UNIVERSITE DE LIMOGES

ECOLE DOCTORALE Sociétés et organisations n°526

FACULTE de Droit et des Sciences Economiques

Laboratoire d'Analyse et de Prospective Economiques (LAPE) EA1088

Thèse
pour obtenir le grade de
Docteur de l'Université de Limoges

Discipline / Spécialité : Sciences Economiques

Présentée et soutenue publiquement par

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Le 14 Janvier 2013

ESSAYS ON BANK SME FINANCE, BANKING STRUCTURES AND GOVERNANCE MECHANISMS IN EMERGING AND LESS DEVELOPED ECONOMIES

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« La faculté n'entend donner aucune approbation ou improbation aux opinions émises dans les thèses ; ces opinions doivent être considérées comme propres à leurs auteurs. »

ACKNOWLEDGEMENT

"It is good to have an end to journey toward;
But it is the journey that matters, in the end."
-Ernest Hemingway

My Ph.D. life, itself, is a journey. There were times that the road seemed too long to take, there were decisions hard to make. But before I end this journey, I would like to acknowledge all those who have helped me in one way or another in reaching my destination.

First, I would like to thank my advisers for believing in me and my research ideas, and for their constructive criticisms that allowed me to advance in writing this dissertation. To Prof. Amine Tarazi for his guidance and encouragement and for refining my knowledge further in the field of banking and finance. To Dr. Céline Meslier not only for supervising this thesis, but also for giving me her moral support especially in the final stages of writing this dissertation. And lastly, to Prof. Maria Socorro Gochoco-Bautista for urging me to pursue my doctoral studies abroad. She has always lent me her helping hand in all my pursuits in life.

I also extend my deepest gratitude to Professors Christian Bordes, Charles Yuji Horioka and Clas Wihlborg for doing me the honor of accepting to be members of my dissertation committee.

I am also grateful to the *Conseil Régional du Limousin* for providing me the funding (Bourse Regionale) to write this research work, and *L'Ecole Doctorale* and the *LAPE* for the financial support in presenting my works to several conferences locally and internationally.

I am also indebted to the Asian Development Bank (*ADB*) for funding my research about bank SME finance through the Regional Technical Assistance (*RETA*) 6250: *Enterprise Development and the Challenge of Inclusive Growth*. My stay with the *ADB* in 2011 was particularly fruitful in helping me write the first two chapters of this dissertation. I also thank all the staff of the Development Indicators and Policy Research Division, Economics and Research Department of the *ADB*, particularly to Dr. Niny Khor, Iva Sebastian-Samaniego and Ryan Jacildo for their kind assistance and suggestions in improving my research works. Several portions of Chapters 1 and 2 are working papers that I co-authored with Dr. Khor and Mr. Jacildo. I have also benefited from the help of the Bangko Sentral ng Pilipinas (*BSP*) in providing several datasets that I have used in writing the first three chapters of this thesis.

My deepest gratitude also goes to all the members of the *LAPE*. I particularly thank Dr. Thierno Barry for imparting me his knowledge in the field of bank governance, for his constant support, and for his generosity in sharing his valuable time to read this dissertation. I also thank Dr. Isabelle Distinguin, Dr. Emmanuelle Nys, Dr. Clovis Rugemintwari, Cécile Casteuble and Noma Ziadeh-Mikati for investing their time in reading several chapters of this

thesis. This journey has been less stressful and more fun because of the friendships I have made along the way with all the other Ph.D. students.

Finally, I thank my family- my parents, Eduardo and Carmen for being my biggest supporters. They are my major source of inspiration and have always supported me in all my dreams and goals in life. I am grateful to my sisters Maricris and Esperanza, for always uplifting my spirits, and to my nephews Mar Anthony and John Christian for being sources of my joy. I also take this opportune time to thank four beautiful people, my grandparents Josefa, Honorio, Angeles and Saturnino, for reminding me to live life to the fullest.

For what else will keep us going,
If not a clear sense of whom it is for

To my father and mother, Eduardo and Carmen

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GENERAL INTRODUCTION

"*I cannot expect to have escaped statistical errors and oversights…All I can do is to take comfort in the proverb, nothing ventured, nothing gained, and to put my faith in those who will plow the field all over again and may produce a richer harvest, in particular obtaining a higher yield per hour for their labor*."
- Raymond Goldsmith (1969)

A well-functioning financial system in both developed and developing countries is essential for economic growth. Funds are efficiently allocated and channeled to their most productive uses, boosting growth, improving income distribution and reducing poverty. When the financial system does not work well, however, growth opportunities are missed and in extreme cases may even lead to crises (World Bank, 2008). As pointed out by Berger et al. (2012), the recent turmoil that hit the global financial system has raised concerns about the stability of the financial system and the business models used by banks within the system.

Gurley and Shaw's (1955) seminal work on the interaction between financial structure and real activity emphasizes the role of financial intermediaries in the credit supply process. More modern research on the macroeconomic implications of financial intermediation integrates this idea. Initially, Fama (1980a) describes banks and financial intermediaries as veils over real economic behavior in a frictionless competitive market environment but reconsidered the importance of intermediaries in the economy, particularly commercial banks (Fama, 1985). He argues that banks have a comparative advantage in gathering information about borrowers. Banks are not simply veils, but instead, are the most efficient way to minimize informational distortions. Other works that followed such as Diamond (1984) highlight the role of financial intermediaries as delegated monitors to its depositors. Because of their net cost advantage in terms of monitoring information, they are able to resolve incentive problems between borrowers and lenders more effectively. He highlighted further that the key to their net cost advantage is diversification within the intermediary. A number of works such as Williamson (1986) followed linking intermediation and credit rationing using the monitoring cost advantage of intermediaries as demonstrated by Diamond (1984). Bernanke and Gertler (1987) emphasize the role of banks as financial intermediaries in facilitating credit flows. They demonstrate how the health of the banking sector is important

to the macroeconomy and explain how monetary policy matters to real activity by affecting bank credit flows (Gertler, 1988).

Since the "Great Depression" in the 1930s, policymakers thought the smooth functioning of financial intermediation, particularly commercial banking required some form of regulation (Gertler, 1988). While natural factors such as liquidity risk can disrupt the intermediation process, problems with financial intermediation may also stem from unwise government policy. Gorton and Haubrich (1987) show how regulations that limit or hamper intermediaries to diversify or write contracts can introduce inefficiencies that might not have otherwise existed.

Several changes in the financial system over the past decades have been responsible in transforming the structure of the banking industry. Financial liberalization and deregulation increased competitive pressures on banks. On the asset side of the balance sheet, the industry lost market power over its large borrowers, who were able to choose among many alternative sources of finance. Moreover, on the liability side, the industry evolved from a position of protected monopsony toward a market setting where banks paid closer to competitive prices to raise funds. Commercial banking also changed because of advances in telecommunications and information technology, which effectively spurred financial innovations that developed new bank products and services and production processes. Banks diversified their income sources by performing investment banking activities and by developing new lines of businesses, which increased their profitability prospects. Most banking studies in developed economies (Stiroh, 2004; 2006), however, point out to a dark side of income diversification, where bank expansion to these new income sources has been associated with increased volatility of earnings and hence, bank risk. Moreover, the process of consolidation, which occurred in large developed markets such as in US and Europe, both domestically and on a cross-border basis has led to substantial changes in ownership structure. Notably, the increased entry of foreign banks in domestic markets had consequences on competition in local markets and on the efficiency of the domestic banking industry. It also raised concerns on bank risk taking and lending activity (Detragiache *et al*., 2008; Gormley, 2010). Moreover, these ownership changes also altered bank governance practices and mechanisms. The increase in banking consolidation also raised questions on its impact on small business lending. From a theoretical perspective, consolidation is expected to reduce relationship banking, which is traditionally viewed to be essential when dealing with informationally opaque borrowers. In reality, however, the market for small business credit is much more

complex as reflected in a broad array of different lending technologies that could cater customers with different levels of opacity (Berger *et al*., 2012).

In emerging and developing countries, where financial systems tend to be relatively smaller in size and also less complex than financial systems in advanced economies, banks play a large role while capital markets and other financial institutions remain relatively underdeveloped. Because channels to obtain credit are limited, banks play a vital role in financing the private sector and critical sectors, such as agriculture, small scale industries in rural areas and small and medium enterprises. Moreover, these economies are characterized by weak institutional frameworks and market infrastructures, greater dependence on foreign capital, greater involvement of state in the financial system, and capacity constraints (IMF, 2011).

This dissertation, which comprises two parts, focuses on several issues that banks confront in emerging and developing economies. Part 1 examines bank small and medium firm financing and the effect of income diversification on profitability while Part 2 looks into the effects of different governance mechanisms on bank risk taking in emerging and developing economies.

Part 1. Bank small and medium enterprise financing and income structure

Inclusive growth and strong institutions are necessary to increase economic opportunities especially in emerging and developing economies. Small and medium enterprise development is crucial to inclusive growth. SMEs enhance competition and entrepreneurship and hence, have benefits on the efficiency of the economy. Moreover, SME expansion boosts economic growth by increasing employment and contributing to social stability (World Bank, 2002, 2004). SMEs, however, are often constrained to grow because of the lack of access to external finance. Without inclusive financial systems, small businesses need to rely on internal resource to take advantage of promising growth and expansion opportunities, which further traps them in low productivity operations.

The financial conditions are generally different for large businesses and small businesses (Lucas, 1978). Smaller businesses often find it difficult to signal their creditworthiness to potential lenders (Scholtens, 1999). Aside from the lack of capability of small firms to provide collateral against their loans, small firms are perceived to be more risky because they are more informationally opaque compared with the large businesses. Because of these, they are disadvantaged compared with large firms in terms of access to bank loans.

Because better access to finance helps promote growth both to new and mature small firms, financial sector reforms and government programs such as mandated credit programs, and interest rate ceilings, which support broader access to financial services have been initiated. Not all government action, however, is equally effective. In some cases, policies might even be counterproductive. Policy success not only depends on a well-intentioned policy but also on institutional quality or the presence of strong institutions. In addition, policies to improve financial access and financial development may not always be the same (World Bank, 2008). Certain regulatory prudential measures aimed at financial stability, such as the Basel II and III frameworks, may restrict the degree to which banks cater or serve the small businesses.

Studies, which focus on SME finance using firm level data, are abundant in the literature. Until the recent works of Beck *et al*. (2008, 2011) and de la Torre *et al*. (2010), research efforts are relatively scarce in empirically examining the supply side of SME financing, particularly from the point of view of banks. Banks are the largest external providers of loans to SMEs and are thus vital, especially in financing their expansion prospects. Conventional wisdom on bank SME finance purports that large banks are disadvantaged over small banks in catering to small businesses. Larger banks lack the capability to analyze and produce "soft" information, which are essential in relationship lending. Berger and Udell (2006), however, challenge the conventional wisdom viewing it as oversimplified, and thus, often resulting in misleading conclusions. They suggest that a new paradigm of SME finance exists, where relationship lending is not the sole lending technology that works for banks in order to address the financing needs of informationally opaque small business borrowers. Recent empirical works (Beck *et al*., 2011; de la Torre *et al*., 2010) have shown support in favor of a new paradigm of financing SMEs as proposed by Berger and Udell (2006). Large banks view investing in the SME market to be profitable and that arms-length lending technologies such as credit scoring and factoring may be used in lending to small firms. Part I of this dissertation devotes study on bank SME financing in an emerging economy. It contributes mainly to the literature by examining bank behavior towards SME finance in the presence of mandated credit programs for financial institutions directed to micro, small and medium businesses. While such programs are considered inefficient ways to allocate scarce financial sources, they help channel funds that would have been exclusively allotted to projects that generate private returns but not necessarily social returns. Moreover, this part also looks into the effects of disintermediation in terms of shifts in bank income structure, in favor of non-interest income activities on bank profitability.

Part 1 contains three chapters. Chapter 1 provides a descriptive overview of the trends and determinants of aggregate and individual bank SME financing in the Philippines. It also analyzes the sensitivity of bank SME financing to bank performance and macroeconomic conditions, following the global financial crisis in 2007. Further, it tackles the effect of an increase in the percentage of mandated lending to small firms in 2008, particularly in the case of large or commercial banks. Chapter 2 examines the bank practices, perceptions and behavior toward the SME market by using information from a recently gathered survey that was conducted in 2011 on commercial and thrift banks in the country. It also assesses whether banks that lend less to SMEs impose different loan application criteria, use different lending technologies and have different drivers and obstacles in lending to SMEs compared with banks that have higher exposures to SME financing. This chapter also empirically studies the impact of the usage of different lending technologies on the likelihood that banks will have higher exposure to SME financing. Chapter 3 discusses the impact of bank income diversification of risk and profitability using a unique dataset that provides detailed information of bank income. In addition, it examines factors such as bank size and ownership that may affect the income diversification-performance relationship. It also investigates whether the benefits of a shift of focus from interest income activities to activities that generate non-interest income depends on whether the bank lends more or less to SMEs.

Part 2. Bank governance mechanisms and bank risk taking in emerging and less developed economies

Transformations in the banking industries of emerging and developing economies in the past decades have changed not only how banks do their business but also changed their ownership structure. Financial liberalization and deregulation in the 90s allowed the entry of foreign banks and also increased levels of foreign investments in the domestic markets. Moreover, the different financial crises, which occurred in the last two decades in Asia or Latin America, encouraged consolidation and privatization, which effectively reduced government ownership.

In informationally efficient capital markets, firm performance is independent of capital structure and ownership composition. However, when considering the existence of agency costs and information asymmetries, ownership structure matters and can have an effect on firm performance. Since the seminal contribution of Berle and Means (1932), the connection between ownership structure and firm behavior has led to an extensive theoretical and empirical literature on non-financial firms. Corporate governance of banks, however, has

received relatively limited attention. The models and empirical results that are developed for non-bank companies are not directly applicable to banks as they are subject to stringent prudential regulation and greater opacity of their operations, which affects the efficiency of governance mechanisms (Levine, 2004).

The literature presents several definitions of corporate governance. According to Becht *et al*. (2002), corporate governance is concerned with the resolution of collective action problems among dispersed investors and the reconciliation of conflicts of interest between various corporate shareholders. From a broader perspective, Gillan and Starks (1998) define corporate governance as the system of laws, rules and factors that control firms' operations. Regardless of the definition used, researchers often view corporate governance mechanisms into two categories: internal and external. Internal governance mechanisms include large shareholders, the board of directors, hostile takeovers and proxy voting contests, executive contracts that link company performance with compensation, well-defined CEOs fiduciary duties combined with class-action suits and capital structure. Moreover, external governance mechanisms encompass laws, regulations and institutions, capital markets and private sources of external oversight.

Empirical works studying both developed and less developed economies have consistently found bank governance mechanisms such as ownership structure as an important determinant of bank risk taking and performance. Most of these studies have primarily focused on the impact of state and foreign ownership on bank performance (Berger *et al*., 2005; Bonin *et al*., 2005). Especially on an emerging and developing economies setting, which are characterized by certain specificities like inadequate institutional and legal environment, only a few banking studies address the impact of controlling shareholders and ownership concentration and minority foreign ownership on bank performance and risk. With the exception of Laeven and Levine (2009) who examined the effects of the interaction between regulations and ownership structure, an even lesser number of studies look into both external and internal governance mechanisms and the effects of their interaction on bank valuation and risk taking. The aim of Part II of this dissertation is thus, to empirically analyze two corporate governance internal mechanisms: foreign ownership in domestic banks and ownership concentration and their effects on bank performance and risk taking in less developed economies.

Part 2 is divided into two chapters. Chapter 4 examines the impact of minority foreign ownership and foreign representation on the board on bank risk taking in the presence of controlling shareholders in domestic banks. It studies a different nexus of the principal-agent

relationship, where controlling shareholders act as agents and minority foreign shareholders as principal. Chapter 5 empirically investigates how ownership concentration affect bank risk taking in a cross-country study of less developed economies. It also provides an empirical assessment of an institutional approach to understanding the corporate governance-risk relationship. Further, it shows that the effectiveness of better institutions to mitigate bank risk-taking behavior critically depends on ownership concentration.

PART 1 Bank small and medium enterprise finance and income structure

CHAPTER 1 Banking the SMEs in the Philippines: Trends and Determinants

1. Introduction

Developing the small and medium enterprises (SMEs) sector has been one of the priority development goals in both advanced and emerging economies. SMEs promote economic growth by increasing employment and by contributing to social stability. They, however, face various constraints that impede them to grow and to increase their productivity. One of the consistently cited constraints to SME growth is the lack of access to financing. In a survey conducted by the World Bank[1] in over 100 economies, only about 32% of SMEs had loans with a financial institution compared with over 56% of large enterprises.

Readily accessible and sustainable formal sector financing is crucial to the development of a robust private sector with dynamic enterprises. Availability of funds determines firms' ability to maximize efficiency gains in almost all nodes of their operations - from market research to product development to production expansion, which in turn has implications on the economy's ability to generate more jobs and to improve social welfare. However, typically, in a developing country setting, smaller firms have limited channels to obtain credit. They neither have strong presence in the equity market nor are they seen as sophisticated and reputable enough to enter the bond market. Hence, sources of credit for small and medium enterprises (SMEs) are usually narrowed down to banks, government institutions (sometimes with help from international organizations), family members, and often individual lenders operating in the informal economy. Most firm financing studies (i.e. Berger *et al*., 2001;), however, suggests that banks, especially the larger ones, do not readily grant financial support to any medium or smaller firm because of the SME market's perceived higher risk induced by their opaqueness. Thus, these businesses end up settling for smaller operations in spite of opportunities to expand or pay steep interest rates for a relatively marginal change in the production chain.

Because barriers in accessing finance still exist for small firms in developing countries, regulations with the objective to improve access to finance for SMEs and in rural areas have become popular. According to the Financial Access 2010 report of the Consultative Group to Assist the Poor (CGAP), about half of the regulators in developing countries say that promotion of SME finance is part of their agenda, compared with less than 20% in high-income countries. Moreover, improvement of access to SME finance remains to be one of the top three main areas of reform in financial inclusion apart from consumer protection and "know your customer" requirements, with 47% of the economies indicating

[1] World Bank Enterprise Survey Analysis (various years)

reforms implemented in this area. Reform approaches included setting up or expansion of guarantee schemes, encouraging lending to the SME sector and requiring banks to designate a minimum amount of their portfolio to SMEs. Most of the financial inclusion reforms were implemented in South Asia and East Asia, with Philippines and Malaysia reporting the highest number having 10 different areas of reform each. Moreover, governments around the world have also used interest rate subsidies, directed lending, SME guarantees and other approaches to finance SMEs.

