratio of success/ratio of failure caused by logarithm of frequency of using non-credit services is 65.17%/ 34.83%. In row 11, $\Delta y = 0.31 * \log((x+1)/x)$.

[30] Row 16, Specification (8) shows odd ratio = 1.15 or probability of success to probability of failure caused by ratio of collateral is 53.49%/ 46.51%.

catalyst in SME lending with additional successful access of 27% in row 4 through providing a guarantee.

Despite of role of pledged assets in credit approval, several forms of collateral have negative impact on loan access. *Firstly*, we consider pledged assets in the form of collateral. In rows 20 and 22 of Table 2.5 reports a significant negative relationship between this collateral and loan rejection.[31] Furthermore, when real estate accounts for at least 70% of pledged assets, successful loan access will reduce 20-40% (see row 17). To put this result into context, where real estate once accounted for 70% of collateral,[32] now increasingly real estate is losing favour with banks (International Financial Corporation, 2007). However, this finding contradicts the result on banks' view (see row 12 of Table 2.6) which provides a strong positive link between collateral in the form of real estate and the role of collateral in bank credit making decisions. *Secondly*, we incorporate responses about firm assets used as collateral into regressions. Our result provides a strong negative impact on SME lending (see row 15 of Table 2.5).

<u>+ Sector</u>

Rows 26 and 27 of Table 2.5 provide evidence of links between sectors and loan access. SMEs operating in the services or construction sector are likely not to be favoured by banks with elasticity of -0.20 and -0.24, respectively. These results match the recent public policy which has instructed banks to focus on seven core sectors of the economy which exclude the services and construction sector.

<u>+ Comparison between Enterprises - Age and Size</u>

According to Table 2.8, regarding size, smaller SMEs tend to depend on their family or friends for any financing shortage unlike larger firms. This finding is consistent with previous studies (Le et al., 2006). For log-rank tests, we find that firm size and firm age have effect on their responses. Older or bigger firms are

[31] In row 20, $\Delta y = -0.42^* \log((x+1)/x)$. In row 22, odd ratio = -5.58 or probability of failure to probability of success by collateral in the form of real estate is 84.80%/ 15.20%.

[32] Nguyen Thi Mui (2011), Operating a Tight Monetary Policy: Challenges and Solutions. Tap chi Tai Chinh (7). (This document is in Vietnamese only and no English translation exists).

clearer in their evaluation of the factors affecting their successful access to bank loans.

[Table 2.8 here]

2.4.1.2. Factors from the Supply side

In stark contrast to previous studies and our expectations, row 2 of Table 2.5 provides evidence for a significant relationship between state-owned banks and credit availability for SMEs. For the OLS models, SME borrowers can improve their probability of gaining bank loans by an extra about 20% when they develop one additional relationship with a state-owned bank. For the logit models, when SMEs maintain relationships with banks, state-owned institutions offer a 68% probability of success while joint-stock institutions offer 32% in specification (8) and (9).[33] This finding indicates that state ownership is associated with higher credit approval, in contrast to the findings in (De Haas et al., 2010). Furthermore, all large banks are state-owned banks, therefore, the result also implies that larger banks act as a driver in SME lending in Vietnam. This finding is consistent with (De la Torre et al., 2008; Stiroh & Strahan, 2003) who show an increasing importance of large banks in SME lending through arms-length lending technologies (for example, asset-based lending, credit scoring and transaction based lending). Besides, joint-stock banks enter row 3 with a negative sign. These findings are in contrast to (Scott & Dunkelberg, 2001) in which small firms have a significant lower probability of refusal when they seek loans from small banks.

Our findings are in keeping with prior research for the following reasons. State-owned banks have advantages in mobilizing cheaper capital that are from state-owned corporations, who are a key driver of the economy, due to their historical relationships. Besides, with bigger market share, longer time in operation, better reputation and managerial ability, state-owned banks are trusted by the Government or international groups in their projects targeting SMEs. In South

[33] In row 2, Specification (8), odd ratio = 2.11 or probability of success provided by state-owned banks/ probability provided by joint-stock banks = 67.84%/ 32.16%. Similarly, Specification (9) with an odd ratio of 2.17, the former supplies 68.4% and the latter 31.6%.

East Asia, state ownership of commercial banks is identified as an useful tool of national economic development policies in which state-owned banks allocate finance to targeted sectors for social returns (Williams & Nguyen, 2005). Therefore, compared to joint-stock banks, state-owned banks are able to make more profit when they offer SME loans under identical conditions (maturity or customer risks and the business environment). Consequently, the chance of obtaining loans for SMEs is higher when they seek external funding from state-owned banks. In addition, larger banks possess wider branch networks (De la Torre et al., 2008) and offer more variety of service tailored to SMEs, therefore, these firms are more likely access loans and develop long-term relationships with large banks (Mudd, 2013).

+ Banks' Perception of the Legal Environment and Structure of Collateral

First, Table 2.9 presents an overall perception of the legal environment identified by banks in our survey analysis. In general, banks share a trust in the legal system, with a mean of 1.3; their responses are "strongly agree" for "effectiveness of contracts". However, they seem to be less confident on other aspects. For property rights, their certainty significantly reduces at 2.57 and this downturn continues for handling borrowers' personal assets, movable assets and fixed assets. Although banks evaluation for asset handling is still at an acceptable level (around 3), their caution implies a poor quality legal framework. Banks also hold views of a less effective legal environment in which steps (and time) for initiating a court action are complicated and constrained.

[Table 2.9 here]

On the other hand, banks are aware of the effectiveness of the new collateral law but the desired improvements have yet to materialize (response level is 1.74 - a moderate change).[34] Looking at rows 9 and 10 in Table 2.9, banks tend to lend by the asset-based lending technique because of a high ratio of collateralized loans (73%) while the mean for loans with a request for audited financial statements are

[34] Decree 11/2012/ND-CP stipulates that collateral handling will be conducted as contracts of pledge assets without documents of acceptance from borrowers.

only 26%. This is consistent with our prediction that asset-based lending is popular. Nevertheless, the fact that legal uncertainties go hand in hand with a high ratio of collateralized loans with any bank size, disagrees with previous research. Haselmann & Wachtel (2010) find that larger banks with a better perception of collateral laws tend to be more willing to accept pledge assets.

Table 2.10 provides differences in legal perception among bank groups. While Haselmann & Wachtel (2010) point out that larger banks have a better appreciation of the legal environment, t-test results highlight larger banks (group 1 and group 2) as being less certain on the effectiveness of contracts for handling assets. Group 1 (the group of state-owned banks) perceive more legal risks than their joint-stock peers. However, there is no evidence from t-test for a difference in the ratio of pledge loans between groups of various sizes and forms of ownership. Our results of the log-rank test show that joint-stock banks identify more uncertainty about the improvement caused by the new collateral law. However, they strongly agree that there is no exemption in using private assets for repaying loans and exhibit trust in effectiveness of contracts for binding between parties.

Our results of the log-rank test show that state-owned banks disagree with joint-stock banks about improvements in the registration of pledged assets helps enhance SME lending.[35]
[Table 2.10 here]

Surprisingly, larger banks, namely group 1 and group 2, with more perception of uncertainties, are more willing to accept diversified forms of collateral than group 3, such as third party assets and assets formed by loans. Larger banks of group 2 tend to form a better opinion of the VDB's support than smaller banks of group 3. Results of the log-rank test also show that state-owned banks or group 1 has more types of collateral as production line machines while joint-stock banks have less collateral in the form of inventory, production line machines, cash or commercial

[35] Results are available from the authors upon request.

paper. However, state-owned banks place relationship lending as more important compared to smaller banks. This finding disagrees with Berger & Udell (2005) who argue that large banks prefer other lending technologies, namely transaction based lending, credit scoring, fixed-asset lending or leasing to relationship lending. In addition, state-owned seem more flexible in ignoring the requirement for audited statements for borrowers who possess more valuable fixed assets that can be used as collateral while joint-stock banks do not.

+ Bank Collection of Information and Lending Technique

Table 2.7 confirms previous studies and our priors that banks favour asset-based information for screening credit worthiness. Simultaneously, banks rely on relationship lending techniques because they depend upon information obtained from borrowers through direct contact for credit appraisal. Next, transaction based lending information holds the third most important position. In short, banks tend to utilize different channels of information gathering for credit appraisal and there are little significant differences between banks' evaluation of their importance (around 50-55%). From our log-rank test, joint-stock banks or smaller bank groups are less dependent on credit scoring, pricing risks or evaluating fixed assets in their credit approval strategies. However, they are more dependent on information from: direct contact with firm owners, firms' managerial ability, third parties (information agents, state banks or published documents) and evaluating total assets. On the contrary, state-owned or larger bank group disagree that information from evaluating total assets is useful for credit approval.

[Table 2.7 here]

In Table 2.11, banks rank recording and transmitting "soft information" (Petersen & Rajan, 2002) of direct transactions to their Head Office as their biggest challenge to cope with. In addition, banks are often confronted with uncertainty of registry information for pledged assets and that causes potential risks to lenders. Since data provided by Credit Information Centre (CIC) or the State Bank of Vietnam (SBV) is poor, banks ought to spend time and incur costs to collect necessary and reliable information for credit approval. Banks also reveal that

information from tax agents, administrative organizations or other types of information providers are not commonly used due to a lack of cooperation from these counterparts and/or poor satisfaction with the quality of information provided.
[Table 2.11 here]

Table 2.12 with t-test results indicates that smaller banks seem to have more constraints in collecting information compared to other groups. Banks in group 2 firmly agree that unreliable information from SMEs is very common. Similarly, the log-rank test shows that joint-stock banks face more difficulties in collecting information in comparison to state- owned banks.
[Table 2.12 here]

+ Banks in Credit Making Decisions

Banks were required to rank factors affecting credit making decisions by their importance in Table 2.13. They place project-specific factors to be the most important and in second place they rank collateral. This implication arises from a fact that banks focus on the ability of loan recovery, and profitability in any lending technology. Interestingly, distance between banks and SMEs are seen as unlikely to affect credit approval. This finding is consistent with results in row 5 and 9 of Table 2.5 which concludes that distance is slightly positively associated with successful access. However, our log-rank results show there is a difference in banks' opinion. State-owned banks place the role of business projects and obstacles from pledge assets with less importance than smaller banks.
[Table 2.13 here]

Table 2.14 demonstrates banks' perception of the advantages and obstacles arising from borrowers or the business environment affecting their credit approvals. In terms of ownership, while joint-stock banks place importance on borrowers' long term strategies and the geographic distance between branches and customers in their credit making decisions, state-owned banks pay more attention to obstacles affecting good projects. State-owned banks do not think that competitiveness

leads to a decline in SME lending whereas the joint-stock banks believe that competitiveness is neutral in its impact on the financing of these firms. However, from our log-rank test results, joint-stock banks firmly agree that policies, competition and SMEs' characters reduce SME lending.
[Table 2.14 here]

In additional, according to Table 2.14, bank size affects bank credit decision making. In previous research, Berger et al. (1998) conclude that bigger banks lend more as distance increases. Our finding is consistent with past research when providing evidence that bigger banks place less importance on geographical distance between themselves and their clients. Table 2.15 presents factors that cause a reduction in the availability of credit for SMEs. Inherent characteristics of SMEs and Government policies are factors that may reduce loan access while ownership change in banks helps slightly to increase credit availability.
[Table 2.15 here]

<u>+ Bank Collateral Acceptance</u>

In Table 2.6, we use two independent variables, namely the role of collateral in making credit decisions and the ratio of collateralized loans to total loans. Regressors are banks' view on factors from: firm-specific (being new firms), bank-specific (being a branch, lending technologies) or business environment (effectiveness of collateral law, how easy to take steps for initiating court proceedings, and competition).

Consistent with results in Table 2.4 where banks rank project-specific factors and collateral as the most important factors, row 2 of Table 2.6 shows a strong positive link between role of the project and role of collateral and/or ratio of collateralized loans. In addition to findings in row 9 of Table 2.9 where indicates that asset-based lending is the most popular form of lending. Table 2.6 shows that banks tend to use less other lending technologies if they apply asset-based lending. There are positive links between ranking of the role of project in credit approval* or ranking of the role of managerial ability* with collateral acceptance

in row 3 and 4; or an inverse nexus between ranking of obstacles related to collateral* with collateral acceptance in row 1.[36]
[Table 2.6 here]

As aforementioned, methods of collecting information reflect banks' adopted lending technologies. On the one hand, we find that relationship lending and transaction-based lending can reduce collateral requirements. Specifically, collecting information from publication* or managers* positively enters regressions with ratio of collateral in row 5 or 6; and credit scoring has a negative sign in its relationship with ratio of collateral in row 11. On the other hand, information from total asset evaluation increases collateral acceptance and/or collateral ratio (see row 10). Interestingly, banks strongly believe that collateral in the form of real estate is associated with the importance of collateral in credit approval (see row 12). This finding disagrees with SMEs' views in row 17, 20 and 22 of Table 2.5 and conclusion by International Financial Corporation (2007).

Banks face obstacles, which arise from geographical distance between them and borrowers*, lending to a new firm* or SMEs' lacking fixed assets to pledge*, tend to increase collateral requirements (see row 7-9). Therefore, we confirm the findings of (Mercieca et al., 2009) about the impact of distance and (DeYoung et al., 2006) about new firms requiring more collateral. In contrast, uncertainties in information of the collateral register reduces collateralized loan ratio (see row 14) whereas difficulties in access to information from the State Bank of Vietnam are associated with higher ratio (see row 15).

Banks report a noticeable improvement in the new collateral law. As a result, the positive relationship between the law and ratio of collateralized loans in row 16 of Table 2.6 implies that banks gain more certainty in collateral acceptance despite their response reflecting less confidence in the legal framework in row 2 of Table 2.9 or results of the log-rank test show that joint-stock banks identify more

[36] There are 6 levels for a factor goes with*, 1= the most important or totally agree; 6= the least important or totally disagree (see Table 2 for more details).

uncertainty about any improvement resulting from the new collateral law. Similarly, stronger protection, which is provided to lenders through ease of initiating court rulings, is associated with higher collateral ratio in row 13. In row 17, banks, that hold a view that competition diminishes SME lending*, tend to require less pledged assets. Finally, row 18 confirms the conclusion that branches require more collateral than their head office in SME credit extension (Horvitz, 1959).

Interestingly, there are differences in the opinions of banks and enterprises as can be seen in Table 2.16. About the source of collateral, banks and enterprises give the approximate percentages for firm owner assets and third party assets. However, there is a big gap between the two responses on ratios of collateral to firm assets, 74% for enterprises and 40% for banks.

For loyal customers in terms of long relationships or regularly using non-credit services, banks tend to reduce collateral requirements while firms believe that banks will reduce interest rates and collateral requirements. In fact, banks appear to reduce price and security for borrowers who possess valuable assets to pledge. However, firms predict that banks will only loosen collateral requirements.

Borrowers and lenders have homogenous views on banks' reactions under circumstances of economic recession, and there is a slight difference in their opinions on reactions during a business slowdown. However, they all believe that banks will raise interest rates and/or collateral requests in these weak business periods.

On the one hand, both banks and firms agree that collateral plays an important role in credit approval, 69% for firms and 65% for banks. On the other hand, their responses on the ratio of collateralized loans in total lending are significantly different. Firms estimate it to be 63% while banks report a percentage of 74%. Comparison between the two numbers suggests that banks apply an asset-based lending technology even if they identify SMEs as short term target customers. The

gap between firms and banks' opinions on the ratio of various forms of collateral implies that firms believe there is diversification in collateral acceptance while banks place restrictions upon the form of assets that can be collateralized. Banks focus on land use rights, real estate, vehicles, assets formed from loans, inventory, machines or equipment and third party guarantees. Guarantees provided by the Government via the VDB are seen as expensive by banks while firms seem to have an optimistic view that it is not so costly and relatively easy to obtain. However, according to (Ministry of Planning and Investment, 2011), most of SMEs fail at the first step that is establishing feasible projects or business plans to convince the VDB and lending banks. In general, there is homogeneity for most evaluations of factors related to the VDB's guarantees however banks appear more dissatisfied with the VDB's support.

Although both banks and firms think that relationships with lending banks and loan officers helps borrowers overcome credit rationing, firms' outlook on this are more optimistic. Finally, firms seem to feel under pressure to supply audited financial statements while banks only ask for audited certificates in about a third of total credit extensions.

2.4.2. Robustness Tests

We use a Durbin- Wu- Hausman to test for endogeneity and all results accept the null hypothesis that variables are exogenous. We also carry out a Sagan test to eliminate problems of omitted variables. All models are normally distributed according to tests for normal distributions suggested by Jarque & Bera (1980; 1987) or Doornik & Hansen (2008).

In order to carry out robustness checks on our results, the whole sample was divided into two groups, first old firms defined as those in operation for more than 7 years and secondly young firms (less than 7 years in operation). All models in Table 2.5 are reapplied for two new groups. Similar to the whole sample, we found significant signs for the links between outcome and factors in the group of old firms, such as factors of relationship lending (*lending banks*, *service banks*

(log), distance limit (log); or factors of asset based lending (*realestate (log), fixed assets (log), total assets (log), ratio of collateral >=85%, collateral as real estate >= 70%)*; or scale of enterprise (*total assets (log)*; *employee)* or factors of lending banks *(state-owned bank)*. Remarkably, factor *ratio of collateral >=85%* has a stronger impact on the old firms compared to the whole sample. For each increasing percentage of ratio of pledge loans, old firms have extra 34% probability of success while added successful probability for the whole sample is 25%.

Likewise, we obtain some similar significant signs for the group of young firms. In detail, factors of transaction based lending (*service frequency)*; or factors of relationship lending (*lending banks, distance limit (log*), *distance limit*)*;* or factors of scale of enterprise (*total assets (log))* or factors of lending banks *(state-owned bank).*

The main results show significant links between *state-01* with other factors. As a robustness test, we run binary models in which *state-always* is the dependent variable. Significant multivariable models were not achieved while two univariable models show similar signs to our previous findings.

In order to correct for variance error in the estimating coefficients, we employ clustered standard error estimates (Petersen, 2009).[37] For both samples of enterprises and banks, we use years in operation as proxies for cluster variables. For the sample of enterprises, in general, variables maintain significance in all of our models, except Specification 3. For the sample of banks, many variables lose significance in some models or all models.[38]

[37] Petersen (2009) argues that clustered standard errors are unbiased because the approach that accounts for firm effects produces residual dependence.

[38] In detail, for the sample of enterprises, the following four variables lose significance: "the number of service banks", "the lending bank is a state bank", "real estate that account for more than 70% of pledge assets", and "interaction variable between a firm operating in the service sector and ratio of pledge loans more than 60%". For the sample of banks, the following two variables lose significance in all models: "lending bank as a branch" and "collateral as real estate totally". In addition, variables named "rank obstacle from projects" and "obstacle of being a new firm" lose significance in more than 3 models. (Results are available upon request from the authors).

We also carry out robustness test for two groups of SMEs: large SMEs, those have employee size satisfies Decree 56/2009/ND-CP but total assets are as high as large enterprises and otherwise, the group of SMEs. The group of large SMEs have less significant results than the group of SMEs.

[Insert Table 2.17 here]

[Insert Table 2.18 here]

2.5. Concluding Remarks

Results from our analysis show that larger firms have more advantages in borrowing from banks while smaller SMEs depend more on informal types of funding, such as family or friends. Moreover, new and young firms face more constraints than do older more established firms.

Factors that affect SME borrowing can be classified into four groups: relationship lending (number of relations with lending banks or years in the relationship), transaction based lending (requirement for audited financial statements, average number of used services), asset-based lending (total assets, fixed assets, equity, real estate, commercial paper and inventory) and other factors (characteristics of SMEs or the sector that SMEs operate in, distance between banks and clients, guarantees from the VDB and credit policy). Of these, we find that collateral plays a dominant role in credit making decisions and the second most important factor is the number of relationships SMEs have with banks. "Soft information" plays an important role in credit making decisions because the available information on borrowers in Vietnam is poor.

While banks mainly use asset-based lending, developing relationships with banks helps SMEs improve credit supply. Alternative lending technologies that are based on pricing risk or credit scorings are not widely used. Therefore, firms who are seeking external finance should improve their skills in preparing projects as well as their financial statements.

In terms of the supply side, state-owned banks play a leading role in SME lending with significant support from the VDB. However, there is a difference between borrowing in branches and headquarters. Branches tend to provide loans with higher requirements for collateral. Considering different forms of collateral, commercial paper is favoured by banks while inventory is not priorized. Real estate has a bidirectional impact on banks' credit approvals. Finally, competition does not help reduce collateral requirement. However, competition fosters multi-relationships which allow firms to have better chances of obtaining loans and therefore, in this sense competition enhances credit availability for SMEs. Improvement in the legal framework helps strengthen confidence in banks and therefore, they are likely to loosen collateral requirements.

Figure 2. 1: Assets and Capital of Credit Institutions in 2012

Banks	Total Assets (VND trillion)	*Changes (%)	Equity (VND trillion)	Changes (%)	Charter Capital (VND trillion)	Changes (%)
State-owned banks	2,201.6	11.8	137.3	18.7	111.6	28.1
Joint-stock banks	2,159.4	-4.5	183.1	6.3	177.6	8.1
Joint-venture banks and foreign banks	555.4	1.6	92.6	6.8	76.1	2.8
Financial companies and leasing companies	154.9	-8.4	10.8	-24.1	24.8	-1.1
Collective credit institutions	14.5	18.7	2.3	3.7	2.0	0.0
Total	**5,085.8**	**2.5**	**426.1**	**8.9**	**392.1**	**11.2**

Note: *Changes in 2012 compared to 2011.

Source: (General Statistics Office, 2013)

Figure 2. 2: Statistics on Structure of Enterprises

Categories	2005	2009	2010	2011	2012
Statistics on existing enterprises (Unit: enterprise)					
Total enterprises	106,616	236,584	279,360	324,691	346,777
State-owned enterprises	4,086	3,360	3,281	3,265	3,239
Percentage (%)	*3.83*	*1.42*	*1.18*	*1.00*	*0.93*
Non- state enterprises	98,833	226,676	268,831	312,416	334,562
Percentage (%)	*92.70*	*95.81*	*96.21*	*96.23*	*96.48*
Foreign investmemt enterprises	3,697	6,548	7,248	9,010	8,976
Percentage (%)	*3.47*	*2.77*	*2.59*	*2.77*	*2.59*
Statistics on employees (Unit: person)					
Total employees	6,077,300	8,719,000	9,830,900	10,895,600	11,084,900
State-owned enterprises	2,037,700	1,796,900	1,691,800	1,664,400	1,606,400
Percentage (%)	*33.53*	*20.61*	*17.21*	*15.28*	*14.49*
Non- state enterprises	2,819,000	5,002,500	5,983,000	6,680,600	6,758,500
Percentage (%)	*46.39*	*57.37*	*60.86*	*61.31*	*60.97*
Foreign investmemt enterprises	1,220,600	1,919,600	2,156,100	2,550,600	2,720,000
Percentage (%)	*0.20*	*0.22*	*0.22*	*0.23*	*0.25*
Statistics on GDP contribution (Unit: VND billion)					
GDP	914,001	2,157,828	2,779,880	3,245,419	3,584,262
State-owned enterprises	343,883	722,010	908,459	1,056,944	1,154,132
Percentage (%)	*37.62*	*33.46*	*32.68*	*32.57*	*32.20*
Non- state enterprises	431,548	1,054,075	1,369,776	1,601,486	1,729,435
Percentage (%)	*47.22*	*48.85*	*49.27*	*49.35*	*48.25*
Foreign investmemt enterprises	138,570	381,743	501,645	586,989	700,695
Percentage (%)	*15.16*	*17.69*	*18.05*	*18.09*	*19.55*

Source: (General Statistics Office, 2013)

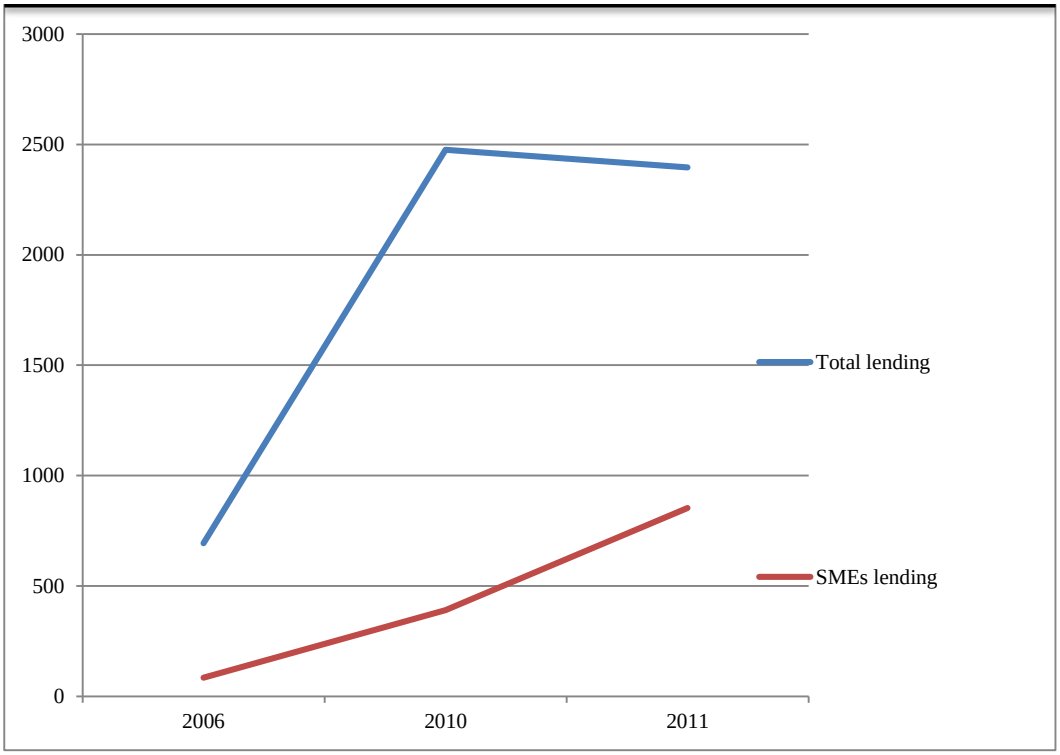
Figure 2. 3: Statistics on Efficiency of Enterprises

Categories	2005	2009	2010	2011	2012
Statistics on on annual average capital of enterprises (Unit: VND trillion)					
Total	2,655.20	7,936.70	10,841.10	13,622.80	15,189.80
State-owned enterprises	1,444.90	3,200.10	3,701.90	4,568.60	4,908.40
Percentage (%)	54.42	40.32	34.15	33.54	32.31
Non- state enterprises	682.30	3,514.80	5,451.70	6,875.00	7,711.70
Percentage (%)	25.70	44.29	50.29	50.47	50.77
Foreign investmemt enterprises	528.00	1221.80	1687.50	2179.20	2569.70
Percentage (%)	19.89	15.39	15.57	16.00	16.92
Statistics on net turnover of enterprises (Unit: VND trillion)					
Total	2,140.60	5,900.30	7,487.70	10,302.00	11,167.80
State-owned enterprises	838.40	1,603.10	2,033.60	2,695.70	2,941.30
Percentage (%)	39.17	27.17	27.16	26.17	26.34
Non- state enterprises	833.80	3,224.90	4,068.20	5,574.30	5,797.40
Percentage (%)	38.95	54.66	54.33	54.11	51.91
Foreign investmemt enterprises	468.40	1,072.30	1,385.90	2,032.00	2,429.10
Percentage (%)	21.88	18.18	18.51	19.72	21.75
Statistics on profit before tax of enterprises (Unit: VND billion)					
Total	98,424	327,207	356,301	334,407	358,825
State-owned enterprises	28,473	131,435	115,193	144,880	170,669
Percentage (%)	28.93	40.17	32.33	43.32	47.56
Non- state enterprises	10,583	74,841	115,654	84,218	68,124
Percentage (%)	10.75	22.87	32.46	25.18	18.99
Foreign investmemt enterprises	59,368	120,931	125,454	105,309	120,032
Percentage (%)	60.32	36.96	35.21	31.49	33.45
Statistics on profit rate of enterprises (Unit: %)					
Total (VND billion)	5.25	5.39	4.53	3.16	3.13
State-owned enterprises	5.4	7.89	5.31	5.18	5.59
Non- state enterprises	1.19	2.27	2.71	1.48	1.15
Foreign investmemt enterprises	11.82	10.96	8.84	5.06	4.85

Source: (General Statistics Office, 2013)

Figure 2. 4: Total Lending versus SME Lending 2006-2011

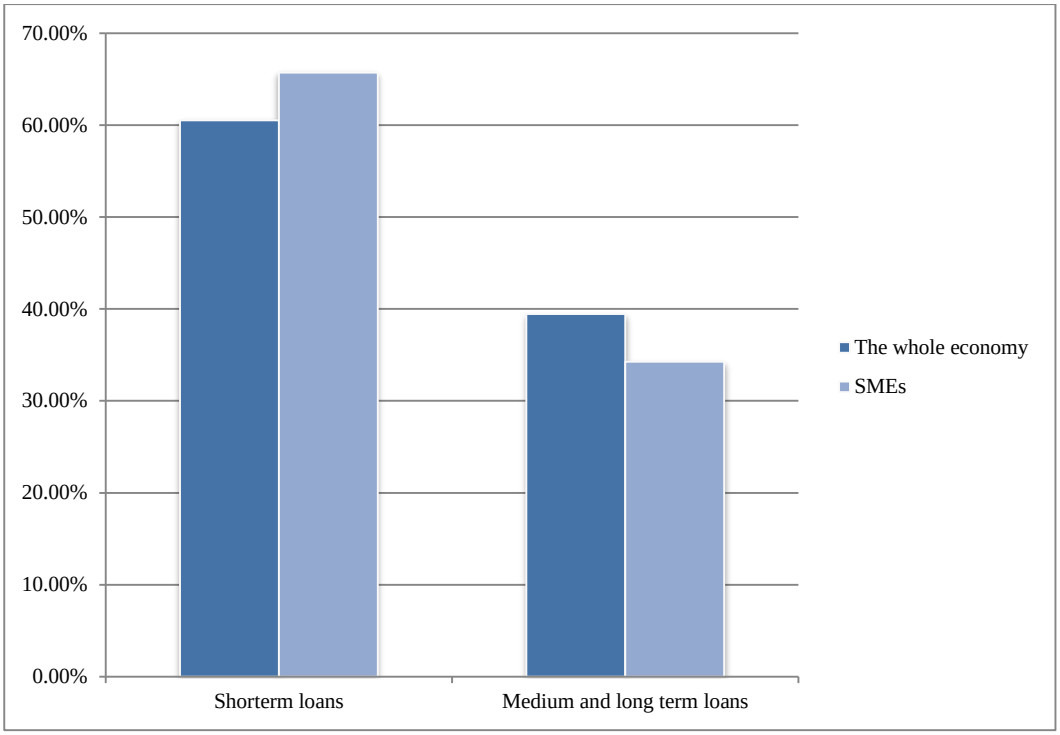
(Unit: VND trillion)



(Source: Compiled from data supplied by the State Bank of Vietnam).

Figure 2. 5: Percentage by Value of different Term Loans in 2011

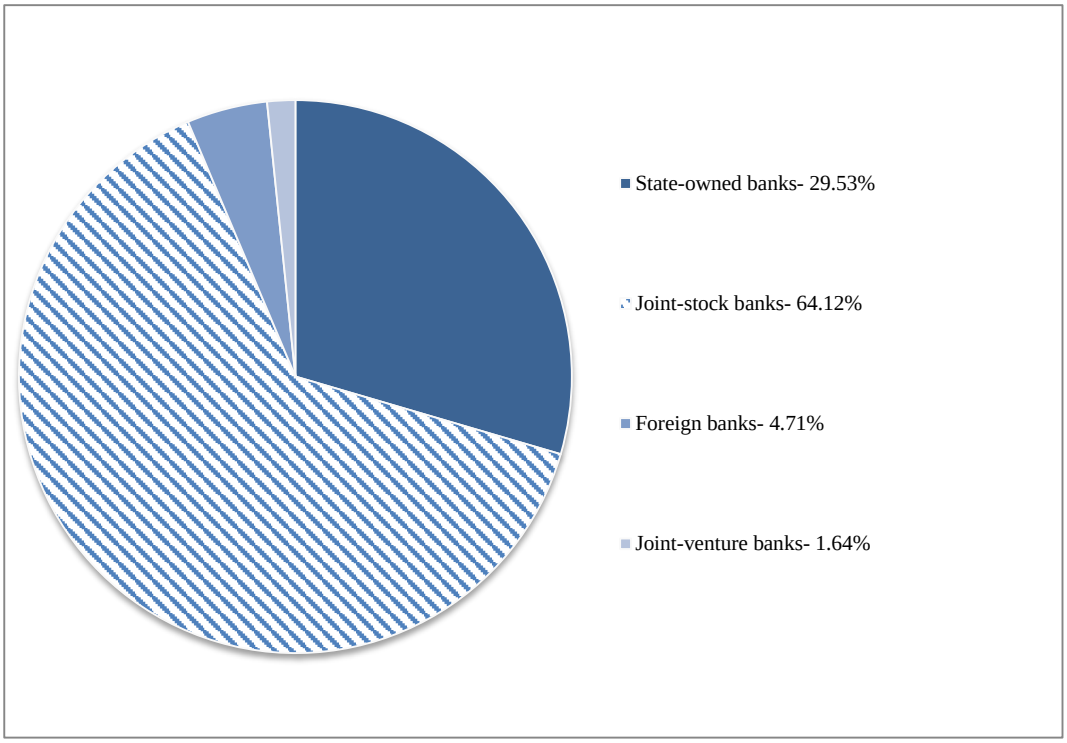
(Unit: Percentage)



(Source: Compiled from data supplied by the State Bank of Vietnam).

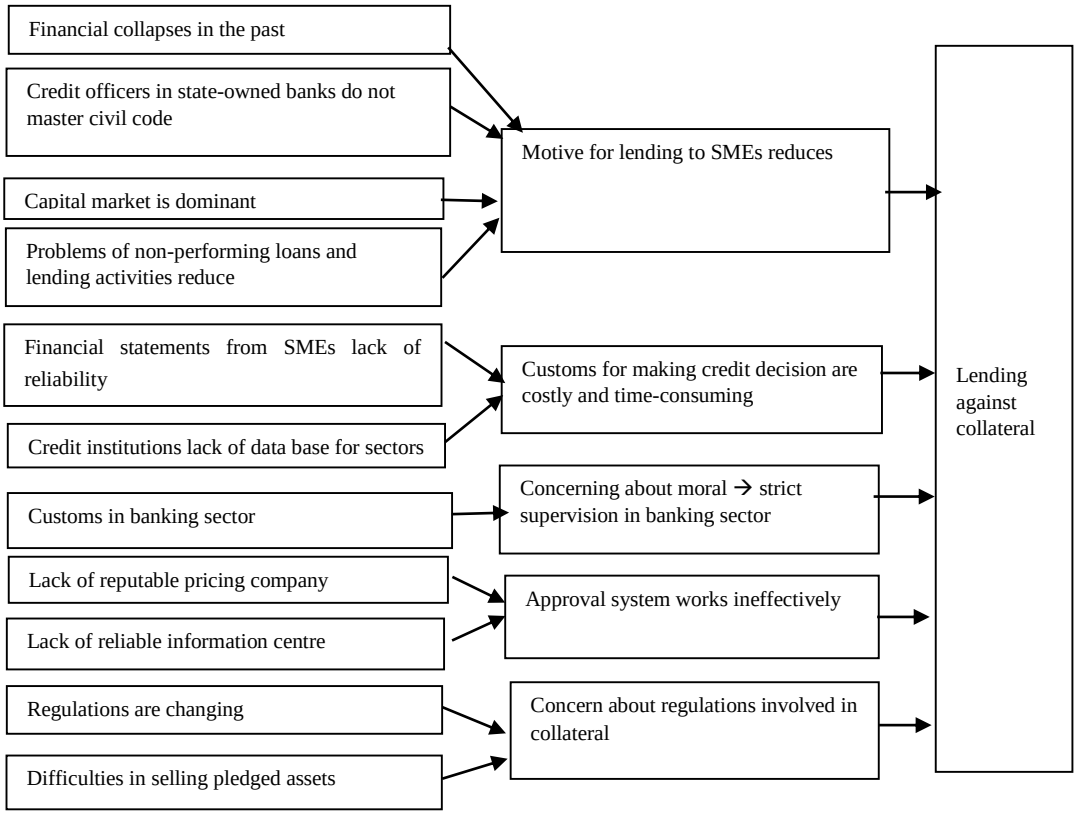
Figure 2. 6: Pledged Loans by Ownership Forms of Banks in 2011

(Unit: Percentage)



(Source: Compiled from data supplied by the State Bank of Vietnam).

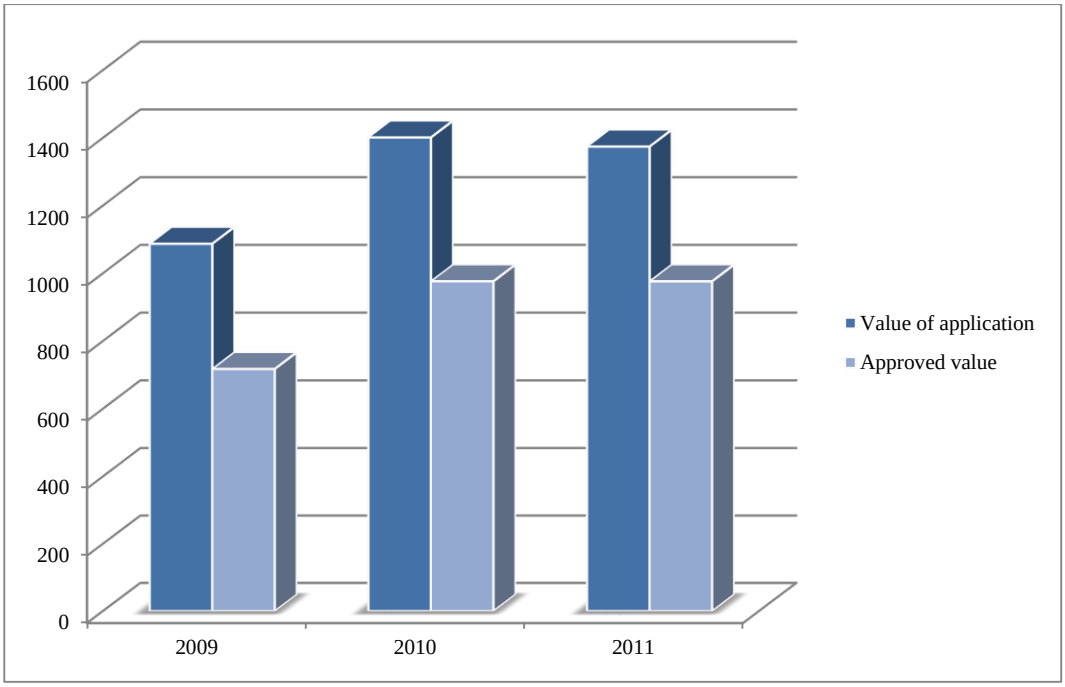
Figure 2. 7. Difficulties of SME Lending



Source: (The State Bank of Vietnam, 2011).

Figure 2. 8: Credit Guarantee Funds in Provinces

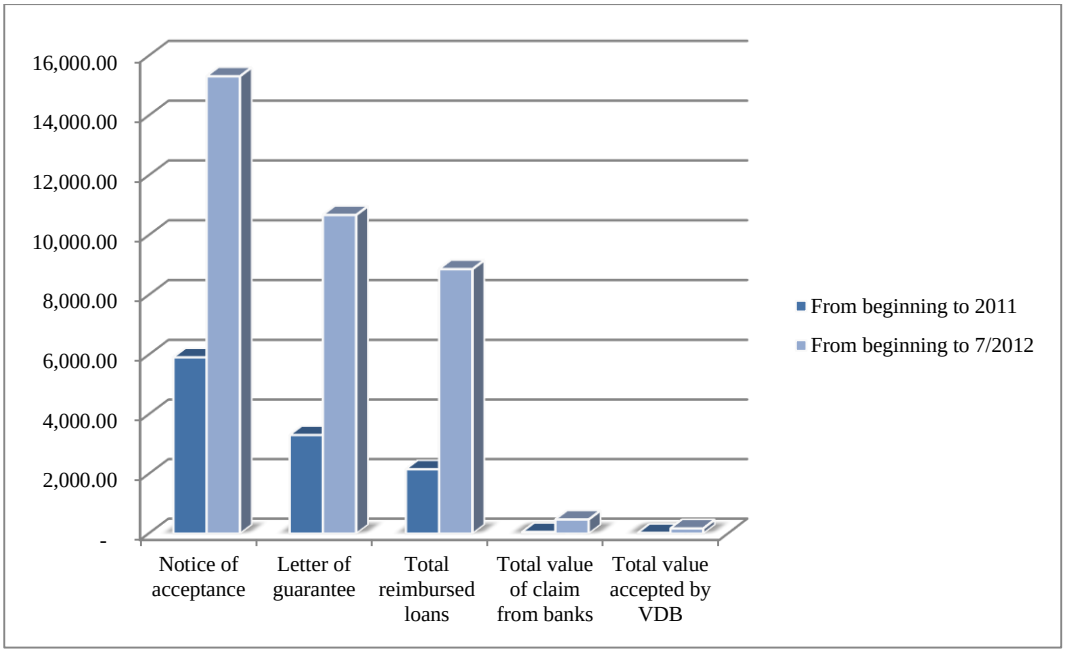
(Unit: VND billion)



Provinces are: Hochiminh city, Bac Ninh, Vinh Phuc, Binh Thuan, Ha Giang, Ba Ria Vung Tau, Yen Bai, Tra Vinh and Dong Thap (Source: Banking Journal, Vol.11, June 2012).

Figure 2. 9: Statistics on Guarantees from Vietnam Development Bank

(Unit: VND billion)



(Source: Compiled from data supplied by the Vietnam Development Bank).

Figure 2. 10: Definition of SMEs

Scales **Sector**	**Micro enterprises**	**Small enterprises**		**Medium enterprises**	
	Employees	**Total assets**	**Employees**	**Total assets**	**Employees**
II. Industry or Construction	Under 10 employees	Under VND 20 billion	From 10-200 employees	From VND 20-100 billion	From 200-300 employees
III. Commerce or Services	Under 10 employees	Under VND 10 billion	From 10-50 employees	From VND 10-50 billion	From 50-100 employees

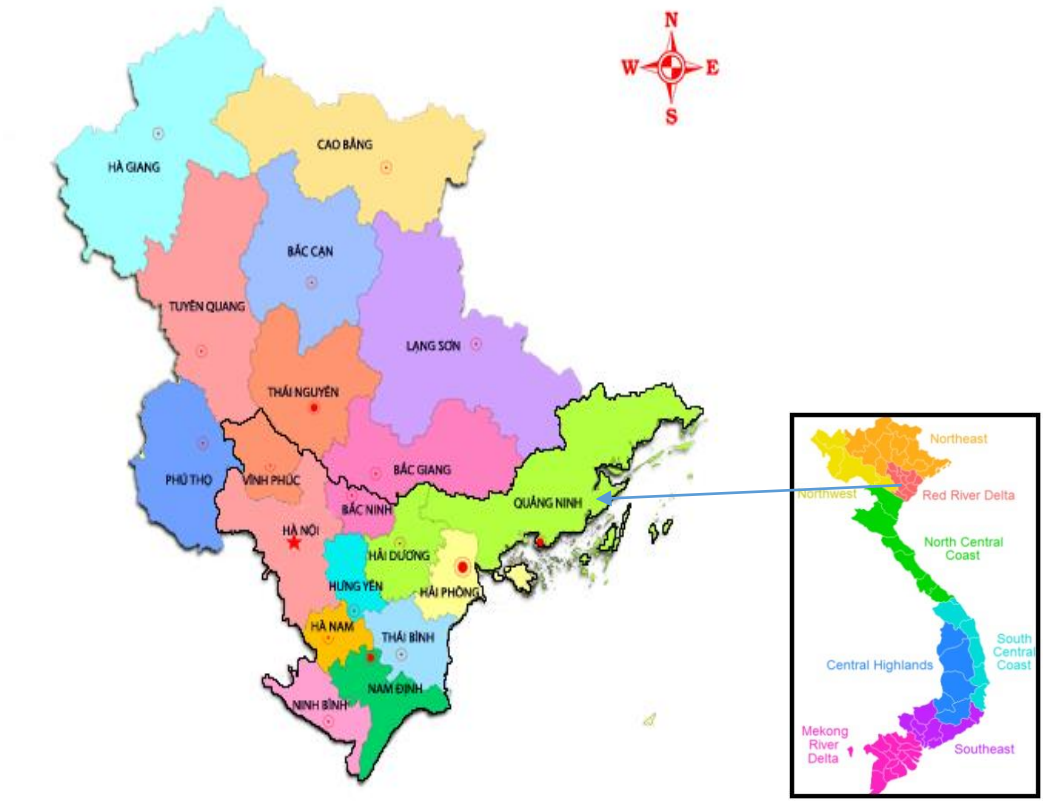
(Source: Decree 56/2009/ND-CP issued 30th June 2009)

Figure 2. 11: Statistics on Enterprises in Red River Delta

Categories	2005	2009	2010	2011	2012
Statistics on existing enterprises (Unit: enterprise)					
Total enterprises	106,616	236,584	279,360	324,691	346,777
Red River Delta	30,134	67,755	82,251	103,518	111,781
Percentage (%)	28.26	28.64	29.44	31.88	32.23
Statistics on employees (Unit: person)					
Total employees	6,077,300	8,719,000	9,830,900	10,895,600	11,084,900
Red River Delta	1,679,108	2,603,504	2,849,782	3,498,715	3,546,968
Percentage (%)	27.63	29.86	28.99	32.11	32.00
Statistics on on annual average capital of enterprises (Unit: VND trillion)					
Total	2655.2	7936.7	10841.1	13622.8	15189.8
Red River Delta	595.6	2353	3131.6	4374.1	4978.1
Percentage (%)	22.43	29.65	28.89	32.11	32.77
Statistics on net turnover of enterprises (Unit: VND trillion)					
Total	2,140.60	5,900.30	7,487.70	10,302.00	11,167.80
Red River Delta	596.20	1,654.30	2,305.70	3,332.60	3,631.10
Percentage (%)	27.85	28.04	30.79	32.35	32.51
Statistics on profit before tax of enterprises (Unit: VND billion)					
Total	98,424	327,207	356,301	334,407	358,825
Red River Delta	18,215	95,222	96,216	100,199	104,837
Percentage (%)	18.51	29.10	27.00	29.96	29.22
Statistics on profit rate of enterprises (Unit: %)					
Total (VND billion)	5.25	5.39	4.53	3.16	3.13
Red River Delta	3.01	5.55	3.86	2.92	2.8

Figure 2. 12: Geographical Structure of SME Surveys- Map of Vietnam

Vinh Phuc (6 firms) 2.8%	Bac Ninh (18 firms) 9.8%	Quang Ninh (26 firms) 14.2%
Ha Noi (57 firms) 31.2%	Hai Duong (20 firms) 10.9%	
Hung Yen (7 firms) 3.8%	Hai Phong (25 firms) 13.7%	
Ha Nam (3 firms) 1.6%	Thai Binh (4 firms) 2.2%	
Ninh Binh (7 firms) 3.8%	Nam Dinh (10 firms) 5.5%	



(Source: Compiled from data obtained in a survey in 2012).

Table 2. 1. Structure of SME surveys

Category	Group of firms	Number of firms	Percentage in sample
Approval/ Rejection	Firms has applications that are always accepted	49	26.78%
	Firms has applications that are accepted and sometimes rejected	99	54.10%
	Firms has applications that are always rejected	35	19.13%
Sector	Industry	20	10.93%
	Construction	39	21.31%
	Trade	55	30.05%
	Services	23	12.57%
	Industry and trade	6	3.28%
	Construction and trade	5	2.73%
	Trade and services	18	9.84%
	Industry and construction	1	0.55%
	Construction and services	2	1.09%
	Construction, trade and services	5	2.73%
Ownership	State-owned firms	81	44.26%
	Limited companies/ joint-stocked firms	56	30.60%
	Private firms	17	9.29%
	Cooperatives	6	3.28%
Age	Young firms (young enterprises with seven years and less in operations	79	43.17%
	Old (old enterprises with more than seven years in operations)	80	43.72%
Scale	SMEs have total assets and employee size satisfy Decree 56/2009/ND-CP	97	53.01%
	Large SMEs have employee size satisfy Decree 56/2009/ND-CP but total assets are as high as large enterprises.	42	22.95%

(Source: Compiled from data obtained in a survey in 2012).

Table 2. 2. Structure of Bank surveys

Category	Group of banks	Number of branches	Percentage in sample
Ownership	State-owned banks	9	25.71%
	Joint-stock banks	22	62.86%
Scale	Group 1 (equity greater than VND billion 20,000, all are state-owned banks)	9	25.71%
	Group 2 (equity from between VND billion 8,000- 20,000)	8	22.86%
	Group 3 (equity less than VND billion 8,000)	13	37.14%

(Source: Compiled from data obtained in a survey in 2012).

Table 2. 3. Descriptive statistics of Variables collected in SME surveys

Variable	Description	Mean	SD
lending banks	number of lending banks that finance a SME	1.61	1.15
state-owned bank	1 if lending bank is a state-owned bank, 0 if otherwise	0.62	0.48
joint-stock bank	1 if lending bank is a joint-stock bank, 0 if otherwise	0.59	0.49
with the VDB's guarantee	borrowing under guarantee by Vietnam Development Bank	0.17	0.38
distance limit	limit of distance that SME borrowers consider an obstacle (unit: km)	42.53	43.92
audited requirement	1 if audited financial statements is a requirement, 0 if otherwise.	0.61	0.49
years with the main bank	number of years with main bank	1.99	0.85
loyal customer * audited requirement	Interaction variable for a firm who has at least 3 years in relationship with lending bank and is asked for audited financial statement.	0.22	0.42
(0= do not use, 1= rarely, 2= yearly, 3= every half of a year, 4= monthly, 5= weekly)			
non-credit services	average frequency of using non-credit services	3.64	1.48
current account	frequency of using a current account	4.32	1.07
service frequency	average frequency of using banking services	3.60	1.12
total assets	total assets in SMEs in the latest financial year (bil.VND/mil.USD)	139.13/6.96	258.37
fixed assets	fixed assets in SMEs in the latest financial year (bil.VND/mil.USD)	68.21/3.41	149.36
equity	equity in SMEs in the latest financial year (bil.VND/mil.USD)	34.45/1.72	58.53
collateral as firm assets	ratio of firm assets to pledged assets (%)	0.75	0.31
ratio of collateral	ratio of collateralized loans (0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= over 85%)	4.15 (or 74%)	1.00
ratio of collateral >=50%	1 if ratio of collateralized loans is at least 50% of total loans, 0 otherwise	0.93	0.26
ratio of collateral >=85%	1 if ratio of collateralized loans is at least 85% of total loans, 0 otherwise	0.46	0.50
collateral as real estate	ratio of real estate to pledged assets	0.61	0.32
collateral as real estate >=70%	1 if real estate accounts for at least 70% of collateral, 0 if otherwise	0.42	0.50
employee	number of employees in SME	87.29	99.72
construction	1 if SMEs belong to construction sector, 0 if otherwise	0.30	0.46
services	1 if SMEs belong to service sector, 0 if otherwise	0.28	0.45

Table 2. 4. Descriptive statistics of Variables collected in Bank surveys

Variables that affect bank credit making decisions	Mean	Std. Dev
(1= the most important, 5= the least important) rank of obstacle arising from collateral*	2.67	1.38
ranking of role of project in credit approval*	2.14	1.55
ranking of role of managerial ability*	2.85	1.14
(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%) role of projects in credit approval	4.2	1.13
(1= strongly agree, 6= strongly disagree) often collect information from publication*	2.43	1.35
often collect information from managers*	1.96	1.2
(1= strongly agree, 6= strongly disagree) obstacles by distance limit* (limit of distance that banks consider an obstacle (unit: km))	4.14	1.37
obstacle caused by being a new firm*	2.37	1.43
obstacle caused by lacking fixed assets to pledge*	2.57	1.35
(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)		
information from total assets evaluation	3.53	1.1
information from credit scoring	3.1	1.2
collateral is in the form of real estate (%)	0.51	0.28
(0= don't know; 1= very difficult and time-consuming; 2= difficult and time-consuming; 3= acceptable; 4=easy and quick; 5=very easy and quick) evaluation requirements for court action	2.03	0.71
(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)		
informational difficulties caused by uncertainty of asset register	2.66	1.37
informational difficulties caused by state bank	2.83	1.31
(-1= worse, 0= no change, 1= somewhat improved , 2= quite improved , 3= significantly improved , 4= extremely improved) evaluation the new collateral law	1.74	1.15
(1= strongly agree, 6= strongly disagree) SME lending is reduced by competition*	3.36	1.58
lender is a branch (*1 if lender is a branch, 0 if otherwise*)	0.87	0.34

Table 2. 5. Chance of obtaining Bank Loans of SMEs (SME survey)

	2SLS							Logit	
Independent vars.	Spec 1	Spec 2	Spec 3	Spec 4	Spec 5	Spec 6	Spec 7	Spec 8	Spec 9
1. lending banks	0.13**	0.37**	0.22***	0.19***	0.20***	0.30**		4.26**	
	(0.05)	(0.15)	(0.05)	(0.04)	(0.04)	(0.14)		(1.39)	
2.state-owned bank			0.16**	0.22**		0.19**		2.11*	2.17**
			(0.08)	(0.07)		(0.09)		(1.21)	(0.91)
3.joint-stock banks					-0.17**				
					(0.06)				
		-0.04			0.27**	-0.05			
4.with VDB guarantee		(0.17)			(0.09)	(0.15)			
5.distance limit	0.003**	0.005**		0.003***		0 .003**	0.002*		
	(0.001)	(0.002)		(0.001)		(0.002)	(0.001)		
6.audited requirement	-0.19*						-0.29**		
	(0.10)						(0.13)		
7.years with the main bank							0.13**		
							(0.06)		
8.loyal customer *audited requirement			-0.33**						
			(0.11)						
9.distance limit (log)			0.10**						1.58**
			(0.04)						(0.62)
10.non-credit services (log)									1.87**
									(0.95)
11.current account (log)							0.31*		
							(0.16)		
12.current account					0.08*				
					(0.05)				
13.service frequency				-0.08**	-0.14**		-0.20**		
				(0.03)	(0.05)		(0.07)		
14.total assets (log)					0.05				1.07**
					(0.03)				(0.36)
15.collateral as firm assets		-0.26*							
		(0.16)							
16.ratio of collateral		0 .19**				0 .30***		1.15*	
		(0.08)				(0.09)		(0.63)	
17.collateral as real estate >=70%	-0.20**	-0.37**				-0.30**			
	(0.09)	(0.14)				(0.11)			
18.ratio of collateral >=60%						-0.61**			
						(0.31)			
19.fixed assets (log)	0.06*		0.08**						
	(0.03)		(0.03)						
20.collateral as real estate (log)			-0.42**						
			(0.14)						
21.ratio of collateral >=84%			0.27**						
			(0.09)						
22.collateral as real estate								-5.58**	
								(2.29)	
23.equity				0.001*					
				(0.001)					
24.employee (log)				0.05					
				(0.04)					
25.employee							0.003**		
							(0.001)		
26.construction						-0.24*			
						(0.13)			
27.services	-0.20*								
	(0.11)								
_cons	0.48***	-0.50	-0.45**	0.28	0.54**	-0.44	0.65**	-5.92*	-8.87***
	(0.13)	(0.51)	(0.16)	(0.18)	(0.19)	(0.51)	(0.28)	(3.04)	(2.70)
N	35	28	28	61	71	33	67	72	82
Rsquare/Pseudo Rsquare	0.58	0.47	0.76	0.64	0.60	0.54	0.21	0.64	0.54
chi-square/ Pearson chi-square	23.39	19.75	101.29	80.90	73.82	30.10	111.44	29.01	34.18
p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
Sagan test	0.40	1.10	0.32	2.40	0.26	0.67	0.85	n/a	n/a
p-value	0.95	0.30	0.85	0.12	0.61	0.41	0.36	n/a	n/a

Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01
Dependent variable- state-01 is binary (1 is accepted, otherwise 0).
The question in our questionnaire is: "Into which group does your enterprise fall when applying for loans?" Answers: Always rejected/ Some loans are approved and some are rejected/ Always successful. Always rejected was coded by 0, otherwise is 1.