Amongst the various approaches, mandated credit programs or programs imposed by legislation on financial institutions exist in different economies. Lending targets set for priority sectors, including SMEs, are particularly imposed in countries such as Afghanistan, India, the Philippines, Pakistan and Sri Lanka. In theory, these mandated programs are inefficient ways to allocate scarce financial resources. However, proponents argue that credit must be extended to sectors that are critical from a social standpoint because otherwise funding resources would be channeled exclusively by financial institutions to projects that generate private returns, but not necessarily social returns (Medalla and Ravalo, 1997).

Previous studies that focus on bank financing to SMEs using firm-level/loan data identify several factors that may affect small and medium firm financing – notably, bank ownership and bank size. Berger *et al*. (2001) hypothesize that large banks are disadvantaged in extending loans to small businesses because of several reasons. First, large banks may suffer from Williamson-type organizational diseconomies of scale in providing loans that mainly require different lending technologies. This is under the assumption that providing non-standard small business loans require collecting and analyzing "soft" information of which smaller banks have advantage over bigger banks. Second, informational distance is high for large banks as they are often headquartered away from potential small business borrowers. This also further exacerbates the agency problem between senior management and loan officers. Although many empirical studies provide empirical support to the "large-bank barriers hypothesis" or "small bank advantage hypothesis" (Berger *et al*., 1995; Berger and Udell, 1996; Akhigbe and McNulty, 2003; Carter *et al*., 2004), there exists evidence, which suggests that bank size does not necessarily have a negative impact on small business lending. M&As between small institutions may increase, rather than decrease small business lending (Strahan and Weston, 1998). Foreign-owned banks are also disadvantaged in lending to small businesses because of the enormous informational distance as they are significantly headquartered away from small businesses. Thus, they are more prone to severe agency

problems and information asymmetry attributed from language, regulatory structure and cultural differences.

The aim of this chapter is two-fold. First, we assess the state of bank micro, small and medium-sized firm financing from 2005 to 2010 in an emerging country, the Philippines, where mandated credit programs for financial institutions directed to SMEs are in place. Our findings will help policymakers evaluate the effects of such programs on the banks' capacity or willingness to abide by the regulation and finance small and medium firms beyond what is required of them. We therefore examine the extent by which larger banks/universal and commercial banks vis-à-vis thrift banks/smaller banks finance SMEs. Although theory predicts that large banks lend less to SMEs compared with smaller banks, from a social point of view, their level of financing is critical in helping solve the access to formal finance problem of small firms since they are the largest loan providers in the country. On the other hand, from a financial stability point of view, their SME financing exposure may just reflect the level where their risk-adjusted returns are maximized. Moreover, we also look into patterns of compliance after the government amended the regulation, raising the lending requirement to small firms from 6% to 8% of total loans net of exclusions in 2008. We examine the extent of financing, separately across small and medium firms for two reasons: 1) informational risk on micro and small firms may be larger compared with medium firms and it might be more difficult for smaller firms to signal their creditworthiness to banks, and 2) the mandated lending requirement to small firms is different from medium firms.

Second, we investigate the determinants of bank small and medium firm financing. We particularly look into how bank ownership, bank size, bank affiliation, bank location and macroeconomic and SME-specific factors determine bank compliance ratios. The results of our regressions will help policymakers understand better why certain banks may be more constrained in financing SMEs compared with others. For example, organizational complexities and informational distance in large banking organizations may impede these banks to lend to SMEs because of more severe agency problems encountered between the loan officer and the senior management. Moreover, as a further study, we also look into bank performance as a determinant of bank micro and small firm financing, separately for universal and commercial banks and thrift banks. We mainly ask the question: Do well-managed banks finance more the micro and small firms? The results are of particular interest to policymakers because they help in assessing the viability of a small bank business model. Small banks often have high levels of micro and small business loans in their portfolio and their financial

stability and efficiency matters in order to guarantee sustainable and better small firm access to bank finance.

Our research work departs from existing bank SME financing studies in several dimensions. First, we focus on an emerging economy, where banks traditionally have had lower exposure to smaller firms (Beck *et al*., 2008; 2011). By focusing on a single economy, we are able to deal with a more institutionally-homogeneous sample, governed by the same legal and regulatory environment. More importantly, the Philippines is an emerging economy where banks are mandated to lend to SMEs. However, even with such program, a study by the International Finance Corporation (IFC) in 2010 reveals that financing obtained by SMEs from formal institutions accounted for only 12% to 21% of their total funding requirements. This percentage is considered low when compared with the 30% benchmark in India and Thailand.[2] Second, we include smaller banks such as savings and thrift banks in the study to avoid selection bias. We highlight this feature of our empirical work because most recent empirical SME studies only examine larger banks (Beck *et al*., 2008; Beck *et al*., 2011). Their inclusion in our analysis allows us to examine the differences in the determinants of SME financing between universal and commercial banks (UKBs) and thrift banks, where the latter are perceived to be at an advantage over UKBs in financing SMEs. Third, we analyze in addition to bank size and ownership, affiliation and location as determinants of bank SME financing across banks in our sample. Bank location often describes the different financing alternatives available for SMEs and thus, degree of bank competition. Meanwhile, affiliation defines another layer of organizational structure complexity. Banks headquartered in more competitive markets and banks that are subsidiaries, affiliates or parts of a financial conglomerate may be disadvantaged in lending to small and medium-sized businesses. Fourth, we examine the potential effects of macroeconomic and SME-specific factors on bank SME financing across bank types using quarterly surveys conducted each year by the Central Bank that involves small and medium enterprises and answer the issue of whether SME financing tends to be cyclical. Fifth, we extend the regression analyses of the determinants of exposure to small firm financing by exploring whether well-managed banks comply higher or lower with the mandated credit program for micro and small firms compared with poorly-run banks and whether they comply at a faster or at a slower rate following the increased mandatory credit allocation from 6% to 8% in 2008 by using duration analysis.

[2] Low levels of financing obtained from financial institutions may mean limited SME growth capacity. Authors such as Fluck et al. (1998) point out the existence of a financial growth cycle, which determines different financing needs for SMEs. Expansion and growth prospects are often financed by formal financial institutions.

Our main empirical findings are:

(1) *Access to bank finance or more precisely, actual supply of bank financial services is a bigger problem for micro and small firms.* Universal and commercial banks (UKBs) and foreign-owned banks have significantly lower financing exposure to micro and small firms compared with thrift banks and domestic banks. For the former, exposures are concentrated around the minimum required 8%. Moreover, it is relatively easier for UKBs and foreign banks to comply with the mandatory credit allocation to medium-sized firms compared to smaller firms. Particularly, after 2007, UKBs have increased confidence in lending to these firms. In the absence of a mandated credit program, it is more likely for banks, especially the UKBs to finance medium firms compared with the smaller, more informationally opaque businesses.

(2) *The empirical results investigating the determinants of small and medium firm financing generally provide evidence in favor of the "foreign-owned bank barrier hypothesis" and "small bank advantage hypothesis",* which state that foreign banks are disadvantaged in lending to SMEs and small banks are in a better position to lend to small businesses. For universal and commercial banks, however, size does not impede them to lend more to medium firms. Bigger thrift banks even have higher shares of medium firm financing than their smaller counterparts.

(3) *The Global financial crisis had negative impact on the small firm financing of thrift banks from 2007-2009, suggesting that small firm financing is cyclical, but only for this type of banks.*

(4) *Well-managed banks have lower micro and small firm financing, while poorly run banks have higher exposures to micro and small business loans.* Particularly for thrift banks, which have high shares of small business loans in their loan portfolio compared with UKBs, this may indicate that they are not operating the small bank business lending in a fully profitable and efficient manner. It is thus not sufficient for policymakers to attribute attention towards increasing access to finance but more importantly, to a sustainable access to bank finance.

The chapter is organized as follows. Section 2 provides an overview of the structure of the banking industry and SME financing in the Philippines, including different initiatives undertaken by the government to aid the local SMEs in their financing needs, with emphasis on the *Magna Carta* for micro, small and medium enterprises. Section 3 examines the trends

and presents the stylized facts of SME bank financing in the Philippines using both aggregate and bank-level data. Section 4 analyzes the determinants of bank SME financing by estimating regression equations. Section 5 checks the robustness of the regression results, and looks into bank performance as a determinant of bank small firm financing. This section also further studies what determines banks' time to comply with the newly-instated regulation in 2008 increasing the mandated lending to micro and small firms from 6% to 8%. We summarize and draw the conclusion in Section 6.

2. Overview of the Philippine Banking Industry and the SME Market

Banks comprise the biggest segment of capital markets in the Philippines. As of 2012, banks account for 80% of the total financial resources in the country.

Prior to extensive structural changes in the last two decades, the government has played the role of the primordial driver of the banking sector (as is the case with other key sectors such as aviation, telecommunication, water, power, etc.).[3] However, political intrusion leading to regulatory lapses and poor oversight had resulted in an unstable industry growth path and severely impacted the government's coffers. The local banking system barely escaped collapse in the 1970s and the early part of 1980s.[4] The banking crisis of the 1980s was particularly remarkable since it led to the insolvencies of two large investment houses, three commercial banks (including two of the largest banks in the country that are state-owned) and 160 rural and thrift banks (Nascimento, 1990).[5]

In 1984 and 1985, a series of difficult economic episodes crippled the domestic capital market and eventually caused the economy to contract.[6] Capital infusion by the national government kept the banking system afloat while a standby credit arrangement with the International Monetary Fund (IMF) was needed to restore the credibility of the country in the

[3] PNB and DBP alone (both state-owned banks at that time) held nearly 50% of the banking sector's assets before they became insolvent in 1985 (Gochoco-Bautista, 1999).

[4] "After a long era of political intrusion under the Marcos regime, there is a principal-agent problem as regulators and supervisors may not be operating in the public interest. Meanwhile, private banks belong to business conglomerates and do not act tough on affiliated companies since they can expect financial assistance from BSP," (Nasution, 1999).

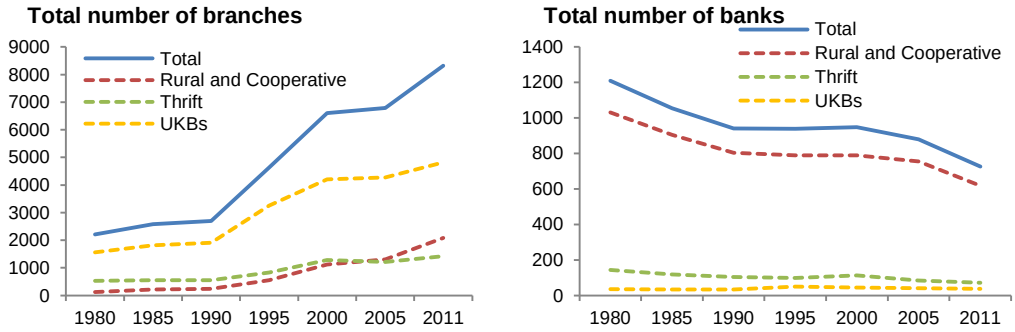
[5] According to Gochoco-Baustista (1999), the Development Bank of the Philippines (DBP) and the Philippine National Bank (PNB) which are both government controlled at that time, were declared insolvent owing largely to excessive lending to directors, officers, stockholders and related interests (DOSRI). Nascimento (1990) noted that on top of the economy-related factors, what happened to DPB and PNB was a reflection of politically-motivated loans granted sometime in the 1970s until the early 1980s, poor internal controls, auditing, and lending standards, and the decision to takeover troubled corporations. The government assumed the liabilities of both banks and PNB was eventually privatized.

[6] The value of the Philippine Peso was cut by more than 50% within two years. Inflation ranged between 33% and 63% which lasted for about a year. Dollar reserves slumped to critical levels causing external trade and debt financing problems (Balance of Payments crisis). On top of these, the assassination of Sen. Benigno Aquino in 1983 almost annihilated the positive investment prospects for the country (Nascimento, 1990).

international financial network - mainly in terms of availability of foreign reserves, albeit at a huge cost to the public (Nascimento, 1990; Dohner and Intal Jr., 1989). Subsequently, the process of reforming the entire industry forced the government to sell to the private sector a substantial amount of its shares in two major banks.[7] Reform measures also compelled the restructuring and re-capitalization of the central bank that itself went bankrupt.[8]

As conditions improved, further liberalization measures were carried out in the first half of 1990s involving entry of foreign banks, bank branching regulations and foreign exchange transactions. The easing of restrictions resulted in a more fluid movement of capital and, accordingly, a sharp rise in the number of branches in a very short time (See Figure 1). Nonetheless, the number of banks declined marginally due to continuous market consolidation especially in the rural and cooperative banks segment (Pasadilla and Milo, 2005).

Figure 1. Number of banks and bank branches in the Philippines, 1980-2011



Note: UKBs include Specialized Government Banks. SOURCES: BSP and Pasadilla and Milo (2005)

However, just before the turn of the decade, the central bank issued a moratorium on bank branching following the Asian financial crisis (AFC). Although the local banking system generally proved to be resilient, the credit crunch and the very steep currency revaluation caused some small banks to fail. System-wide non-performing loans (NPLs) also inched up considerably from 2.6% in 1996 to 17.6% midway in 2002. Uncertainties over the length and depth of the impact of the crisis on the local banks have also pushed monetary authorities to operate at very restrictive mode.[9]

[7] These are PNB and Union Bank, PNB was the biggest bank in the country at that time in terms of assets

[8] The Central Bank of the Philippines itself became bankrupt mainly due to the assumption of foreign liabilities and other quasi-fiscal activities (Singson, Gabriel 1999). After its restructuring in 1993, the Central Bank of the Philippines (CBP) was renamed Bangko Sentral ng Pilipinas (BSP).

[9] Manlagñit and Lamberte (2004) discuss in greater details the various banking sector reforms undertaken after the Asian financial crisis.

Restrictions were gradually relaxed as ill-effects of the regional financial turmoil started to wane. Banks have likewise become more prudent in managing risks in the years following the Asian financial crisis.[10] In contrast to the severe impacts of the Asian financial crisis, the recent Global Financial Crisis (GFC) made a much smaller dent on the books of the banks.[11] Hence, the BSP saw no need to take draconian measures to protect the sector from spillovers, opting instead for a series of policy rate adjustments and a 2 percentage point cut in the statutory reserve requirement to ensure that the system remains liquid.[12] In 2011, BSP finally relaxed the last of the branching regulation put in place 12 years earlier to create a more accommodative regulatory structure.[13]

At present, there are 726 banks in the country under the supervision of BSP (the central bank), of which 38 are universal and commercial banks (UKBs), 71 are thrift banks (THBs) and 617 are rural and cooperative Banks (RCBs). The number of bank branches nationwide currently total 8324 (4819 UKBs, 1420 THBs and 2085 RCBs), with about 35% located in Metro Manila and 65% spread all over the rest of the country. In terms of resources, UKBs dominate the sector holding 89.8% of the aggregate financial and non-financial assets of all banks while thrift banks and rural and cooperative banks, respectively, account for 7.8 and 2.4% of the total pie.

Capitalization and market clout are still very much concentrated within the biggest 10 UKBs. It is also important to emphasize that most large banks in the Philippines belong to conglomerates that also have major representations in other industries. These linkages put the affiliated banks in a peculiar and advantageous position to capture target markets, while at the same time provide the umbrella conglomerates a stable source of funds at presumably more competitive cost than the prevailing market rates. However, these linkages also predispose the banks to lend within their networks, hence challenging the governments' efforts to ensure

[10] Banks' NPLs ratio eased from a high of 17.6% in 1Q:2002 to 3.1% as of 3Q:2011 while the sector managed to maintain a healthy capital adequacy ratio –17.4% as of 1Q:2011, well above the statutory requirement of 10% and the Basel Agreement benchmark of 8% (BSP Quarterly Reports).

[11] BSP Status Reports on the Philippine Financial System, 2nd semester of 2009 and 1st semester 2010

[12] Overall reserve requirement ratio was cut by 2 percentage points in November 2008, from 21% to 19% through a reduction in statutory reserve requirement from 10% to 8%. The ratio was brought back to 21% in July 2011 (via two separate increases in statutory reserve requirement from 8% to 9% in June 2011 and from 9% to 10% in July 2011) but was slashed by 3 percentage points again, from 21% to 18% in February 2012 (effective April 2012) designed to offset the impact on banks of reduced revenue stream as the monetary authorities decided to stop interest payments on bank reserves placed with the central bank (referred to as the statutory reserve equivalent to 10% of banks' deposits). The monetary authorities likewise decided to unify (i.e. no longer makes distinction) liquidity and statutory reserve requirement. ("Monetary Board Approves Rationalization of Reserve Requirement Policy." BSP Media Release. 02 March 2012; BSP Circular 732 Series of 2011; BSP Circular 726-2011 Series of 632-2008).

[13] BSP Circular Letter 10 September 1999; BSP Circular 273 Series of 2001; BSP Circular 277 Series of 2001; BSP Circular 505 Series of 2005; BSP Circular 625 Series of 2008 and BSP Circular 728 Series of 2001.

adequate access of finance for the country's many small and medium firms that do not belong to such conglomerates.

In spite of the various interventions carried out by both public and private sectors in the country, credit accessibility for smaller enterprises is still far from ideal. An International Finance Corporation-Private Enterprise Partnership for the Philippines (IFC-PEP) study in 2007 estimated that formal financial institutions only provide at the maximum 19% of the SMEs' capital requirements, with start-ups having much less, and that annual unmet financing demand is somewhere between 28% and 78% of the current level of loans channeled to SMEs.[14] Similarly, results of prior surveys (e.g. SERDEF-UP ISSI, and ICPS-ADB)[15] as well as the recent World Bank Enterprise Survey in 2009 reveal the limited role of banks in financing SMEs. According to Aldaba *et al*. (2010), this orientation is largely anchored on continued banks' risk aversion due to asymmetric information, banks' reluctance to handle numerous small accounts, banks' limited awareness of lending technologies used in dealing with small businesses, collateral acceptability issues, and SMEs' inability to submit adequate financial statements and business plans.

The disparity between the micro, small and medium enterprises' share in economic output and their relative importance in generating employment has prompted the government to carry out assistance programs across a spectrum of issues, such as access to markets, marketing strategies, productivity and innovation, and financing. In the SME Development Plan 2011-2016, the government targets to push the contribution of micro small and medium enterprises to 40% of the GDP. Numerous studies (FINEX and ACERD, 2006; Tecson, 2004; Fukumoto, 1998; Hapitan, 2005), however, point out that the most challenging of all the constraints is access to financing. This proposition was further bolstered by recent findings of Khor *et al*. (2012a) which showed that access to finance is indeed a significant binding constraint to SME growth.

2.1. The Magna Carta for Micro, Small and Medium Enterprises in Context

The Philippine government has a long history of implementing programs to assist smaller firms with their various needs, including access to finance. In particular, to bridge the gap between the supply of funding and the credit needs of firms, the government had

[14] The assumption is that the current volume of loans provided to SMEs amounts to PhP 250 billion, of which PhP 226 billion is provided by banks while PhP 24 billion sourced from non-bank entities. The level of unmet demand, on the other hand, is estimated to range between PhP 67 billion and PhP 180 billion (Nangia and Vaillancourt, 2007).

[15] SERDEF-UP ISSI - Small Enterprise Research and Development Foundation - University of the Philippines Institute for Small Scale Industries; ICPS-ADB - Investment Climate and Productivity Study, Asian Development Bank.

mandated a few loan-related programs since the 1970s. The most prominent of these initiatives are: (1) the deposit retention scheme, (2) the Agri-Agra Law and (3) the *Magna Carta* for Micro, Small and Medium Enterprises.

The *Magna Carta* for Micro, Small and Medium Enterprises is the primary legislation that mandates banks to finance SMEs. While it has been helpful to target the sector, the law, arguably, has not been quite successful in facilitating credit flows to SMEs in a stable manner. Through the years, it has undergone revisions, incorporating structural and cyclical developments. In 1991, the government passed the very first version of *Magna Carta* for small enterprises that laid out a coordinated structural support and safeguards system to enhance the growth of enterprises classified by asset size - micro, cottage, small and medium (See Table 1).

Table 1. Legal definition of micro, small, medium and large enterprises (total asset size, PhP)

Law/ Regulation	Year enacted	Micro	Cottage	Small	Medium	Large
RA 6977	1991	<50,000	50,001-500,000	500,001-5,000,000	5,000,001-20,000,000	>20,000,000
RA 8289	1997	<1,500,001		1,500,001-15,000,000	15,000,001-60,000,000	>60,000,000
RA 9178	2002	<3,000,000		3,000,001-15,000,000	15,000,001-100,000,000	>100,000,00
SMED Res No.1 and	2003					
RA 9501	2008					

Source: Authors' compilation of pertinent laws and regulations

The Act, in particular, sought to streamline business procedures and requirements, make government services readily available to businesses outside the centers of commerce and most importantly, increase financing available to the SMEs. It created the Small and Medium Enterprise Development Council (SMEDC) [16] as an attached agency of the Department of Trade and Industry (DTI) to carry out the objectives of the Law and appointed the Bureau of Small and Medium Enterprises Development (BSMBD) [17] as the council secretariat. The *Magna Carta* to SMEs also directed government banks[18] to provide financing assistance to entrepreneurs in these groups. Most importantly, the Act contained provisions

[16] This agency was later renamed as the Micro, Small and Medium Enterprise Development Council (MSMEDC).
[17] This bureau was later renamed as Bureau of Micro, Small and Medium Enterprises Development (BMSMED).
[18] At that time including the Philippine National Bank, the Development Bank of the Philippines and the Land Bank of the Philippines

that mandated private banks to allot a portion of their loan portfolio to small businesses, with certain penalties in case of non-compliance.

The Law was further revised in an effort to make the legislation coherent with the changes in firms' needs and the economic conditions. One important development is the merger between the Small Business Guarantee and Finance Corporation (SBGFC) and the Guarantee Fund for Small and Medium Enterprises (GFSME) to form the Small Business Corporation (SBC) in November 2001 to consolidate the efforts of the government in providing financial services to the non-large enterprises.[19]

The range of asset-based enterprise classification matrix has likewise expanded by about three times between 1991 and 1997 and again roughly doubled between 1997 and 2002 (in the case of micro and medium enterprises). These variations are very important to banks in ascertaining their compliance to the mandated lending provisions of the law. The expansion of the definition means that their target market also increased in size. Accordingly, Table 2 shows that the coverage of the law and the statutory share of SMEs in bank lending have also changed over the years.

Table 2. Mandatory share of SME in banks' loan portfolio

Law	Year enacted	Coverage (enterprises)	Share in banks' loan portfolio (years in effect)
RA 6977	1991	Small	5% (1991); 10% (1992-1995); 5% (1996); 0% (1997)
RA 8289	1997	Small and Medium	Small – 6% (1997-2007) Medium – 2% (1997-2007)
RA 9501	2008	Micro, Small and Medium	Micro and Small – 8% (2008-2018) Medium – 2% (2008-2018)

Note: RA 8289 should have ended in May 2007 but implementation of the lending provision was extended until end of 2008 (BSP Circular 2007-039) because BSP passed a circular (625) pursuant to RA 9501 only in Oct 2008. Thus, the implementation of the corresponding provision in RA 9501 was postponed to 2009.
Sources: Authors' compilation of pertinent laws and regulations; Department of Trade and Industry, 2010. DTI DAO-No.9, 2008. *Guide to the Magna Carta for Micro, Small and Medium Enterprises*. Manila; Bangko Sentral ng Pilipinas. 2008. BSP Circular 625 -2008.

Both the required ratio and the coverage increased since 1991. These seem to suggest that although the law instigated a distortion in the lending market, over time, the authorities also

[19] The Guarantee Fund for Small and Medium Enterprises (GFSME) was established in 1984. Operated by the Livelihood Corporation and attached to the office of the President, it is tasked to provide guarantee services to participating financial institutions (PFIs) that had been lending to SMEs (ADB, 2010). The Small Business Guarantee and Finance Corporation (SBGFC), on the other hand, was instituted by virtue of the *Magna Carta* for Small Enterprises in 1991 to financial services to small and medium enterprises (except those involved in trading and crop-level production). The agency which was put under the supervision of the central bank has a board comprised of representatives both from the private sector and the public sector (National Government, Land Bank of the Philippines, Development Bank of the Phils, DTI and DOF).

implemented measures that somehow eased burden on the banks. The primary change after the Asian financial crisis is the recognition that medium firms are fundamentally different from smaller firms, hence the establishments of two compliance rates, respectively targeting medium and smaller firms separately. As it stands today, law mandates all banks to allocate 2% of their total loan portfolio to medium firms, and a further 8% to micro and small firms.

To compensate for the burden on banks brought about by the new regulations, the Central Bank instituted a number of measures to keep funds flowing steadily to the SME sector. These include:[20] (1) the reduction of the risk weight applicable to qualified SMEs and microfinance loan portfolios from 100% to 75% subject to certain conditions[21]; (2) the reduction of the reserve requirements on thrift banks and rural banks which deal with SMEs and small borrowers[22]; (3) the exemption of SME loans without latest income tax returns (ITR) and/or audited financial statements from "Loans Especially Mentioned" classification provided that the said loans are current, have not been restructured and are supported by ITR and/or audited financial statements at the time they were granted; (4) deferment, for a period of one year, of the implementation of the market-based pricing mechanism for rediscount loans below the 91-day T-bill rate to help jumpstart SME lending; (5) allowing the establishment of microfinance-oriented thrift banks and rural banks as an exemption from branching moratorium[23]; (6) the exemption of microfinance loans from normal documentation applicable to regular bank loans[24]; and (7) the approval of the 12-point accreditation guidelines for rural and thrift banks and the lending features of short and long-term loans for direct or retail lending by participating government financial institutions under the SME Unified Lending Opportunities for National Growth (SULONG) program.

2.2. Defining Alternative Compliance with the Magna Carta

Acknowledging the difficulty and the risks of lending to small firms early on, the government has established a set of alternative vehicles in order for banks to comply with the SME lending provisions of the *Magna Carta*. Banks can either lend directly to the firms or alternatively, they can: (a) subscribe preferred shares of the Small Business Guarantee and Finance Corporation, (b) conduct wholesale lending to participating financial institutions (PFIs) for on-lending to SMEs, (c) purchase or discount SME receivables, (d) lend to export,

[20] Bangko Sentral ng Pilipinas. 2004. "Status Report on BSP Initiatives to Improve Credit Access of Small and Medium Enterprises." BSP Media Release. 2 Feb 2004.
[21] Circular No. 364 dated 9 January 2003.
[22] Circular No. 363 dated December 13, 2002.
[23] Circular No. 273 dated February 27, 2001.
[24] Ibid.

import and domestic traders subject to compliance with the pertinent provisions of RA 6977 or (e) subscribe or purchase liability instruments as may be offered by SBGFC. Banks can also set aside special accounts consisting of cash or "due from BSP" for SMEs which are free, unencumbered, not hypothecated, not utilized or earmarked for other purposes and include the corresponding amounts to their compliance reports.

However, contrary to popular presumptions that banks would take advantage of these alternative means of compliance to reduce management and risk-related costs, data provided by the BSP indicate that banks have actually reduced exposure to other facilities. Instead, banks on the aggregate, increased direct lending operations since. Attractiveness of the yields of alternative notes appears to be one of the key issues. Lamberte (2002) observes that alternative modes of compliance like SBC notes "do not pay market rates" while deposits with central bank allotted for SMEs do not bear interest. SBC's wholesale lending was also adversely affected during the height of the global financial crisis when the central bank expanded and reduced the interest rate of its rediscounting facility to keep the banking system liquid, "which directly competed with SBC's wholesale lending operations".[25] The Small Business Corporation (SBC), through Memorandum No.6 (2011), has also decided to narrow the spread of its notes against the benchmark secondary bond rate (PDST-F)[26] from 33% of the yields of the corresponding reference fixed income notes (1 year and 6 months) to 20%. SBC also issued preferred shares worth P1.6 billion at P100 per share (minimum of 2000 shares) to further boost its coffers.

In case of non-compliance, the penalty is relatively lenient compared with the previous versions of *Magna Carta* law. Under RA 6977 (Small Enterprises *Magna Carta* of 1991), non-compliant banks are fined by an amount no less than P500,000 and other officers of the erring lending institutions shall be individually liable for imprisonment of not less than six (6) months. In the subsequent law, RA 8289 (SME *Magna Carta* of 1997), which extended the loan earmarking program for SMEs to 2007, imprisonment provision was dropped but the monetary fine was maintained (See Table 3).

[25] Small and Medium Enterprise Development Support Project. ADB Completion Report Philippines 2010.
[26] This is also referred to as the Money Market Association of the Philippines (MART 1) benchmark rate.

Table 3. Penalty matrix

Item	PhP	USD
Zero compliance:	500,000	11,628
Under-compliance, end of each quarter:		
Micro and small enterprises	% of under-compliance *	* (9,302)
Medium enterprises	% of under-compliance * (P100,000)	* (2,326)
Willful making of a false or misleading statement to the	P500,000 per quarter-end	
Non-submission/delayed submission of reports on		
Universal and Commercial banks (U/KBs)	1,200	27.9
Thrift banks (ThBs)	600	14
Rural and Cooperative banks (RCBs)	80	1.9

Note: PhP/USD=43
Source: Government of the Philippines. 2008. Republic Act 9501: *Magna Carta* for Micro, Small and Medium Enterprises (SMEs). Manila

The government also focused on aspects that would make banking non-large firms appealing to creditors. These include (1) establishing an effective loan guarantee system; (2) finding ways to deal with collateral requirement issues; (3) creating a public credit bureau, (4) developing more appropriate ways to assess risk associated with lending to SMEs and (5) optimizing the network of state-owned firms in delivering services to SMEs.

Meanwhile, in order to alleviate information gaps, one important solution considered by both regulators and financial institutions is the creation of a reliable credit scoring system to assess the credit viability of firms that can be used by the entire banking system. Notably, according to an ADB report (2004), "SBC's management has discovered (as have many other lenders in many places) that there is no clear correlation between the kind and quality of collateral offered to a lender and loan default. This implies that loan underwriting techniques that do not rely on traditional collateral are highly relevant in the Philippines."

Lastly, to give structure to its overall approach to aid SMEs in their financing needs, the government implemented the SME Unified Lending Opportunities for National Growth (SULONG) program. The program, launched in 2003, essentially seeks to provide SMEs alternative credit sources courtesy of the participating government financial institutions (GFIs).[27] The general objectives of the program were to: (a) simplify and standardize the lending procedures; (b) reduce documentary requirements and expedite procedures; (c) provide SMEs greater access to short- and long-term funds and; (d) lower the effective cost of borrowing by SMEs and liberalize the requirement.[28]

[27]These include the Development Bank of the Philippines (DBP), the Land Bank of the Philippines (LBP), Small Business Guarantee Corporation (SBGC) and the Social Security System (SSS).
[28] LBP and DBP are also part of the SULONG program.

3. Descriptive Statistics of the SME[29] Bank Financing in the Philippines

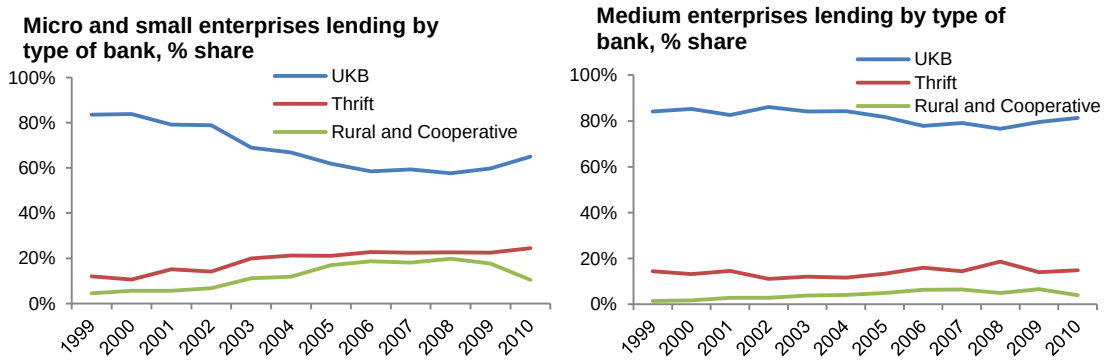
The primary objective of this chapter is to assess the state of SME bank financing in the Philippines where mandated credit programs for financial institutions directed to specific target sectors such as the SMEs are in place. We do this in two ways. First, we analyze the aggregate compliance of the Philippine banking industry and second, we examine individual bank compliance to the *Magna Carta* for micro, small and medium enterprises of universal and commercial banks (UKBs) and thrift banks.

3.1. Aggregate Compliance to the Magna Carta for SMEs

Aggregate Philippine banking industry data were provided by the Bangko Sentral ng Pilipinas (BSP). These data are on a quarterly frequency from 2005:Q1 to 2011:Q2.

Between 1999 and 2010, the Philippine banking system has allotted a yearly average of PhP 268 billion to finance the operations of micro, small and medium enterprises. As shown in Figure 2, universal and commercial banks provide the lion's share to the credit provided by banks to the sector, comprising almost three-quarters (74.7%) of the total amount of SME bank financing. Thrift banks, on the other hand, account for 16.7%, while the rest is bankrolled by the rural and cooperative banks.[30] On the average, each UKB disburses PhP 5.4 billion yearly to SMEs, which is over 8 times and 163 times respectively, the money released by thrift banks (PhP 637.2 million) and rural and cooperative banks (PhP 32.96 million) annually.

Figure 2. Share in SME lending by bank type



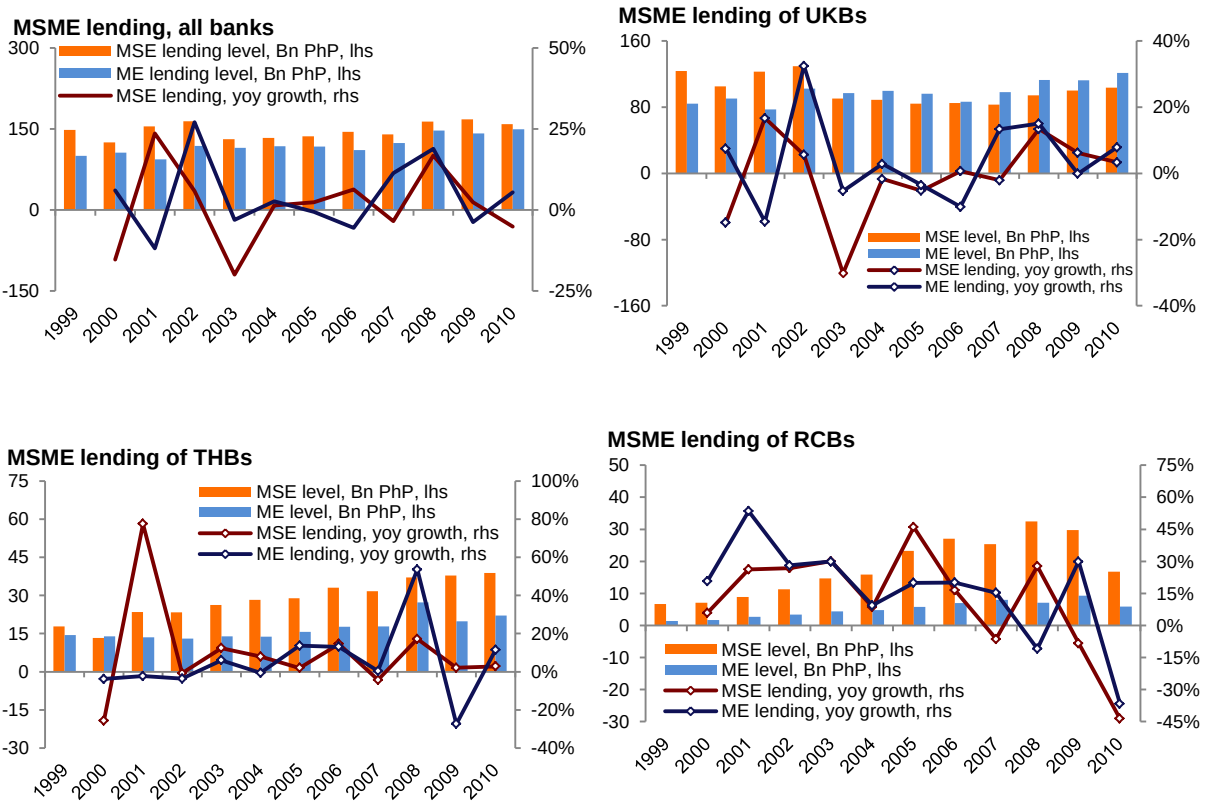
Source: Author's calculation based on BSP data

Bank lending to micro and small enterprises has somewhat stagnated in the last few years. Although the growth of the banks' credit channeled to the sector picked up significantly

[29] We interchangeably use MSME and SME throughout the text to mean the micro, small and medium enterprises.
[30] Annual average from 1999 to 2010.

on a couple of occasions between 1999 and 2010, the momentum of releases has not been sustained in the succeeding years (cf. Figure 3).[31]

Figure 3. SME lending by type of bank



Source: Author's calculation based on BSP data

Being the biggest source of funds among the banks, the UKBs' performance, by and large, drives the overall trend in SME lending. Based on the data, the UKBs have not been consistent year-in-year-out. Since 2000, the UKB group has registered five years of negative annual nominal growth both in their lending to micro/small enterprises and to medium enterprises (albeit do not coincide all the time).[32] Lending growth rates of the thrift and rural/cooperative banks, on the other hand, have been generally increasing but recently showed hints of aversion as well. When comparing SME lending from non-SME lending growth rates (cf. Table 4), resulting statistics implies that banks are less inclined to lend to SMEs than other market segments, except for the rural and cooperative banks.