Table 2. 6. Collateral Requirements in links with other Factors (Bank survey)

	Y= Role of collateral			Y= Ratio of pledged loans				
Independent variables	Spec 1	Spec 2	Spec 3	Spec 4	Spec 5	Spec 6	Spec 7	Spec 8
1.rank of obstacle arising from collateral *						-0.10**	-0.10***	-0.10***
						(0.03)	(0.03)	(0.02)
2.role of projects in credit approval		0.18*	0.18**			0.20***	0.18***	0.13***
		(0.10)	(0.08)			(0.05)	(0.04)	(0.04)
3.ranking of role of project in credit approval*		0.17*	0.23***					
		(0.08)	(0.06)					
4.ranking of role of managerial ability*	0.46***	0.74***	0.76***					
	(0.11)	(0.09)	(0.09)					
5.often collect information from publication*		0.18**						
		(0.08)						
6.often collect information from managers*					0.16*	0.16***	0.18***	0.16***
					(0.08)	(0.04)	(0.04)	(0.03)
7.obstacles by distance limit*					-0.22**	-0.29***	-0.28***	-0.29***
					(0.11)	(0.07)	(0.05)	(0.04)
8.obstales by being a new firm*		-0.28***	-0.29***	-0.14**	-0.34	-0.27**	-0.21*	-0.16*
		(0.06)	(0.05)	(0.05)	(0.22)	(0.13)	(0.11)	(0.09)
9.obstales by lacking fixed assets to pledge*		-0.32**	-0.17					
		(0.12)	(0.12)					
10.information from asset evaluation	0.35**			0.30***				
	(0.13)			(0.08)				
11.information from credit scoring						-0.06**		
						(0.05)		
12.collateral in the form of real estate			0.64**					
			(0.27)					
13.evaluation requirements for court action					0.21*			
					(0.12)			
14.informational difficulties by uncertainty of asset register				-0.11**				-0.09**
				(0.04)				(0.03)
15.informational difficulties by state bank						0.11**	0.11**	0.14***
						(0.03)	(0.03)	(0.03)
16.evaluation the new collateral law						0.17**	0.15**	0.11**
						(0.05)	(0.05)	(0.04)
17.SME lending is reduced by competition*					0.13*	0.20***	0.18***	0.15***
					(0.07)	(0.04)	(0.03)	(0.03)
18.lender is a branch				0.96***	0.57	0.89***	0.96***	1.01***
				(0.19)	(0.38)	(0.19)	(0.18)	(0.15)
_cons	1.65***	2.06**	1.66**	3.29***	4.57***	3.60***	3.35***	3.81***
	(0.45)	(0.72)	(0.58)	(0.44)	(0.53)	(0.43)	(0.36)	(0.34)
N	29	29	28	29	28	28	28	28
R-square	0.58	0.73	0.77	0.71	0.60	0.88	0.91	0.91
Sagan test	1.48	2.72	3.70	1.97	0.07	0.53	0.75	0.32
p- value	0.22	0.10	0.054	0.16	0.80	0.47	0.69	0.57

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

There are 6 levels for a factor goes with*, 1= the most important or totally agree; 6= the least important or totally disagree (see Table 2 for more details).

Table 2. 7. Role of Sources of Information for Credit Making Decisions

Source of information in credit making decisions *(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)*	**Mean**	**Std. Dev**	**Min**	**Max**
From direct contact over time with SMEs, owners or managers	3.43	1.28	1	5
From previous loans	3.30	0.92	1	5
From financial statements	3.03	1.10	1	5
From credit scoring	3.10	1.21	1	5
From standardized risk- rating tools	3.10	1.21	1	5
From total assets	3.53	1.11	1	5
From fixed assets	3.23	1.14	0	5

Source: Data obtained from a survey analysis in 2012

Table 2. 8. Financial Sources for SME needs

(1= the most important, 6= the least important)	**Large SMEs**	**SMEs**	t-test Mean different = Mean (leaf column) – Mean (right column) Ho: Mean different = 0
Importance of financial sources supported by family, or friends	3.81	3.14	Ha: Mean different ≠0 (p= 0.0074) Ha: Mean different >0 (p= 0.0037)
Source: Data obtained from a survey analysis in 2012. Large SMEs are firms with less than 300 persons but total assets as big as large firms (>=VND 100 billion or USD 5 million).			

Table 2. 9. Legal Perception, Ratio of Collateral & Requirement for Audited Financial Statements

Variable description	Obs.	Mean	Std.Dev	Min	Max
Effectiveness of contracts *(1= totally agree, 6= totally disagree)*	30	1.3	0.65	1	3
Effectiveness of property rights *(1= totally agree, 6= totally disagree)*	30	2.57	1.41	1	6
The borrowers have to use all legal sources to recover loans and no exemption for their personal properties *(1= totally agree, 6= totally disagree)*	30	3.07	1.86	1	6
Contracts help your bank easily and quickly handle movable collateral *(1= totally agree, 6= totally disagree)*	30	3.23	1.52	1	6
Contracts help your bank easily and quickly handle immovable collateral *(1= totally agree, 6= totally disagree)*	30	3.43	1.63	1	6
Evaluating steps for initiating a court action *(1=very difficult, 5= very easy)*	30	2.03	0.72	1	3
Evaluating time for courts *(1=very slow, 5= very fast)*	30	1.57	0.63	1	3
Evaluating improvement of new collateral laws *(0= no change, 4= totally changed)*	31	1.74	1.15	0	4
Ratio of collateralized loans in total loans *(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)*	32	4.56	0.62	3	5
Requirement for audited financial statements *(0= no, 1= yes)*	31	0.26	0.44	0	1

Source: Data obtained from a survey analysis in 2012.

Table 2. 10. Legal Perception, ratio of Collateralized Loans by Bank Size & Ownership

Variables	**Group 1 Mean**	**Group 2 Mean**	**Group 3 Mean**	**t-test** Mean different = Mean (leaf column) – Mean (right column) **Ho: Mean different = 0**
Contracts help your bank easily and quickly handle movable collateral *(1= totally agree, 6= totally disagree)*	3.78		2.67	Ha: Mean different ≠0 (p= 0.0759) Ha: Mean different >0 (p=0.0379)
Contracts help your bank easily and quickly handle immovable collateral *(1= totally agree, 6= totally disagree)*	4.11		2.58	Ha: Mean different ≠0 (p= 0.0272) Ha: Mean different >0 (p=0.0136)
		4.14	2.58	Ha: Mean different ≠0 (p= 0.0372) Ha: Mean different >0 (p=0.0186)
Ratio of third party's assets in total collateral		0.37	0.22	Ha: Mean different≠0 (p= 0.0831) Ha: Mean different >0 (p= 0.0415)
Ratio of collateral as assets formed from loans in total loans		0.29	0.16	Ha: Mean different >0 (p= 0.0507)
	0.30		0.16	Ha: Mean different≠0 (p= 0.0901) Ha: Mean different >0 (p= 0.0451)
Evaluating VDB support *(0= very ineffective, 4= very satisfied)*		2.33	1.25	Ha: Mean different≠0 (p= 0.0446) Ha: Mean different >0 (p= 0.0223)

Source: Data obtained from a survey analysis in 2012.

Groups of Banks: *Group 1* consists of banks with equity greater than VND 20,000 billion. All banks in Group 1 are State owned banks, *Group 2* comprise banks with equity between VND 8,000- 20,000 billion; *Group 3* includes banks with equity less than VND billion 8,000.

Table 2. 11. Difficulties in Collecting Information

Difficulties in collecting information *(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)*	**Means**	**Std. Dev**	**Min**	**Max**
Unavailable information of SMEs due to their limited managerial capability	3	1.16	1	4
SMEs produce unreliable information on purpose	3.84	1.00	2	5
Lack of reliable information for references (eg. authority or reputable independent agent)	3.29	1.13	1	5
Lack of cooperation between financial institutions who lend to the same customers	3.5	1.19	1	5
Information from CIC or SBV is too basic and insufficient	2.83	1.32	0	5
Deliberate information collection by yourself requires time and is expensive	2.87	1.04	0	5
Difficulty/ uncertainty in access to information of security transactions	2.67	1.37	0	5
Difficult to quantify and transmit information through the formalised communication channels to HQ	2.47	1.45	0	5

Source: Data obtained from a survey analysis in 2012

Table 2. 12. Difficulties in Collecting Information by Bank Size

Difficulties in collecting information *(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)*	**Group 1** Mean	**Group 2** Mean	**Group 3** Mean	t-test Mean different = Mean (leaf column) – Mean (right column) Ho: Mean different = 0
Unavailable information of SMEs due to their limited managerial capability	2.50	3.71		Ha: Mean different <0 (p= 0.0132) Ha: Mean different ≠0 (p=0.0265)
SMEs produce unreliable information on purpose		4.37	3.58	Ha: Mean different ≠0 (p= 0.0893) Ha: Mean different >0 (p= 0.0447)
Information from CIC or SBV is too simple and insufficient		2.14	3.25	Ha: Mean different <0 (p= 0.0414) Ha: Mean different ≠0 (p= 0.0828)

Source: Data obtained from a survey analysis in 2012

Table 2. 13. Factors ranked in Bank Credit Making Decisions

Variables		Mean	Std. Dev.
Role	Rank role of projects	2.14	1.55
	Rank role of financial statements	3.42	1.24
	Rank role of collateral	2.71	1.29
	Rank role of relationship with banks	3.85	1.24
	Rank role of managerial ability	2.85	1.14
Obstacle	Rank obstacles from projects	2.7	1.74
	Rank obstacles from financial statements	3.35	1.27
	Rank obstacles from collateral	2.67	1.38
	Rank obstacles from SME characteristics	3.23	1.57
	Rank obstacles from policy	3.64	1.66
	Rank obstacles from distance between borrower and lender	5.38	0.98

Source: Data obtained from a survey analysis in 2012

Table 2. 14. Factors that affect Bank Credit Making Decisions

	Group 1 Mean	**Group 2** Mean	**Group 3** Mean	**JS banks** Mean	**State-owned banks** Mean	**t-test** Mean different = Mean (leaf column) – Mean (right column) Ho: Mean different = 0
Advantages of having a long term strategy *(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)*				3.62	2.75	Ha: Mean different ≠0 (p= 0.0750) Ha: Mean different >0 (p= 0.0375)
Obstacles related to mapping out a good project/ business plan *(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)*				2.29	3.33	Ha: Mean different <0 (p= 0.0252) Ha: Mean different ≠0 (p= 0.0503)
Ranking distance as an obstacle *(1= the most important, 6= the least important)*				5.10	5.78	Ha: Mean different <0 (p= 0.0471) Ha: Mean different ≠0 (p= 0.0941)
		5.63	4.75			Ha: Mean different >0 (p= 0.0505)
	5.78		4.75			Ha: Mean different ≠0 (p= 0.0193) Ha: Mean different >0 (p= 0.0097)
Decisions during an economic downturn *(3=increase interest rate, 2= require more collateral, 1= both, 0= none)*	1.13	2.50				Ha: Mean different <0 (p= 0.0090) Ha: Mean different ≠0 (p= 0.0180)
		2.50	1.20			Ha: Mean different ≠0 (p= 0.0522) Ha: Mean different >0 (p= 0.0261)
Evaluate the current competitive environment for SME lending *(0= very low, 4= very strong)*		3.00	2.33			Ha: Mean different ≠0 (p= 0.0987) Ha: Mean different >0 (p= 0.0494)
Competitiveness between banks reduces SME lending *(1= totally agree, 6= totally disagree)*				3.00	4.11	Ha: Mean different <0 (p= 0.0427) Ha: Mean different ≠0 (p= 0.0854)

Source: Data obtained from a survey analysis in 2012

Table 2. 15. Factors that Reduce the Availability of SME Loans

Reasons for a reduction of credit availability	**Mean**	**Std. Dev.**	**Min**	**Max**
Government regulations on credit supply/ credit growth rate *(1= the most important, 6= the least important)*	2.80	1.75	1	6
Competitiveness between banks *(1= the most important, 6= the least important)*	3.37	1.59	1	6
SMEs' inherent characteristics *(1= the most important, 6= the least important)*	2.33	1.12	1	5
Difficulties in attracting deposits from residents and enterprises *(1= the most important, 6= the least important)*	3.14	1.43	1	6
Scarcity of capital to finance SMEs *(1= the most important, 6= the least important)*	4.40	1.52	1	6
Limited labour force to serve SMEs *(1= the most important, 6= the least important)*	4.43	1.55	1	6
Ownership change *(2= privatization, 1= M&A, 0= no change)*	0.76	0.91	0	2
Effect of ownership change *(1= increase, -1= decrease, 0= no change)*	0.33	0.62	-1	1

Source: Data obtained from a survey analysis in 2012

Table 2. 16. Compare Views and Evaluations of Banks and Enterprises

Variables	Enterprises		Banks	
	Mean	Std. Dev.	Mean	Std. Dev.
Ratio of collateral to firm assets (%)	0.74	0.30	0.40	0.25
Ratio of collateral to firm owner assets (%)	0.50	0.37	0.54	0.20
Ratio of collateral to third party assets (%)	0.29	0.33	0.31	0.20
Advantages of being a loyal customers will: *(0= none, 1= reduce interest rate, 2= reduce collateral requirements, 3= both)*	2.00	1.07	1.80	0.92
Advantages for often using non-credit services *(0= none, 1= reduce interest rate, 2= reduce collateral requirements, 3= both)*	1.10	0.99	1.60	0.91
Advantages due to having more assets for pledging (compared to others with the same conditions) *(0= none, 1= reduce interest rate, 2= reduce collateral requirements, 3= both)*	1.23	1.00	0.93	1.21
Decisions for riskier customers (compared to others with the same conditions) *(0= none, 1= reduce interest rate, 2= reduce collateral requirements, 3= both)*	1.86	0.91	1.74	0.90
Decisions in a weak business environment *(0= none, 1=increase interest rate, 2= require more collateral, 3= both)*	1.55	1.01	1.55	1.06
Decisions in economic recession *(0= none, 1=increase interest rate, 2= require more collateral, 3= both)*	1.74	1.08	1.48	1.03
Role of collateral in credit decision making *(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)*	4.33	0.81	4.19	0.83
Ratio of collateralized loans in total loans *(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)*	4.15	1.00	4.56	0.62
Ratio of collateral as land-use rights (%)	0.73	0.28	0.56	0.25
Ratio of collateral as real estate (%)	0.61	0.32	0.51	0.29
Ratio of collateral as goods in stock (%)	0.51	0.66	0.17	0.17
Ratio of collateral as vehicles (%)	0.54	0.55	0.22	0.17
Ratio of collateral as machines, equipment (%)	0.50	0.33	0.19	0.16
Ratio of collateral as assets formed from loans (%)	0.43	0.34	0.24	0.18
Ratio of collateral as cash/ receivable collections (%)	0.49	0.37	0.07	0.09
Ratio of collateral as commercial paper (%)	0.42	0.36	0.12	0.09
Ratio of collateral as third party guarantee (%)	0.44	0.34	0.21	0.29
Ratio of collateral as trademark (%)	0.42	0.34	0.02	0.05
Ratio of collateral as firms' reputation (%)	0.42	0.34	0.04	0.06
Ratio of collateral as license (%)	0.35	0.33	0.01	0.07
Lending with VDB guarantee *(dummy, yes=1)*	0.17	0.38	0.34	0.48
Evaluating documentation requirements by the VDB *(0= costly/ complicated, 4= cheap/ easy)*	1.98	1.07	1.93	0.20
Evaluating conditions necessary for being guaranteed by the VDB *(0= costly/ complicated, 4= cheap/ easy)*	1.86	0.79	2.00	0.82

Evaluating cost of VDB guarantee *(0= costly/ complicated, 4= cheap/ easy)*	2.07	0.81	1.77	0.60
Evaluating terms of loans when guaranteed by VDB *(0= costly/ complicated, 4= cheap/ easy)*	2.00	0.62	1.92	0.76
Evaluating value of loans when guaranteed by VDB *(0= costly/ complicated, 4= cheap/ easy)*	2.00	0.48	1.92	0.95
Evaluating support from VDB *(0= costly/ complicated, 4= cheap/ easy)*	2.03	0.80	1.36	1.08
Advantages due to a good relationship with lending banks *(3= favourable conditions, 2= being informed policies, 1= both, 0= none)*	1.68	0.99		
Advantages due to a good relationship with loan officer *(3= favourable conditions, 2= being informed policies, 1= both, 0= none)*	1.38	0.81		
Role of a good relationship with lending banks *(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)*	4.01	1.11	3.77	0.96
Role of a good relationship with loan officers *(0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%)*	2.91	1.51	2.68	1.02
Requirement for audited financial statements *(dummy, yes=1)*	0.61	0.49	0.26	0.44

Source: Data obtained from a survey analysis in 2012

Table 2. 17. Robustness Test the Chance of Obtaining Loans of Large SMEs

Independent variables	2SLS			
	Spec 1	**Spec 2**	**Spec 3**	**Spec 4**
1. lending banks	0.12**	0.10**	0.14**	
	(0.05)	(0.04)	(0.04)	
2.state-owned bank		0.004		
		(0.09)		
3.joint-stock banks			-0.14	
			(0.09)	
			0.17	
4.with VDB guarantee			(0.18)	
5.distance limit	0.002**	0.002**		-0.0003
	(0.001)	(0.001)		(0.001)
6.audited requirement	-0.33**			-0.29
	(0.15)			(0.45)
				0.08
7.years with the main bank				(0.06)
8.current account (log)				-0.008
				(0.18)
9.current account			0.29*	
			(0.15)	
10.service frequency		-0.06	-0.11*	-0.12
		(0.05)	(0.06)	0.10)
11.total assets (log)			0.09	
			(0.08)	
	0.24**			
12.collateral as real estate >=70%	(0.10)			
13.fixed assets (log)	0.10*			
	(0.06)			
14.equity		0.001		
		(0.001)		
15.employee (log)		0.07		
		(0.05)		
16.employee				0.002
				(0.003)
17.services	-0.07			
	(0.13)			
_cons	0.30	0.55*	-0.72	1.19*
	(0.24)	(0.27)	(0.62)	(0.61)
N	21	29	33	33
Rsquare/Pseudo Rsquare	0.76	0.50	0.59	0.11
Sagan test	3.73	0.80	0.68	0.35
p-value	0.05	0.78	0.41	0.55

Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01. Source: Data obtained from a survey analysis in 2012

Dependent variable- state-01 is binary (1 is accepted, otherwise 0).

The question in our questionnaire is: "Into which group does your enterprise fall when applying for loans?" Answers: Always rejected/ Some loans are approved and some are rejected/ Always successful. Always rejected was coded by 0, otherwise is 1.

Note: Large SMEs have employee size satisfies Decree 56/2009/ND-CP but total assets are as high as large enterprises.

Table 2. 18.Robustness Test the Chance of Obtaining Loans of SMEs

	2SLS							Logit	
Independent variables	**Spec 1**	**Spec 2**	**Spec 3**	**Spec 4**	**Spec 5**	**Spec 6**	**Spec 7**	**Spec 8**	**Spec 9**
1. lending banks	0.15**	0.28**	0.22***	0.20**	0.23***	0.12		4.22*	2.70**
	(0.06)	(0.12)	(0.06)	(0.07)	(0.06)	(0.15)		(2.23)	(1.11)
2.state-owned bank			0.12	0.45		0.51**		5.33*	
			(0.12)	(0.29)		(0.17)		(2.90)	
3.joint-stock banks					-0.18**				
					(0.09)				
		0.02			0.29**	0.23			
4.with VDB guarantee		(0.22)			(0.11)	(0.22)			
5.distance limit	0.003**	0.006**		0.002		0.004*	0.003**		
	(0.002)	(0.002)		(0.002)		(0.002)	(0.001)		
6.audited requirement	-0.26**						-0.23*		
	(0.12)						(0.12)		
							0.13*		
7.years with the main bank							(0.07)		
8.loyal customer *audited requirement			-0.37**						
			(0.14)						
9.distance limit (log)			0.17**						1.23**
			(0.07)						(0.60)
10.non-credit services (log)									1.02
									(1.01)
11.current account (log)							0.41*		
							(0.22)		
12.current account					0.06				
					(0.06)				
13.service frequency				-0.03	-0.12		-0.26**		
				(0.09)	(0.07)		(0.08)		
14.total assets (log)					0.07				1.50**
					(0.07)				(0.59)
15.collateral as firm assets		0.004							
		(0.38)							
16.ratio of collateral		0.05				0.22**		-0.35	
		(0.12)				(0.10)		(0.93)	
17.collateral as real estate >=70%	-0.35**	-0.52**				-0.20			
	(0.11)	(0.19)				(0.17)			
18.fixed assets (log)	0.06		0.01						
	(0.06)		(0.06)						
			-0.53**						
19.collateral as real estate (log)			(0.19)						
			0.27**					-14.15	
20.ratio of collateral >=84%			(0.12)					(9.31)	
21.equity				0.02					
				(0.03)					
22.employee (log)				-0.10					
				(0.22)					
23.employee							0.001		
							(0.001)		
24.construction						-0.06			
						(0.18)			
25.services	-0.22*								
	(0.13)								
_cons	0.58***	-0.02	-0.57**	0.32	0.45	-0.84*	0.73**	6.20	-8.04**
	(0.16)	(0.58)	(0.20)	(0.32)	(0.28)	(0.47)	(0.33)	(8.76)	(2.88)
N	34	24	21	42	47	18	44	37	57
Rsquare/Pseudo Rsquare	0.65	0.72	0.75	0.47	0.60	0.70	0.37	0.70	0.51
Sagan test	0.26	3.94	0.20	0.07	0.02	0.45	1.22	n/a	n/a
p-value	0.61	0.05	0.90	0.79	0.89	0.50	0.27	n/a	n/a

Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01. Source: Data obtained from a survey analysis in 2012
Dependent variable- state-01 is binary (1 is accepted, otherwise 0).
The question in our questionnaire is: "Into which group does your enterprise fall when applying for loans?" Answers: Always rejected/ Some loans are approved and some are rejected/ Always successful. Always rejected was coded by 0, otherwise is 1.
Note: These SMEs have total assets and employee size satisfy Decree 56/2009/ND-CP

Table 2. 19. Descriptive statistics for Data sets from Banks and SMEs

+ Data from Banks

Variable	Description	Obs.	Mean	SD	Unit
ratiocollateral	Ratio of pledged loans	32	4.56	0.62	%
landuseright	Ratio of pledged loans as land use rights	30	0.56	0.25	%
real estate	Ratio of pledged loans as real estate	28	0.51	0.29	%
stocks	Ratio of pledged loans as stocks	29	0.17	0.17	%
vehicles	Ratio of pledged loans as vehicles	30	0.22	0.17	%
machines	Ratio of pledged loans as machines	26	0.19	0.16	%
fromloans	Ratio of pledged loans as asset formed from loans	29	0.23	0.18	%
firmassets	Ratio of pledged loans as firm assets	27	0.40	0.25	%
firmownerassets	Ratio of pledged loans as firm owner assets	29	0.54	0.20	%
thirdparty	Ratio of pledged loans as third party's assets	28	0.31	0.20	%
with VDB	Lent under VDB' guarantor, 1 if yes, 0 otherwise	32	0.34	0.48	
audit (0,1)	1 if audited financial statements is a requirement, 0 if otherwise	31	0.26	0.44	
SME lending	Outstanding of SMEs	16	23813	73126	VND billion
nocus	Number of customers	17	11097	30585	firm
noSME	Number of SMEs	16	2052.81	6075.77	Firm
equity	Equity of banks	30	11809.23	9130.03	VND billion

+ Data from SMEs

Variable	Description	Obs.	Mean	SD	Unit
servicesbank	Number of service banks that finance a SME	179	2.86	1.28	bank
lendingbank	Number of lending banks that finance a SME	146	1.61	1.15	bank
yearsmainbank	Years in relationship with main banks	180	1.99	0.85	year
collateral	Value of pledged assets for bank loans	91	77.83	331.80	VND billion
ratiocollateral	Ratio of pledged loans	170	4.15	1.00	%
landuseright	Ratio of pledged loans as land use rights	116	0.73	0.28	%
real estate	Ratio of pledged loans as real estate	93	0.61	0.32	%
stocks	Ratio of pledged loans as stocks	88	0.51	0.67	%
vehicles	Ratio of pledged loans as vehicles	103	0.54	0.55	%
machines	Ratio of pledged loans as machines	90	0.50	0.34	%
fromloans	Ratio of pledged loans as asset formed from other loans	72	0.43	0.34	%
firmassets	Ratio of pledged loans as firm assets	88	0.75	0.31	%
firmownerassets	Ratio of pledged loans as firm owner assets	68	0.50	0.37	%
thirdparty	Ratio of pledged loans as third party's assets	42	0.29	0.33	%
with VDB	Lent under VDB' guarantor, 1 if yes, 0 otherwise	163	0.17	0.38	
audit (0,1)	1 if audited financial statements is a requirement, 0 if otherwise	166	0.61	0.49	
distancelimit	Limit of distance that SME borrow consider an obstacle	122	56.29	113.5	km
totalasset	Total assets of SMEs	140	289.58	1136.48	VND billion
fixedasset	Fixed assets of SMEs	138	251.10	1162.87	VND billion
equity	Equity of SMEs	133	178.90	1036.41	VND billion
turnover	Turnover of recent financial year	137	206.45	514.11	VND billion
profit	Profit of recent financial year	134	17.50	85.75	VND billion
employee	Total number of employees	151	87.21	99.52	person
years	Number of years in operation	159	11.04	11.49	year

Appendix 2. A. List of Hypotheses

Hypothesis	Confirm		Reject	
	Lit. Rev	Priori	Lit. Rev	Priori
Factors from Environment				
Legal effectiveness and SME lending have a positive link.	x	x		
Competitiveness stimulates SME lending through increasing number of bank relationships	x	x		
Insufficient available information on SMEs has a negative impact on lending to these firms.	x	x		
Unfavourble changes in the economic environment reduce credit availability	x	x		
Factors from Firms				
Firm size (i.e total assets or number of employees) and credit availability have a positive link.	x	x		
Firms possessing more value assets to pledge will have more advantages in borrowing from banks.	x	x		
Collateral is the decisive factor in SME lending	x	x		
Fixed assets that a firm have a positive relation to their chance of obtaing loans	x	x		
Equity in firms have a positive correlate to their chance of obtaing loans	x	x		
Chance of obtaining loans has a positive link with value of real estate that used as collateral			x	x
Multi-relationships help SMEs overcome credit rationing	x	x		
A close and long relationship helps SMEs overcome credit rationing	x	x		
Distance between borrower and lender has a negative effect on SMEs' chance of obtaining loans.			x	x
Sector of business will affect credit availability to firms	x	x		
Younger firms face more credit constraints than older peers			x	x
Younger firms have to pledge more collateral than larger firms	x			
Larger firms enjoy more advantages in relationship lending than smaller peers.		x		
Larger firms have more tangible assets to pledge	x			
Small firms use more personnel assets to pledge than larger firms	x			
Small firms significantly encounter financing barriers caused by legal framework			x	x
Small firms tend to face more constraints than larger firms			x	
Small firms face more difficulties caused by distance than larger firms		x		
Factors from Banks				
Non-state owned banks lend more to SMEs than state-owned banks			x	x
Larger banks less chance to collect "soft" information in comparison with smaller banks, therefore, they lend less to SMEs.			x	
Large banks require more collateral than small banks			x	
Merger and acquisitions reduce SME lending			x	
Banks with better clarity of collateral laws are more interested in pledged lending			x	
Granting loans on availability of hard information reduce chance of obtaining loans for SMEs (eg, asking for audited financial statements).	x	x		
Relationships lending help increase SME lending	x	x		

Appendix 2. B. Main Questions extracted from Questionnaires for Enterprises and Banks

For Enterprises

I. **General information**: name, sector, form of ownership, briefly description of services or products, years in operation, number of employees

II. **Financial information in the latest financial year**: total assets, fixed assets, equity, turnover, profit

III. **Questions focus on factors**:

1. Identify current financing sources:

- Please rank by importance (1= the most important): *(internal funding; external equity; Government incentives; commercial banks; from family and friends; informal source).*

2. Identify role of transaction lending:

- Please tick frequency of using these services *(short term loan, long term loan current account; deposit; nationwide payment; international payment; foreign exchange; other kind of credit extension, payroll function).*

- Please approximate monthly *amount of all payment and receipts* conducted through the lending bank and *outstanding/ facility of short term loans or long term loans* in the latest financial year in the lending bank.

3. Identify role of collateral:

-How important is collateral when lending banks makes credit decision? *(critical importance; extremely important; very important; of considerable importance; quite importance; moderate importance; somewhat important; unimportant).*

- How often are you required to pledge assets as collateral when lending banks make credit decision? *(from 0% to 100%)*

- Please estimate percentage of these assets used as collateral in your total loans: *(land use rights; real estates; inventory; machines; assets formed from loans; cash or account receivable; commercial papers; vehicles; trade mark; reputation; licence; third party's guarantee).*

- Total value of assets as collateral in the latest financial year is:

4. Identify role of guarantee:

- Please comment your experience of borrowing under an arranged guarantor? *(eg. Vietnam Development Bank; local guarantee fund; social organisations).*

5. Role of relationship lending:

- How long have you been a customer of the lending bank?

- How many banks have lent to your enterprise for recent three years?