[31] Incidentally, the spikes in 2001/2002 and 2008 coincide with the implementation of government's major MSME policies – the Barangay Micro Business Enterprises Act (2002) and the *Magna Carta* for Micro, Small and Medium Enterprises (2008).

[32] The authors have not found any literature or data that would suggest defaults by firms as the binding constraint. Non-performing loans ratio published by the central bank even suggests improvement in banks' collection efficiency, as the share of bad loans to total loan portfolio had progressively declined since reaching recent peaks of 19.4% for universal banks and 22.8% for commercial banks in 2001 to 3.0% and 6.1%, respectively, in 2010.

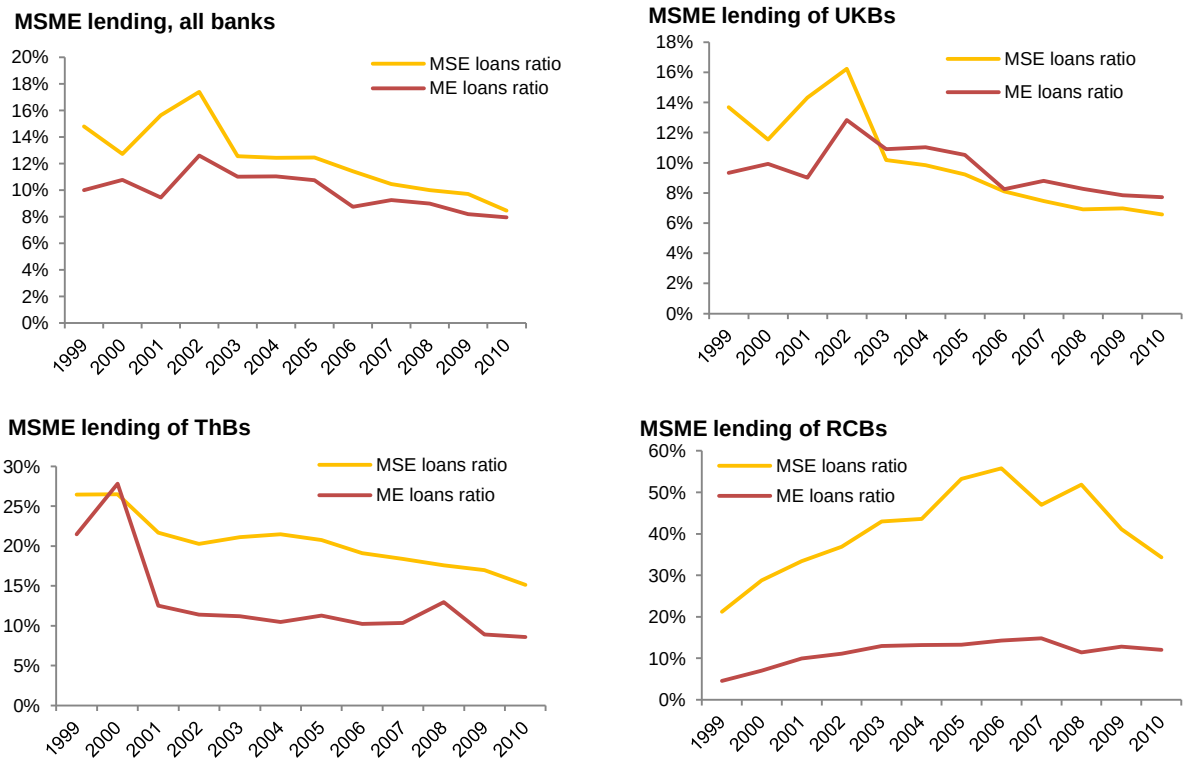
Given the relative sluggishness of banks' SME lending growth, SMEs' share to banks' total loan portfolio is likewise decreasing across banking groups (See Figure 4). While the banks' exposure to medium enterprises is consistently well above what is required by the law (> 2% of total loan portfolio net of exclusions), exposure to micro and small enterprises has dipped to levels close to the minimum 8% of total loan portfolio, net of exclusions. UKBs, as a group, have even breached the mandated minimum with a discrepancy of about 1.4 percentage points by the end of 2010.

Table 4.Average Lending Growth (%), SME vs Non-SME, 2000-2010

	UKB	Thrift	RCB	All
SME	1.2	7.0	12.4	2.3
Micro and Small (MSE)	-0.7	9.6	11.8	1.4
Medium (ME)	4.1	5.5	16.3	4.3
Non-SME	6.0	11.3	10.3	6.5
Total	5.4	10	9.8	5.9

Source: Author's calculation based on BSP data

Figure 4. SME Lending as Percentage of Total Loan Portfolio by type of bank



Note: Ratios are expressed as % of total loan portfolio (TLP) net of exclusions. MSE = micro and small enterprises; ME = medium enterprises

Source: Authors' calculations based on BSP (central bank) data

3.2. Bank-Level Compliance to the Magna Carta for SMEs

This section moves beyond the aggregate data by using individual bank compliance data to examine patterns of compliance to the the *Magna Carta* for SMEs across universal and commercial banks and thrift banks.

3.2.1. Data

Bank-level data are from the Published Statement of Condition of individual banks provided by the Bangko Sentral ng Pilipinas. These data, which are on a quarterly basis from 2005:Q1 to 2010:Q4, consists mainly of universal and commercial (UKBs) and thrift banks' individual compliance to the *Magna Carta* for SMEs. We identify a total of 136 banks for which quarterly balance sheet information are available over the period of study, 130 of which, report their compliance ratios. We apply several selection criteria in our sample. First, we clean the data on compliance ratios by removing potential outlier observations. We implement this by removing bank-quarter observations where the compliance ratios are below the 1st percentile and above the 99th percentile values. Next, we delete the banks with less than 8 quarters or two years of time series observations. This condition enables us to isolate the banks with sufficient data on compliance ratios. Our final sample consists of 109 banks – 38 UKBs and 71 thrift banks, representing over 90% of all the UKBs and thrift banks over the period, in terms of total assets.

The summary statistics of our data across time is shown in Table 5.

Table 5. Summary Statistics of the Compliance Ratios according to firm size and bank type across time, 2005-2010

Compliance(SMALL)%: **Whole Sample**							
	2005	2006	2007	2008	2009	2010	ALL
Mean	15.8	16.07	17.31	16.51	15.79	17.49	16.64
Std Dev	14.44	15.29	16.73	14.99	14.8	15.6	25.34
Min	0.95	0.59	1	0.77	0.55	1.12	0.55
Max	87.99	75.57	84.56	87	88.31	88.18	88.31
Compliance(MEDIUM)%: **Whole Sample**							
Mean	11.12	10.63	11.7	11.7	10.32	10.01	10.92
Std Dev	11.4	11.06	12.68	11.05	9.08	9.56	10.91
Min	0.53	0.22	0.09	0.15	0.1	0.12	0.09
Max	61.83	59.04	63.5	62.45	54.01	62.39	63.5
Compliance(SMALL)%: **UKB**							
Mean	8.16	7.54	7.57	7.78	7.66	7.66	7.73
Std Dev	3.8	3.19	3.45	3.17	2.95	3.1	3.31
Min	5.27	5	4.75	1.79	1.97	1.74	1.74
Max	30.05	23.83	27.34	22.63	15.73	21.54	30.05
Compliance(MEDIUM)%: **UKB**							
Mean	7.13	6.35	6.49	7.53	7.43	7.86	7.06
Std Dev	5.25	4.51	4.57	4.83	4.18	5.12	4.78
Min	1.98	2	1.64	0.15	0.1	0.12	0.1
Max	24.93	20.98	21.85	19.39	17.18	24.53	24.93
Compliance(SMALL)%: **Thrift Banks**							
Mean	20.78	21.31	22.61	20.52	20.71	21.81	27.3
Std Dev	16.51	17.29	18.61	16.5	16.07	16.94	17.01
Min	0.95	0.59	1	0.79	0.55	1.12	0.55
Max	87.99	75.57	84.56	87	88.31	88.18	88.31
Compliance(MEDIUM)%: **Thrift Banks**							
Mean	13.93	13.32	14.65	13.66	11.54	10.98	12.99
Std Dev	13.54	12.96	14.7	12.52	10.24	10.86	12.58
Min	0.53	0.22	0.09	0.2	0.31	0.26	0.09
Max	61.83	59.04	63.5	62.45	54.01	62.39	63.5

We note that it is important to look into the compliance ratios of micro and small and medium enterprises, separately, not only because of the difference in the bank lending requirements across the two firm types but also because of the heterogeneity across these firms and their differences in financing needs. We thus distinguish bank compliance ratios to micro and small firms from medium-sized enterprises.

The compliance ratios in both micro and small firms and medium-sized firms are more than the required 6% (8% from Q3: 2008) and 2%, respectively- averaging to almost 17% for small firms and 11% to medium-sized firms over the period of the study. We observe, however, high dispersion of the distribution of compliance ratios to micro and small firms, with standard deviation equivalent to 25.34 from 2005-2010, hinting heterogeneity across UKBs and thrift banks. Indeed, compliance ratios differ across bank types, which may be due to their difference in terms of strategic focus. UKBs tend to cater to larger firms/corporations

and offer a variety of financial services while thrift banks invest more towards the SME market.

The average compliance ratios of UKBs do not deviate a lot from the lending requirement. After the amendment of the *Magna Carta* for micro and small firms (starting 2008:Q3), which increased the minimum lending to micro and small firms from 6% to 8% of total loans net of exclusions, UKBs on the average, do not satisfy the minimum required financing. This suggests that it takes time for this group of bigger banks to comply with the amended legal limit to the micro and small firms. Moreover, UKBs do not have a problem satisfying the lending requirement of 2% to medium-sized firms. We observe that the UKBs' average compliance to medium-sized firms is almost equal to their exposure to the smaller firms. Thus, despite the variation set by the *Magna Carta* to SMEs, encouraging banks to lend more to micro and small firms, UKBs may be more willing to lend to medium-sized firms as they are assumed to be less informationally opaque. The thrift banks' average compliance to the *Magna Carta* for both small and medium-sized firms is way above the lending requirement, averaging over 27.3% and almost 13%, for micro and small, and medium-sized firms, respectively, over the period of study. Unlike the UKBs, thrift banks' average exposure to the small firms is significantly higher from their exposure to medium-sized firms.

We show in Table 6 the frequency in terms of the number of quarters the bank complied at varying degrees with the mandated credit program for SMEs. We define the following variables to describe the behavior of banks toward compliance to the *Magna Carta* for SMEs, distinguishing micro and small firm financing from medium-sized firm financing: *UNDERCOMPLY* is a dummy variable that takes the value 1 if the bank's compliance ratio in a quarter is less than the mandatory bank lending requirement (LIMIT) - 6% for small firms until Q2:2008, and 8%, thereafter; and 2% for medium-sized firms; JUSTCOMPLY is a dummy variable that is equal to 1 if LIMIT ≤ *Compliance Ratio* < LIMIT< (1.1*LIMIT); *OVERCOMPLY* takes the value 1 if (1.1*LIMIT) ≤ *Compliance Ratio* < LIMIT < (2*LIMIT) and; *SUPERCOMPLY* is a dummy variable that takes the value 1 if *Compliance Ratio* ≥ (2*LIMIT).

Table 6. Frequency of bank compliance to the *Magna Carta* for SMEs using the whole sample of banks and across bank types in the Philippines, 2005-2010

	Frequency in terms of no. of quarters the banks complied with the *Magna Carta*						
Whole Sample	**0**	**(1-4)**	**(5-8)**	**(9-12)**	**(13-16)**	**(17-20)**	**(21-24)**
Small Firm Financing							
UNDERCOMPLY	65.4	20.1	6.9	5.5	2.1	0.0	0.0
JUSTCOMPLY	51.6	22.1	9.7	11.8	3.5	1.3	0.0
OVERCOMPLY	39.1	22.2	15.2	13.2	8.3	1.4	0.6
SUPERCOMPLY	48.8	15.9	5.5	10.4	5.5	5.5	8.4
Medium Firm Financing							
UNDERCOMPLY	84.8	11.8	2.1	0.0	1.4	0.0	0.0
JUSTCOMPLY	75.1	17.3	3.5	2.8	0.7	0.7	0.0
OVERCOMPLY	55.7	19.4	14.5	5.5	3.5	1.4	0.0
SUPERCOMPLY	30.8	10.4	4.8	10.4	9.7	8.3	25.6
UKBs							
Small Firm Financing							
UNDERCOMPLY	49.2	26.5	6.6	13.3	4.4	0.0	0.0
JUSTCOMPLY	18.2	17.7	22.1	26.5	11.1	4.4	0.0
OVERCOMPLY	27.1	26.5	11.1	19.9	13.3	0.0	2.2
SUPERCOMPLY	75.7	19.9	0.0	2.2	2.2	0.0	0.0
Medium Firm Financing							
UNDERCOMPLY	86.7	13.3	0.0	0.0	0.0	0.0	0.0
JUSTCOMPLY	64.6	19.9	6.6	6.6	2.2	0.0	0.0
OVERCOMPLY	49.2	15.5	17.7	8.8	8.8	0.0	0.0
SUPERCOMPLY	29.3	15.5	6.6	2.2	6.6	6.6	33.2
Thrift Banks							
Small Firm Financing							
UNDERCOMPLY	72.8	17.1	7.1	2.0	1.0	0.0	0.0
JUSTCOMPLY	66.8	24.2	4.0	5.0	0.0	0.0	0.0
OVERCOMPLY	44.6	20.2	17.1	10.1	6.0	2.0	0.0
SUPERCOMPLY	36.5	14.1	8.1	14.1	7.1	8.1	12.1
Medium Firm Financing							
UNDERCOMPLY	83.9	11.1	3.0	0.0	2.0	0.0	0.0
JUSTCOMPLY	79.9	16.1	2.0	1.0	0.0	1.0	0.0
OVERCOMPLY	58.7	21.2	13.1	4.0	1.0	2.0	0.0
SUPERCOMPLY	31.5	8.1	4.0	14.1	11.1	9.1	22.2

UNDERCOMPLY is a dummy variable that takes the value 1 if the bank's compliance ratio for each quarter is less than the mandatory bank lending requirement (LIMIT) - 6% for small firms until Q2:2008, and 8%, thereafter,; and 2% for medium-sized firms). JUSTCOMPLY is a dummy variable that is equal to 1 if LIMIT ≤ *Compliance Ratio* < LIMIT<(1.1*LIMIT); *OVERCOMPLY* takes the value 1 if (1.1*LIMIT) ≤ *Compliance Ratio* < LIMIT<(2*LIMIT); and *SUPERCOMPLY* is a dummy variable that takes the value 1 if Compliance Ratio ≥ (2*LIMIT).

We note that 65% of the banks in our sample have complied with the bank regulation for small firms for at least a quarter and 7.6% have at least "under"complied in 9 quarters or more. Moreover, 30% of the banks have been exposed to small firms, with compliance ratios that are equal to at least 16% of their loan portfolio for more than two years (>8 quarters), while almost half of the banks has never allotted 16% or more of their loan portfolio on financing small firms. This is a little bit surprising since the average compliance ratio as shown in Table 5 is 16.64% over the period of study, further hinting that the distribution of compliance ratios may be skewed. The story is a little bit different in terms of medium firm

financing. Almost 85% of the banks have complied at least once with the *Magna Carta* for medium-sized enterprises and a sizeable 69% of the banks have medium-sized firm loan exposure of at least twice the required 2%.

We also look into the differences in terms of the extent of compliance by bank type. We highlight that the main difference between the UKBs and thrift banks is their exposure to small firms. Almost 50% of the UKBs have "under"complied for at least a quarter, compared with only 27% for thrift banks. 17% of the UKBs have "under"complied for at least two years, compared with only 3% in the case of thrift banks. Moreover, we find that 12% of the thrift banks have been financing small firms with at least 16% of their loan portfolio for at least 5 years (>20 quarters). No UKBs, however, have allotted 16% or more of their loan portfolio to small firms for more than 4 years. In terms of medium firm financing, we find more similarities between the two types of banks, with 33% of the UKBs even "super" complying for at least 5 years compared with only 22% of the thrift banks.

Overall, the data suggests that universal and commercial banks have higher tendencies to "under" comply with the *Magna Carta* for micro and small enterprises and have low exposure to small firm financing compared with thrift banks. This may be indicative of the advantage of smaller banks over larger banks with regards to financing smaller firms. Moreover, both bank types comply with the mandated credit to medium enterprises more easily, particularly the universal and commercial banks, which may be because of the informational risk differences between the two types of firms. Moreover, both bank types do not seem to have problems satisfying the mandated credit to medium enterprises.

3.2.2. Trends/Stylized Facts of Compliance to the Magna Carta for Micro, Small and Medium Enterprises in the Philippines

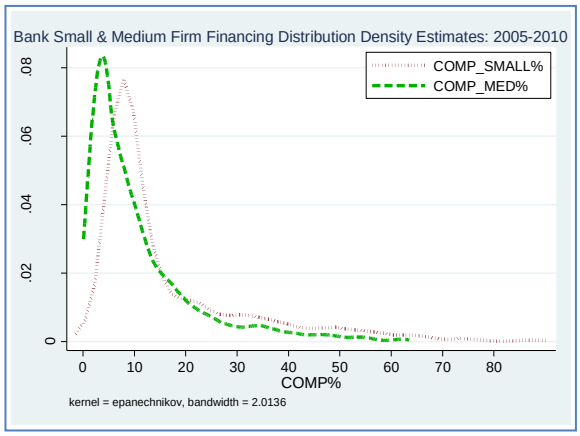
In this section, we show the different trends in the distribution and patterns of compliance to the *Magna Carta* for micro, small and medium enterprises (SMEs) from 2005 to 2010.

3.2.2.1 Distribution of Compliance Ratios

Figure 5 depicts the kernel density estimates of the distribution of compliance to the *Magna Carta* for SMEs from 2005-2010. The distributions are positively skewed for both bank financing to micro and small and medium-sized firms. Bank financing to SMEs, for most banks, comprise only about 10% of their loan portfolios net of exclusions, reflecting the concentration of bank compliance ratios to small firms around the legal limit. Compliance

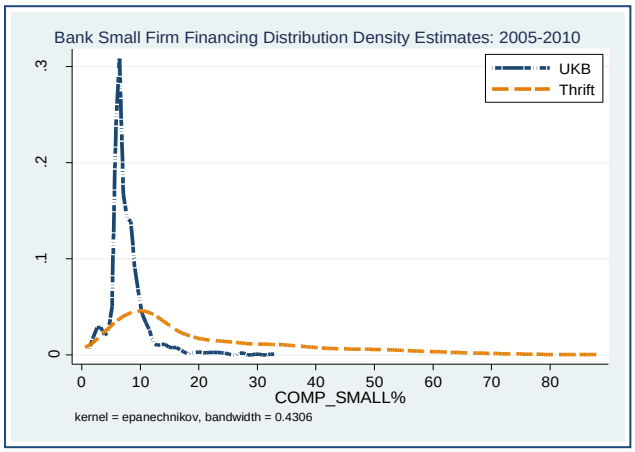
ratios to the *Magna Carta* for medium enterprises have higher density at a slightly lower ratio of compliance, which reflects the lower required lending to medium enterprises.

Figure 5. Kernel density estimates of the distribution of compliance to the *Magna Carta* for micro and small and medium –sized enterprises, 2005-2010

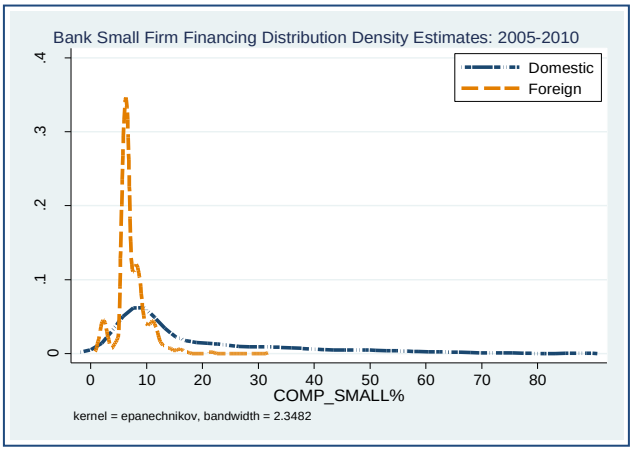


We now look into how making a distinction between universal and commercial banks and thrift banks, and domestic and foreign banks modifies the story for the whole sample small bank financing distribution. The six parts of Figures 6 and 7 show the distribution of compliance to the *Magna Carta* for micro and small enterprises, and medium-sized enterprises, respectively, according to bank type, ownership and across time.

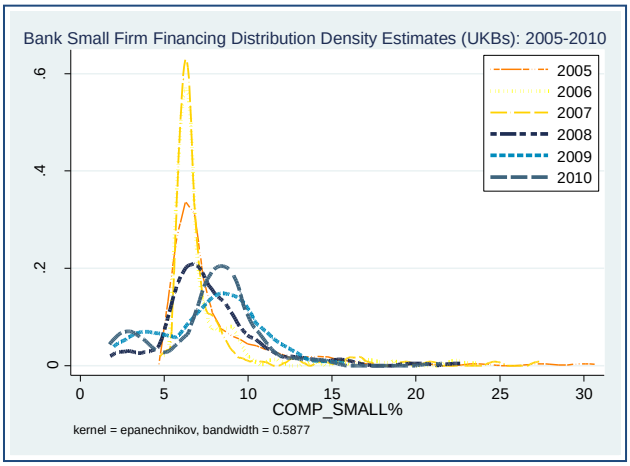
Figure 6. Bank Small Firm Financing Distribution Density Estimates, 2005-2010



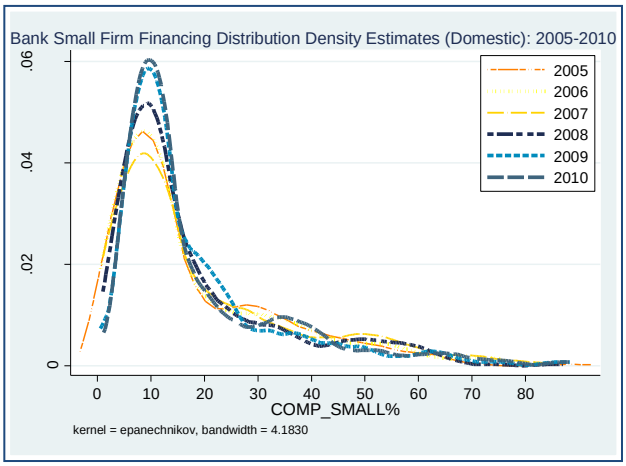
a) UKBs vs Thrift Banks



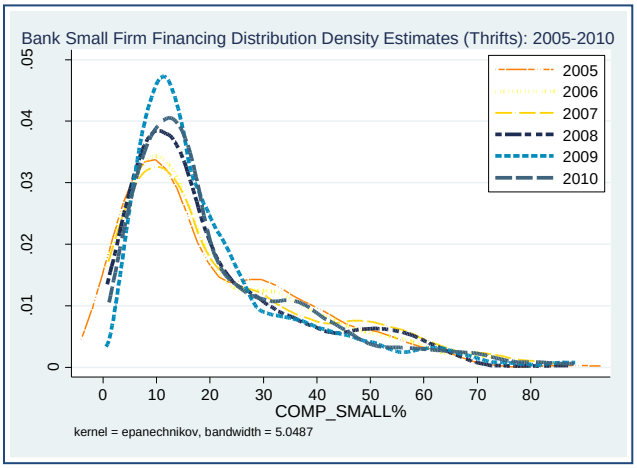
b) Domestic vs Foreign



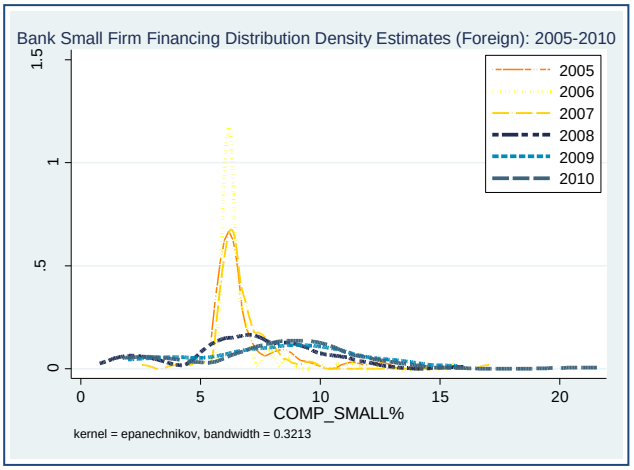
a.1) UKBs through time



b.1) Domestic banks through time



a.2) Thrift banks through time



b.2) Foreign Banks through time

Figures 6.a and 6.b display the differences in the shapes of the distribution of compliance ratios to small firm financing between UKBs and thrift banks and between domestic banks and foreign banks. This further confirms the heterogeneity of our sample of banks when it comes to small firm financing. The distributions of compliance ratios to small

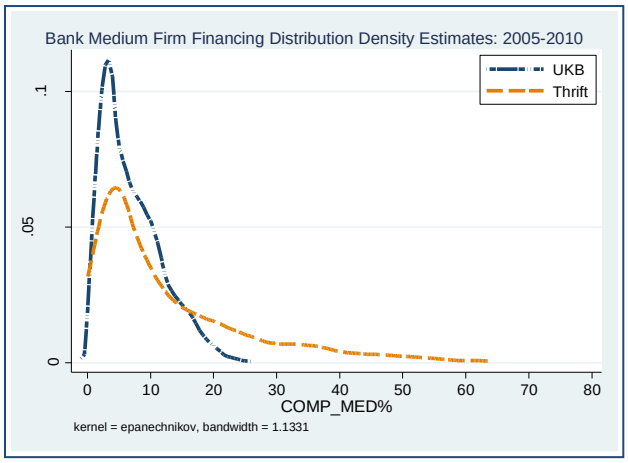
firm financing of UKBs and foreign banks are highly skewed to the right, where significant clusters appear at approximately 8%. On the other hand, the distributions among thrift banks and domestic banks are much more widely dispersed along the compliance ratio scale. These findings are akin to many studies in both the empirical and theoretical literature, which predict that bigger banks and foreign-owned banks may be disadvantaged in lending to informationally opaque small businesses.

Changes in the distribution of small firm financing across time are shown in Figures 6.a.1, 6.b.1, 6.a.2 and 6b.2 for the universal and commercial banks (UKBs), domestic banks, thrift banks and foreign banks, respectively. For the UKBs and foreign banks, obviously, there has been a sea-change in the shape of small firm financing distribution over time, notably after 2007. In part, this change can be characterized as an increase in small firm financing. This may be indicative of the UKBs and foreign banks' reaction to the increased mandatory lending requirement to micro and small enterprises from 6% to 8% in 2008. Moreover, for UKBs, the distribution has become less dispersed across the compliance ratio scale. In other words, there were relatively more UKBs with low compliance ratios (at most 12%) and relatively less at higher levels after 2007 than the 2005-2007 period.

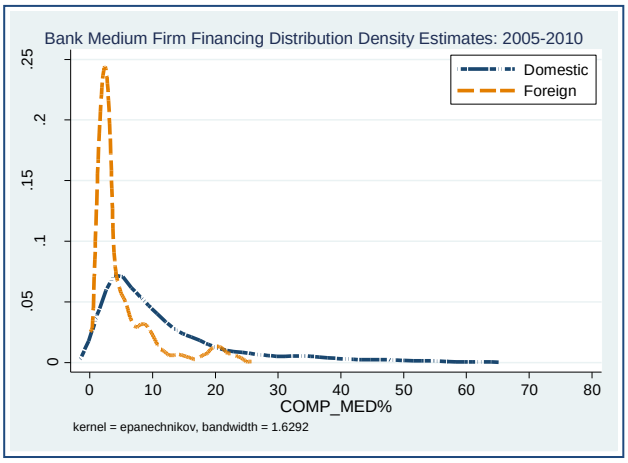
Unlike the UKBs and foreign banks, we do not observe very significant changes in the shapes of compliance ratio to small firm financing distributions over time for thrift banks and domestic banks. The direction, however, of small firm financing for these groups of banks after 2008 is toward higher concentration on low levels of compliance ratios.

Figure 7, which shows the distribution of bank medium-sized firm financing distribution, suggests a slightly different story from the small firm financing distribution. The difference in the shape of the distributions between UKBs and thrift banks is much less pronounced. UKBs have relatively high levels of medium firm financing, beyond what is required. We observe that there are more UKBs than thrift banks with compliance ratios to medium firm financing between the 2%-15% compliance ratio scales, signaling their relatively high exposure to these firms. The difference in the shapes of the distributions of medium firm compliance ratios between domestic banks and foreign banks as shown in Figure 7.b is comparable to what was observed in their small firm financing distributions. A very large frequency of foreign banks has low medium firm compliance ratios, clustering around the minimum required compliance ratio of 2%.

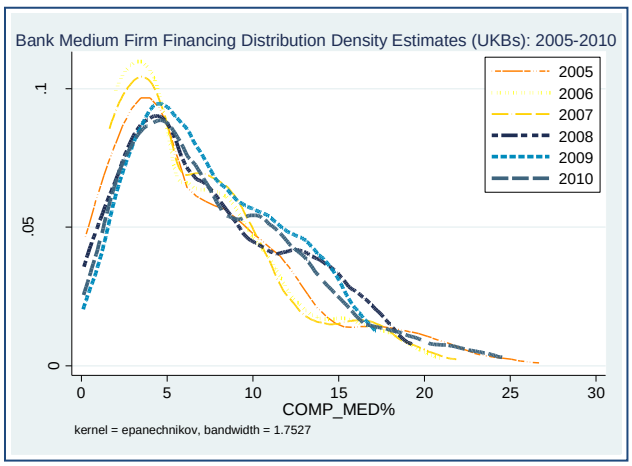
Figure 7. Bank Medium-Sized Firm Financing Distribution Density Estimates, 2005-2010



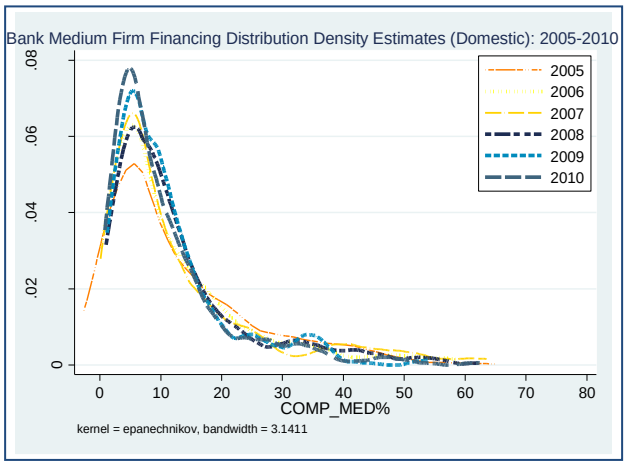
a) UKBs vs Thrift Banks



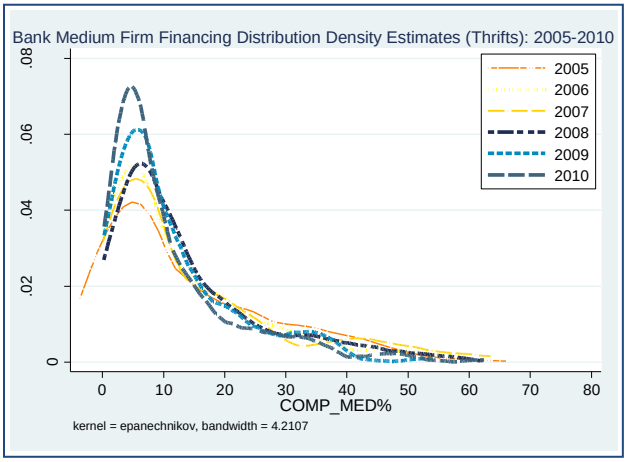
b) Domestic vs Foreign



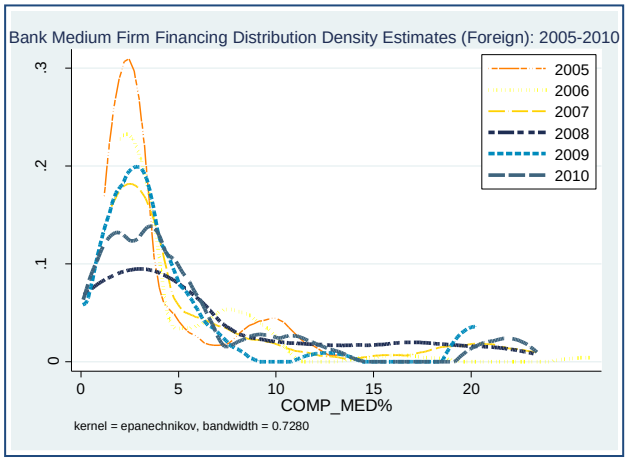
a.1) UKB through time



b.1) Domestic banks through time



a.2) Thrift banks through time



b.2) Foreign banks through time

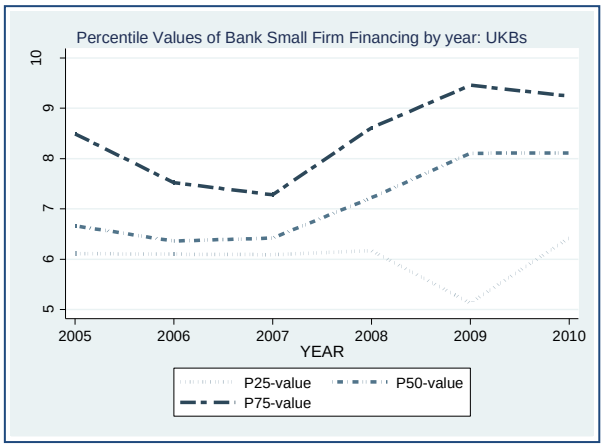
Over time, Figure 7a.1 shows that while the shape of the distribution of medium firm financing for UKBs did not change, we observe small but significant shifts through time, particularly between the 10%-15% compliance ratio scales. More and more UKBs have become more exposed to medium firm financing after 2007, which may indicate their increased confidence in lending to these firms. Moreover, for domestic banks and thrift banks, we observe an increase in concentration at low levels of compliance over time, suggesting a decrease in the exposure to medium firms for both thrift banks and domestic banks.

3.2.2.2 Patterns of compliance ratios across bank type, ownership and location

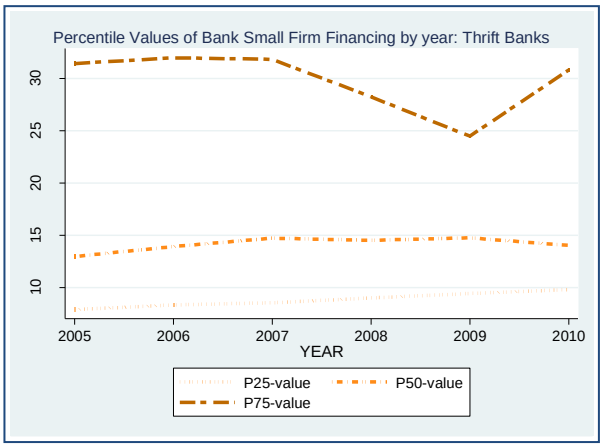
The six parts of Figure 8 illustrate the extent of bank small firm financing using percentile values across banks of different types, ownership and location over the period of study, 2005-2010. Figure 8.a.1 shows that at least 75% of the UKBs comply to the *Magna Carta* for micro and small enterprises from 2005 to 2007, when the legal limit was set at 6%. This percentage of UKBs that comply diminished, however, from 2008 although we see increases in compliance from the end of 2007. By 2010, we see that the 25th percentile value is pegged at almost the same compliance ratio as in 2005, around 6%, which is 2% shy from the required small firm financing. Only around 50% of the UKBs are able to comply by 2010. Moreover, Figure 8a.1 shows that overall, commercial banks that were "just" complying, with small firm financing compliance ratios pegged at the minimum 6% were the ones severely affected by the imposed adjustment in the compliance ratio for micro and small firms. For the thrift banks, although we can infer that from 2008, at least 75% of the banks comply with the mandated credit allocation of 8% to small enterprises and that 50% of the banks allot almost 15% of their loans to small firms, we observe a decreasing trend of compliance of the 75th percentile value from 2007 to 2009. If in 2005, a quarter of the thrift banks allot at least 30% of their loans to micro and small firms, in 2009, they only allot a minimum 25% suggesting that thrift banks that have been previously lending a lot to micro and small firms have decreased the share of small firm lending in their loan portfolio from 2007. We also observe, however, a recovery by the end of 2010, where percentile values approximate their initial values in 2005. Interestingly, we observe a similar decreasing trend in the overall conditions of the macroeconomy from 2007 to 2009, owing to spillovers from the global financial crisis.