- Which are achievable privileges through a long and close relationship with the lending bank or a close social relationship with loan officers? *(receive favourable terms; access information on preferential programs from Government; neither of them).*

- How important is relationship with lending banks or loan officers when lending banks make credit decision? *(critical importance; extremely important; very important; of considerable importance; quite importance; moderate importance; somewhat important; unimportant).*

- Audited financial statements are compulsory conditions when lending banks analyse credit worthiness: *(true/false)*

6. Overall assessment:

- In your experience, how these following things determine success in accessing bank loans (1= the most important): *(a good project; a good business plan; financial statements with strong financial ratios; financial statements are well-prepared and meet accounting standards; financial statements are audited by relevant auditors; valuable tangible assets as security for the loan; a long term strategy; a suitable fraction of equity stake in total value of projects; a long and close relationship with the lending bank; a good social interaction/ relationship with loan officer; a good reputation; a good payment history; a good managerial capacity for running projects/ business plans; easy observation of loan).*

- Please rank by the above factors by their importance (1= the most important): *(factors relate to business plans/ projects; factors relate to financial statements; factors relate to collateral; factors relate to relationship with the lending bank; factors relate to borrowers' reputation and managerial capability).*

- Please specific distance from your enterprise to lending banks that you see as an obstacle: *(in km).*

- Please rank constraints that prevent SMEs from successful access to bank loans (1= the most important): *(factors relate to business plans projects; factors relate to financial statements; factors relate to collateral; factors relate to*

disadvantages of SMEs; factors relate to policies and regulations issued by the Government; factors relate to distance between the borrower and the lending bank).

For Banks

I. **General information**: name, form of ownership, numbers of borrowers, numbers of SMEs borrowers, years in operation.

II. **Financial information in the latest financial year**: total assets, profit, total outstanding loans, total outstanding loans for SMEs.

III. **Questions focus on factors**:

1. Identify role of collateral:

-How important is collateral in making credit decision? *(critical importance; extremely important; very important; of considerable importance; quite importance; moderate importance; somewhat important; unimportant).*

- How often do you require collateral in approving loan application to SMEs? *(from 0% to 100%)*

- Please estimate percentage of these assets used as collateral in total loans of SMEs: *(land use rights; real estates; inventory; machines; assets formed from loans; cash or account receivable; commercial papers; vehicles; trade mark; reputation; licence; third party's guarantee).*

2. Identify role of guarantee:

- Please comment your experience of lending under an arranged guarantor? *(eg. Vietnam Development Bank; local guarantee fund; social organisations).*

3. Identify role of relationship lending:

- Do your bank tend to favour these following borrowers? *(borrower has a long and close relationship with you; borrower uses many other non-credit services; borrower pledges more collateral compared to other peers having the same observed risks).*

- How important is relationship with lending banks or loan officers when lending banks make credit decision? *(critical importance; extremely important; very important; of considerable importance; quite importance; moderate importance; somewhat important; unimportant).*

- Long and close relationships with the lending bank or loan officers help to achieve: *(receive favourable terms; access information on preferential programs from Government; neither of them).*

- Audited financial statements are compulsory conditions when lending banks analyse credit worthiness: *(true/false)*

4. Identify method of collecting credit information:

- How important these method of collection information? *(direct contacts owners or managers of SMEs; transaction based lending; financial statements based information; credit scoring; risk- rating tools; asset based information; fixed asset information)*

- Which difficulties in collecting information about SMEs borrowers? *(unavailable information due to SMEs' limited managerial capability; SMEs produce unreliable information on purpose; lack of reliable information for references; lack of cooperation from other credit institutions; information from SVB or CIC is insufficient; collecting information by yourself requires time and cost; uncertainty of information of security transactions).*

5. Identify effectiveness of contracts:

- Please comment about enforcement of agreed credit contracts and collateral contracts (1= strongly agree): *(highly binding between parties; when borrowers fail to repay loans, they can help effectively seize collateral; the borrowers have to use all legal sources to recover loans and no exemption for their personal properties; they help easily handle movable collateral; they help easily handle immovable collateral).*

- Please comment about steps and time for initiating a court when a SME borrower fails to recover a loan: *(very easy and quick; easy and quick; acceptable; difficult and time-consuming; very difficult and time-consuming).*

- Compared to the past, how is handling collateral in SME lending since the Decree 11 came into effect on April 10th 2012?

6. Overall assessment:

- In your experience, how these following things determine success in accessing bank loans (1= the most important): *(a good project; a good business plan; financial statements with strong financial ratios; financial statements are well-prepared and meet accounting standards; financial statements are audited by relevant auditors; valuable tangible assets as security for the loan; a longterm strategy; a suitable fraction of equity stake in total value of projects; a long and close relationship with the lending bank; a good social interaction/ relationship with loan officer; a good reputation; a good payment history; a good managerial capacity for running projects/ business plans; easy observation of loan).*

- Please rank by the above factors by their importance (1= the most important): *(factors relate to business plans/ projects; factors relate to financial statements; factors relate to collateral; factors relate to relationship with the lending bank; factors relate to borrowers' reputation and managerial capability).*

- Please rank constraints that prevent SMEs from successful access to bank loans (1= the most important): *(factors relate to business plans projects; factors relate to financial statements; factors relate to collateral; factors relate to disadvantages of SMEs; factors relate to policies and regulations issued by the Government; factors relate to distance between the borrower and the lending bank).*

- Please evaluate the current competitive environment for SMEs lending *(very high; high; normal; low; very low).*

- Please compare interest rates charged by your bank to true level of risk would suggest to SMEs? *(higher, equal, belower).*

- Which are suitable factors to explain for declining in SMEs lending (1= the most important): *(government regulations on credit supply/ credit growth rate; competitiveness between banks; SMEs' inherent characteristics; difficulties in attracting deposits; scarcity of capital; limited labour force)*

- In your strategy, SMEs are: *(currently the most important customer; short term target customer; long term future potential customers).*

Appendix 2. C. Incentives and Programs to Develop SMEs

Macro policies affecting SMEs	Policies for developing SMEs	Credit regulations on SMEs
+Decree 178/1999/ND-CP dated on 29th December 1999 on **loan security**: Banks are allowed to lend with or without security.[39] + Law on Enterprise (2005) **allows individual to set up limited liability company** + Decree 25/2010/ND-CP dated 19th March 2010= the number of the firms significantly increase + Decree 66/2008/ND-CP dated 28th May 2008 on **legal support** for enterprises in 2010-2014 including: developing law database to support enterprise's operation, providing legal support in certain areas, enhancing capacity of agencies and organisations that provide legal support to enterprises. + Decision 14/2009/QD-TTg dated 21st January 2009 and its amendment, Decision 60/2009/QD-TTg dated 17th April 2009 promulgating the **regulation on guarantee** for enterprises borrowing loans from banks. Accordingly, the VDB plays a role as guarantor for enterprises. [40] In terms of charter capital, the majority of enterprises guaranteed by the VDB are SMEs. Up to now, the VDB has signed guarantee agreement with more than 30 large and prestige banks. + **Tax support**: Recently, because of high inflation,	+ Decree No. 90/2001/ND-CP dated 23rd Nov 2001 on SMEs development: [41] regulations on establishment of **Credit Guarantee Fund**, creating favourable conditions for access to production premise; stimulate competitiveness and SMEs' approach to information of market. + Decision 236/2006/QD-TTg dated 23rd October 2006 on **developing SMEs** in 5 years (2006-2010): [42] improving legal framework, registration and financial policies to stimulate SMEs; evaluating impacts of policies on SMEs and holding periodically conversations between SMEs and authority, building enterprise information centre; boosting up establishment of Credit Guarantee Fund for SMEs in provinces and stimulating credit institutions targeting SMEs; supplying technical support to SMEs.[43]	+ Decision 03/2011/QD-TTg dated 10th Jan 2011 promulgating stipulations **on guarantees for SMEs' borrowing from banks**. Compare to Decision 14/2009/QD-TTg dated 21st January 2009 and its amendment, this Decision focused more on details and provided several new points, namely: being eligible for SME (excluded micro enterprises) in 7 sectors, [44] increasing requirement for a fraction of equity stake in total value of projects from 10% to 15%; there is no bad debts when SME request for credit guarantee; setting limitation for credit guarantee (a guarantee provided for an enterprise shall not exceed 5% of the VDB's charter capital and total guarantee provided for all SME shall not exceed 5 times of the VDB's charter capital).

[39] Before the issuance of Decree 178/1999/ND-CP, extension of loans without collateral or using assets forming by loans as collateral to customers shall be subject to the Government's regulations (Law (1997) - Article 52.

[40] Conditions for being guaranteed by the VDB are stipulated in Decision 14 and its amendment, Decision 60/2009/QD-TTg: First, firms must have charter capital of less than VND20 billion and employ less than 1000 labourers. Then, they must borrow from commercial banks legally operating in Vietnam to invest in projects for developing business or production (for fixed assets) or business plans (for working capital). Next, volume must be more than VND100 million. The stake proportion of equity must present more than 10% of total value of the projects/plans. Assets forming from the loans will be used as collateral. Finally, the firms do not have overdue loans in credit institutions or economic entities and overdue debt in tax agencies. In case they have overdue loans, they must commit to fully repaying all overdue loans. In case they have overdue debt to tax agencies, they must have feasible investment projects or business plans.

[41] This Decree also stipulated that SMEs, they are enterprises with figered capital equivalent to less than VND 10 billion or annual employees equivalent to less than 300 persons.

[42] This document instructed banks to implement targets given in Decree No. 90/2001/ND-CP

[43] Up to now, 13 provinces have established Credit Guarantee Fund including: Tay Ninh, Tra Vinh, Ben Tre, Dong Thap, Hochiminh city, Binh Thuan, Ninh Thuan, Kien Giang, Hanoi, Bac Ninh, Vinh Phuc, Ha Giang, Yen Bai. Seven provinces: Thanh Hoa, Hai Phong, Da Nang, Khanh Hoa, Ba Ria- Vung Tau, Vinh Long, Quang Ngai have been preparing for Credit Guarantee Fund establishment and its mechanism. The total working capital of the fund established in the provinces is about VND 575 billion. These funds seem to bring about little effectiveness in alleviating financial problems of SMEs since there was on 13 provinces having Credit Guarantee Fund (on the total of 63 provinces in the nation) (White Paper on SMEs in Vietnam, 2011).

[44] Seven sectors are: Agriculture, forestry and fisheries; Processing industry, manufacturing; Production of natural gas, hot water, steam and air conditioning; Provide water and waste management activities and waste water; Construction; Repair of automobiles, motorcycles, motorcycles and other motor vehicles; Transport, and storage.

increasing input price, high interest rate and slow economic growth, the Government apply appropriate tax reliefs: exemption, reduction and deferral of corporate income tax. In 2009, total deferred tax offered to several industries and services is estimated at VND10,000 billion. Decision 12/2010/QD-TTg dated 12th Feb 2010 and Decision 21/2011/QD-TTg dated 6th April 2011 on extending enterprise income tax payment periods. With the latter decision, the total deducted amount is about VND 13,300 billion with about 200,000 SME (account 60% of active SME in Vietnam). + **Support on interest rate:** Decision 2072/QD-TTg dated 11th December 2009 on interest subsidy for medium and long term loans for corporate and individual borrowers for business investment in 2010. Accordingly, SBV issued Circular 21/2009/TT-NHNN extended the aforesaid subsidies to 31st Dec 2011 with 4% annum. Afterward, SBV issued Circular 27/2009/TT-NHNN to guideline execution): subsidises 2% per annum up to 24 months (from 01/01/2010 to 31/12/2012) will be offered to agriculture and forestry, fisheries, the process industry, salt, science and technology; and borrowers who wish to purchase agro-forestry and fishery will also be eligible (White Paper on SMEs in Vietnam, 2011).		

Appendix 2. D. Summary of key Studies related to SME Lending

Authors	Country	Period	Type	Research questions	Findings
Beck et al. (2011)	92 banks in 45 countrie		Empirical	SME lending and bank ownership types	The extent, type, and pricing of SME loans is not strongly correlated with lending technologies and organizational structures. SME financing need not be based only on "relationship lending". Instead, they find significant differences across developed and developing countries, driven by differences in the institutional and legal environment.
Berger et al. (2007)	US banks and SMEs	1998	Empirical	Theoretical literature motivates collateral as a mechanism that mitigates adverse selection and credit rationing arising from asymmetric information.	A reduction in asymmetric information reduces the incidence of collateral.
Berger et al. (2001)	Argentinean banks, firms, and loans		Empirical	The effects of bank size and distress on lending to SMEs. Borrowing from a single bank versus multiple banks	Large and foreign-owned banks may have difficulty extending relationship loans to small firms. Bank distress appears to have no greater effect on small borrowers than on large borrowers, although even small firms may react to bank distress by borrowing from multiple banks.
Berger and Udell (2002)	US SMEs	1993	Empirical	bank organisational structure, and the effects of shocks to the economic environment on the availability of relationship credit to small businesses	Agency problems are created throughout the organisation that may best be resolved by structuring the bank as a small, closely-held organisation with few managerial layers. The shocks analysed include technological innovations, regulatory regime shifts, banking industry consolidation, and monetary policy shocks.
Berger and Udell (2005)			Theoretical	A causal chain from policy to financial structures, which affect the feasibility and profitability of different lending technologies. These technologies, in turn, have important effects on SME credit availability.	A common oversimplification in the literature, is the treatment of transactions technologies as a homogeneous group, unsuitable for serving informationally opaque SMEs, and a frequent misleading conclusion is that large institutions are disadvantaged in lending to opaque SMEs.
Berggren et al. (2000)	281 Swidish SMEs	1997	Empirical	Under what circumstances small and medium sized firms are prepared to accept outside control in the business firm in order to grow	technology development, financial strength, size and perceived need to grow, change firms attitudes towards external financiers. The change in attitude towards more openness eventually leads to an actual behaviour where the principals choose to apply for external finance in the form of bank loans.
De Haas et al. (2010)	220 banks in 20 transition countries	2005	Empirical	how bank characteristics and the institutional environment influence the composition of banks' loan portfolios.	Bank ownership, bank size, and legal creditor protection are important determinants of the composition of banks' loan portfolios. In particular, we find that foreign banks play an active role in mortgage lending. Moreover, banks that perceive pledge and mortgage laws to be of high quality choose to focus more on mortgage lending.
De la Torre et al. (2008)	cross-countries	2002-2007	Empirical	Literature argues that small and niche banks have an advantage in serving SMEs doing so due to relationship lending while large and foreign banks do not. This paper shows a gap between this view and what banks actually do.	All types of banks are catering to SMEs and larger, multiple-service banks have in fact a comparative advantage in offering a wide range of products and services on a large scale, through the use of new technologies, business models, and risk management systems.
Hainz et al. (2011)	39,000 bank loans raised by Vietnamese borrowers	2006-2009	Empirical	The determinants of collateral in loans granted to entrepreneurs and consumers.	Riskier borrowers, as measured by the bank through the ex ante risk score, are more likely to pledge collateral while wealthier borrowers are more likely to pledge collateral to benefit from a reduction in interest costs. Other determinants of collateral such as borrower-lender relationship, credit market competition, and institutions.

Haselmann & Wachtel (2010)	423 banks from 20 transition economies	2004	Empirical	How the legal environment affects bank behavior	Banks' loan portfolio composition depends on the legal environment. If banks operate in a well-functioning legal environment they lend relatively more to SMEs and provide more mortgages. Furthermore, the banks' willingness to accept collateral depends on the bankers' perceptions of the prevailing laws regarding collateral.
Haynes et al. (1999)	US SMEs	1993	Empirical	The influence of firm size and quality on the type of debt instruments held by small and large banks.	The smallest small business borrowers appear to have less access to financial capital, especially line of credit loans, from large banks than other small business borrowers.
Mercieca et al. (2009)	SMEs in Western Europe	2001	Empirical	The impact of increasing concentration and competition on the number of lending relationships maintained by SMEs.	Competition has a positive effect on the number of lending relationships, weak evidence that concentration reduces the number of banking relationships and weak persistent evidence that they tend to offset each other.
Mudd (2013)	71 countries	1999	Empirical	Impact of competition on small firm finance access may depend on the size distribution of banks and the ways in which banks compete.	At very low levels of contestability an increase in constestability increases small firm use of bank finance. For most observations of contestability in the sample, an increase in contestability produces the opposite result. This also holds for medium sixe firms outside of manufacturing. Small firms are also more likely to use banks financing the higher is the small bank market share. However, neither the size distribution of banks nor the level of profitability of lending is shown to further influence the effect of the contestability on small firm use of bank lending.
Neuberger el al. (2006)	1700 cases	1996-2002	Empirical	Differentiates between overall bank relationships and lending relationships and disaggregates the loan market with respect to firm sizes, industries and banking groups.	On average, bank lending declined, and the concentration of lending relationships increased. The changes seem to have been driven by demand and supply for medium-sized firms, but only by supply for micro and small firms. There is increasing specialization of larger banks on transaction lending and of smaller and regional banks on relationship lending.
Nguyen et al. (2006)	11 banks in Vietnam	2006	Empirical	How the absence of institutions and the lack of business data affect bank loan making decisions to private sector	Banks face considerable uncertainties (rather than risks) and employ a combination of uncertainty avoidance and reliance on trust in lending to private business clients. There is a strong association between types of banks and uncertainty strategies/ trust development mechanisms.
Ono & Uesugi (2009)	Japan		Empirical	the determinants of the use of collateral and personal guarantees in SME loan	Firms' riskiness does not have a significant effect on the likelihood that collateral is used. Borrowers who have a long-term relationship with their main banks are more likely to pledge collateral. The use of collateral enhances its screening and monitoring.

Chapter III

FACTORS THAT IMPACT SME GROWTH: VIETNAM VERSUS THE UK

FACTORS THAT IMPACT SME GROWTH: VIETNAM VERSUS THE UK

Abstract

This chapter presents an empirical analysis of the factors from the business environment that affect firm growth. Through analysing original data sets obtained from surveys in both Vietnam and the UK in 2012, we find that financing is still the foremost determinant for SME growth in both countries, regardless of their different developmental levels. In Vietnam, loan access may be a priority for smaller firms while larger firms seek a reasonable price for financial support. At a higher level of development, smaller firms in the UK focus on flexibility of finance. In addition, we provide further evidence on the role of human capital, management, location and industry in firm growth. Finally, our study is in keeping with a strand of the literature that SME growth in transition countries results from systemic changes while firm expansion in advanced economies goes hand in hand with business strategies. Interestingly, our results from two diverse countries reveal national-level experience and yield policy implications, especially for transition countries.

3. Introduction

Following a pro-SME philosophy (Ayyagari et al. 2003; International Financial Corporation, 2006; European Commision, 2009), the Government of Vietnam has identified an increasing role for SMEs in the Vietnamese economy (Ministry of Planning and Investment, 2011) and thereby introduced a wide range of regulations to reduce barriers to their development (Vo et al. 2010). SMEs have grown rapidly since the country started moving towards a market led economy. However, their development appears not to be in line with expectations over more recent years (Ministry of Planning and Investment, 2011). This study aims to contribute to the empirical literature by investigating the drivers that affect SME growth through the relationships between factors of the business environment and their size.

We adopt a quantitative research methodology and run regressions to analyse a survey of 10,000 firms in Vietnam in 2012. Not only are external factors from the business environment likely to affect efficiency in SMEs' operations but also internal factors may impede their growth (Beck & Demirguc-Kunt, 2006; Delmar & Wiklund, 2008). In the event that SMEs' rapid growth could just be a temporary phenomenon resulting from specific conditions that exist due to the central planning period or systemic changes in the transition period (Hashi & Krasniqi, 2011) in Vietnam, we also include an analysis of a unique data set of 130 SMEs in the UK in the same year to address the research questions. With two distinct original data sets reflecting countries at different stages of development, we hope that the lessons drawn from the experience of the more advanced economy may contain some policy implications for the transition one. However, this should not be taken as a rejection of the possibility that despite an apparent dichotomy in developmental levels of the two economies, growth determinants in the transition country are not necessarily different from those in the more developed one.

We choose to study SMEs in Vietnam because the literature is very thin on studies that investigate countries with transition type economies although there is a

significant body of literature investigating the relationship between firm size and growth barriers in developed countries or cross-national research. Due to the lack of data (Rocha, 2012), knowledge about SME growth is not available (Huynh & Petrunia, 2010), specifically to identify and solve barriers to their growth is not easy (Cowan, 1988). Therefore, this chapter provides new evidence on SMEs' experience in transitional periods of a developing country. In addition, such countries may have specific characteristics that differ from those identified in cross-country studies or in studies of developed countries (Levine & Zervos, 1993).

A study of SMEs in Vietnam is interesting for several reasons. *Firstly*, the "absence of market institutions" in Vietnam makes the country "a unique natural laboratory" (Le et al. 2006) for testing hypotheses on SME growth. The international financial crisis in 2008-2009 negatively impacted firms of all size, but particularly SMEs (Smallbone et al. 2012). *Secondly*, while Little et al. (1987) refer to a common perception that socialist based developing countries may not encourage their non-state owned sector, SME development in parallel with the country moving towards a socialist market led economy (Ministry of Planning and Investment, 2011) suggest an interesting issue on the role of the Vietnamese government that is in charge of radical SME reforms. In addition, our study may shine some light on the work by (Hashi & Krasniqi, 2011) who argue that SMEs grow quickly under the impact of systemic changes or specific conditions stipulated by the central planning regime. *Thirdly*, given that incentives for SMEs have been introduced in many countries recently, our results from two distinct economies may impart policy suggestions, especially in the event that the World Bank refers to potential reverse causes that are associated with direct SME subsidies (Beck & Demirguc-Kunt, 2004). *Finally*, a large body of literature argues that SME development has a direct impact on the success or failure of a country's economy (Ayyagari et al. 2003; International Financial Corporation, 2006; European Commission, 2011; Wieneke & Gries, 2011), however, the absence of a standard definition or consistent indicators in the private sector constrains the research (Ardic et al. 2011). Our research follows an increasing

focus of attention on SMEs which represents a new industrial paradigm (Kitching, 1982; Piore & Sabel, 1984).[45]

This study addresses the following three questions. *Firstly*, are there any relationships between factors of the business environment and firm size? *Secondly*, in case there are relationships, what do they look like? *Thirdly*, do factors of the business environment differently impact firms of various sizes?

Although the two countries are at different levels of development, results are similar in terms of showing the link between firm size and access to finance for growth. In Vietnam, our finding confirms that financing continues to be the foremost determinant for SME growth. Loan access may be a priority for smaller firms while larger firms seek affordability of financial support. Smaller firms ought to borrow at high interest rates, face more constraints in loan access but are less likely to be aware of subsidy information. Therefore, smaller firms expect removals of barriers to external finance and subsidy programs as well as the cutting of borrowing costs. In the UK, smaller firms in the UK focus on flexibility of finance while larger firms focus on barriers arising from regulations.

In their research, Hashi & Krasniqi (2011) demonstrate the links between inputs of production and firm growth. Similarly, we find positive links between firm size and institutional settings, funding cost, technology and transportation costs in Vietnam. It implies that Vietnamese firms appear to reap significant benefits resulting from improvements of these factors. In the UK, firm development is driven by R&D (smaller firms invest more in this activity) and cost of production or labour (larger firms stress on these costs). Furthermore, the need for skilled staff becomes more acute when firm size decreases. Therefore, designing and implementing policies aimed at improving human capital, monitoring the changes in human resource can promote SMEs.

[45] Piore and Sabel (1984) identify SMEs' strengths as flexibility, efficiency and unemployment reduction. Because capitalist industrialisation depends on a few large firms, an economy that places more importance on small firms could be seen as an alternative to it (Kitching, 1982).

Both data sets confirm the role of location and industry type in firm growth. In both countries, firms that operate in larger markets or more developed areas have a bigger size. Specifically, firm size is associated with regions such as the North in Vietnam and the North and East Midlands in the UK. Vietnamese firms in the primary and secondary sector have more employees, firms in the UK in manufacturing or the entertainment sector use more employees. In brief, these findings supply guidance in regional development or industrial strategies for Governments.

Last but not least, our study sheds some light on the role of regulation on SME growth. From the results of a developing country, we concur with the literature that SME growth in transition countries results from systemic changes (Hashi & Krasniqi, 2011). Larger firms in Vietnam tend to place regulatory difficulties or impediments caused by unstable macro-policies as more serious. This finding reveals that larger firms have better legal perception, and may see that their chances are associated with regulatory changes. Therefore, they exhibit more expectations of legal improvements and their growth depends on institutional settings. From the evidence from an advanced country, we illustrate that SME development goes hand in hand with not only institutional settings but also an ambition to grow. Similar to Vietnam, larger firms in the UK have better regulatory perception, geographical expansion or introduction of products in comparison with smaller ones. All in all, our results support the legal improvements in parallel with programs to help strengthen firms' financial and managerial capability provided by Governments.

The chapter is organised as follows. Section 3.1 provides a review of the relevant literature on external and internal factors that affect SME development. Section 3.2 presents the methodology employed. Followed by Section 3.3 which describes the data and empirical models, Section 3.4 reports the results and findings. Finally, conclusions are provided in Section 3.5.

3.1. Literature Review

Business environment, which has a great impact on SME growth (Delmar & Wiklund, 2008; Hashi & Krasniqi, 2011; Rocha, 2012), includes all factors both inside and outside the enterprise (Beck & Demirguc-Kunt, 2006).

3.1.1. External factors that affect SME development

3.1.1.1. Institutional Settings

Recent cross-country work at the firm level provides salient evidence on the link between firm size and institutional settings (You, 1995; Kumar et al. 1999). SMEs confronted with growth barriers which are inversely related to firm size or levels of institutional development (Bartlett & Vladimir, 2001). Therefore, small firms benefit the most from *institutional development* which is associated with removal of *barriers to finance* (Beck et al. 2005). Better institutions, identified by efficiency of *judicial system*, are associated with larger firms (Kumar et al. 1999; Rocha 2012) because they can facilitate SME growth (Hashi & Krasniqi, 2011). Caves et al. (1980) provide evidence that in a country opened to *international trade*, optimal firm size is likely to be larger.

As far as institutional settings are concerned, government-business coordination relates in several important ways. According to Rasiah (2002), *incentives from governments* play an important role in developing an effective SME sector in Malaysia. Similarly, Doh & Kim (2014) refer to the important role of government in regional SME innovations in terms of *financial aid*. Furthermore, Smallbone & Welter (2001) provide evidence that incentives from governments are adjusted according to the stage of transition. In contrast, Schiffer & Weder (2001) point out that small firms endeavour with higher barriers in finance and regulations or Aidis (2005) mentions the *interference from governments* to private firms in transition countries. Impact of these barriers on firm growth is likely to increase for small firms or in countries where finance or institutions are less developed (Beck et al., 2005). Bi-directional impacts from governments on firm growth are supported by (Kawai & Urata, 2002) where the Japanese government loosens contract regulations to new firms in parallel with discouragement of these firms in their

subsidized credit programs. However, Smallbone & Welter (2001) point out that governments' role appears not to be important in some transition countries where many firms can survive and grow without their financial support.

3.1.1.2. Economic Variables, Location and Markets

Finance is a core part of an economy, therefore the presence of *financial barriers* may create impediments for SME growth (Bartlett & Vladimir, 2001). Firms seem larger in countries with better financial markets (Kumar et al. 1999) or easier loan access (Rocha, 2012). Consequently, firms, especially small firms benefit from financial development in which barriers to finance are reduced (Beck et al., 2005).

Much of the attention surrounding economic development and SME size is because *scale economies* may determine firm size (You, 1995). Recently, the financial crisis 2008-2009 which is associated with a major economic downturn has had a negative impact on SMEs (Smallbone et al. 2012). However, economic development can ease SMEs' financial barriers and foster these firms (Levine & Renelt, 1992). Perhaps the most obvious example is that developed countries seem to have comparative advantages in lending to SMEs, consequently, they have larger firm size (Beck et al. 2003). However, according to Kumar et al. (1999), there is little evidence that richer countries have larger firms.

More especially, factors of an economy may have an impact on SME growth. While Mahadea (2008) include *labour force* in their SME research in South Africa, Olawale & Garwe (2010) point out the link between quality of *infrastructure* and new SMEs especially in this country. Besides, it could be *comparative advantage* in producing goods that may determine optimal size of firms (You, 1995); or financial obstacles caused by *macroeconomic instability* in developing countries or *competition* in developed countries (Beck et al. 2008). In addition, Ehlers & Lazenby (2007) also suggest that *fiscal* and *monetary policies* have an impact on SME growth.

The economy also has an impact on the pattern of SME development in terms of the *supply* and *demand* sides (Futo et al. 1997). In line with this strand, Kumar et al. (1999) points out that there is a link between firm size and the *market* where they operate in. Firms are likely to be larger when they operate in a larger market. Through its impact on market prospects of new firms, *location* also affects firm growth (Davidsson et al. 2002; Dahl & Sorenson, 2012). Similarly, *networking* plays an important role in SME growth opportunities (Okten & Osili, 2004; Le & Nguyen, 2009). According to Havnes & Senneseth (2001) networking not only has a link with high growth but also secures a long-term strategy.

3.1.2. Internal factors that affect SME development

3.1.2.1. Financial Structure

Financial structure contributes to firm growth through *internal financing* and *loan access* (Rahaman, 2011). Furthermore, firms' actual financial status affects their attitudes and actions (Berggren et al. 2000). Compared to larger firms, SMEs are confronted with more barriers to financial availability and affordability (Ardic et al. 2011) and consequently, these barriers slow down firm growth (Bartlett & Vladimir, 2001). For new SMEs, Huynh & Petrunia (2010) provide evidence that *initial financial size* and *leverage ratio* are important drivers. Specifically, difficulties in loan access prevent new SMEs from acquiring necessary technology (Phillips & Sipahioglu, 2007) therefore, jeopardize their business and growth prospects (Rajan & Zingales, 1998).

3.1.2.2. Industry Specific Factors

Academic studies on determinants of firm growth suggest that the *industry* in which firms operate has a great impact on their size (Davidsson et al., 2002). For example, Kumar et al. (1999) concludes that the utility sector, capital intensive industries, high wage industries and industries with R&D have larger firms. Similarly, Sleuwaegen & Goedhuys (2002) provide evidence that firm size increases for firms in textile, wood and metal industries while Variyam & Kraybill (1992) find an interaction between firm size with manufacturing and the construction sector. Furthermore, export orientation is likely to be associated with

firm scale (Robson & Bennett, 2000; Hessels & Parker, 2013) or product and process innovation (Higon & Driffield, 2010).

With the role of knowledge in today's knowledge-based economy, *technology* is viewed as a major factor that triggers high growth rates (Hashi & Krasniqi, 2011; Goedhuys & Veugelers, 2012; Prediscan & Roiban, 2014). For example, technology affects cost production (Smallbone & Welter, 2001), thereby has an impact on firm growth. More specifically, Freel & Robson (2004) find a positive link between product innovation and firm growth in manufacturing firms.

3.1.2.3. Human Capital

As far as knowledge is concerned in research on firm growth, *human capital*, which comprises education, training and working experience, is viewed as a catalyst for firm development (Hashi & Krasniqi, 2011). Several authors emphasize the critical role of *managerial skills* on firm growth (Dobbs & Hamilton, 2007; Olawale & Garwe, 2010), for example, Aidis (2005) points out the link between perception of environmental barriers and management problems. Importantly, human resource is identified as a key factor for SMEs to maintain a sustained competitive advantage (Sheehan, 2014), especially new firms (Zahra et al. 2002). Another strand of the literature identifies *personal initiative* (Frohman, 1997) or *organisational innovation* as the key factor for firm development (Hashi & Krasniqi, 2011).

3.1.2.4. Age and Firm Size

Size and *age* are identified as factors that are closely related to firm growth (Sleuwaegen & Goedhuys, 2002; Hashi & Krasniqi, 2011). In regard to the impact of firm size to its growth, a strand of the literature based on Gibrat's Law states that firm growth and its size are independent (Lee, 2010; Nassar et al. 2014). Another common argument is that firm size negatively relates to its growth (Variyam & Kraybill, 1992; Bartlett & Vladimir, 2001; Sleuwaegen & Goedhuys, 2002; Huynh & Petrunia, 2010) because SMEs are more efficient (Raju et al. 2011) or a have better customer base (Coviello et al. 2000). In contrast, Schiffer &

Weder (2001) find that smaller firms face more difficulties in fulfilling legal regulations or competition, therefore small firms may "start small, live small and die small" (Davidsson et al. 2002). Furthermore, Schiffer & Weder (2001) find that interactions between firm size and regions impact on SME growth. Specifically, the negative link between firm size and its growth are significantly stronger in Latin America, the Caribbean, Africa and transition countries. In terms of firm age, (Robson & Bennett, 2000; Davidsson et al., 2002; Yasuda, 2005) find that younger firms grow faster than older firms.

3.1.2.5. Growth Strategies

In the populist tradition of thought, *strategies* play the crucial role in firm growth. Surprisingly, a survey by Moy & Luk (2003) provides a low response rate about strategies to overcome growth barriers. With the emerging role of knowledge in firm development, *R&D activities*, which launch new products or trigger applications of new production methods, stimulate firm growth (Freel & Robson, 2004; Yasuda, 2005). Besides, *attitude* plays an important role in firm development, such as SME growth appears to be associated *willingness* to accept outside control (Berggren et al. 2000). Finally, Aidis (2005) refers to subjective opinions or *perceptions* of firm owners as factors that direct their growth motivations and behaviors.

3.1.2.6. Ownership

Ownership may influence firm growth (Hashi & Krasniqi, 2011). Hessels & Parker (2013) find that both private ownership and public ownership are associated with dynamic firms.

3.2. Methodology

First, we utilize two- stage least squares (2SLS) to estimate the relationships between SME growth and factors that affect their growth:

$$y_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k + u_i \qquad (3.1)$$

Where y_i is a dependent variable, measured by the number of employees, x_k are factors of the business environment and u_i, i=1,…n are independent error components.

We choose the number of employees as the dependent variable because of a lack of financial data on the small, young and private firms (Huynh & Petrunia, 2010). In fact, there is a large strand of literature that proposes this variable as a proxy for firm growth in research (Little et al., 1987; Variyam & Kraybill, 1992; Sleuwaegen & Goedhuys, 2002; Gregory et al. 2005). In terms of factors of the business environment that may have an impact on SME growth, we classify them into two main groups, external factors and internal factors.

Through evaluation of values of R-square, t-test and p-value and Wald tests, we identify better models. For these better models, we calculate a covariance matrix for testing multi-collinearity and use a Sagan test to eliminate problems of omitted variables. Finally, we employ a Jacque-Bera test to check for normality. However, the Jacque-Bera test shows that our models do not follow a normal distribution. Therefore, we employ Generalized Method of Moments (GMM) to solve that problem. With GMM, we obtain significant results which confirm the relationships between firm size and a similar set of factors from the business environment. However, several coefficients present for the strength of relationships have value of more than 1000 when we add instrumental variables for Hansen's test. Therefore, we are concerned about the problems of using too many instruments (Roodman 2009a). Finally, we decide to exclude GMM models in our study and choose three-stage least squares (3SLS) to gain a deeper insight into the data as well as confirm our results obtained in 2SLS. However, we face a problem of lacking instrumental variables for Hausman test to eliminate endogeneity in obtained models. Therefore, we use F-test to choose better 3SLS models with a null hypothesis $H_0: \forall \beta_i = 0$. If p-value below 0.05, all independent variables are included in models. In contrast, for F-test with p-value above 0.05, we continue to conduct F-test for individual independent variables and omit the variables that produce p-value above 0.05.

3.3. Variables and Data

In Vietnam, we use a cross-national data set in order to have a panorama of SME growth in this country. This national survey was conducted by General Statistic Organisation for 10,120 enterprises selected randomly in 2012 and targeted at discovering facts and difficulties faced by SMEs. In the UK, we conduct a parallel analysis using data from a survey on SMEs in the same year. This survey was carried out by researchers at the University of Southampton to investigate SME access to finance in the UK.

On the surface, SMEs in Vietnam and the UK might appear to be largely unrelated because their different developmental levels. Despite this apparent dichotomy, the SME surveys in Vietnam and the UK are in fact related in several important ways. Firstly, both surveys are conducted in 2012. Secondly, they aim at investigating some similar research questions. Thirdly, while Vietnam, the country with a lower developmental level reported successful SMEs, the UK that has a higher development level faces difficulties in sponsoring this sector. This chapter investigates the factors that affect SME growth.

In Vietnam, SMEs are those registered under the Law of Enterprises in Vietnam, with a number of employees less than 300 persons (Decree 56/2009/ND-CP). In the UK, SMEs are any business with fewer than 250 employees (The European definition).[46]

[46] Access http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm for details.

3.4. Results

3.4.1. Main Results for Vietnam

The main results are presented in Table 3.3, 3.4 and 3.5 (Table 3.2 is Description of variables for them). Our results will help to answer the research questions.

3.4.1.1. Factors from External Environment

+ Institutional Settings

A large body of literature on SMEs point out that the major barriers for firm growth are mainly caused by the legal framework (La Porta et al. 1997, 1998; Qian & Strahan, 2007; Haselmann & Wachtel, 2010), especially smaller firms appear to face more difficulties compared to larger ones (Bartlett & Vladimir, 2001; Beck et al., 2005). Our results, however, show a strong positive association between the perception of regulatory constraints and firm size. Specifically, firms which are larger tend to place regulatory difficulties as more acute (see row 13 of Table 3.3). Similarly, larger firms are likely to be more concerned about impediments caused by unstable macro-policies (see row 14 of Table 3.3) and they also show more expectation for regulatory changes (see row 18 of Table 3.3). Our findings are in contrast to previous results which find that regulatory impacts are equal for firms of all sizes (Schiffer & Weder, 2001) or a good environment generally stimulates all firms (Hessels & Parker, 2013).

+ Economic variables and Location

In line with Kumar et al. (1999) who point out that firms are likely to be larger when they operate in a larger market, our results provide evidence that firms that operate in a larger market (the North) (see row 9 of Table 3.3) have advantages in growing while their peers located in smaller markets in the Centre of Vietnam face difficulties that reduce their growth (see row 8 and 9 of Table 3.3; row 5 and 6 of Panel A in Table 3.5). Our results also confirm (Dahl & Sorenson, 2012) which stress the impact of location on the market prospects of new firms. Furthermore, our results provide evidence that firms in the North appear to enjoy more favours in loan access (row 9 of Panel B in Table 3.5).

From the result in row 16 of Table 3.3, larger firms are associated with higher transportation costs. This implies that larger firms may benefit more from infrastructure improvements than smaller firms. Our finding disagrees with Schiffer & Weder (2001) who concludes that infrastructure does not contribute to firm growth; or Olawale & Garwe (2010) who argue that the quality of infrastructure impacts on new small firms only; or Sleuwaegen & Goedhuys (2002) who show that medium sized firms are affected the most by insufficient access to infrastructure.

3.4.1.2. Factors from Internal Environment

+ Financial Structure

In general, our results confirm the main strand of literature that loan access is desirable for smaller firms but they face more difficulties to obtain (Stefano et al., 2015). Variable "constraints by loan access" enters our regression with negative signs (see row 15 of Table 3.3) implies that constraints increase when firm size decrease. Therefore, smaller firms seem to accept and have to pay higher interest rates (see row 2 and 3 of Table 3.3, row 2 and 3 of Panel A of Table 3.5, row 1 of Specification (3) and (4) of Panel B of Table 3.5).

We confirm (Rocha, 2012) which concludes that the effectiveness of credit information sharing stimulates firm growth. In our results, larger firms appear to have better access to information. They are better informed about incentive programs for import and export as well as interest subsidy (see row 4 and 12 of Table 3.3, row 1 of Panel A in Table 3.5). Consequently, they have more chances in loan access (see row 5 of Specification (1) and (2) of Panel B in Table 3.5) and in turn, better loan access stimulates firm size (see row 5 and 6 of Table 3.3). We also find a positive link between ratio of borrowing compared to need with firm size (see row 1 of Table 3.3 and row 4 of Panel A in Table 3.5). However, larger size does not secure a successful loan access (see row 1 of Specification (1) and (2) of Panel B in Table 3.5).

Our results provide evidence that larger firms express more expectation for changes in interest rates (see row 20 of Table 3.3) while smaller firms are likely to seek opportunities for loan access (see row 17 of Table 3.3).[47] Two groups' expectations may imply that loan access may be a priority for smaller firms while larger firms have more choices in seeking external financial support.

+ Industry specific Factors

We partly confirm the conclusion by Kumar et al. (1999) that firms in the utility sector, capital intensive industries, high wage industries and industries with R&D have bigger size. In our research, firms in the primary sector and secondary sector need more employees (see row 10 and 11 of Table 3.3; row 8 of Panel A in Table 3.5). Besides, larger firms show more expectation for technological changes to grow (see row 19 of Table 3.3).

As can be seen in Table 3.4a, for firms in primary and secondary sector, larger firms perceive more barriers to growth. Larger firms can also borrow more, however with higher interest rates and they are will to pay higher interest rates as well. We obtain the similar result for firms in the secondary sector in row 2 of Specification (1) and (2) in Panel B of Table 3.5. In contrast, in the tertiary sector, smaller firms have better perceptions of the business environment and their ratio of borrowing amount to need is higher than larger firms although larger firms can accept higher interest rates (see Table 3.4a). We also find there is a negative association between the dummy variable "operate in the primary sector" with acceptable interest rate (see row 3 of Specification (6) in Panel B of Table 3.5).

Similar to firms in the primary or secondary sector, as can be seen on Table 3.4a, state- owned larger firms perceive more risks in business and accept higher interest rates. In contrast, smaller private firms appear to accept higher interest rates although they perceive more environmental constraints.

[47] Our result shows that higher acceptable interest rate is associated with loan access (see row 6 of Specification (2) of Panel B in Table 3.5).

From Table 3.4b, the similarity among firms in the primary sector, secondary sector, tertiary sector and state-owned sector is that larger firms are well-informed about financial aids and they expect more environmental improvements. Only the private sector is likely to fail in collecting information and therefore, they appear not to be concerned about the business environment.

+ Ownership

In our study, state-owned firms have bigger size (see row 7 of Table 3.3, row 7 of Panel A in Table 3.5). This finding is different from (Hessels & Parker, 2013) which highlight a positive link between firm size and private ownership or public ownership. Interestingly, state-owned firms are likely to bear higher interest rates while private firms are willing to pay more for loans (see row 10 and 11 of Panel B in Table 3.5).

3.4.2. Main Results for the UK

The main results are presented in Table 3.8 and 3.9 (Table 3.7 is Variable Description). Our results will help to answer research questions or reject or accept hypotheses.

3.4.2.1. Factors from External Environment

+ Institutional Settings

Larger firms emphasize importance of regulatory barriers than smaller firms (see row 20 of Table 3.8, row 11 of Panel A in Table 3.9).

+ Economic variables and Location

Our results are consistent with (Dahl & Sorenson, 2012) that points out the role of location in growth of firms. While firms locate in Yorkshire, Humberside and the East (older and more developed areas) have larger size (see row 9 and 10 of Table 3.8), firms that are in the West Midlands- a less developed area- have smaller size (see row 11 of Table 3.8).

3.4.2.2. Factors from External Environment

+ Financial structure

We find that smaller firms are more concerned about flexibility of finance (see row 17 of Table 3.8, row 9 of Panel A in Table 3.8).

+ Industry specific factors

We partly confirm results of Kumar et al. (1999) that firms in the utility sector, capital intensive industries, high wage industries and industries with R&D have a bigger size. In our results, firms in the manufacturing or entertainment sector uses more employees (see row 13 and 14 of Table 3.8) while firms in the scientific sector have smaller size (see row 12 of Table 3.8). We also find that gazelles have larger size (see row 6 of Table 3.8, row 6 of Panel A in Table 3.9).[48]

While Freel & Robson (2004) and Hashi & Krasniqi (2011) point out that innovative activities stimulate firm growth, in our research, R&D spending in 2011 is negatively related with firm size. The reason may be revealed through results in row 8 of Table 3.8 where larger firms failed to introduce new products due to high innovation costs. Similarly, older firms seem to invest less into R& D activities (see row 6 of Panel B in Table 3.9).

In contrast, smaller firms are likely invest more into R&D activities (see row 1 of Table 3.8; row 1 and 2 of Panel A in Table 3.9). Spending in R&D in 2010 positively links to R&D activities in 2011 (see row 1 of Panel B in Table 3.9). Firms that invest more in R&D activities also emphasize barriers to growth from their customer base (see row 2 of Panel B in Table 3.9). In contrast, firms that invest less in R&D activities focus on growth constraints from competition (see row 3 of Panel B in Table 3.9).

[48] According to http://www.oecd.org, gazelles are all enterprises up to 5 years old with average annualised growth greater than 20% per annum, over a three year period.

+ Human capital

Larger firms focus on cost of production or labour although they perceive less barriers from availability of skilled staff to their growth compared to smaller firms (see row 18 and 19 of Table 3.8; row 10 of Panel A in Table 3.9).

+ Age

Our result present a positive link between firm size and firm age (see row 5 of Table 3.8, row 7 of Panel A in Table 3.9) which is in line with (Davidsson et al. 2002).

+ Strategies

Larger firms launch more often new products or new services (see row 16 of Table 3.8). However, they are more likely to fail in introducing new products due to high innovation costs (see row 8 of Table 3.8). The reason could be these activities are associated with higher spending in R&D in 2011 (see row 7 of Panel A in Table 3.9) while larger firms spend less on R&D (see row 1 of Table 3.8) compared to smaller firms.

Additionally, in comparison with larger firms, smaller firms select or have good results for new ways of marketing or selling goods (see row 15 of Table 3.8, row 8 of Panel A in Table 3.9). They also appear to choose a reorganization of management structure (see row 8 of Panel B in Table 3.9).

Expansion of geographical distribution goes hand in hand with larger firm size (see row 12 of Panel A in Table 3.9) but negatively interacts with spending on R&D in 2011. Similarly, distribution expansion through exports has a negative link with R&D activities (see row 5 of Panel B in Table 3.9).

3.4.3. Comparison of results between SMEs in Vietnam and the UK

In both Vietnam and the UK, growth barriers from the legal framework are a concern for SMEs and there is a positive association between regulatory perception and firm size. While firms in Vietnam identify transportation costs as

a barrier to growth,[49] firms in a developed country may enjoy better infrastructure therefore, information about this area was not referred to in the survey for SMEs firms in the UK. We find that larger firms appear to focus on cost of production or labour. In contrast, we do not find a linear relationship between availability of employees and quality of human capital with firm size in Vietnam. Vietnamese SMEs are confronted with infrastructural difficulties and related costs. However, 80% of total firms confirm that they have enough employees for production. While only 8.1% of them have an excess, 11.9% of firms have a deficit of employees. In terms of quality of human capital, 63.2% of total firms are satisfied with it while 14% of them disagree with this evaluation. Up to 14.8% place human capital to be good of quality.

Both data sets confirm the role of firm location in its growth through affecting its market prospects. Furthermore, firms are likely to be larger when they operate in a larger market.

We have interesting results for financial structure. While smaller firms in the UK concern more about flexibility of finance, smaller firms in Vietnam focus on gaining successful access to loans even they have to and accept to pay high interest rates. Larger Vietnamese firms seem to enjoy a scale advantage, enjoy more chances in loan access, have choices in incentive programs and more favourable interest rates.

Both data sets are partly in line with Kumar et al. (1999) when pointing out that firms: in manufacturing (in the UK) or in the primary sector (in Vietnam); in entertainment (in the UK) or in the secondary sector (in Vietnam) have larger size.

While larger firms in Vietnam expect changes in technology, larger firms in the UK invest less in R&D compared to smaller firms.

[49] In our survey, 9.6% of total firms believe that transportation costs are high. 7.1% of total firms identify lack of electricity as a growth constraint which is in line with (Olawale & Garwe, 2010).

3.4.4. Robustness Tests

As a matter of course, all 2SLS models for Vietnam and the UK are rejected in tests for normal distributions by Jarque & Bera (1980, 1987) or Doornik & Hansen (2008). Furthermore, we use a Durbin- Wu- Hausman to test for endogeneity in models. Results from Vietnamese SMEs reject the null hypothesis that all variables are exogenous while results from SMEs in the UK accept the null hypothesis. Therefore, in order to correct for variance error in the estimating coefficients, we employ clustered standard error estimates (Petersen, 2009).[50]

Besides, we run 3SLS for the main variables and obtain similar results. We attempt to employ a Hausman test for endogeneity of 3SLS models but limitation of instrumental variables bars us from that.

We also divide the sample of Vietnam into groups by the variable "overall evaluation of business in 2012", they are three categories: increase, unchanged and decrease. For each group, we find that the main results continue to hold for 2SLS and 3SLS.

3.5. Concluding Remarks

Successful SMEs play an important role in economic development, therefore, their growth has been a concern for researchers and governments. Our study attempts to investigate how much the business environment contributes to firm employment.

Firstly, we find the important role of regulation in SME growth. Regulatory perception is positively associated with firm size and small firms in a less developing country face more difficulties from the legal framework or access to information from the Government.

[50] Petersen (2009) argues that clustered standard errors are unbiased because the approach that accounts for firm effects produces residual

dependence.

Secondly, we find that financing is still the foremost determinant for SME growth in Vietnam and the UK. In Vietnam, while smaller firms still seek loan access to satisfy their financial shortage, larger firms focus on affordability of financial support when their loan needs are already met.

We find that human capital, infrastructure, location, industry and business strategies impact on firm growth. On the one hand, changes in institutional setting, human resource, regional and industrial strategies can facilitate SMEs. Specifically, our study agrees with a body of the literature that SME growth in transition countries results from systemic changes. On the other hand, firm development in an advanced economy is parallel with business strategies, such as launching new products or geographical expansion. In any level of development, improvement in loan access can stimulate firm growth.

Similar to (Hashi & Krasniqi, 2011), we are aware of the limitations of a survey, such as the qualitative nature of survey data and shortcomings due to self-declaration of entrepreneurs. Besides, having only two countries in our research may be another limitation which could reduce the reliability of our conclusions. In addition, we exert caution when interpreting results from SMEs in the UK because the date set is relatively small in size.

Table 3. 1: Structure of the National survey in Vietnam

Category	Group of firms	Number of firms	Percentage in sample
Ownership	State-owned firms	332	3.56%
	Private firms	8244	88.51%
	Foreign firms	738	7.92%
Location	North	3270	35.11%
	Centre	2430	26.09%
	South	3614	38.80%
Sector	Primary	622	6.68%
	Secondary	3848	41.31%
	Tertiary	4844	52%
Scale	Micro	4568	49.04%
	Small	3968	42.60%
	Medium	333	3.58%

(Source: Compiled from data obtained in a national survey in Vietnam in 2012).

Table 3. 2: Data Description for SMEs in Vietnam

Variables	Mean	Standard deviation	Skewness	Kurtosis
1. borrowing compared to need (%)	2.1	0.93	0.54	2.51
2. average interest rate (% per year)	8.82	2.98	-1.25	3.82
3. acceptable interest rate (% per year)	12.66	3.23	0.05	13.8
Dummy variables				
4.heard of interest subsidy	0.54	0.5	-0.16	1.02
5. heard of incentives for import and export	0.26	0.44	1.1	2.21
6. borrow under interest subsidy programmes	0.21	0.41	1.44	3.06
7. being borrowed	0.58	0.49	-0.32	1.1
8. being state enterprise	0.04	0.19	5.01	26.09
9. being private enterprise	0.88	0.31	-2.41	6.83
10. location in Centre	0.26	0.44	1.09	2.19
11. location in North	0.35	0.48	0.62	1.39
12. operate in primary sector	0.07	0.25	3.47	13.05
13. operate in secondary sector	0.41	0.49	0.35	1.12
14. number of employees	67.18	520.41	51.11	3581.65
Evaluation factors that constrain business (0= don't know, 1= no impact, 2= moderately important, 3= quite impact, 4= very important 5= extremely important)				
15. constraints by regulations	1.59	1.35	0.81	2.89
16. constraints by unstable macro-policies	2.84	1.47	0.16	2.04
17. constraints by loan access	2.75	1.46	-0.1	1.94
18. constraints by transportation fees	2.54	1.32	0.05	2.09
Expectation for changes: (0= no relation, 1= unnecessary, 2= necessary, 3= extremely necessary)				
19. expect changes for loan access	1.98	0.97	-0.69	2.51
20. expect changes for regulations	1.53	1.01	-0.14	1.92
21. expect changes for technology	1.58	1.03	-0.21	1.89
22. expect changes for interest rate	2.38	0.85	-1.39	4.27

Table 3. 3: Factors affecting SME Growth in Vietnam (2SLS models)

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
1. borrowing compared to need	6.50***	6.45***	8.05***	6.38***	5.52***	5.71***
	(0.92)	(0.91)	(1.21)	(0.92)	(0.99)	(1.07)
2. average interest rate	-1.90***	-2.13***	-1.94***	-2.16***	-1.98***	-3.13***
	(0.32)	(0.29)	(0.40)	(0.29)	(0.31)	(0.43)
3. acceptable interest rate	-0.32				-0.13	-0.25
	(0.30)				(0.29)	(0.34)
4. heard of incentives for import and export		8.86***				
		(2.04)				
5. borrow under interest subsidy programes			1.29			
			(2.42)			
6. being borrowed				34.42		
				(27.73)		
7. being state enterprise	99.03***	97.74***	101.50***	98.88***	101.17***	95.50***
	(4.31)	(4.31)	(5.27)	(4.32)	(4.22)	(5.04)
8. location in Centre	-4.56**	-3.96*	-2.34	-4.60**	-5.05**	-6.40**
	(2.22)	(2.21)	(2.98)	(2.22)	(2.18)	(2.48)
9. location in North	5.74**	5.56**	8.69**	5.77**	6.31**	5.06**
	(2.10)	(2.09)	(2.80)	(2.10)	(2.19)	(2.38)
10. operate in primary sector	11.74**	12.69**	11.59**	12.11**	14.09***	12.07***
	(4.23)	(4.21)	(5.54)	(4.22)	(4.29)	(5.14)
11. operate in secondary sector	39.03***	38.91***	40.36***	38.94***	40.89***	41.81***
	(1.77)	(1.76)	(2.32)	(1.77)	(1.93)	(2.13)
12. heard of interest subsidy	5.68***	2.57	15.12	5.59***	5.59***	3.95*
	(1.72)	(1.85)	(25.47)	(1.72)	(1.72)	(2.03)
13. constraints by regulations	9.84**	9.56**	11.45**	9.89**	0.50	3.07***
	(3.54)	(3.51)	(5.08)	(3.52)	(0.83)	(0.91)
14. constraints by unstable marco policies	0.73	0.86	0.79	0.81	1.29	2.03**
	(1.06)	(1.05)	(1.45)	(1.05)	(0.91)	(0.77)
15. constraints by loan access	-3.17***	-3.20***	-2.65**	-3.18***	-4.05***	-5.14***
	(0.81)	(0.80)	(1.11)	(0.80)	(1.07)	(1.00)
16. constraints by transportation fees	1.39*	1.30*	1.59	1.37*	1.69**	1.14
	(0.78)	(0.78)	(1.05)	(0.78)	(4.18)	(0.85)
17. expect changes for loan access	-8.84***	-8.71***	-10.40***	-8.78***	-8.85***	-9.10***
	(0.99)	(0.99)	(1.33)	(0.99)	(0.99)	(2.31)
18. expect changes for regulations	1.43	1.40	1.11	1.37	3.90***	3.65***
	(1.56)	(1.56)	(2.27)	(1.56)	(0.98)	(1.12)
19. expect changes for technology	3.16***	3.00**	1.95	3.19***	3.12***	2.00*
	(0.90)	(0.89)	(1.19)	(0.90)	(0.90)	(1.07)
20. expect changes for interest rate	3.74**	3.46**	6.63***	3.42**	2.25	5.87***
	(1.40)	(1.39)	(1.91)	(1.39)	(1.38)	(1.12)
_cons	13.89**	12.53**	-12.18	-21.34	2.07	-8.43
	(5.79)	(5.09)	(25.55)	(27.68)	(8.08)	(2.09)
N	4302	4319	2607	4319	4302	4302
Centered R2	0.27	0.28	0.29	0.27	0.26	0.09
Sagan test	2.68	2.69	0.20	2.61	3.13	0.81
P-value	0.10	0.10	0.96	0.11	0.07	0.36
Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01						

Table 3. 4: Signs of Impacts to Firm Size when separately adding Interaction Variables to Model (1) of Table 3.3

The first variable of interaction	The second variable of interaction												
	Contrained by unstable electricity	Contrained by transportation fee	Contrained by land rent payment	Contrained by unstable marco policies	Contrained by taxation	Contrained by skill of employees	Contrained by loan access	Contrained by high interest rate	Contrained by inflation	Contrained by legal framework	Borrowing amount compared to need	Average interest rate	Acceptable interest rate
Primary sector	+	+	+	+	+	+	+	+	+		+	+	+
Secondary sector		+		+			+	+		+	+	+	+
Tertiary sector	-			-	-		+			-	-	+	+
State-owned firms						+	+	+	+	+	+	+	+
Private firms	-	-	-	-		-	-			-	-	-	-

Note: Interaction variable = the first variable * the second variable. We report signs of significant coefficience only (p-value <0.10). All reported models have Sagan tests with p-value > 0.05.

The first variable of interaction	The second variable of interaction											
	Heard of interest subsidy programs	Borrow under interest subsidy programs	Heard of incentives for import and export	Borrow under incentives for import and export	Being borrowed	Expect changes for interest rate	Expect for loan access	Expect changes for transportation	Expect for legal framework	Expect changes for domestic market	Expect changes for export	Expect changes for technological innovation
Primary sector	+		+		+	+	+	+	+	+	+	+
Secondary sector	+	+	+	+	+	+	+			+		
Tertiary sector			+				+		+			+
State-owned firms	+	+	+	+	+	+	+	+	+	+	+	+
Private firms		-	-	+	-	-	-	-	-	-	-	-

Note: Interaction variable = the first variable * the second variable. We report signs of significant coefficience only (p-value <0.10). All reported models have Sagan tests with p-value > 0.05.