For domestic banks, we see modest increases in the ratio of micro and small firm lending to total loan portfolio in terms of the 25th and 50th percentile values. We, however, observe that by 2010, the gap has significantly diminished between the 25th and 75 percentile values. Only approximately 23% (vs 27% in 2007), is held by a quarter of the domestic banks.

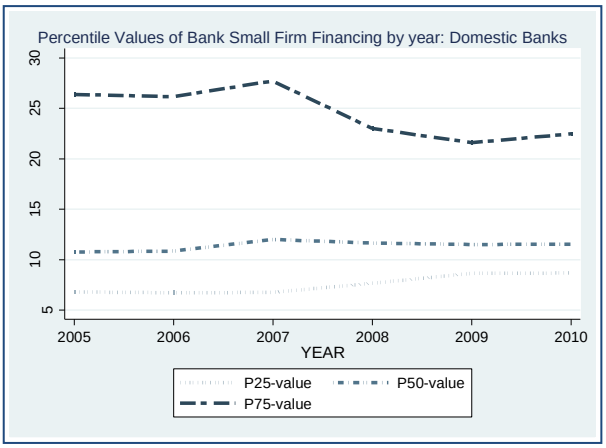
Figure 8. Percentile Values of Bank Small Firm Financing through time, 2005-2010



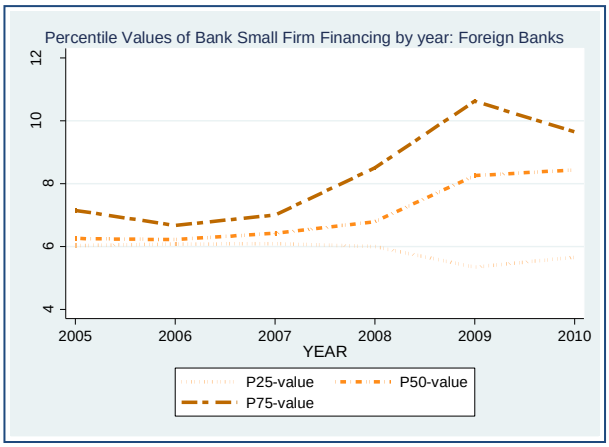
a.1) UKBs



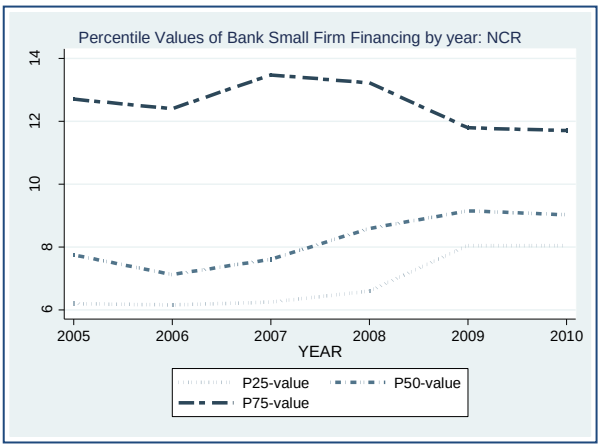
a.2) Thrift Banks



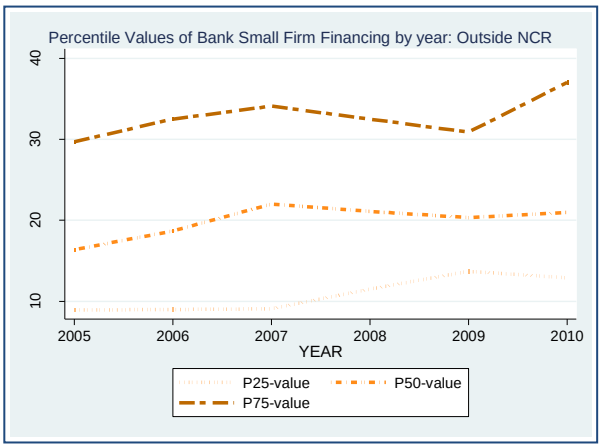
b.1) Domestic Banks



b.2) Foreign Banks



c.1) NCR (metropolitan)



c.2) Outside NCR (rural)

The scenario observed in domestic banks, however, is opposite to what is implied in Figure 8b.2, in the case of foreign banks, where we generally observe an increasing trend of small firm financing. We note that if in 2005, only 25% of the foreign banks allot around 7%

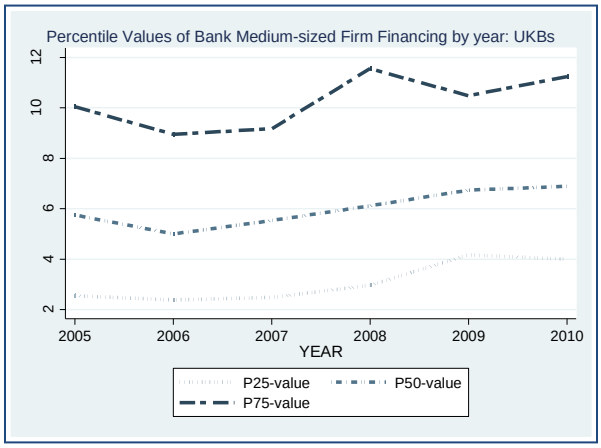
of their loan portfolio in small firm lending, at least 50% in 2010 allot at least 8% of their loan portfolio to small firms. Compliance, however, is another story. If at the beginning of our study period, 2005, at least 75% of the banks comply with the legal limit of 6%, by the end of the study period, a smaller proportion of the foreign banks comply with the legal limit set at 8%, after the proposed amendment in 2008. This may imply that the increase in the mandatory allocation to small firms is less binding for this group of banks. This is expected, however, because of numerous disadvantages of foreign banks often cited in the literature in terms of lending to small business, which is further exacerbated by the branching restrictions imposed on foreign banks in the Philippines.

In terms of location, we generally observe an increasing trend in the compliance to the *Magna Carta* for micro and small enterprises for banks headquartered in the National Capital Region (NCR) or the metropolitan. The variations of the 25^{th} percentile values between 2005 and 2010 may reflect these banks' reaction to the amendment of the *Magna Carta* for micro and small firms in 2008. We assert that for at least 75% of these banks, the increase in the mandatory lending to micro and small firms is binding. Moreover, banks headquartered outside the metropolitan, generally have higher compliance ratios in terms of small firm financing than their counterparts in the metropolitan. By 2010, at least, 75% of these banks allot at least approximately 13% of their portfolio to small firms.

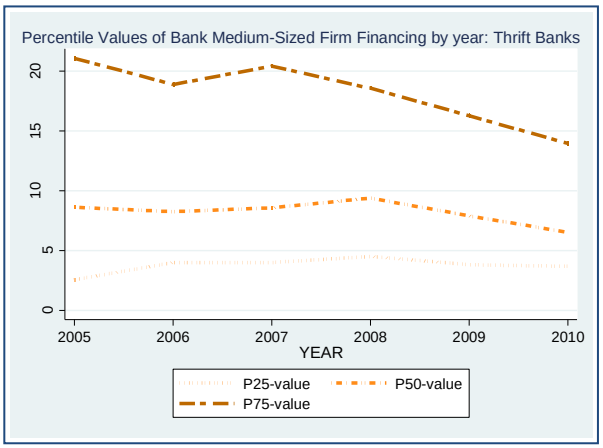
Figure 9 meanwhile depicts the extent of bank medium-sized firm financing from 2005 to 2010 by bank type, ownership and location using percentile values. We highlight the case of UKBs where financing is seen to be increasing over time. By the end of 2010, at least 75% of the UKBs allot at least 4% of their total loan portfolio to medium-sized enterprises, doubling the minimum allocation set at 2%. While this is also a fact for thrift banks, domestic banks and banks headquartered outside the metropolitan, we generally observe a decreasing trend of medium-sized firm financing for these group of banks. For foreign banks, we observe an optimistic outlook on their level of medium-sized firm financing as 50% of the foreign banks allot two times the required 2% mandatory credit allocation.

Overall, we observe that it is less difficult for large banks and foreign banks to comply with the *Magna Carta* for medium enterprises compared with that of micro and small enterprises.

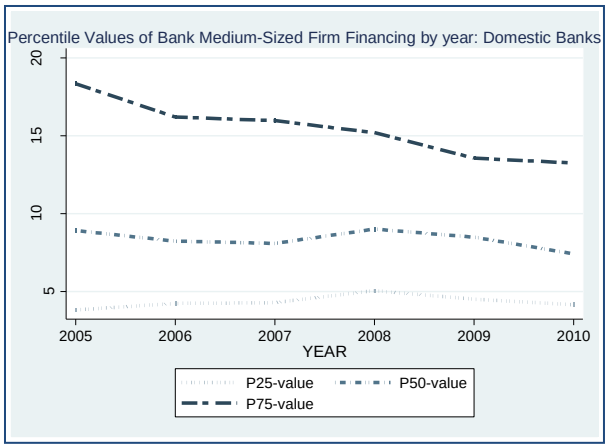
Figure 9. Percentile Values of Bank Medium-Sized Firm Financing through time, 2005-2010



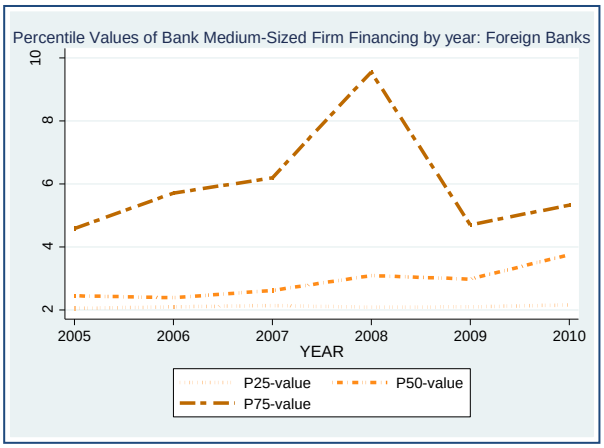
a.1) UKBs



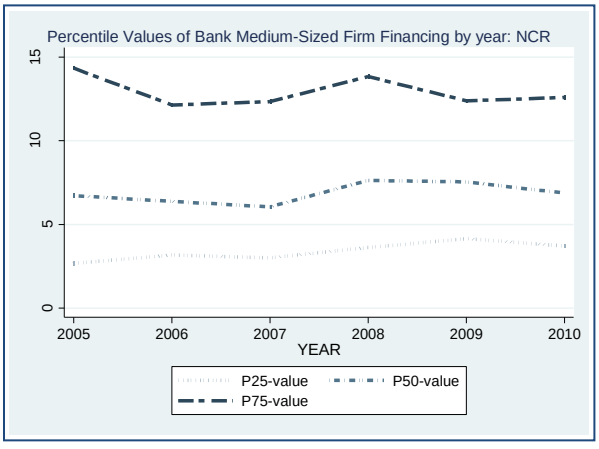
a.2) Thrift Banks



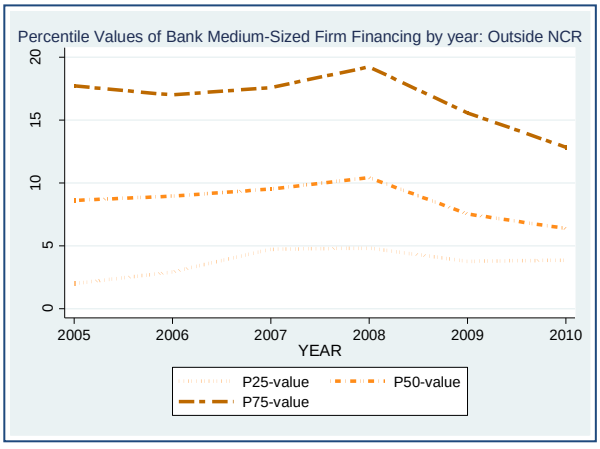
b.1) Domestic Banks



b.2) Foreign Banks



c.1) NCR (metropolitan)



c.2) Outside NCR (rural)

We highlight two significant changes after 2007 that may potentially affect small businesses financing: 1) the increased mandatory lending allocation to micro and small enterprises in 2008, and 2) the global financial crisis (GFC) from 2008 to 2009.

In order to analyze the extent of bank small and medium-sized firm financing after 2007, we group the banks according to their financing behavior from 2005 to 2007. We thus define the following variables: *StartLow*, *StartModerate*, *StartHigh* and *StartVeryHigh. StartLow* are the banks whose average compliance ratios to the *Magna Carta* for micro and small, and medium Enterprises from 2005-2007 are below the 25th percentile. *StartModerate* and *StartHigh* comprise the banks whose average compliance from 2005-2007 are higher than the 25th percentile, but less than the median value and above the median but less than the 75th percentile, respectively. Finally, *StartVeryHigh* consists of banks whose average compliance from 2005-2007 are higher than the 75th percentile. Figures A1 and A2 (shown in Annex 2) illustrate the behavior of these banks through time. We note three important observations from the six-part Figure A1 depicting the median values of bank small firm financing through time according to bank type, ownership and location. First, for banks that started low and moderate (*StartLow* and *StartModerate*), their median values are stable (slight increases, but not notable) from 2005-2010, with the exception of foreign banks and banks headquartered outside the metropolitan. Second, for the banks that allot a significant proportion of their loan portfolio in financing micro and small firms from 2005-2007, we see a significant decrease after 2007 for these group of banks regardless of the bank type, ownership and location. Third, we observe an increasing small firm financing trend for the foreign banks and Outside NCR (rural) for both *StartLow* and *StartModerate.*

In terms of medium-sized firm financing, consistent with Figure A1, Figure A2 shows that banks that allocate a significant proportion of their loan portfolio in financing medium-sized firms notably decrease their lending from 2007, where median values between 2005 and 2010 are estimated to decrease by 10% of the total loan portfolio (with the exception of banks headquartered outside NCR where decrease is about 5%). In contrast with small firm financing, we observe foreign banks' medium-sized firm financing has been decreasing throughout the period of study, notably those that are categorized under *StartLow* and *StartModerate.*

The summary of the stylized facts and trends of the compliance ratios to the *Magna Carta* for micro, small and medium-sized enterprises in the Philippines of UKBs and thrift banks are shown in Table 7.

Table 7. Summary of the Stylized facts of the universal, commercial and thrift bank compliance ratios to the *Magna Carta* for micro and small medium enterprises in the Philippines, 2005-2010

- The distributions of bank financing to both micro and small and medium-sized firms are positively skewed, with density peaking near the minimum mandatory credit allocation requirement.
- Kernel density estimates suggest that UKBs and foreign-owned banks have significantly lower exposure to micro and small firms compared with thrift banks and domestic banks. For the former, exposures are concentrated around the minimum required.
- Banks located outside the metropolitan have higher exposures to micro and small firms compared with banks headquartered in the metropolitan. Half of these banks allot at least 20% of their loan portfolio net of exclusions to micro and small firms.
- Although exposures to medium-sized firm financing for thrift banks, domestic banks and banks headquartered outside the metropolitan are significantly higher than their counterparts, these values have been decreasing after 2008.
- It is relatively easier for UKBs, foreign-owned banks and banks located in the metropolitan to comply with the *Magna Carta* for medium-sized firms compared with the *Magna Carta* for micro and small firms.
- After 2008, we observe increases in the micro and small firm financing for UKBs and foreign-owned banks reflecting their adjustments to the amended *Magna Carta* for micro and small enterprises, increasing the legal limit percentage from 6% to 8%.
- While 75% of the UKBs and foreign-owned banks in the sample comply to the *Magna Carta* for micro and small firms when the legal limit was 6%; from 2009, only half of the UKBs and foreign-owned banks in the sample have micro and small financing ratios above the legally required 8% of the loan portfolio net of exclusions.
- Thrift banks and domestic banks with loan portfolios concentrated on small business loans (at least 25%) have decreased their share of micro and small firm financing between 2007 and 2009. We note that during this period, overall macroeconomic conditions have also stagnated due to spillovers from the Global Financial Crisis.
- Regardless of the bank type, ownership and location, we observe significant decreases in SME financing after 2007 for banks, which allot a significant proportion of their loan portfolio on micro, small and medium-sized firms from 2005-2007.

4. The determinants of bank micro, small and medium-sized firm financing in the Philippines

Focusing on the supply side dimension of SME financing, from a bank's perspective, we particularly investigate in this section the factors that determine bank SME financing in the Philippines. We, thus, answer three questions: 1) To what extent do bank size and ownership affect micro, small and/or medium-sized firm financing?; 2) Is bank SME financing pro-cyclical?; and 3) Do UKBs and thrift banks differ in terms of what determines small and medium-sized business financing?

4.1. Size

Previous studies that focus on bank financing to small and medium-sized enterprises using firm-level/loan data identify bank size as one of the primary determinants of SME financing. A lot of empirical work support the "small bank advantage hypothesis" (Akhigbe and McNulty, 2003; Carter *et al*., 2004), which purports that small banks are in a better position to lend to small businesses than large banks. Several authors that include Nakamura (1993, 1994) and Mester (1999) point out that a small bank has *information advantage* over a large bank because of the former's organizational structure, which is more conducive to lending to small businesses. Agency problems that arise between a bank and its loan officers are less severe in smaller banks because they have fewer managerial levels (Berger and Udell, 2002). On a similar note, Berger *et al*. (2001) suggest the large banks are at a disadvantage when lending to small businesses because they are often headquartered at a substantial distance from these borrowers. In addition, they often tend to lend to larger, older and more financially secure businesses that are most likely to receive transaction loans (Haynes *et al*., 1999).

There are some studies, however, which show that bank size does not necessarily have a negative impact on small business lending. Strahan and Weston (1998) examining the effect of mergers and acquisitions (M&As) on small business lending, find that M&As between small banks increase, rather than decrease small business lending. Using bank-level data, Shen *et al*. (2009), meanwhile find that size is not significant in determining banks' lending to SMEs in Chinese banks.

4.2. Ownership

Many empirical studies support a "foreign-owned bank barriers hypothesis", suggesting that foreign-owned banks are less likely to lend to small businesses than domestically-owned banks (Berger *et al*., 2001). They argue that informational distance is too

high for foreign-owned banks because they are headquartered at a considerable distance from small firm borrowers and thus, they may be confronted with more severe agency problems that may stem from market environment, language and cultural differences. These differences make it costly for foreign-owned banks to collect and analyze locally based relationship information, which are essential when lending to small businesses. An empirical study by Grosse and Goldberg (1991) stresses that foreign-owned banking organizations tend to lend to large corporate affiliates of their customers in their home nation.