Table 3. 5: Factors affecting SME Growth in Vietnam (3SLS models)

Panel A	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Dependent variables	**Y = Number of employees**					
1.heard of interest subsidy	8.24***	8.21***	8.64***		8.59***	8.56***
	(1.86)	(1.86)	(1.52)		(1.88)	(1.88)
2.acceptable interest rate	-1.11***	-0.28	-0.13	-0.12	-6.74***	-6.94***
	(0.26)	(0.31)	(0.26)	(0.26)	(0.75)	(0.75)
3.average interest rate	-2.24***	-2.62***				
	(0.31)	(0.33)				
4.borrowing compared to need	8.40***	8.34***		2.30**		
	(0.98)	(0.98)		(0.81)		
5.location in Centre	-7.14***	-7.88***	-4.43**	-4.14**	-7.16**	-7.07**
	(1.94)	(2.16)	(1.64)	(1.65)	(2.30)	(2.30)
6.location in North	7.84***	7.32***			7.36***	7.44***
	(2.09)	(2.14)			(2.21)	(2.20)
7.being private enterprise			-113.70***	-113.16***		
			(2.63)	(2.63)		
8.operate in secondary sector	40.57***	40.58***			38.62***	38.87***
	(1.83)	(1.83)			(1.85)	(1.85)
Panel B	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Dependent variables	**Y= being borrowed**	**Y= being borrowed**	**Y=average interest rate**	**Y=average interest rate**	**Y=acceptable interest rate**	**Y=acceptable interest rate**
1.number of employees	-0.0003***	-0.0002**	-0.02***	-0.02***		
	(0.0001)	(0.0001)	(0.001)	(0.001)		
2.operate in secondary sector	0.01***	0.006**				
	(0.003)	(0.003)				
3.operate in primary sector						-0.73***
						(0.20)
4. borrowing compared to need	0.005***	0.004***			-0.03	-0.04
	(0.001)	(0.001)			(0.04)	(0.04)
5.heard of interest subsidy	0.003**	0.002**			-0.10	-0.11
	(0.001)	(0.001)			(0.09)	(0.09)
6.acceptable interest rate		0.001***	0.36***	0.36***		
		(0.0002)	(0.01)	(0.01)		
7.being borrowed					7.97***	7.99***
					(1.36)	(1.35)
8.average interest rate					0.38***	0.37***
					(0.01)	(0.01)
9.location in North	0.005***	0.003**				
	(0.001)	(0.001)				
10.being state enterprise			1.96***	1.89***	-0.24	
			(0.26)	(0.26)	(0.26)	
11.being private enterprise					1.41***	1.53***
					(0.17)	(0.14)
N	4303	4303	4305	4303	4305	4305
F- test	227.12***	987.88***	128.20***	309.94***	965.05***	203***

Standard errors in parentheses, * p<0.1, ** p<0.05, ***p<0.01.
For F-test, Ho: $\forall \beta_i = 0$

Table 3. 6: Structure of the survey in the UK

Category	Group of firms	Number of firms	Percentage in sample
Scale	Gazelle	22	16.54%
	Micro	76	57.14%
	Small	37	27.82%
	Medium	20	15.04%
Location	London	5	3.76%
	South East	48	36.09%
	South West	21	15.79%
	East	14	10.53%
	East Midlands	6	4.51%
	West Midlands	7	5.26%
	Wales	7	5.26%
	North West	5	3.76%
	York- Humbershire	6	4.51%
	North East	3	2.26%
	Scotland	9	6.77%
	North Ireland	2	1.50%
Sector	Administrative Supply	5	3.75%
	Manufacture	39	29.32%
	Electricity - Gas	1	0.75%
	Water Supply	4	3%
	Construction	3	2.26%
	Whole Sales	18	13.53%
	Transport	1	0.75%
	Accommodation	1	0.75%
	Science	56	42.11%
	Entertain	5	3.75%

(Source: Compiled from data obtained in a survey in the UK in 2012).

Table 3. 7: Data description for SMEs in the UK

Variables	Mean	Standard deviation	Skewness	Kurtosis
1.spending R&D 2010	3.16	1.93	0.92	2.84
2.spending R&D 2011	3.35	1.99	0.84	2.66
3.spending change	16.15	375.67	5.44	68.59
4.firm age	2.14	1.34	1.45	4.63
Dummy variables				
5.being Micro	0.57	0.49	-0.28	1.08
6.being Small	0.27	0.44	0.99	1.98
7.being Medium	0.15	0.35	1.95	4.82
8.being gazelle	0.16	0.37	1.8	4.24
9. locate in Yorkshire or Humbershire	0.04	0.21	4.38	20.21
10.locate in the East	0.1	0.31	2.57	7.61
11.locate in West Midlands	0.05	0.22	4	17.05
12.operate in Scientific sector	0.42	0.49	0.32	1.1
13.operate in Entertainment sector	0.04	0.19	4.86	24.63
14.operate in Manufacturing sector	0.29	0.45	0.91	1.82
15.expand geographical distribution	0.5	0.5	-0.03	1
16.expand geographical distribution through export	0.93	0.67	1.37	6.65
17.failed to introduce new products due to high innovation costs	0.17	0.38	1.72	3.98
(1= selected, 2= selected and expectation not meet, 3= not selected)				
18.introduce marketing/selling goods	2.27	0.88	-0.55	1.52
19.introduce products	1.7	0.81	0.58	1.75
20.introduce reorganisation of management structure	2.28	0.93	-0.59	1.42
(1= very significant, 5= very insignificant)				
21.barriers by flexibility of finance	1.39	0.49	0.43	1.19
22.barriers by cost of production/ labour	2.67	1.01	0.31	2.46
23.barriers by available of skilled staff	2.54	1.12	0.36	2.28
24.barriers by regulation	2.7	1.08	0.21	2.25
25.barriers by customer base	1.79	0.83	1.11	4.31
26.barriers by competition	2.58	1	0.34	2.32

Table 3. 8: Factors affecting SME Growth in the UK (2SLS models)

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.spending R&D 2011	-4.01	-5.56*	-1.54	-5.75	-4.13		
	(3.77)	(3.37)	(3.97)	(5.25)	(5.75)		
2.spending R&D 2010							-5.15
							(5.29)
3.being Micro	-34.60**	-38.85**	-207.49***	-74.59***	-73.49***		
	(15.43)	(13.55)	(20.12)	(17.47)	(18.61)		
4.being Small			-189.89***				
			(21.30)				
5.being Medium	78.61***	69.33***				233.66***	
	(22.23)	(19.67)				(51.79)	
6.being gazelle							87.07***
							(24.76)
7.firm age	9.10**	8.15**				-1.92	
	(4.41)	(3.84)				(6.35)	
8.failed to introduce new products due to high innovation costs	40.12**	21.14					
	(16.33)	(15.68)					
9.locate in Yorkshire or Humbershire		57.40**					
		(19.82)					
10.locate in the East			41.14*				
			(24.04)				
11.locate in West Midlands				-65.90**			
				(32.12)			
12.operate in Scientific sector					-36.29*		
					(20.02)		
13.operate in Entertainment sector				131.92**			
				(45.65)			
14.operate in Manufacturing sector				41.87**			
				(20.38)			
15.introduce marketing/ selling goods				18.21*	24.91**		22.76**
				(10.30)	(10.79)		(10.46)
16.introduce new products						-21.79**	
						(8.68)	
17.barriers by flexibility of finance			36.11**			45.20**	
			(13.99)			(15.31)	
18.barriers by cost of production/ labour			-14.74**			-14.61**	
			(7.29)			(6.51)	
19.barriers by available of skilled staff			6.57				
			(6.33)				
20.barriers by regulation							-18.38**
							(8.45)
_cons	23.00	31.87*	184.14***	49.09*	55.97*	20.14	41.07
	(21.11)	(18.81)	(32.67)	(28.68)	(29.91)	(31.16)	(36.91)
N	28	28	67	71	71	72	68
Centered R2	0.70	0.77	0.64	0.36	0.26	0.59	0.22
Sagan test	0.06	0.21	0.31	0.11	0.08	0.08	0.10
p-value	0.81	0.65	0.58	0.74	0.78	0.78	0.75

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

Table 3. 9: Factors affecting SME Growth in the UK (3SLS models)

Panel A	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Dependent variables	Y = Number of employees					
1.spending R&D 2011	-8.71	-3.91	-22.18			
	(20.51)	(14.92)	(18.48)			
2.spending R&D 2010				-2.07		
				(3.66)		
3.being Micro	-169.22***	-170.55***				
	(42.10)	(35.22)				
4.being Small	-146.12***	-147.13***				
	(31.66)	(29.49)				
5.being Medium					147.03***	147.32***
					(13.36)	(13.40)
6.being gazelle			74.42**	63.83***		
			(27.99)	(16.15)		
7.firm age					4.03	3.91
					(3.88)	(3.90)
8.introduce marketing/ selling goods			24.82	16.79**		
			(15.21)	(7.31)		
9.barriers by flexibility of finance	25.04	25.52			21.12**	21.89**
	(25.00)	(22.60)			(9.57)	(9.69)
10.barriers by cost of production/ labour	-15.39	-16.41*			-8.00*	-8.67*
	(10.01)	(9.96)			(4.55)	(4.62)
			-22.10**	-10.04*		
11.barriers by regulation			(9.87)	(5.92)		
12.expand geographical distribution			103.76	21.29*		
			(66.43)	(12.82)		
Panel B	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Dependent variables	Y=spending R&D 2011	Y=spending R&D 2011	Y=spending R&D 2011	Y=spending R&D change	Y= spending R&D 2011	Y=spending R&D 2011
1.spending R&D 2010					0.83***	0.83***
					(0.05)	(0.05)
2.barriers by customer base					-0.29**	-0.21*
					(0.13)	(0.12)
3.barriers by competition			0.43**	75.46**	0.19*	
			(0.22)	(36.81)	(0.11)	
4.expand geographical distribution						-0.37*
						(0.21)
5.expand geographical distribution through export	-0.33	-0.33	-0.03			
	(0.38)	(0.38)	(0.33)			
6.firm age	-0.38**	-0.40**	-0.26	37.91		
	(0.17)	(0.17)	(0.17)	(30.97)		
7. introduce marketing/ selling goods		0.47*				
		(0.27)				
8.introduce reorganisation of management structure				65.94*		
				(39.30)		
N	43	43	43	107	115	114
F- test	68.92***	67.85***	39.44***	33.76***	389.81***	386.30***

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

Chapter IV

Financial Liberalization, Competition, Efficiency and Bank Soundness in East Asia

Financial Liberalization, Competition, Efficiency and Bank Soundness in East Asia

Abstract

A key outcome of the Asian debt crisis of the 1990's was for countries to undergo major financial liberalization programs. This begs an important question about how banks in East Asia performed throughout the 2007-2008 global financial crisis. We use data on 10 East Asian countries (1997-2012) to analyse the impact of liberalization on banking soundness. Our results indicate that a rise in comparative size (systemic size) significantly reduces bank risk. However, a growth in absolute size (total assets) is associated with greater bank vulnerability due to increasing leverage ratios and costs. Similarly, greater comparative market power (HHI) fosters soundness in the banking sector while greater absolute market power (market share) reduces it. In addition, relative size of a banking system (total assets of a banking system to GDP) has a positive impact on banking soundness. Through liberalization, Islamic banks, savings banks and non-bank institutions become sounder while state-owned banks tend to become more fragile. Finally, our results from interaction variables show that, market power (Lerner index), under the impact of overall freedom and especially in investment openness, creates incentives for bank risk-taking. In contrast, interactions between profit efficiency with monetary freedom or investment freedom strengthen bank soundness.

4. Introduction

Striking a balance between liberalization and regulation of financial intermediaries has been central to a controversial debate amongst policymakers and scholars. Indeed, the extant literature provides conflicting views about the impact of liberalization on the development and stability of a banking system.

On the one hand, more freedom is identified as a factor which facilitates banking financial strength. For example, in a concentrated market, banks appear to operate with lower cost efficiency and offer mispriced loans (Berger & Hannan, 1998). Consequently, banks are likely to be riskier (Barth et al. 2004; Boyd & De Nicolo, 2005; Berger et al. 2009) because their profits are made through exerting market power (Berger & Hannan, 1998) as borrowers face greater difficulties in repaying loans with higher interest rates (Strahan, 1999). Deregulation creates favourable conditions for competition to flourish, specifically liberalization provides greater autonomy for banks in allocating assets and setting interest rates (Hellmann et al. 2000). In turn, an increase in competition fosters efficiency (Claessens & Laeven, 2004) and therefore stimulates soundness (Koskela & Stenbacka, 2000; Beck et al. 2006).

On the other hand, an absence of government intervention may lead to a prevalence of market distortions and banking instability. For instance, in a competitive market, especially one that lacks regulatory discipline, banks tend to loosen screening standards for new or current customers (Hellmann et al. 2000) or accept riskier portfolios (Boyd & De Nicolo, 2005). As a result, resources are allocated in ignorance of lending principles and standards (Kumbhakar et al. 2001). In addition, Berger & De Young (1997) refer to a bad luck hypothesis in which bank failure results from external events. Prudential regulations and supervision could act as a buffer that reduces the impact of external shocks (for example, restrictions on loan concentration or loan-to-asset ratios and requirements for higher capital adequacy ratios). In their research in South East Asian countries, Liu et al. (2012) provide mixed results in which competition does not produce incentives for risk-taking, however, a reduction in competition

meaning more concentration, has a positive link with stability in the banking sector. Furthermore, excessive competition may erode profits, thereby lower franchise values and reduce motives for seeking good projects while increasing moral hazard (Hellmann et al. 2000). In a less competitive environment, banks have an advantage in increasing franchise values that are associated with market power (Salas & Saurina, 2003). According to Allen & Gale (2003), there is a trade-off between competition and stability.

During the early 1990s, Asian countries underwent restructurings in attempts to improve productivity (Berger et al. 1993) and competitiveness of national banking sectors (Williams & Nguyen, 2005). Many studies identify fully globalized financial institutions and markets and overvaluation of local currencies as major reasons for the financial crisis 1997-1998. Post crisis, these countries have carried out financial reforms under requirements laid down by the IMF. In this chapter, we examine whether liberalization has had a uniform impact across countries in East Asia. The main objective here is to identify the effect of liberalization on soundness through competition and/ or efficiency in the banking sector. We attest the likelihood that the effect of competition and/or efficiency on soundness in a banking sector will probably be due to the degree of financial liberalization in that jurisdiction.

We choose East Asian countries for analysing the effects of regulatory changes on banking stability during the recent global financial crises. *Firstly*, this area experienced a severe regional financial crisis in the late 1990s prior to the global financial crisis of 2007-2008. Many regional Governments carried out bailouts, financial support and reforms to their financial systems, however, there is a paucity of studies on financial liberalization and bank soundness in this area post crisis 1997-1998. The existing literature mostly examines the effects of financial deregulation on bank performance in developed countries or country specific studies; or East Asian countries prior to the financial crisis. *Secondly*, East Asia is identified as a dynamic area which is comprised of various size economies with different levels of development as well as types of political regimes. On the one

hand, with such diversified characteristics, the area can be seen as a unique natural laboratory for empirical research. On the other hand, the variety in institutional settings that affect banks' behaviours (Haselmann & Wachtel, 2010) requires specific studies to be conducted on this area and also because findings in the existing literature for developed countries may not be relevant for developing countries. *Finally*, as the BIS Basel Accord II and III for which capital requirements and supervisory power are main pillars is increasingly implemented, there is an ongoing debate as to which aspects of liberalization really work, what the role of liberalization in banking development is and whether policies that have proved successful in one country will also be successful in another.

From the extent conflicting views, we are concerned about the following five questions: *First*, has liberalization in East Asian banking sectors improved? *Second*, does liberalization affect competition, efficiency and soundness in the banking sector? *Third*, to what extent does the impact of liberalization on competition, efficiency and soundness differ across countries in East Asia? *Fourth*, is there any link between the impact of liberalization on competition, efficiency and soundness in the banking sector? And *finally*, how large are these effects?

To this end, we employ fixed effects, random effects, first difference and GMM to gain a deeper insight into data from Bankscope, the World Bank and the Heritage Foundation. Our sample has more than 1,100 banks and covers 10 countries in East Asia for the period from 1997- 2012. We also employ a t-test to compare: groups of countries which are classified by income and groups of banks which are classified by ownership or type of bank.

In our results, which are consistent with concentration-stability theories, concentration (HHI) enters regressions with stability with positive signs. Higher capital adequacy ratios appear to bring about stronger soundness. Larger banks (measured by absolute value of banks' total assets) face scale diseconomies that erode their soundness. However, an increase in relative bank scale or systemic

size (Demirguc-Kunt & Huizinga, 2011) significantly strengthens bank stability. In our study, commercial banks are sounder than other types of banks. Liberalization in various areas of an economy generally improves banking stability. Freedom in monetary policy and investment stimulate bank soundness while openness in finance, business and labour negatively affect stability in the banking sector. Our finding on financial freedom is opposite to (Fang et al. 2014). There are mixed signs for the relationship between bank risk and fiscal freedom.

This chapter contributes to the literature in the following four ways. *First*, most of the past studies on East Asian banking systems are at the country level, and/or cover the pre-1997 financial crisis period, and/or focus on one of the following relationships: liberalization and competition, liberalization and efficiency, liberalization and stability. This chapter provides a cross-country study that investigates the impact of banking-sector-liberalization on competition, efficiency and soundness in East Asia during 1997-2012. We attempt to answer the question whether or how deregulation interacts with competition to shape bank performance and behaviour of risk-taking. Our results may provide insights for policy makers when considering which areas of banking and finance they should or should not deregulate with a motivation to stimulate competition to enhance stability.

Second, there is a growing body of literature about competition that is based on theories developed by New Industrial Organization (Gupta et al. 2001; Bertay et al. 2013). While the paradigm of structure-conduct-performance assumes that competition and concentration have an inverse link and structure is the driver of the level of competition, New Industrial Organization literature demonstrates that strategies (conduct) of each bank is as important as concentration in explaining the competitive condition. In considering two above mentioned approaches, we take account of absolute size and systemic size of banks (Bertay et al. 2013) in interactions with competition, efficiency and soundness.

Third, Beck et al., (2006) provide evidence that differences in legal infrastructure affect the relationships between: competition and stability, and efficiency and stability. However, they also argue that regulatory adjustments do not appear to keep pace with market movements because legal infrastructures across countries, in general, have changed little over past decades. In addition, while Haselmann & Wachtel (2007) point out that bank risk-taking is not well-documented in the rich literature of studies on transition countries, Haselmann & Wachtel (2010) refers to differences of banks' behaviour under different institutional settings. They conclude that findings obtained from developed countries may not apply to developing and transition economies. Against this backdrop past studies have employed various measures in attempts to find suitable proxies for reflecting regulatory changes, for example governance indicators by the World Bank. Among them, there is a strand of the literature which focuses on financial freedom provided by the Heritage Foundation (Schaeck & Cihak, 2008; Sufian & Habibullah, 2010). We follow this approach, however, it is our intention to shed light on the relationship between banking stability and economic freedom of which liberty in finance plays an important role.

Last, but not least, adoption of Basel II regulations creates advantages for larger banks over smaller banks in competition. Therefore, under fiercer competition, small banks are prone to taking higher risk (Hakenes & Schnabel, 2011). Our research aims to investigate the impact of deregulation on banks of all sizes because liberalization could adversely affect bank performance, especially smaller banks in underdeveloped institutional environments characterised by weak regulations. This study provides new findings in the literature since it covers a period of financial deregulation, financial crisis, and financial restructuring.

The chapter is organised as follows. Section 4.1 provides a review of the literature on factors that affect soundness from both microeconomics and macroeconomics. Section 4.2 presents the methodology employed. Followed by Section 4.3 which describes the data and summary statistics. Section 4.4 reports the results, findings and robustness tests. Conclusions are in Section 4.5.

4.1. Literature Review

This literature review draws on a strand of the empirical literature that yields a summary of the explanatory factors for banking soundness. Competition and efficiency are identified as the key determinants while the legal framework is viewed as the environment for interactions between explanatory variables and the stability of the banking system.

4.1.1. Microeconomic Factors that affect Soundness

The strand of the literature that relates to the determinants of soundness identifies *competition* and *efficiency* as the leading drivers. Boyd & De Nicolo (2005) indicate that banks are likely to be more fragile when the market becomes less competitive. For example, banks make profits through exerting market power while borrowers face greater difficulties in repaying loans. Similarly, Beck et al., (2006) postulate that competition is a significant driver for soundness. Berger & Mester (1997) partly corroborate this view when they point out the nexus between *profit efficiency* and soundness. They probe the performance of banks in terms of *cost* and *revenue* that help banks grasp competitiveness, thereby improving their soundness. In contrast, in a concentrated market, banks are able to increase franchise values to yield more market power and finally, obtain better profit efficiency. Whereas franchise value is identified as an important factor that reduces banks' incentives for risk-taking (Hellmann et al., 2000; Salas & Saurina, 2003), higher market power is associated with lower credit risk (Agoraki et al. 2011).

Bank size is also identified as an important factor affecting soundness. The argument of "Too big to fail" may explain the finding in (De Nicolo, 2000) in which larger banks are more likely to take-on risk. Berger & De Young (1997) refer to *non-performing loans* as "a statistically significant predictor of insolvency" by which banks with a lower level of non-performing loans are sounder.[51] They also point out the positive relationship between *cost* and problem loans. Limited managerial capacity or monitoring loans increase cost and

[51] Berger & De Young (1997), page 2.

therefore affect bank soundness. In addition, they emphasize the role of sufficient *capital adequacy ratio*. Banks with a thin capital adequacy ratio tend to have more non-performing loans because of moral hazard. To measure the strength and vulnerabilities of a financial system, the IMF propose a Financial Soundness Indicator which is based on a range of financial ratios, such as *ROE*, *ROA* and *interest margin to gross income*. Altunbas et al. (2007) argue that loan intensity positively interacts with risk. Similarly, Nguyen et al. (2012) believe that more product *diversification* helps banks gain stability against the impact of external shocks. However, Amidu & Wolfe (2013) find negative links between diversified revenues and soundness. To investigate the impact of bank *ownership*, Berger et al. (2004) employ bank type and find a negative link between state-owned banks with access to finance and banking stability. They conclude that policies that tend to protect state resources by restricting bank entry and competition produce negative impacts on banking system performance. Likewise, Fiordelisi & Mare, (2014) provide evidence for a positive link between competition and bank stability in a research on European cooperative banks.

4.1.2. Macroeconomic Factors that affect Soundness

Soundness of the banking sector is a subject that attracts a lot of attention. There is a strand in the literature that argues that tightening *entry requirements* reduces efficiency while increasing instability due to higher net-interest margins imposed by dominant banks (Barth et al., 2004; Berger et al., 2004). By contrast, scholars supporting liberalization indicate that liberal *policies* towards foreign penetration and privatization stimulate competitiveness, efficiency and stability in banking sectors (Claessens & Laeven, 2004).

A main function of banks is processing data collected from borrowers for credit decision making. In order to mitigate information asymmetries and manage risk, they form their judgment and decisions upon the legal framework in which they operate, such as property rights, contracting and dispute regulations. On the one hand, the level of competition comprises a degree of freedom from government intervention, efficiency also includes banks' autonomy and independence from

government regulation and finally, soundness is measured by the rule of law. Therefore, the legal environment is likely to play an important role in competition, efficiency and soundness of the banking industry. On the other hand, there are a wide range of empirical studies on the nexus between competition and soundness (Beck et al., 2006; Agoraki et al., 2011) or how efficiency plays a role in transmission for their relationship (Schaeck & Cihak, 2008). Although these studies are often based upon the structure-conduct-performance paradigm, none of the studies elucidate the mechanisms in which competition can translate into soundness via efficiency. Our study will consider the legal environment as a condition for this transmission process.

In regards to financial liberalization, many countries and economies have achieved success, however, more freedom may create challenges for the stability of banks (OECD, 2011). In our research, we anticipate that financial liberalization stimulates competition, therefore improves efficiency and finally, strengthens banking soundness. Based on the data set, we attempt to test the following hypotheses: (H1) u*nder the impact of liberalization, competition stimulates banking soundness*; (H2) *under the impact of liberalization, efficiency stimulates banking soundness*; (H3) *under the impact of liberalization, competition stimulates banking soundness through improving efficiency*.

4.2. Methodology

We classify predictors into two main groups, at the bank level and at the country level. In the bank level group, we have three sub-groups: factors reflecting financial strength, factors reflecting competitive strength and dummy variables for different banks with various forms of ownership. In the country level group, we identify two sub-groups: factors representing stability of the economy or scale of bank system; and factors relating to the legal framework. In addition to the two main groups, we propose a dummy variable to control for time: period 1 (from 1997 to 2006) and period 2 (from 2007 to 2012).

In the core estimations, we employ random effects, fixed effects and first difference models. We use a Wald test to choose better models and a covariance matrix for testing multi-collinearity. We use a Sagan test to eliminate problems of omitted variables. As a matter of course, all models are rejected in tests for normal distributions suggested by Jarque & Bera (1980, 1987) or Doornik & Hansen (2008). They also have signs of autocorrelation and heteroskedasticity. To solve these problems, we employ Xtabond2 which is suitable for panel data with following characteristics: "small T, large N"; and/or independent variables correlates with their lags; and/or fixed effects; and/or heteroskedasticity and autocorrelation within individuals (Roodman, 2009b). With Xtabond2, we select two different methods: one-step difference GMM and two-step system GMM as standard estimations to compare with results from random effects, fixed effects and first difference.

4.2.1. Measuring Competition

Primarily, our approach to the level of competition is to adopt the structure-conduct-performance paradigm (Berger et al., 2004) and hence calculate HHI values (see Equation 1).

$$\boldsymbol{HHI_{jt} = \sum_{i=1}^{n} \left(\frac{total\ assets\ of\ bank_{it}}{total\ assets\ of\ all\ banks\ in\ country_{jt}} \right)^2} \qquad \textbf{(1)}$$

However, absence of data, such as on costs and prices in banks, is a common barrier to any direct measure of competition. Therefore, we use indirect measures, such as the Lerner index or the Boone indicator (Leuvensteijn et al. 2007). These parameters reflect competitive strength (measured as profit or market share), that a bank is able to achieve through improving efficiency (portrayed by lower marginal cost). Similar to the majority of model-based measures, we adopt an assumption that there is homogeneity in quality and design of products and innovations among banks (Leuvensteijn et al. 2007).

To deal with inefficiencies in measurement, we follow (Aigner et al. 1977; Battese & Coelli 1995; Koetter et al. 2012; Barros & Williams 2013) and employ stochastic frontier analysis which captures random disturbances (normal

distribution) and inefficiency caused by the technique (half-normal distribution) for estimating total costs of bank i at time t in Equation 2. This function includes a trend which captures technical changes because movements of the cost function over time is associated with technological change. TC_i represents total costs for bank i, TA_i is total assets, E_i is total equity and W_1, W_2, W_3 are price of labour, capital and deposits, respectively. In detail, the price of labour is defined as personnel expenses divided by total assets.[52] Price of capital is the ratio between other operating expenses and total assets. Price of deposits is denoted as interest expenses divided by total deposits, money market and short-term funding.

$$lnTC_i = \beta_0 + \gamma lnTA_i + \frac{1}{2}\theta(lnTA_i)^2 + \sum_{j=1}^{3}\beta_j lnW_{ji} + \delta lnE_i + \sum_{j<k}^{3}\sum^{3}\mu_{jk} lnW_{ji} lnW_{ki} + \frac{1}{2}\sum_{j=1}^{3}\vartheta_j (lnW_{jt})^2 + \sum_{j=1}^{3}\rho_j lnW_{ji} lnTA_i + lnu_i \quad (2)$$

Next, we calculate marginal cost in Equation 3.

$$MC_{it} = \frac{\partial TC_{it}}{\partial TA_{it}} = \left[\gamma + \theta lnTA_{it} + \sum_{j=1}^{3}\rho_j lnW_{j,it}\right]\frac{TC_{it}}{TA_{it}} \quad (3)$$

The result from Equation 3 is used for calculating the standard Lerner index in Equation 4.

$$LI_{it} = \frac{P_{it} - MC_{it}}{P_{it}} \quad (4)$$

Where P_{it} represents the output price of bank i at time t and is the ratio between total revenue and total assets.[53] The Lerner index takes a value between [0;1] and when a bank has a higher Lerner index it tends to have more market power.

Besides the standard Lerner index, we also use the adjusted Lerner index (Koetter et al. 2012) which is presented in Equation 5.

$$LIa = \frac{(\hat{\pi}/TA + \hat{C}/TA) - \widehat{MC}}{\hat{\pi}/TA + \hat{C}/TA} \quad (5)$$

[52] As employee numbers are not available, we use total assets instead.