4.3. Macroeconomic Factors/ SME-Specific Factors

We also examine the extent to which the supply of bank financing to SMEs is dependent on macroeconomic fluctuations. An empirical work by Covas and den Haan (2006) studying the U.S. listed firms show that business cycle fluctuations may have significant impact on the supply of different forms of debt and equity finance for small businesses. According to Masschelein (2007), several sources of the pro-cyclicality in lending and borrowing include the following: 1) fluctuations in the quality of banks' and borrowers' balance sheets; 2) information asymmetries between borrowers and lenders and; 3) inappropriate responses by financial system participants. When pro-cyclicality of SME financing exists, there may be adverse effects on SMEs. In an economic downturn, it is difficult for small business borrowers to obtain funding even when their projects are expected to be highly profitable.

4.4. Empirical Estimation

To investigate the extent by which size, ownership and macroeconomic factors affect micro, small and medium-sized financing in the Philippines, we estimate the following equation:

$$y_{it} = \alpha + \beta_1 \text{FOREIGN}_i + \beta_2 \text{SIZE}_{it} + \beta_3 \text{MACRO\_SME}_t + \delta_i Z + \sum_{k=1,l=2008}^{3,2010} \nu_k \text{yrl} + \sum_{m=1,s=2}^{3,4} \eta_m \text{qtrs} + \varepsilon_{it} \quad \text{Eq 1}$$

Where y_{it} is the share of bank *i*'s compliance to the *Magna Carta* for micro, small and medium-sized firm financing enterprises, separately, measuring micro and small firm financing and medium-sized firm financing, respectively (COMP_SMALL% and COMP_MED%). In addition, we also introduce two dependent variables, DIFFCOMP_SMALL% and DIFFCOMP_MED%, which are the differences between a bank's compliance to the *Magna Carta* for small and medium enterprises, respectively and the minimum mandatory credit allocation to each firm type. These variables capture excess SME financing, beyond the legal limit set by the BSP. FOREIGN_i is a dummy variable that is

equal to 1 if a bank is foreign-owned, and zero, otherwise; $SIZE_{it}$ is the natural logarithm of total assets of bank *i* at quarter *t*. $MACRO\_SME_t$ comprises several factors that are entered in the equation, one at a time because these variables are highly correlated, which include GDPGR or the growth rate of the gross domestic product at quarter *t*, BCI_t or the firms' confidence index of the overall business outlook on the macro economy, and $CREDIT\_ACCESS_t$ or the firms' business outlook index on own operations based in terms of credit access. These SME-specific factors, BCI_t and $CREDIT\_ACCESS_t$ are derived from the Business Expectations Survey, which is a quarterly survey of firms from the Security and Exchange Commission's Top 5000 corporations conducted by the BSP. According to the BSP's report, the results of the survey provide advance indication of the direction of change in the overall business economy and in various measures of activity at the companies' own operations as well as in selected economic factors. The confidence indices are computed as the percentage of firms that answered in the affirmative less the percentage of firms that answered in the negative in a given indicator. Z is a vector of control variables; yrl and qtrs are the year and quarter dummies, respectively. The variables in Eq 1 are defined and described in the Annex 1. We include a number of variables in Eq (1) to control for other factors that could affect micro, small and medium-sized financing. These variables are the following:

$CONGLOMERATE_i$ is a dummy variable, which takes the value 1 if a bank is part of a domestic financial conglomerate and zero, otherwise. Since conglomerates relatively have more complex organizational structures, agency problems may be more severe and non-conglomerates may be in a better position to lend to small businesses.

$FUNDING_{it}$ is the ratio of total deposits to total assets of bank *i* at quarter *t.* This variable captures the differences among bank's funding structure that could affect bank SME financing.

$LESSCOMP_{it}$ is a dummy variable, which takes the value 1 if a bank is headquartered outside the National Capital Region (NCR), and zero, otherwise. This variable captures location and market concentration, broadly defining bank competition. Bank competition is often higher in the metropolitan than in rural areas. Banks located in less competitive markets often have greater incentives to invest in loan relationships because there is a lower probability that the borrower will shift to a competing lender (Petersen and Rajan, 2005). We thus expect banks headquartered or located outside the NCR to have higher small business financing.

$POLRATE_t$ measures the central bank's policy rate, which affects the cost of credit and thus, small business financing.

To estimate Eq 1, we use the tobit regression model because the distributions of our dependent variables, measuring SME financing are positively-skewed because of the mandatory credit allocation to SMEs.

4.5. Empirical Results

Table 8 reports the regression results of Eq. 1. Regardless of the firm size, the results support the "foreign-owned bank barriers hypothesis", which states that foreign banks are disadvantaged in lending to relatively opaque small businesses compared with domestic banks. Aside from organizational diseconomies of providing lending services to small businesses while providing transactional lending services to large enterprises, some studies find that foreign-owned banks tend to have a wholesale orientation (DeYoung and Nolle, 1996). Our findings also show that size is negatively and significantly related with small firm financing but not in medium-sized firm financing. This is not surprising as medium-sized firms are relatively less opaque than the smaller firms, and are more likely to satisfy basic lending requirements such as financial statement reports, collateral, among others. These results thus confirm the "small bank advantage hypothesis", suggesting that small banks are in a better position to lend to small businesses. We also find that banks that are part of a domestic financial conglomerate have lower compliance ratios to the mandatory credit allocation to both small and medium-sized firms. Banks that are affiliated are usually large and have more complex organizational structures, further complicating the agency problem between senior management and loan officers, and hence, lend less to SME borrowers. Moreover, our results also show that banks headquartered in less competitive regions or outside the metropolitan, have lower medium-sized firm financing compared to banks headquartered in the metropolitan.

Our results also suggest cyclicality of small firm financing. Banks are found to be affected by how firms perceive the overall business activity and their own operations. Among the Macro_SME factors, it is worth noting that GDPGR or the growth rate of the gross domestic product has the highest coefficient estimate suggesting that there are several aspects of the macroeconomy that are not captured by the business expectations confidence indices when explaining small firm financing. This finding provides explanation to why we observe a decreasing trend in small firm financing particularly those that should not be affected by the amendment of the *Magna Carta* for micro and small firms as shown in Figure 9 and 11. The

end of 2008 towards the latter parts of 2009 has been marked by decreasing confidence indices, if not negative, which may be indicative of the effects of the Global Financial Crisis (GFC). We do not find, however, evidence that indicates medium firm financing to be cyclical. Compared with micro and small enterprises, medium-sized firms are less informationally opaque and thus, medium business financing may not be subject to macroeconomic fluctuations.

Table 8. The determinants of the extent of bank small and medium –sized firm financing in the Philippines using quarterly data, 2005-2010 (WHOLE SAMPLE). The table shows regressions of variables capturing the extent of small and medium firm financing from several factors – ownership, bank-specific variables, macroeconomic and SME-specific variables. COMP_SMALL% is the share of a bank's compliance to the *Magna Carta* for Micro and Small Enterprises (MSEs) to total loans net of exclusions. COMP_MED% is the share of a bank's compliance to the *Magna Carta* for Medium Enterprises (MEs) to total loans net of exclusions. DIFFCOMP_SMALL% is the difference between COMP_SMALL% and the legal limit of the required lending to MSEs. DIFFCOMP_MED% is the difference between COMP_MED% and the legal limit of the required lending to MEs. FOREIGN takes the value 1 if the bank is foreign-owned (foreign branch or subsidiary) and zero, otherwise. CONGLOMERATE is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise. SIZE is the natural logarithm of total assets. FUNDING is the ratio of total deposits to total assets. LESSCOMP is a dummy variable that is equal to 1 if a bank's headquarters is located outside the National Capital Region (NCR), and zero, otherwise. POLRATE is the Central Bank's policy rate. GDPGR is the growth rate of the gross domestic product. BCI is the confidence index of the firms' overall business outlook of the economy. CREDIT_ACCESS is the credit access confidence index of the firms. yr2008, yr2009 and yr2010 are year dummies. qtr2, qtr3 and qtr4 are quarter dummies. ***, ** and *indicate 1%, 5% and 10% levels of significance respectively. T-statistics in parentheses.

	(I)	(II)	(III)	(I)	(II)	(III)	(I)	(II)	(III)	(I)	(II)	(III)
	COMP_SMALL%			**DIFFCOMP_SMALL%**			**COMP_MED%**			**DIFFCOMP_MED%**		
FOREIGN	**-10.96*****	**-10.99*****	**-11.00*****	**-10.89*****	**-10.95*****	**-10.95*****	**-12.29*****	**-12.30*****	**-12.31*****	**-12.29*****	**-12.30*****	**-12.31*****
	(-14.80)	(-14.80)	(-14.81)	(-14.30)	(-14.36)	(-14.36)	(-15.29)	(-15.27)	(-15.28)	(-15.29)	(-15.27)	(-15.28)
CONGLOMERATE	**-3.575*****	**-3.570*****	**-3.572*****	**-3.582*****	**-3.584*****	**-3.584*****	**-7.159*****	**-7.151*****	**-7.154*****	**-7.159*****	**-7.151*****	**-7.154*****
	(-4.32)	(-4.31)	(-4.31)	(-4.20)	(-4.20)	(-4.19)	(-9.11)	(-9.10)	(-9.10)	(-9.11)	(-9.10)	(-9.10)
SIZE	**-2.210*****	**-2.212*****	**-2.209*****	**-2.339*****	**-2.338*****	**-2.335*****	0.243	0.239	0.241	0.243	0.239	0.241
	(-8.89)	(-8.89)	(-8.87)	(-9.19)	(-9.18)	(-9.16)	(1.36)	(1.34)	(1.35)	(1.36)	(1.34)	(1.35)
FUNDING	0.0163	0.0163	0.0155	0.0199	0.0187	0.0181	**-0.0881*****	**-0.0878*****	**-0.0880*****	**-0.0881*****	**-0.0878*****	**-0.0880*****
	(0.83)	(0.83)	(0.79)	(1.00)	(0.94)	(0.91)	(-5.53)	(-5.52)	(-5.51)	(-5.53)	(-5.52)	(-5.51)
LESSCOMP	-0.678	-0.685	-0.678	-0.784	-0.781	-0.774	**-3.231*****	**-3.241*****	**-3.235*****	**-3.231*****	**-3.241*****	**-3.235*****
	(-0.52)	(-0.53)	(-0.52)	(-0.60)	(-0.60)	(-0.59)	(-3.31)	(-3.32)	(-3.31)	(-3.31)	(-3.32)	(-3.31)
POLRATE	-0.212	0.0464	0.0873	-0.818	-0.379	-0.387	-0.504	-0.404	-0.409	-0.504	-0.404	-0.409
	(-0.32)	(0.06)	(0.12)	(-1.22)	(-0.53)	(-0.55)	(-0.96)	(-0.71)	(-0.74)	(-0.96)	(-0.71)	(-0.74)
GDPGR	**0.847****			0.483			0.489			0.489		
	(2.00)			(1.10)			(1.47)			(1.47)		
BCI		**0.0363***			**0.0442****			0.0173			0.0173	
		(1.68)			(2.02)			(1.08)			(1.08)	
CREDIT_ACCESS			**0.102****			**0.112****			0.0434			0.0434
			(2.02)			(2.20)			(1.11)			(1.11)
yr2008	0.398	0.421	-0.444	-2.711	-1.748	-2.869*	0.425	0.277	-0.164	0.425	0.277	-0.164
	(0.26)	(0.25)	(-0.31)	(-1.64)	(-1.03)	(-1.95)	(0.33)	(0.21)	(-0.14)	(0.33)	(0.21)	(-0.14)
yr2009	2.849	0.709	0.358	-2.764	-2.578	-3.222	0.164	-1.300	-1.555	0.164	-1.300	-1.555
	(0.97)	(0.29)	(0.16)	(-0.90)	(-1.04)	(-1.42)	(0.07)	(-0.68)	(-0.88)	(0.07)	(-0.68)	(-0.88)
yr2010	-1.648	0.333	0.0827	-5.278**	-3.635	-4.002*	-3.372*	-2.313	-2.459	-3.372*	-2.313	-2.459
	(-0.72)	(0.15)	(0.04)	(-2.27)	(-1.57)	(-1.76)	(-1.85)	(-1.28)	(-1.38)	(-1.85)	(-1.28)	(-1.38)
qtr2	0.0674	0.462	0.478	0.282	0.462	0.490	-0.0988	0.135	0.145	-0.0988	0.135	0.145
	(0.07)	(0.51)	(0.53)	(0.30)	(0.51)	(0.54)	(-0.15)	(0.21)	(0.22)	(-0.15)	(0.21)	(0.22)
qtr3	0.256	0.380	0.0225	-0.690	-0.444	-0.869	0.126	0.162	-0.00288	0.126	0.162	-0.00288
	(0.28)	(0.41)	(0.02)	(-0.73)	(-0.46)	(-0.92)	(0.18)	(0.23)	(-0.00)	(0.18)	(0.23)	(-0.00)
qtr4	0.672	0.240	0.349	0.0500	-0.259	-0.127	0.225	-0.0229	0.0309	0.225	-0.0229	0.0309
	(0.73)	(0.26)	(0.39)	(0.05)	(-0.28)	(-0.14)	(0.32)	(-0.03)	(0.05)	(0.32)	(-0.03)	(0.05)
Constant	63.40***	65.29***	66.16***	66.69***	65.04***	66.50***	16.64***	18.22***	18.78***	14.64**	16.22***	16.78***
	(8.03)	(8.45)	(8.87)	(8.16)	(8.27)	(8.73)	(2.75)	(3.13)	(3.35)	(2.42)	(2.78)	(2.99)
Sigma												
Constant	14.53***	14.53***	14.53***	14.75***	14.74***	14.74***	10.70***	10.70***	10.70***	10.70***	10.70***	10.70***
	(40.54)	(40.53)	(40.57)	(40.41)	(40.45)	(40.48)	(39.16)	(39.08)	(39.11)	(39.16)	(39.08)	(39.11)
Pseudo R-squared	0.0318	0.0317	0.0318	0.0330	0.0332	0.0333	0.0209	0.0208	0.0208	0.0209	0.0208	0.0208
OBS	2117	2117	2117	2117	2117	2117	2062	2062	2062	2062	2062	2062
OBS left censored	220	220	220	278	278	278	140	140	140	140	140	140
F-statistic	55.93	56.13	56.07	53.06	53.22	53.20	23.57	23.50	23.51	23.57	23.50	23.51

4.6. UKBs vs. Thrift Banks

Examining the determinants of small and medium-sized firm financing for both universal and commercial banks (UKBs) and thrift banks at the same time may pose heterogeneity problems arising from the difference in their strategic focus. UKBs, representing the largest group of financial institutions in the Philippines, offer wide variety of financial services and are authorized to engage in underwriting activities and investment house functions. On the other hand, thrift banks, which are mainly composed of savings and mortgage banks provide short-term working capital and medium and long-term financing to businesses engaged in a variety of services (i.e. agriculture, services, industry and housing) and to their chosen markets, especially small and medium enterprises. The latter type of banks are thus, expected to have higher shares of micro and small firm financing on their loan portfolio.

Tables 9 and 10 report the estimation results using the tobit procedure of the determinants of bank micro and small firm financing and medium-sized firm financing, respectively for UKBs and thrift banks. Our findings show that in both bank types, foreign banks and banks that are parts of conglomerates have lower compliance ratios than domestic banks and non-affiliated banks. We observe, however, sizeable differences in the coefficients of FOREIGN between UKBs and thrift banks. For UKBs, foreign banks only have slightly lower compliance ratios compared with their domestic bank counterparts. When excess small firm financing, DIFFCOMP_SMALL% is the dependent variable, we do not observe FOREIGN to be a significant determinant of small firm financing. For the subsample of thrift banks, the coefficient estimates of FOREIGN largely provide support to the foreign bank barrier hypothesis. We also note that smaller UKBs and thrift banks have advantage over large banks in financing micro and small firms. One important finding in Table 9 is the opposing effects of CONGLOMERATE on micro and small firm financing for UKBs and thrift banks. For UKBs, we find banks, which are parts of a domestic financial conglomerate to have higher compliance ratios. This could be explained by the presence of thrift banks and other small banks that are also affiliated and are subsidiaries of the parent company. UKBs that are parts of a financial conglomerate may have advantage over their non-affiliated counterparts because they could also use the same information already collected by their affiliates when catering to the same small business client. Because of their small bank subsidiaries/affiliates, they also have broader set of small business clients. On the other hand, among the thrift banks, we observe the opposite. Thrift banks that are subsidiaries/affiliates of

a domestic financial conglomerate may be disadvantaged and thus, are able to cater less to micro and small firms. This is not surprising because of their more complex organizational structure exacerbating the agency problem between loan officers and the senior management compared with thrift banks that are non-affiliated or are not subsidiaries of larger banks.

We highlight the positive relationship between the Macro_SME variables and COMP_SMALL% and DIFFCOMP_SMALL% in the case of thrift banks, which indicates that when the general outlook of the economy is good, thrift banks increase their lending to SMEs, even beyond what is required, which also indicates the sensitivity for this group of banks to macroeconomic factors. This explains why the trend of COMP_SMALL% has been decreasing for this type of banks from 2008, given that relatively, they should not be affected by the amendment of the *Magna Carta* for micro and small enterprises. The pro-cyclicality of small firm financing for thrift banks, however, may have adverse effects as mentioned in Section 4.3 because in the distress times, even when a micro or a small firm has a profitable project, they may not be able to obtain funding from small banks, limiting their prospects for growth.

The results of the determinants of medium-sized firm financing by bank type slightly relay a different story. In the case of UKBs, we find evidence that supports the "foreign bank barrier hypothesis", but we do not find size and affiliation to be significant determinants of medium-sized firm financing. This suggests that the organizational structure and the size of the bank do not impede them to lend to medium-sized businesses. When compared with micro and small firms, these results are not surprising since medium-sized firms are less informationally opaque. We also find UKBs with higher deposit-asset ratios to have higher medium-size firm financing. Like the UKBs, our results show that foreign thrift banks are at a disadvantage and thus have lower compliance ratios to the *Magna Carta* for medium-sized firms. We do not find, however, support to the "small bank advantage hypothesis" in terms of medium-sized firm financing for thrift banks. On the contrary, we find bigger thrift banks to have higher shares of compliance to the mandated credit allocation to medium-sized firms. This could be the result of the preference of medium-sized firms to borrow from bigger banks – not only thrift banks, but branches of UKBs operating in their town/city. Moreover, the regression results do not provide evidence of cyclicality of medium-sized firm financing.