[53] Total revenue is defined as interest revenue plus non-interest revenue.

where $\widehat{\boldsymbol{C}}$, $\widehat{\boldsymbol{MC}}$ are taken from Equation 2 and 3 and $\widehat{\boldsymbol{\pi}}$ is obtained from Equation 6.

4.2.2. Measuring Efficiency

Similar to Schaeck & Cihak (2008), we attempt to estimate profit efficiency- a proxy for bank efficiency in considering costs and revenues in a bank's performance. This approach is based on calculation a standard profit (Berger & Mester, 1997).[54]

$$\boldsymbol{ln(\pi + \theta) = f(w, p, q) + lnu_{\pi} + lne_{\pi}} \quad \textbf{(6)}$$

where π is the after tax profit of banks, $\boldsymbol{\theta}$ is a constant added to banks' profit in order to take the natural log of positive numbers.[55] w, p, q are vectors of input prices, output prices and quantities of inputs or outputs. $\boldsymbol{lne_{\pi}}$ denotes random errors. $\boldsymbol{lnu_{\pi}}$ captures inefficiency that reduce profits. However, estimation for standard profit faces difficulties due to absence of data on prices and quantities of input and output. To solve this problem, Humphrey & Pulley (1997) estimate profit efficiency through a stochastic frontier function. They name it alternative profit efficiency. In line with this approach, Koetter et al. (2012) employ profit after tax in the stochastic frontier function for estimating alternative profit efficiency.

$$\boldsymbol{ln(\pi_i + \theta) = \beta_0 + \gamma lnTA_i + \frac{1}{2}\theta(lnTA_i)^2 + \sum_{j=1}^{3}\beta_j lnW_{ji} + \delta lnE_i + \sum_{j<k}^{3}\sum^{3}\mu_{jk} lnW_{ji} lnW_{ki}} + \boldsymbol{\frac{1}{2}\sum_{j=1}^{3}\vartheta_j (lnW_{jt})^2 + \sum_{j=1}^{3}\rho_j lnW_{ji} lnTA_i + lnu_i} \quad \textbf{(7)}$$

According to Boone (2008), the Boone indicator is the β parameter in Equation 8.

$$\ln s_{it} = \alpha + \beta \ln mc_{it} + \sum_{t=1,\ldots,(T-1)} \gamma_t d_t + \varepsilon_{it} \quad (8)$$

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[54] Berger & Mester (1997) state that: The standard profit function "specifies variable profits in place of variable costs and takes variable output prices as given, rather than holding all output quantities statistically fixed at their observed, possibly inefficient, levels. That is, the profit dependent variable allows for consideration of revenues that can be earned by varying outputs as well as inputs. Output prices are taken as exogenous, allowing for inefficiencies in the choice of outputs when responding to these prices or to any other arguments of the profit function (page 5).

[55] In this study, we define $\boldsymbol{\theta}$ as equal to the absolute value of the minimum value of profits, that is $\boldsymbol{\theta}$=15,000,000 (unit: USD thousand).

where s_{it} represents loan market share of bank i at time t, d_t is a time dummy variable, and $\boldsymbol{\varepsilon_{it}}$is the error term. A Boone indicator is estimated yearly for each country demonstrating the change in competition over time. When the β parameter is negative with a high absolute value, competition is stronger.

4.2.3. Measuring Soundness

Z-score in Equation 9 is an inverse proxy for a bank's probability of failure.[56] The score combines profitability (the measure of bank performance), leverage (or the reciprocal of the equity multiplier) and return volatility (the measure of risk) for bank i (Berger et al. 2008; Kohler, 2012).

$$\boldsymbol{Z_i = \frac{ROA_i + E/TA_i}{\sigma ROA_i}} \qquad (\mathbf{9})$$

There are different methods of calculating z-core. According to Berger et al., (2008), ROA_i is the period average return-on-assets and E/TA_i is the period equity to total assets for bank i (zP- period soundness is calculated by this method). Specifically, in his research, Kohler (2012) employs ROA_i and E/TA_i of bank i in year t (zT- yearly soundness is calculated by this method). Both methods calculate σROA_i- the standard deviation of return-on-assets over the observed period.

Z-score goes up when profitability and capitalization levels increase. On the contrary, Z-score will decrease with a higher standard deviation of return-on-assets which reflects instability in returns. This index reflects the thickness of the book value cushion to absorb losses, and consequently a higher Z-score means a lower probability of failure.

Finally, we analyse the mechanism by which competition affects efficiency and its impact on bank soundness in Equation 10.

$$\boldsymbol{Z_{ijt} = \alpha + \beta Boone_{jt} + \gamma B_{ijt} + \mu C_{jt} + \varepsilon_{ijt}} \qquad (\mathbf{10})$$

[56] Bongini et al. (2002) refer to shortcomings of using accounting-based measures in banking sector risk. However, Chiaramonte et al. (2015) support usage of z-score. We employ z-score because of unavailable data for East Asian banks.

where Z_{ijt} is the z-score for bank i in country j at time t, $Boone_{jt}$ is the Boone indicator for country j at time t, B and C are control variables at the bank and country level, $\boldsymbol{\varepsilon_{ijt}}$ is the error term.

4.3. Data and Summary Statistics

Our data set is assembled using Bankscope, the World Bank and the Heritage Foundation. It includes 1,149 banks with various forms of ownership: commercial banks, savings banks, cooperative banks, real estate and mortgage banks, other non-banking credit institutions, special government credit institutions, multi-lateral governmental banks, private banking or asset management companies and Islamic banks covering the period 1997-2012. Ten countries are selected from East Asia, namely Cambodia, China, Indonesia, Japan, Malaysia, Singapore, South Korea, Thailand, the Philippines and Vietnam.[57] The data set comprises two recent financial crisis, 1997-1998 and 2007-2008 and two periods of post-crisis (see Table 4.2 for Description of variables).

[Table 4.2 here]

The main results from fixed-effects, random-effects, first difference and GMM models are presented in Section 4.4.1 and robustness tests are contained in Section 4.4.2.

4.4. Results

The main results are presented in Table 4.3 of which zT- yearly soundness is the dependent variable. Specification (1) is random effects, (2) and (3) are GMM, (4), (6), (8) and (10) are fixed effects and finally, (5), (7), (9) and (11) are first difference models. The estimated results will be used as evidence to reject or confirm our hypotheses and to contrast with the literature. We also employ an interpretivist approach to explain the results.

Coefficients in the models in this chapter should be read differently in different modelling techniques. First, in the linear regressions which are in the form of y_i =

[57] We exclude Brunei, Laos and Myanmar because there are insufficient observations for calculating indices.

$\beta_0 + \beta_k x_{ki} + u_i$, a positive sign demonstrates a growth in Y by β_k when X grows by 1 unit and vice versa. Second, in a linear-log regression model ($y_i = \beta_0 + \beta_k ln x_{ki} + u_i$), when x rises by 1 unit, y will be likely to rise by β_k*ln((x+1)/x). Third, for a log-linear regression model ($lny_i = \beta_0 + \beta_k x_{ki} + u_{i.}$), when x increases 1 unit, y would grow by $e^{\beta k * x}(e^{\beta k}-1)$ units. Finally, for a log-log regression model, when x rises 1 unit, y would increase by $\{(x+1)^{\beta k} - x^{\beta k}\}$ units. In line with Liu et al. (2012) we use financial freedom as an independent variable in Table 4.3. Furthermore, we analyse the impact of the legal environment when running 11 specifications with 8 factors which contribute to the overall score of economic freedom.

[Table 4.3 here]

4.4.1. Main Results

4.4.1.1. Factors from Banks that affect Soundness

Our main results are reported in Table 4.3. *Firstly*, we consider factors that represent bank scale. Despite of the bigger-stronger argument (Demsetz, 1973), total assets enter the regressions with negative signs in row 2. This finding for total assets which is similar to (Boyd & Runkle, 1993) which conclude that larger banking firms are more likely to fail than smaller firms. Similarly, Fu et al. (2014) conclude that larger banking firms are more likely to fail than smaller firms. On the contrary, capital adequacy ratio, which is in line with (Berger & De Young, 1997), acts as a buffer against risk in row 4. While systemic size has a great impact on bank stability (see row 14), the ratio of fixed assets to total assets produces mixed results (see row 3).

Secondly, we consider bank lending activities. Row 5 shows that, in general, banks who lend more are stronger. This finding is contrary to (Altunbas et al., 2007). Although loan loss provisions enter specifications with mixed outcomes in row 6, loan loss provisions to gross loans significantly intensifies banks' strength in the next row.

Thirdly, we focus on profitability. Pre-tax profit has a weak positive impact on bank stability (see row 8). In general, return-on-assets and return-on-equity have converse influences on banking soundness (see row 9 and 10). Banks with higher return-on-assets are not guaranteed better financial strength, for example they may have a high leverage ratio that creates risks.

Finally, we include variables controlling for bank type. When the observed banks are commercial banks, their soundness are significantly higher than for other types of banks with coefficients of more than 9 in row 17.

4.4.1.2. Factors from the Business Environment that affect Soundness

As a step in the structure-conduct-performance paradigm, we enter Boone indicator and HHI in the regressions to analyse how market structure affects banks' conduct as well as their performance. Our results, that are in alignment with Liu et al. (2012), provide evidence of strong links between concentration and soundness (see row 11 and 12).[58] However, this finding is the inverse of (Hasan & Marton, 2003; Boyd & De Nicolo, 2005) and rejects our prior that competition helps strengthen banking soundness. On the contrary to Berger (1995), our results in row 13 show a negative link between market share and soundness. These results may imply that greater market share does not transform to stability although absolute value of gross loans positively affects bank soundness (see row 5).

Next, we include factors from the macro-economy. Interestingly, inflation helps strengthen soundness (see row 15). This result disagrees with (Demirgüç-Kunt & Detragiache, 1998). From row 16, we find that the ratio of scale of a banking system to scale of the economy positively affects bank stability. Our evidence supports the statement that "bigger is stronger".

[58] As can be seen in row 11 of Table 4.3, Boone indicator positively interacts with soundness where a lower value of the Boone indicator is associated with a more competitive market.

Finally, we incorporate legal factors to take into account impacts from the institutional settings on banking soundness. In general, more liberty produces improved bank soundness with elasticity of 0.2- 0.3 in row 24. This finding is in line with (Berger & De Young, 1997; Barth et al. 2004; Claessens & Laeven, 2004) who provide supportive evidence for the nexus between liberalization and soundness. Similarly, improvements in investment and monetary policy stimulate banks financial strength (see row 26 and 28); while liberty in business, finance and labour creates incentives for bank risk-taking (see row 25, 27 and 32). Our results in banking reforms are opposite to (Fang et al., 2014). Only fiscal freedom has mixed results on bank soundness (see row 31).

4.4.1.3. Factors that affect Competition, Efficiency and Soundness

We include in our regressions several interactive variables in order to explore the nexus between competition, efficiency and soundness and we also take account of the legal setting because it may act as a catalyst for this nexus.

Freedom in trade increases Islamic banks' stability (see row 18) while improvements in property rights erode soundness in state-owned banks (see row 19). Our finding in property rights is opposite to (Fang et al., 2014) who find that legal reforms stimulate bank soundness. Changes in the business environment heavily impact non-bank institutions. These banks are sounder in general (see row 20) although they face higher risks due to deregulation in government spending and across the period 1997-2006 (see row 21 and 22). Finally, savings banks seem to face mixed results from investment freedom, however results are more reliable in GMM models (see row 23 of Specification (2).

Interaction between market power (Lerner index) with overall freedom and investment freedom reduce soundness (see row 34 and 38). In contrast, bank competitiveness (Boone indicator) combines with property rights to improve bank strength (see row 33). These results may suggest that, under liberalization, banks are likely to exert their market power to earn profit through imposing price.

Therefore, we reject our hypothesis (H1) u*nder the impact of liberalization, competition stimulates banking soundness*.

In contrast, profit efficiency interacts with investment freedom or monetary freedom to produce positive results on bank soundness (see row 35 and 36). Our results confirm the hypothesis (H2) *under the impact of liberalization, efficiency stimulates banking soundness*. Finally, the combination between yearly soundness and overall freedom, which enters the regressions with a positive sign, confirms the positive impact of overall liberalization on soundness (see row 37). Because the hypothesis (H1) is rejected and there is no clear evidence for the link between competition- efficiency under the impact of liberalization. Therefore, the final hypothesis (H3) *under the impact of liberalization, competition stimulates banking soundness through improving efficiency* is rejected.

As can be seen in Table 4.4, all countries become sounder in period 2 (2007-2012) in comparison with period 1 (1997-2006). However, *zTgrwth* which stands for yearly growth of z-score has a negative value in 3 of 10 countries (namely, Japan and Thailand (slightly) and Indonesia (medium)).

4.4.2. Robustness Tests

4.4.2.1. Evaluations by T- test for pairs of Countries

Based on the World Bank's classification, we divide ten countries into four groups: low income (Cambodia); low middle income (Indonesia, Philippines, and Vietnam), upper middle income (China, Malaysia, South Korea, and Thailand) and high income (Japan, Singapore). After that, we compare parameters in pairs of groups.[59]

As can be seen in Table 4.5a and 4.5b, generally in any comparison pairs, banks in poorer countries have a lower Boone indicator and higher market power than their peers in richer countries. It implies that, banks in poorer countries are likely to enjoy higher margin due to their higher market power. However, poorer

[59] According to http://data.worldbank.org

countries have lower overall freedom and a lower ratio of bank system total-assets to GDP.

Cambodia is a special case where the Boone indicator is higher than for other countries. It can be interpreted that Cambodian banks are the least competitive and efficient. However, banks enjoy freedom which is ranked second highest and Cambodian banks have the highest z-score. These findings partly confirm our past results in row 15 of Table 4.3 which provide evidence for positive links between a less favourable business environment, such as higher inflation and bank soundness.

In Table 4.5b, state-owned banks and Islamic banks have more market power than other banks. Although Islamic banks have a higher Boone indicator, they are sounder than other banks. This finding is similar to our past results in row 18 of Table 4.3.

In Table 4.5c, the group of commercial and cooperative banks are less efficient than the group of savings banks and real-estate banks. The former group also have less market power than other types of banks. The group of savings banks and real estate banks are sounder than the group including Islamic banks, non-bank institutions and state-owned banks. This finding is inconsistent with our past result in row 17 of Table 4.3 where commercial banks are sounder than other banks.

4.4.2.2. Robustness Test by excluding some specific Banks

We exclude Islamic banks from the sample and run all regressions of fixed effect, random effect, first difference and GMM. The results maintain significance for all main factors. In order to correct for variance error in the estimating coefficients, we employ clustered standard error estimates (Petersen, 2009), bank identification

number is a proxy for cluster variables.[60] Similarly, key factors have significant links with soundness.[61]

4.5. Concluding Remarks

Given the existing literature has a paucity of studies on the impact of bank-sector liberalization on competition, efficiency and soundness in developing countries, we elaborate on the question how deregulation interacts with competition to shape bank performance and risk-taking.

In our research, absolute size (or total assets) reduces soundness. Larger banks are likely to fail in reaping benefits from scale, their vulnerabilities lie with high leverage ratios and costs. In detail, ROA enters the nexus with soundness with a negative sign because banks widen their lending activities through increasing borrowing. The ratio of fixed assets produces bi-directional links with soundness because its growth is associated with increasing costs. Capital adequacy ratio acts as a core part of bank size that absorbs external shocks, therefore this ratio enters the regressions with bank soundness with positive signs. In addition, profit efficiency fosters bank soundness. Loan loss provisions and liquid assets do not produce clear impacts on bank stability. Systemic size acts as a key driver for bank soundness.

Commercial banks are likely to be the most stable institutions. Under the impact of investment openness, savings banks face both opportunities and challenges for their financial stability while state-owned banks' vulnerabilities arise from improvements in property rights. Islamic banks benefit from trade freedom and non-bank institutions are strengthened by overall liberalization. Banks that operate in a comparatively larger banking system are likely to achieve more stability. Surprisingly, inflation is positively associated with bank stability.

[60] Petersen (2009) argues that clustered standard errors are unbiased because the approach that accounts for firm effects produces residual dependence.

[61] Results are available upon request from the authors.

Overall liberalization, especially in monetary and investment policy, improves bank soundness. Our findings support (Berger & De Young, 1997; Barth et al. 2004; Claessens & Laeven, 2004) who indicate a positive link between banking deregulation and stability. More autonomy in business, labour and finance suppresses banks' financial strength.

When we control for interaction variables, the combination between overall freedom and market power reduces soundness. On the one hand, the association between investment freedom and market power declines bank soundness. On the other hand, the interaction between openness in investment and bank efficiency increases bank stability. More competitive banks appear to be stronger under the impact of sounder regulations in property rights. Likewise, more efficient banks are likely to be stronger under loose monetary policies.

In conclusion, overall liberalization has a positive impact on bank soundness in East Asian countries however, liberty in finance and business may be potential key factors that create incentives for bank risk-taking. This finding reflects the regulatory efforts by developing countries in an analogous comparison with developed countries (Agoraki et al., 2011). In detail, governments in developing countries aim at risk management and stability while governments in developed countries attempt to stimulate competition and efficiency. Our results also provide clear evidence for the links between soundness and comparative scale of bank systems.

A growth in absolute market power (market share) erodes soundness while an increase in comparative market power (HHI) improves bank stability. Similarly, absolute size (total assets) negatively interacts with soundness while comparative size (systemic size) significantly strengthens bank soundness. In addition, comparative size of the banking system has a positive link with bank financial strength. Furthermore, concentration (HHI) and Boone indicator positively correlate with stability in the banking sector. In brief, on the one hand, our results support concentration- stability theories. On the other hand, our results that

market power (Lerner index) interacts with overall freedom or large market shares adversely affect bank soundness supply evidence for a competition- stability views. Our findings reflect on-going conflicting strands of literature.

On the grounds that overall liberalization may stimulate banking soundness while business and financial freedom may create banking vulnerabilities, our above findings on comparative advantages suggest implications for East Asian countries. In order to secure success from liberalization and reduce negative impacts from deregulation, these countries should improve their domestic banks in terms of comparative strength to foreign banks before carrying out steps of openness.

Table 4. 1. Structure of the Bank Dataset from Bankscope

Category	Group of banks	Number of banks	Percentage in sample
Country	Cambodia	20	1.74%
	China	162	14.10%
	Indonesia	75	6.53%
	Japan	658	57.27%
	Malaysia	56	4.87%
	Singapore	23	2%
	Korea	31	2.70%
	Thailand	26	2.26%
	The Philippines	50	4.35%
	Vietnam	48	4.18%
Forms	Commercial banks	535	46.56%
	Saving banks	20	1.74%
	Cooperative banks	466	40.56%
	Real estates banks	2	0.17%
	Islamic banks	22	1.91%
	Non- bank- institutions	8	0.7%
	Government banks	29	2.52%

Table 4. 2. Data Description for Factors affect Bank Soundness

Groups of variables	Variable	Mean	SD
Factors reflecting financial strength	1.asset growth(%)	61.8	27.71
	2.square of asset growth	7679.12	6874.7
	3.total assets (USD thousand)	23400000	133000000
	4.equity to total assets	7.39	13.11
	5.fixed assets	217370.9	1077636
	6.fixed assets to total assets	0.02	0.37
	7.liquid assets	3477440	2.37E+07
	8.liquid assets to total assets	0.22	0.14
	9.gross loans	1.21E+07	6.17E+07
	10.net loans to total assets	53.14	15.98
	11.loan loss provisions	93019.32	663110.6
	12. loan loss provisions to total loans	0.01	0.07
	13. total revenue	465222.1	2814763
	14. pre- tax profit	148472.1	1513954
	15.profit after tax	92381.65	1051144
	16. lag 1 of profit after tax	73860.44	916507.2
	17. return-on-assets	0.2	3.55
	18.return-on-equity	2.99	31.66
Factors reflecting competitive strength	19.Boone- Boone indicator	-0.44	0.75
	20.hhi- Herfindahl–Hirschman Index	0.13	0.11
	21.adjusted Lerner index	0.63	0.19
	22. market share	0.086	0.4
	23.systemic size	0.0000161	0.0000823
	24. diversification index	0.02	3.76
Factors reflecting strength of economy	25.inflation	1.57	3.41
	26.GDP growth	3.44	4.13
	27. bank system assets to GDP	0.0018	0.0008
	28.bank system assets	6770000000	4750000000
Factors relating to legal framework	29.overallscore- overall score of freedom	65.14	8.74
	30.business freedom	72.2	15.36
	31.financial freedom	44.86	9.91
	32. fiscal freedom	69.68	8.29
	33. investment freedom	49.55	13.65
	34. government spending	70.52	15.12
	35. labour freedom	73.87	13.15
	36.monetary freedom	84.72	8.59
	37. property rights freedom	61.53	24.85
	38. trade freedom	74.21	11.72
Dummy variables for bank type	39. commercial banks (dummy)	0.46	0.5
	40. government banks (dummy)	0.03	0.16
	41. Islamic banks (dummy)	0.02	0.14
	42. non-bank institutions (dummy)	0.01	0.08
	43. saving banks (dummy)	0.02	0.13
Time dummy variable	44.period1- from 1997 to 2006	0.62	0.48

Table 4. 3. Factors affecting Soundness in the Banking Sector

Dependent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	RE	two-step system GMM	one-step difference GMM	IV-Fixed effects	First Difference	IV-Fixed effects	First Difference	IV-Fixed effects	First Difference	IV-Fixed effects	First Difference
1.lag 1 of soundness		0.20**	-0.26								
		(0.088)	(0.16)								
2.total assets (log)	-2.50***		1.26			-1.56***	-1.78***	-0.24***	-0.35***		
	(0.13)		(1.97)			(0.21)	(0.28)	(0.05)	(0.05)		
3.fixed assets to total assets						-0.04*	0.03	0.01***	0.01***		
						(0.02)	(0.06)	(0.001)	(0.001)		
4.equity to total assets	0.22***	0.84***		0.43***	0.36***	0.72***	0.63***	0.12***	0.09***	0.45***	0.37***
	(0.01)	(0.17)		(0.02)	(0.02)	(0.02)	(0.03)	(0.006)	(0.006)	(0.02)	(0.02)
5.gross loans						2.32e-08***	3.07e-08***	2.10e-09*	2.12e-09*	2.14e-08***	4.11e-08***
						(3.93e-09)	(6.41e-09)	(1.10e-09)	(1.20e-09)	(4.37e-09)	(8.37e-09)
6.loan loss provisions				1.14e-06 **	1.55e-06***	-5.07e-07**	-5.52e-07**				
				(3.73e-07)	(4.77e-07)	(1.53e-07)	(1.81e-07)				
7.loan loss provision to loans										13.49***	14.45***
										(2.62)	(3.02)
8.pre-tax profit	1.30e-07**										
	(6.30e-08)										
9.ROA		-0.46**				-0.57***	-0.53***	-0.10***	-0.08***		
		(0.15)				(0.03)	(0.05)	(0.009)	(0.008)		
10.ROE		0.05***	0.01***	0.02***	0.02***			0.0001	-0.001		
		(0.01)	(0.003)	(0.003)	(0.003)			(0.0006)	(0.0007)		
11.Boone		0.16	0.69**			-0.7	2.51*	0.10	0.22***		
		(0.45)	(0.29)			(0.63)	(1.34)	(0.06)	(0.05)		
12.hhi		-4.94		4.29*	7.22**					4.77**	7.25**
		(3.16)		(2.28)	(2.81)					(2.28)	(2.73)
13.market share (log)			-4.23**	-1.96***	-2.10***					-1.65***	-1.77***
			(2.13)	(0.17)	(0.20)					(0.17)	(0.19)
14.system size		3144.9	55255***	19947.3***	21664.21***						
		(6490.3)	(9219)	(3910.43)	(6136.31)						
15.inflation				0.10**	0.04					0.09*	0.01
				(0.05)	(0.07)					(0.05)	(0.06)
16.banksystem to GDP (log)		2.59***									
		(0.48)									
17.commercial bank	9.58*										
	(5.04)										
18.Islamic bank*trade freedom	0.61**										
	(0.28)										
19.government bank*property rights	-0.08**	-0.12**									
	(0.04)	(0.04)									
20.non-bank*overall score	1.95***										
	(0.56)										

Dependent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(continued)	RE	two-step system GMM	one-step difference GMM	IV-Fixed effects	First Difference	IV-Fixed effects	First Difference	IV-Fixed effects	First Difference	IV-Fixed effects	First Difference
21.non-bank*government spending	-1.09**										
	(0.38)										
22.non-bank*period1	-8.03**										
	(3.03)										
23.savings bank*investment freedom	-0.12*	0.30**									
	(0.07)	(0.13)									
24.overall score		0.29***	0.15**								
		(0.09)	(0.07)								
25.business freedom	-0.02**	-0.02	-0.07**	-0.009	0.005					-0.02*	-0.002
	(0.008)	(0.03)	(0.02)	(0.01)	(0.06)					(0.01)	(0.09)
26.monetary freedom										0.05**	-0.002
										(0.02)	(0.05)
27.financial freedom		-0.08***				-0.08**	-0.25*	-0.12***	-0.11***		
		(0.02)				(0.02)	(0.13)	(0.005)	(0.01)		
28.investmentfreedom						0.07**	0.20*				
						(0.03)	(0.11)				
29.trade freedom				0.06	0.11						
				(0.04)	(0.09)						
30.government spending				-0.02	-0.01						
				(0.03)	(0.06)						
31.fiscal freedom						-0.13**	2.97*				
						(0.05)	(1.57)				
32.labour freedom						0.08	-0.85*	-0.07***	-0.06***		
						(0.05)	(0.46)	(0.01)	(0.02)		
33.Boone*property rights						0.02**	-0.03				
						(0.01)	(0.02)				
34.Lerner Index*investment freedom				-0.02*	-0.05*						
				(0.01)	(0.03)						
35.profit*monetary freedom				2.49e-09**	9.67e-10						
				(1.27e-09)	(2.80e-09)						
36.profit*investment freedom								9.01e-10**	-7.01e-10		
								(3.75e-10)	(6.03e-10)		
37.zT*overall score								0.01***	0.01***		
								(0.00006)	(0.00006)		
38. Lerner Index*overall score										-0.02*	-0.06*
										(0.01)	(0.03)
_cons	62.42***	1.39	n/a	n/a	-0.003	n/a	1.21*	n/a	0.08**	n/a	-0.009
Centre R2	n/a	n/a	n/a	0.21	0.19	0.27	0.07	0.92	0.94	0.20	0.18
AR(2)	n/a	1.84	0.95	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AR(2) p-value	n/a	0.07	0.34	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sagan/Hansen test	n/a	122.89	15.40	0.07	0.12	1.52	2.02	2.00	0.02	0.21	0.04
Sagan/Hansen p-value	n/a	0.08	0.42	0.80	0.74	0.22	0.16	0.16	0.90	0.90	0.84
Standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01											

Table 4. 4. Arithmetic Means of Annual Growth

Country	GDP growth	Asset growth	Profit growth	ROA growth	Market growth	Diversification growth	Boone growth	HHI growth	Lerner index growth	zP* growth	zT** growth
Cambodia	0.12	0.18	0.11	-1.13	2.00	-0.03	-2.68	0.30	0.12	1.13	0.17
China	0.18	0.90	1.10	0.73	0.85	0.28	0.23	0.04	0.02	1.17	0.15
Indonesia	0.16	0.99	0.22	-7.26	2.93	6.23	-0.18	0.02	0.13	0.48	-0.42
Japan	0.02	0.08	-1.36	-0.76	0.07	6.61	0.22	0.05	0.02	1.69	-0.01
Malaysia	0.11	2.06	0.90	0.91	26.91	0.33	-0.23	0.37	0.19	1.01	0.11
Singapore	0.09	0.14	-0.12	0.18	4.83	-1.40	-1.45	0.21	0.09	0.71	0.06
S. Korea	0.08	0.27	-0.02	1.14	0.47	-0.77	0.74	0.04	0.74	12.46	0.42
Philippines	0.10	1.00	1.05	-0.99	0.74	-0.44	0.28	0.04	0.96	6.88	0.11
Thailand	0.10	0.11	0.23	0.03	0.69	0.08	-0.92	0.06	-0.05	2.23	-0.13
Vietnam	0.13	16.69	3.07	0.63	14.31	0.07	0.31	0.07	0.18	0.71	0.19

Country	Over score growth	Business freedom growth	Financial freedom growth	Fiscal freedom growth	Free from corruption growth	Government spending growth	Investment freedom growth	Labour freedom growth	Monetary freedom growth	Property rights freedom growth	Trade freedom growth
Cambodia	0.01	-0.02	0.01	0.00	0.04	0.00	0.01	0.01	0.02	0.00	0.24
China	0.00	-0.01	-0.03	0.00	0.03	-0.01	-0.03	-0.02	0.01	-0.02	0.06
Indonesia	-0.01	0.00	0.00	0.00	0.04	0.00	-0.03	0.01	0.01	-0.03	0.00
Japan	0.00	0.00	0.02	0.02	0.01	-0.02	0.02	0.00	0.00	-0.01	0.00
Malaysia	0.00	0.00	0.01	0.01	-0.01	-0.01	0.01	0.01	0.00	-0.02	0.03
Singapore	0.00	0.00	0.00	0.01	0.00	0.00	-0.01	-0.01	0.00	0.00	0.01
S. Korea	0.00	0.02	0.01	0.01	0.02	-0.02	0.03	-0.02	0.00	-0.01	0.00
Philippines	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	-0.04	0.01
Thailand	-0.01	-0.01	0.02	0.01	-0.01	0.00	0.00	0.00	0.00	-0.05	0.02
Vietnam	0.02	0.03	0.00	0.04	0.12	-0.01	-0.04	0.01	0.02	0.03	0.04

(Source: Data obtained from Bankscope)

* zPgrwth= (soundness in period 2- soundness in period 1)/ soundness in period 1

** zTgrwth= (soundness in year T- soundness in year T-1)/ soundness in year T-1

Table 4.5 a. Two-group-country comparisons by T-test

Variables	low income	low middle income	low income	upper middle income	low income	high income	low middle income	upper middle income	low middle income	high income	upper middle income	high income
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Boone	0.5	-0.7	0.5	-0.52	0.5	-0.37	-0.7	-0.52	-0.7	-0.37	-0.52	-0.37
overall score	58.38	54.11	58.38	56.75	58.38	70.88	54.11	56.75	54.11	70.88	56.75	70.88
property rights			30	36.41	30	78.48	30.85	36.41	30.85	78.48	36.41	78.48
freedom from corruption	25.18	24.11	25.18	36.59	25.18	69.63	24.11	36.59	24.11	69.63	36.59	69.63
fiscal freedom	91.36	74.12	91.36	72.6	91.36	66.98	74.12	72.6	74.12	66.98	72.6	66.98
government spending	92.25	86.31	92.25	87.79	92.25	60.15	86.31	87.79	86.31	60.15	87.79	60.15
business freedom	49.2	52.5	49.2	59.08	49.2	82.11	52.5	59.08	52.5	82.11	59.08	82.11
labour freedom	45.03	55.72	45.03	65.29	45.03	82.03	55.72	65.29	55.72	82.03	65.29	82.03
monetary freedom	77.36	72.16	77.36	78.1	77.36	90.25	72.16	78.1	72.16	90.25	78.1	90.25
trade freedom	59.2	68.49	59.2	61.21	59.2	80.46	68.49	61.21	68.49	80.46	61.21	80.46
investment freedom	51.87	39.28	51.87	36.14	51.87	56.57	39.28	36.14	39.28	56.57	36.14	56.57
financial freedom	55	38.12	55	38.35	55	48.44			38.12	48.44	38.35	48.44
HHI	0.39	0.15	0.39	0.19	0.39	0.09	0.15	0.19	0.15	0.09	0.19	0.09
adjusted Lerner index					0.57	0.65	0.56	0.48	0.56	0.65	0.48	0.65
bank system assets (log)			13.8	21.07	13.8	22.8	18.3	21.07	18.3	22.8	21.07	22.8
non performing loans							5.78	5.34	5.78	2.71	5.34	2.71
ROA			1.38	0.77	1.38	0.02			0.51	0.02	0.77	0.02
ROE			6.17	10.71	6.17	-0.28	14.1	10.71	14.1	-0.28	10.71	-0.28
zP	100.37	49.28	100.37	53.39	100.37	34.59			49.28	34.59	53.39	34.59
zT	53.72	27.34	53.72	29.52	53.72	28.7						
z1					50.55	35.87	53.83	45.61	53.83	35.87	45.61	35.87
z2	188	48.22	188	96.08	188	47.33	48.22	96.08			96.08	47.33
market share (log)	-0.87	-3.16	-0.87	-3.84	-0.87	-6.33	-3.16	-3.84	-3.16	-6.33	-3.84	-6.33
fixed assets to total assets					4.51	1.57	7.54	2.26	7.54	1.57	2.26	1.57
equity to total assets	32.12	12.57	32.12	11.05	32.12	5.57	12.57	11.05	12.57	5.57	11.05	5.57
asset growth									4.13	0.08	1.18	0.08
loan loss provisions	1228.2	38275.1	1228.15	204271.3			38275.1	204271.3	38275.1	82353.49	204271.3	82353.49
diversification index			55.94	31.59	55.94	-3.46	-1.97	31.59			31.59	-3.46
GDP per capita	544.18	1372.37	544.18	3377.08	544.18	35749.26	1372.37	3377.08	1372.37	35749.26	3377.08	35749.26
GDP growth	8.03	5.62	8.03	8.36	8.03	1.1	5.62	8.36	5.62	1.1	8.36	1.1
inflation	5.07	6.93	5.07	2.29	5.07	-0.07	6.93	2.29	6.93	-0.07	2.29	-0.07
total assets	190188	3278813	190188	5.30E+07	190188	2.13E+07	3278813	5.30E+07	3278813	2.13E+07	5.30E+07	2.13E+07
gross loans	92227	1749154	92227.3	2.96E+07	92227	1.05E+07	1749154	2.96E+07	1749154	1.05E+07	2.96E+07	1.05E+07
liquid assets	79753	793118	79753.5	1.22E+07	79753	2297365	793118	1.22E+07	793118	2297365	1.22E+07	2297365
alternative profit (log)			16.52	16.55			16.52	16.55			16.55	16.52
pre-tax profit			3544.87	756979.2			38976.9	756979.2			756979.2	53692.69
total costs (log)	8.2	10.97	8.2	12.37	8.2	10.09	10.97	12.37	10.97	10.09	12.37	10.09
net loans to total assets	42.61	50.03	42.61	53.6	42.61	53.66	50.03	53.6	50.03	53.66		
fixed assets to total assets	4815.9	43212.9	4815.89	494180.8	4815.9	195254.5	43212.9	494180.8	43212.9	195254.5	494180.8	195254.5
total assets (log)	11.42	13.54	11.42	15.48	11.42	14.75	13.54	15.48	13.54	14.75	15.48	14.75
total revenue	8744.4	167972	8744.39	1511596	8744.4	323955.7	167972	1511596	167972	323955.7	1511596	323955.7
bank system to GDP	0.02	0.07	0.02	0.16	0.02	0.21	0.07	0.16	0.07	0.21	0.16	0.21
loan loss provisions to total loans			0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01		
liquid assets to total assets	47.12	30.43	47.12	26.69	47.12	20.14	30.43	26.69	30.43	20.14	26.69	20.14

diff = mean(left column) - mean(right column)

If Ha: diff > 0 with p<0.05, two columns are grey; if Ha: diff <0 with p<0.05, two columns have no colour. Blank columns are insignificant.

(Source: Data obtained from a survey analysis conducted by the authors in 2012).

Table 4.5 b. Two-group-country comparisons by T-test

Variables	low and low middle income countries	upper middle and high income countries	non-government-owned banks	government-owned banks	non-Islamic banks	Islamic banks	banks	non-bank institutions
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Boone	-0.64	-0.41			-0.44	-0.34		
overall score	54.55	67.27	65.2	62.84	65.16	63.71	65.12	66.99
property rights	30.76	67.74	61.7	54.74	61.68	53.59		
freedom from corruption	24.22	61.21	55.31	42.66	55.14	47.12	55.03	50.35
fiscal freedom	75.91	68.42	69.56	74.22	69.45	81	69.64	74.06
government spending	86.92	67.21	70.25	80.72	70.29	82.43	70.46	78.08
business freedom	52.16	76.23	72.3	68.1				
labour freedom	54.62	77.75	74.08	65.51	73.93	70.68	73.9	69.85
monetary freedom	72.7	87.14	84.84	79.86	84.84	78.7	84.74	81.51
trade freedom	67.52	75.55	74.3	70.34	74.22	73.22	74.18	76.58
investment freedom	40.59	51.36	49.62	46.81	49.72	40.88	49.5	55.45
financial freedom	39.87	45.86	44.81	46.68	44.92	41.42	44.82	48.75
HHI	0.18	0.12	0.12	0.2	0.12	0.24	0.12	0.17
adjusted Lerner index	0.56	0.64	0.63	0.46				
bank system assets (log)	17.84	22.36	21.65	19.42	21.66	18.48	21.61	20.34
non performing loans	5.78	3.42	3.69	4.78	3.74	2.48	3.71	4.76
ROA	0.57	0.14	0.19	0.54	0.21	-2.75	0.19	1.32
ROE	13.58	1.45	2.88	7.27	2.94	8.33	2.94	12.31
zP	54.34	39.12	42.09	27.28	41.26	71.7		
zT	29.05	28.82			28.75	43.98		
z1	53.55	37.97			40.14	65.3		
z2	56.32	56.86						
market share (log)	-3.02	-5.93	-5.65	-1.9	-5.58	-2.87	-5.57	-4.14
fixed assets to total assets	7.4	1.66						
equity to total assets	13.84	6.45	7.22	14.17	7.43	1.22	7.32	22.42
asset growth	3.99	0.21			0.57	11.85		
loan loss provisions	35913.3	101069.9	88976.24	272139.4				
diversification index	1.83	2.02	1.21	34.64				
GDP per capita	1286.54	27486.9	23417.89	10267.24	23409.91	6491.62	23122.58	18449.66
GDP growth	5.87	2.95	3.41	4.78	3.41	5.07		
inflation	6.74	0.53	1.53	2.98	1.54	3.09	1.56	3.02
total assets	3077654	2.63E+07	2.28E+07	4.90E+07	2.35E+07	3307729		
gross loans	1641855	1.36E+07	1.14E+07	3.91E+07	1.21E+07	1978390		
liquid assets	746657	3873423						
alternative profit (log)	16.52	16.52						
pre-tax profit	36661.36	164683.1						
total costs (log)	10.81	10.39	10.42	12.1	10.45	10.88		
net loans to total assets	49.54	53.65	52.83	65.48				
fixed assets to total assets	40715.57	242999.2			218786.5	12640.3		
total assets (log)	13.4	14.86	14.65	15.84	14.68	14.11	14.68	13.41
total revenue	157494.6	509653.1	455980.3	848892.5				
bank system to GDP	0.06	0.2	0.17	0.1	0.17	0.08	0.17	0.13
loan loss provisions to total loans	0.02	0.01	0.01	0.02				
liquid assets to total assets	31.51	21.19	22.69	14.58	22.42	32.38		

diff = mean(left column) - mean(right column)

If Ha: diff > 0 with p<0.05, two columns are grey; if Ha: diff <0 with p<0.05, two columns have no colour. Blank columns are insignificant.

(Source: Data obtained from a survey analysis conducted by the authors in 2012).

Table 4.5 c. Two-group-country comparisons by T-test

Variables	commercial or cooperate banks Mean	saving or real estate banks Mean	commercial or cooperate banks Mean	Islamic banks, non bank or government-owned banks Mean	saving or real estate banks Mean	Islamic banks, non bank or government - owned banks Mean
Boone	-0.44	-0.52				
overall score	65.24	63.76	65.24	63.78		
property rights	61.95	57.36	61.95	55.68	57.36	55.68
freedom from corruption	55.87	39.76	55.87	45.45	39.76	45.45
fiscal freedom	69.17	74.5	69.17	76.68	74.5	76.68
government spending	69.63	84.02	69.63	80.95	84.02	80.95
business freedom	72.45	66.2	72.45	70	66.2	70
labour freedom	74.53	58.9	74.53	68.06	58.9	68.06
monetary freedom	85.12	79.34	85.12	79.68		
trade freedom	74.35	72.18	74.35	72.33		
investment freedom	49.71	51.54	49.71	45.93	51.54	45.93
financial freedom	44.71	50.75			50.75	45.06
HHI	0.12	0.21	0.12	0.21		
adjusted Lerner index	0.63	0.43	0.63	0.49	0.43	0.49
bank system assets (log)	21.79	19.15	21.79	19.21		
non performing loans	3.63	6.91	3.63	3.9	6.91	3.9
ROA	0.2	0.8				
ROE	2.73	8.86	2.73	8.06		
zP						
zT					36.43	28.58
z1					48.44	42.25
z2					32.26	55.46
market share (log)	-5.7	-3.7	-5.7	-2.34	-3.7	-2.34
fixed assets to total assets						
equity to total assets	7.13	13.27	7.13	12.47		
asset growth						
loan loss provisions			90084	198447.7	42600.43	198447.7
diversification index						
GDP per capita	24117.34	9758.55	24117.34	10110.21		
GDP growth	3.35	4.57	3.35	4.7		
inflation	1.45	3.43	1.45	3.03	3.43	3.03
total assets	2.22E+07	9.23E+07	2.22E+07	3.48E+07	9.23E+07	3.48E+07
gross loans			1.15E+07	2.79E+07	6610619	2.79E+07
liquid assets	3451724	9251036			9251036	2390524
alternative profit (log)						
pre-tax profit	143203.5	572801			572801	160424.7
total costs (log)			10.41	11.64	10.51	11.64
net loans to total assets			52.85	61.68	51.03	61.68
fixed assets to total assets					331169.7	201388.7
total assets (log)	14.67	13.94	14.67	15.21	13.94	15.21
total revenue	451206.2	1021147	451206.2	683526.5	1021147	683526.5
bank system to GDP	0.18	0.08	0.18	0.1	0.08	0.1
loan loss provisions to total loans			0.01	0.02	0.01	0.02
liquid assets to total assets	22.64	19.64	22.64	19.36		

diff = mean(left column) - mean(right column)

If Ha: diff > 0 with p<0.05, two columns are grey; if Ha: diff <0 with p<0.05, two columns have no colour. Blank columns are insignificant.

(Source: Data obtained from a survey analysis conducted by the authors in 2012).

Appendix 4. A. Key studies related to Liberalization, Competition, Efficiency & Bank Soundness

Authors	Country	Period	Type	Research questions	Findings
Allen & Gale (2003)			Theoretical	What are the efficient levels of competition and financial stability?	Using a variety of models provides different answers. Concentration may be socially preferable to perfect competition while perfect stability may be socially undesirable.
Amidu & Wolfe (2013)	55 emerging and developing countries	2000-2007	Empirical	Competition- stability nexus in interactions with: market power, diversification and stability.	Competition increases stability when revenue diversification increases.
Beck et al. (2006)	69 countries	1980-1997	Empirical	Concentration- crisis	Crises are less likely in economies with more concentrated banking systems even after controlling for some variables
Berger et al. (2009)	23 developed nations	1999-2005	Empirical	Competition-stability	Main results support "competition-fragility" view while providing some evidence support for "competition-stability" view. Equity capital ratios act as risk cushion.
Boyd & De Nicolo (2005)			Theoretical	Competition- risk-taking	From literature review, relationships between competition and risk-taking are mixed. From author's model, banks tend to more risky in more concentrated markets.
Claessens and Laeven (2004)	50 countries	1994-2001	Empirical	Regulatory factors in the relationships with competition	Systems with greater foreign bank entry and fewer restrictions (in entry and activity) are more competitive.
De Guevara et al. (2005)	15 countries in EU	1990-1999	Empirical	Factors affect the behaviour of the market power	There is no significant sign for margins but bank size, bank efficiency, default risk and economic cycle have significant relationships with market power.
Fu et al. (2014)	14 Asia Pacific economies	2003-2010	Empirical	Competition- stability	Greater concentration fosters financial fragility. Tougher entry restrictions may benefit bank stability
Humphrey & Pulley (1997)	USA (683 banks)	1980s	Empirical	Change in bank profits following deregulations	Bank adjustments to the deregulations in three main forms: cost offset and reduction, cost shifting and revenue augmentation.
Kumbhakar et al. (2001)	Spanish	1986-1995	Empirical	Examines the impact of regulatory reform on the performance of savings banks	Declining levels of output technical efficiency along with a rate of technical progress. Declining technical efficiency is associated with productivity growth
Liu et al. (2012)	4 South East Asian countries	1998-2008	Empirical	Effects of competition on bank risk taking behaviour	Competition does not increase bank risk-taking behaviour. Concentration is inversely related to bank risk whereas regulatory restrictions positively influence bank risk-taking.
Nguyen et al. (2012)	4 South Asian countries	1998-2009	Empirical	Whether market power affects bank stability through revenue diversification	Greater market power focuses more on traditional interest income generating activities. Banks, however, become more stable when they diversify across both interest- and non-interest income activities.
William & Nguyen (2005)	South East Asian countries	1990-2003	Empirical	Impact of changes in bank governance on bank performance	Results supports bank privatisation and the repeal of state ownership on economic grounds. Potential benefits of foreign ownership may take longer to be realised. Challenge is improving bank efficiency for domestic private-owned banks.
Schaeck & Cihak (2008)	EU & USA	1995-2005	Empirical	A possible transmission mechanism by which higher competition can contribute to increased bank soundness	Increased competition robustly increases bank soundness via the efficiency channel.

Chapter V

CONCLUSION

5. Introduction

This final chapter provides overall concluding remarks for each of the three core chapters. In particular, this conclusion not only highlights idiosyncratic contributions to the literature in the core chapters but also mentions the limitations of the chosen methods. Finally, this chapter reiterates policy implications based on the present research and suggest avenues for future research.

5.1.Chapter II: Determinants of Successful Access to Bank Loans by Vietnamese SMEs: New Evidence from the Red River Delta

Chapter II provides the "point of departure" for the analysis of the lending relationship between banks and SMEs. *Firstly*, while earlier researchers only focus on collateral, this chapter offers the first exploration of factors affecting SME lending in Vietnam, collateral and relationship lending. Specifically, bank approval is significantly affected by the provision of collateral. We also contribute to the literature by providing new evidence on banks' preference for different forms of collateral. Firms with better relationships, in terms of using more banking services or years in the relationships with lending banks, are likely to succeed in borrowing. *Secondly*, while earlier researchers focus on the weakness of the legal framework under the standard assumption of a level playing field for all firms of various sizes, we study behaviour of firms by size or age and decisions of banks by size or ownership form under the impact of the legal framework in Vietnam. Therefore, this research helps disentangle the impact of the legal environment on different groups of firms or banks. In detail, larger firms in terms of total assets or total number of employees seem to have better access to bank loans. In addition, larger banks (or state-own banks) are associated with a higher ratio of credit approval. *Finally*, this chapter adopts a variety of methodologies from the literature on SME lending. We not only use 2SLS and Logit but also use t-test or non-parametric log-rank test to compare groups of firms or banks.

Using data sets from a survey of 20 banks and 180 SMEs conducted in 2012, this chapter presents evidence that collateral and relationship lending have positive impacts on successful access. The core result for a positive effect of the collateral ratio on successful loan access is corroborated when a broad set of different forms of collateral is account for. The empirical analysis shows that successful loan access has no significant nexuses with different forms of firm ownership. To this extent, our results cast serious doubt on a body of literature that refers to favours for state-owned firms from state-owned banks. Moreover, our finding is insensitive to and explicitly controls for loan duration.

In term of economic magnitude, the results indicate that an increase in the ratio of collateral tends to increase the probability of success in loan access by 20-30%.[62] This is considerable, given that the overall failure probability in the dataset is below 5 percent.

5.2. Chapter III: Factors that Impact SME Growth: Vietnam versus the UK

Chapter III develops on the results obtained in Chapter II in the sense that a financial barrier is identified as a main constraint for SME growth. We confirm the finding in the previous chapter that firm size has a positive nexus with loan access. To this end, this chapter investigates which are the factors from the business environment are that interact with firm size, and therefore provide incentives for Governments to launch support programs for SME development. Importantly, this chapter emphasizes the role of access to information of financial incentives from Governments, well-informed SME are likely to have significantly larger size. Furthermore, this chapter sheds more light on the importance of institutional changes in SME growth. On the one hand, firm development in developing countries appears to mainly depend on systemic changes. On the other hand, in advance countries, firm growth is affected by business management in

[62] We classify probability of success into 6 levels: 0=0%, 1=1-29%, 2=30-49%, 3=50-59%, 4=60-84%, 5= above 85%.

parallel with regulatory changes. Interestingly, larger firms are likely to be more concerned about impediments caused by an inconsistent legal framework. Therefore, our result differs from a strand of literature that stresses that regulatory impacts are equal for firms of all size. Finally, we point out that firms that operate in larger market or specific sectors may enjoy better chance of growth in both countries in our study. In addition, infrastructure fee has a negative impact on firm growth in Vietnam. These findings imply that Governments, especially in developing countries, can indirectly stimulate SME growth through regional or industrial strategies or infrastructure improvements. In the event that the World Bank refers to potential reverse causes may arise from direct SME subsidies, our results may suggest a commencement of new approaches to SME growth in public policy implications.

Drawing upon two datasets, a larger one of 10,000 firms in Vietnam and a smaller one of 130 SMEs in the UK in the year of 2012, this chapter distinguishes between various barriers to growth to account for differences in the way developmental levels of the two countries affect economic entities' development. The estimation procedure employs instrumental variables estimator for cross-sectional data with 2SLS and 3SLS supplies robust evidence that finance is still the foremost constraint for SME growth in both countries. Furthermore, the financial barrier impacts firms of various sizes differently. Small firms are confronted with more difficulties than larger firms, especially in countries with a lower level of development. In contrast, apart from unmet financial need, larger firms start seeking flexibility of loans. In robustness tests, our results confirm the core result for a link between a financial barrier and SME size. Precisely, we conduct a re-estimation of the econometric analyses with two separate groups: "being borrowed" and "not being borrowed" for the dataset of Vietnamese SMEs. For each group, we examine the effect of the business environment on SME growth and find that the main results continue to hold. However, no consistent relationship between borrowing under interest subsidy programs and firm size is found. Therefore, our finding suggests a need to re-examine the view that

borrowing compared to need has a link with firm size. The positive interaction between "being borrowed" with firm size is high in Vietnamese SMEs. Compared to other firms, SMEs which are in lending relationships with banks grow faster and up to 34 times more.

5.3. Chapter IV: Financial Liberalization, Competition, Efficiency and Bank Soundness in East Asia

Chapter IV takes a view on bank performance and examines the link between liberalising the banking sector and banking soundness. This is due to the two following reasons: First, liberalization has a direct impact on bank behaviour and therefore, affects bank soundness. Second, liberalization also affects market power and efficiency of banks through impacting risk-taking and asset structure. In addition, this chapter presents a methodological advancement in the literature on banking soundness. The estimation procedure using instrumental variables estimators for panel data with random effects, fixed effects and first difference present robust evidence that overall liberalization may strengthen a banking system while business and financial freedom may create a banking crisis. To further investigate the role of liberalization on bank stability, this chapter contains an estimation using GMM- a method that can solve the problem of a non-normal distribution.

Analysing a sample of more than 18,000 banks in 10 East Asian countries (1997-2012), our results point out that overall liberalization strengthens bank soundness. While monetary freedom has positive impact on bank stability, financial openness is associated with vulnerabilities. Furthermore, financial institutions with a greater comparative size (systemic size) are sounder. A growth in absolute size (total assets) of banks negatively interacts with bank soundness. Similarly, banks with greater comparative market power (HHI) are more stable while a growth in absolute market power (market share) may reduce bank soundness. Under the negative impact of financial liberalization, these above results suggest that deliberate consideration of banking structure is a necessary step before

commencing banking deregulation. We concludes that negative effects in East Asian countries could be dampened through improving the comparative strength of domestic banks in comparison with foreign banks before carrying out steps of openness. Our robustness checks confirm the core results for a positive link between liberalization and bank soundness.

5.4. Summary and Public Policy Implications

This thesis offers several important contributions to the literature on SMEs funding and bank efficiency. To this end, several different econometric approaches (OLS, logit, GMM, fixed effects, random effects, first different, t-test and log-rank test) and a set of different samples (from Vietnam, the UK and East Asian countries) are employed for the purpose of this thesis.

Throughout Chapter II and Chapter III, robust empirical evidence points out that, while finance is still the foremost barrier to growth of SMEs, an increase in firm size can mitigate financial constraints. These results from Vietnam and the UK offer empirical support for what is referred to in the literature review in Chapter II as unmet financial needs of small firms. Chapter IV focus on liberalization in banking sector and furthermore aims to disentangle the factors from the business environment that drive bank soundness. The results show that overall liberalization stimulates bank stability. However, openness in finance and business create incentives for bank risk-taking.

These results give rise to important public policy implications: *First*, information transparency or regulatory perception from SMEs can impact their loan access, and thereby affect their growth. While a body of the extant literature refers to a level playing field for all firms of various size, our finding reflects that, under the impact of institutional settings, firms are differentiated. Rather, smaller firms have less opportunities to be well-informed about Government's incentives due to limited social networks; or face more impediments to provide standard information for loan applications due to limited managerial capabilities; or do not have sufficient awareness and business skills to process regulatory changes or

difficulties. Consequently, SMEs may be in need of technical support in terms of information transparency, regulatory perception and managerial capability. *Second*, the results presented in Chapter IV have implications for banking soundness under the impact of economic freedom. The varying signs of economic freedom and bank performance capture information that the economic liberalization deserves more regulatory scrutiny. *Third*, the finding regarding composition of economic freedom furthermore suggests that monitoring the negative impacts should be extended to each area of economic freedom. *Finally*, Chapter IV is related to the new Basel Capital Accord. Pillar 3 focuses on market discipline which may ignore liberalization although liberalization has a positive impact on banking stability.

5.5. Limitations

Although this thesis provides strong results and diversified public policy implications, it is necessary to have a critical assessment and review of the chosen methods and techniques.

The survey approach which is employed in Chapter II has some limitations. *First*, we are aware of the shortcomings due to the relatively small size of the datasets. *Secondly*, we can only analyse datasets collected from participants, therefore there is an emerging concern about the risk of distortion or bias due to non-respondents. *Thirdly*, because the survey is specific for 2012 only, our results may only reflect the facts in the short-term. *Finally*, we are concerned about the qualitative nature of the survey data and its shortcomings due to the opinions and perception of participants.

In chapter III, using two given secondary data sets from different sources produces limitation in interpreting data coding, matching concern variables and analysing results. For example, while the national survey in Vietnam with a large scale which focus on inputs of production, the small survey in the UK emphasizes

on managerial strategies. Similar, we face difficulties in comparing firms in different sectors because economic structures in the two countries are different.

In chapter IV, we employ competition indices, such as HHI, Boone indicator, Lerner index and z-score. *First*, the HHI does not help us distinguish between large and small countries (Leuvensteijn et al. 2007). *Next*, the assumption of the Boone indicator is homogeneity in bank product quality and design (Leuvensteijn et al. 2007). The next parameter is the Lerner index that ignores monopoly power and competition in non-price areas (Chamberlin, 1933). *Finally*, all above mentioned indices and bank soundness (z-score) that are calculated based on the book value may not fully reflect the probability of bank failure from the business environment.

In a common vein, we use OLS that is widely accepted by financial economists for the three core chapters. However, our results violate the normality of errors assumptions of OLS regression. Therefore we additionally employ a wide range of advanced estimations. *Firstly*, we use Logit for the binary dependent variables in Chapter II. The disadvantage of this method is its restriction in discrete number set. Moreover, the parameter estimation procedure requires an adequate number of observations for each combination of independent variables, small size in datasets may be associated with high error of estimations. *Secondly*, we use fixed effects or random effects to take advantage of panel data. However, these methods can analyse changes by time series or cross-sectional only. *Thirdly*, we utilise GMM to solve problems of the violating normal distribution. This method automatically excludes observations which are without available valid instruments. *Forthly*, 3SLS however, we can only apply F-test but we could not carry out Hausman test because the lack of instrumental variables**.** *Finally*, we are aware of restrictions in using a t-test to compare groups of banks or SMEs. For variables that violate conditions of normality, we apply a non-parametric log-rank test which has less power for datasets with small sizes.

5.6. Avenues for Future Research

Our thesis suggests a number of interesting avenues for future research.

First, future work is advisable to investigate further factors that affect SME lending from the business environment such as, human capital, competition, exporting tendency or technological innovation.

Second, we did not use a part of the data set obtained from SMEs in the UK which focuses on loan access. There is homogeneity between this part and our survey in the North of Vietnam. In addition, to address limitations associated with the size of datasets, it suggests conducting another survey to investigate SME finance with wider participants allocated throughout Vietnam and the UK. Furthermore, we hope to extend the research to several transition countries or advanced countries in order to have general empirical results or findings.

Finally, while this thesis offers robust evidence for a positive link between liberalization and bank soundness, it does not aim to shed any light on the mechanisms though which liberalization stimulates soundness. In detail, there could be questions about the role of banking competition and/or efficiency on bank soundness under the impact of liberalization. Because z-score has shortcomings, it suggests future research which is based on new parameters, such as non-performing loans, loan loss reserves and loan loss provisions. In general, we also expect to find a suitable dependent variable, that is a proxy for banking stability, that not only captures book value but also reflects risk of the business environment.

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