Overall, our findings using the subsample of UKBs and thrift banks highlight four important points: 1) our regression results find evidence supporting the "foreign bank barrier hypothesis" on SME financing, but at varying degrees between UKBs and thrift banks. The disadvantage of foreign banks is more pronounced in the case of thrift banks; 2) thrift banks

that are subsidiaries or affiliates of a domestic financial conglomerate have lower SME compliance ratios and thus, lower SME financing; UKBs that are parent companies or are parts of financial conglomerate, on the other hand, have higher shares of small firm financing on their loan portfolio over UKBs that are not affiliated to a financial conglomerate; 3) size has a negative and statistically significant effect on micro and small firm financing regardless of the bank type, providing support to the "small bank advantage hypothesis". In terms of medium-sized firm financing, however, bigger thrift banks have higher shares of medium firm financing on their loan portfolio compared with smaller thrift banks; 4) small firm financing of thrift banks is sensitive to macroeconomic factors and SME-specific factors.

Table 9. The determinants of the extent of bank small firm financing in the Philippines using quarterly data, 2005-2010 (UKB vs THRIFT). The table shows regressions of variables capturing the extent of small and medium firm financing from several factors – ownership, bank-specific variables, macroeconomic and SME-specific variables. COMP_SMALL% is the share of a bank's compliance to the *Magna Carta* for Micro and Small Enterprises (MSEs) to total loans net of exclusions. DIFFCOMP_SMALL is the difference between COMP_SMALL% and the legal limit of the required lending to MSEs. FOREIGN takes the value 1 if the bank is foreign-owned (foreign branch or subsidiary) and zero, otherwise. CONGLOMERATE is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise. SIZE is the natural logarithm of total assets. FUNDING is the ratio of total deposits to total assets. LESSCOMP is a dummy variable that is equal to 1 if a bank's headquarters is located outside the National Capital Region (NCR), and zero, otherwise. POLRATE is the Central Bank's policy rate. GDPGR is the growth rate of the gross domestic product. BCI is the confidence index of the firms' overall business outlook of the economy. CREDIT_ACCESS is the credit access confidence index of the firms; yr2008, yr2009 and yr2010 are year dummies; qtr2, qtr3 and qtr4 are quarter dummies. ***, ** and *indicate 1%, 5% and 10% levels of significance respectively. T-statistics in parentheses.

	(I)	(II)	(III)	(I)	(II)	(III)	(I)	(II)	(III)	(I)	(II)	(III)
	UKB						**THRIFT**					
	COMP_SMALL%			DIFFCOMP_SMALL%			COMP_SMALL%			DIFFCOMP_SMALL%		
FOREIGN	**-0.404***	**-0.401***	**-0.394***	-0.137	-0.149	-0.140	**-13.17*****	**-13.19*****	**-13.26*****	**-13.42*****	**-13.51*****	**-13.57*****
	(-1.75)	(-1.72)	(-1.70)	(-0.62)	(-0.67)	(-0.63)	(-12.90)	(-12.99)	(-13.02)	(-12.50)	(-12.67)	(-12.68)
CONGLOMERATE	**1.095*****	**1.095*****	**1.095*****	**1.137*****	**1.135*****	**1.136*****	**-5.738*****	**-5.725*****	**-5.721*****	**-5.675*****	**-5.664*****	**-5.658*****
	(4.39)	(4.39)	(4.39)	(4.53)	(4.51)	(4.51)	(-4.61)	(-4.60)	(-4.58)	(-4.52)	(-4.51)	(-4.49)
SIZE	**-0.392*****	**-0.390*****	**-0.391*****	**-0.357*****	**-0.354*****	**-0.354*****	**-0.814***	**-0.805***	**-0.812***	**-0.826***	**-0.820***	**-0.827***
	(-4.32)	(-4.29)	(-4.30)	(-4.15)	(-4.09)	(-4.10)	(-1.69)	(-1.67)	(-1.68)	(-1.71)	(-1.70)	(-1.71)
FUNDING	0.00714	0.00695	0.00726	0.00833	0.00750	0.00783	-0.0251	-0.0254	-0.0260	-0.0241	-0.0248	-0.0254
	(0.92)	(0.91)	(0.94)	(1.11)	(1.01)	(1.05)	(-0.89)	(-0.90)	(-0.92)	(-0.85)	(-0.87)	(-0.89)
LESSCOMP							0.227	0.242	0.231	0.277	0.289	0.278
							(0.14)	(0.15)	(0.14)	(0.17)	(0.18)	(0.17)
POLRATE	-0.300	**-0.322***	**-0.340***	**-0.595*****	**-0.536*****	**-0.573*****	0.0688	0.399	0.511	-0.415	0.0779	0.145
	(-1.61)	(-1.65)	(-1.78)	(-3.14)	(-2.72)	(-2.97)	(0.07)	(0.38)	(0.50)	(-0.43)	(0.07)	(0.14)
GDPGR	-0.145			-0.274**			**1.242****			1.017		
	(-1.30)			(-2.43)			(2.01)			(1.62)		
BCI		-0.00445			-0.000583			0.0489			**0.0573***	
		(-0.78)			(-0.10)			(1.53)			(1.78)	
CREDIT_ACCESS			-0.0155			-0.00970			**0.147***			**0.160****
			(-1.27)			(-0.80)			(1.94)			(2.10)
yr2008	-0.264	-0.194	-0.103	-1.783***	-1.307***	-1.335***	1.230	1.094	0.0170	-1.118	-0.510	-1.855
	(-0.58)	(-0.41)	(-0.24)	(-3.64)	(-2.69)	(-3.06)	(0.55)	(0.45)	(0.01)	(-0.49)	(-0.21)	(-0.90)
yr2009	-0.795	-0.323	-0.328	-3.822***	-2.459***	-2.588***	5.647	2.262	2.001	1.239	-0.473	-1.016
	(-0.96)	(-0.46)	(-0.51)	(-4.49)	(-3.55)	(-4.01)	(1.31)	(0.63)	(0.61)	(0.28)	(-0.13)	(-0.31)
yr2010	0.0422	-0.256	-0.235	-2.356***	-2.744***	-2.773***	-1.123	1.705	1.453	-4.198	-1.475	-1.849
	(0.06)	(-0.38)	(-0.35)	(-3.41)	(-4.01)	(-4.10)	(-0.34)	(0.52)	(0.45)	(-1.28)	(-0.45)	(-0.57)
qtr2	0.0610	-0.0128	-0.0148	0.126	-0.0275	-0.0258	0.0149	0.585	0.597	0.151	0.581	0.603
	(0.25)	(-0.05)	(-0.06)	(0.53)	(-0.12)	(-0.11)	(0.01)	(0.45)	(0.46)	(0.11)	(0.44)	(0.46)
qtr3	-0.272	-0.286	-0.239	-0.654**	-0.599**	-0.590**	0.754	0.861	0.386	0.126	0.325	-0.218
	(-1.01)	(-1.04)	(-0.90)	(-2.41)	(-2.19)	(-2.19)	(0.57)	(0.65)	(0.29)	(0.09)	(0.24)	(-0.16)
qtr4	-0.0621	-0.00480	-0.0170	-0.419*	-0.334	-0.337	1.100	0.422	0.579	0.585	-0.0241	0.159
	(-0.24)	(-0.02)	(-0.07)	(-1.65)	(-1.35)	(-1.36)	(0.82)	(0.32)	(0.44)	(0.43)	(-0.02)	(0.12)
Constant	19.02***	18.47***	18.44***	14.94***	13.00***	13.21***	33.01**	36.04***	37.03***	32.09**	32.57**	34.13***
	(7.10)	(7.11)	(7.16)	(5.57)	(5.09)	(5.21)	(2.56)	(2.83)	(3.00)	(2.47)	(2.55)	(2.76)
Sigma												
Constant	2.347***	2.349***	2.347***	2.268***	2.276***	2.275***	17.19***	17.20***	17.19***	17.29***	17.29***	17.28***
	(16.70)	(16.68)	(16.66)	(14.93)	(14.99)	(14.95)	(40.73)	(40.75)	(40.79)	(40.60)	(40.65)	(40.69)
Pseudo R-squared	0.0167	0.0164	0.0166	0.0252	0.0231	0.0233	0.00860	0.00844	0.00858	0.00894	0.00898	0.00910
OBS	705	705	705	705	705	705	1412	1412	1412	1412	1412	1412
OBS left censored	117	117	117	161	161	161	103	103	103	117	117	117
F-statistic	6.180	6.460	6.636	4.071	3.650	3.741	25.08	25.55	25.46	23.60	24.15	24.04

Table 10. The determinants of the extent of bank medium –sized firm financing in the Philippines using quarterly data, 2005-2010 (UKB vs THRIFT). The table shows regressions of variables capturing the extent of small and medium firm financing from several factors – ownership, bank-specific variables, macroeconomic and SME-specific variables. COMP_MED% is the share of a bank's compliance to the *Magna Carta* for Medium Enterprises (MEs) to total loans net of exclusions. DIFFCOMP_MED% is the difference between COMP_MED% and the legal limit of the required lending to MEs. FOREIGN takes the value 1 if the bank is foreign-owned (foreign branch or subsidiary) and zero, otherwise. CONGLOMERATE is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise. SIZE is the natural logarithm of total assets. FUNDING is the ratio of total deposits to total assets. LESSCOMP is a dummy variable that is equal to 1 if a bank's headquarters is located outside the National Capital Region (NCR), and zero, otherwise. POLRATE is the Central Bank's policy rate. GDPGROWTH is the growth rate of the gross domestic product. BCI is the confidence index of the firms' overall business outlook of the economy. CREDIT_ACCESS is the credit access confidence index of the firms ; yr2008, yr2009 and yr2010 are year dummies; qtr2, qtr3 and qtr4 are quarter dummies. ***, ** and *indicate 1%, 5% and 10% levels of significance respectively. T-statistics in parentheses.

	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	UKB						**THRIFT**					
	COMP_MED%			DIFFCOMP_MED%			COMP_MED%			DIFFCOMP_MED%		
FOREIGN	**-4.164*****	**-4.145*****	**-4.137*****	**-4.164*****	**-4.145*****	**-4.137*****	**-8.820*****	**-8.814*****	**-8.838*****	**-8.820*****	**-8.814*****	**-8.838*****
	(-8.60)	(-8.53)	(-8.54)	(-8.60)	(-8.53)	(-8.54)	(-5.48)	(-5.47)	(-5.49)	(-5.48)	(-5.47)	(-5.49)
CONGLOMERATE	0.349	0.351	0.353	0.349	0.351	0.353	**-12.06*****	**-12.05*****	**-12.06*****	**-12.06*****	**-12.05*****	**-12.06*****
	(0.73)	(0.73)	(0.74)	(0.73)	(0.73)	(0.74)	(-12.00)	(-12.01)	(-12.00)	(-12.00)	(-12.01)	(-12.00)
SIZE	-0.190	-0.188	-0.190	-0.190	-0.188	-0.190	**2.382*****	**2.385*****	**2.385*****	**2.382*****	**2.385*****	**2.385*****
	(-0.92)	(-0.91)	(-0.92)	(-0.92)	(-0.91)	(-0.92)	(7.44)	(7.43)	(7.43)	(7.44)	(7.43)	(7.43)
FUNDING	**0.0227***	**0.0230***	**0.0235***	**0.0227***	**0.0230***	**0.0235***	**-0.191*****	**-0.191*****	**-0.191*****	**-0.191*****	**-0.191*****	**-0.191*****
	(1.87)	(1.90)	(1.93)	(1.87)	(1.90)	(1.93)	(-8.45)	(-8.43)	(-8.43)	(-8.45)	(-8.43)	(-8.43)
LESSCOMP							-0.776	-0.775	-0.770	-0.776	-0.775	-0.770
							(-0.68)	(-0.68)	(-0.68)	(-0.68)	(-0.68)	(-0.68)
POLRATE	-0.428	-0.541	-0.564	-0.428	-0.541	-0.564	-0.527	-0.353	-0.317	-0.527	-0.353	-0.317
	(-1.18)	(-1.43)	(-1.51)	(-1.18)	(-1.43)	(-1.51)	(-0.72)	(-0.44)	(-0.40)	(-0.72)	(-0.44)	(-0.40)
GDPGR	-0.155			-0.155			0.744			0.744		
	(-0.70)			(-0.70)			(1.55)			(1.55)		
BCI		-0.0123			-0.0123			0.0278			0.0278	
		(-1.24)			(-1.24)			(1.18)			(1.18)	
CREDIT_ACCESS			-0.0370			-0.0370			0.0778			0.0778
			(-1.58)			(-1.58)			(1.33)			(1.33)
yr2008	-0.449	-0.675	-0.388	-0.449	-0.675	-0.388	0.400	0.242	-0.403	0.400	0.242	-0.403
	(-0.48)	(-0.73)	(-0.46)	(-0.48)	(-0.73)	(-0.46)	(0.22)	(0.13)	(-0.25)	(0.22)	(0.13)	(-0.25)
yr2009	-1.780	-1.715	-1.628	-1.780	-1.715	-1.628	0.255	-1.882	-2.130	0.255	-1.882	-2.130
	(-1.10)	(-1.32)	(-1.33)	(-1.10)	(-1.32)	(-1.33)	(0.08)	(-0.69)	(-0.84)	(0.08)	(-0.69)	(-0.84)
yr2010	-0.730	-1.200	-1.115	-0.730	-1.200	-1.115	-5.085**	-3.429	-3.600	-5.085**	-3.429	-3.600
	(-0.55)	(-0.93)	(-0.87)	(-0.55)	(-0.93)	(-0.87)	(-2.03)	(-1.35)	(-1.46)	(-2.03)	(-1.35)	(-1.46)
qtr2	0.0879	0.0239	0.0168	0.0879	0.0239	0.0168	-0.234	0.112	0.120	-0.234	0.112	0.120
	(0.19)	(0.05)	(0.04)	(0.19)	(0.05)	(0.04)	(-0.24)	(0.12)	(0.13)	(-0.24)	(0.12)	(0.13)
qtr3	-0.304	-0.385	-0.257	-0.304	-0.385	-0.257	0.228	0.273	0.00847	0.228	0.273	0.00847
	(-0.64)	(-0.82)	(-0.56)	(-0.64)	(-0.82)	(-0.56)	(0.23)	(0.28)	(0.01)	(0.23)	(0.28)	(0.01)
qtr4	-0.166	-0.0813	-0.115	-0.166	-0.0813	-0.115	0.279	-0.133	-0.0400	0.279	-0.133	-0.0400
	(-0.35)	(-0.18)	(-0.25)	(-0.35)	(-0.18)	(-0.25)	(0.28)	(-0.14)	(-0.04)	(0.28)	(-0.14)	(-0.04)
Constant	15.42***	15.64***	15.40***	13.42**	13.64**	13.40**	-22.37**	-20.30**	-19.65**	-24.37***	-22.30**	-21.65**
	(2.75)	(2.82)	(2.79)	(2.40)	(2.46)	(2.42)	(-2.45)	(-2.29)	(-2.30)	(-2.67)	(-2.52)	(-2.54)
Sigma												
Constant	4.282***	4.279***	4.277***	4.282***	4.279***	4.277***	12.30***	12.31***	12.30***	12.30***	12.31***	12.30***
	(29.69)	(29.81)	(29.81)	(29.69)	(29.81)	(29.81)	(38.02)	(37.97)	(37.99)	(38.02)	(37.97)	(37.99)
Pseudo R-squared	0.0432	0.0434	0.0437	0.0432	0.0434	0.0437	0.0215	0.0214	0.0214	0.0215	0.0214	0.0214
OBS	702	702	702	702	702	702	1360	1360	1360	1360	1360	1360
OBS left censored	36	36	36	36	36	36	104	104	104	104	104	104
F-statistic	19.93	20.01	19.95	19.93	20.01	19.95	14.89	14.81	14.85	14.89	14.81	14.85

5. Robustness Checks and Further Issues

In this section, we check the robustness of the results of our empirical investigation and discuss further issues relating to the determinants of the compliance to the *Magna Carta* for micro and small firms.

5.1. Initial level of exposure to micro and small firms

Taking into account the amendment of the mandatory lending to micro and small firms from 6% to 8% in 2008, we empirically investigate the determinants of compliance to the said regulation, and thus, to the level of exposure to micro and small firms over the period 2008-2010 using subsamples of banks based on their level of exposure to small firms from 2005 to 2007.

We identify two groups of banks – 1) banks that should not be affected by the regulation, *INITIAL>8*; and 2) banks that are affected by the regulation, *INITIAL<8. INITIAL<8* includes the banks whose average compliance to the *Magna Carta* for micro and small enterprises between 2005 and 2007 is less than 8% and thus, are expected to increase their exposure to micro and small firms. *INITIAL>8*, meanwhile, comprises the banks whose average micro and small firm compliance between 2005 and 2007 is equal or more than 8%. These banks should not be affected by the change in the mandated allocation for micro and small firms.

We report the results of the regressions in Table 11. Our findings highlight that size and location are statistically significant determinants of increased micro and small firm compliance from 2008 to 2010, for banks that are expected to be affected by the increased mandatory lending for micro and small firms. This indicates that smaller banks and/or thrift banks (only thrift banks are headquartered outside the metropolitan) have higher exposure to smaller firms controlling for their initial level of MSE exposure, providing support to the "large bank barrier hypothesis", which is consistent with our findings in the previous section.

Table 11. Robustness Checks: Determinants of the extent of bank micro and small firm financing in the Philippines after the amendment of the increased mandatory lending to micro and small firms in 2008, using quarterly data according to the level of initial small firm financing over the period 2008-2010. The table shows regressions of variables capturing the extent of small and medium firm financing from several factors – ownership, bank-specific variables, macroeconomic and SME-specific variables. COMP_SMALL% is the share of a bank's compliance to the *Magna Carta* for Micro and Small Enterprises (MSEs) to total loans net of exclusions. FOREIGN takes the value 1 if the bank is foreign-owned (foreign branch or subsidiary) and zero, otherwise. CONGLOMERATE is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise. SIZE is the natural logarithm of total assets. FUNDING is the ratio of total deposits to total assets. LESSCOMP is a dummy variable that is equal to 1 if a bank's headquarters is located outside the National Capital Region (NCR), and zero, otherwise. POLRATE is the Central Bank's policy rate. GDPGR is the growth rate of the gross domestic product. yr2009 and yr2010 are year dummies and qtr2, qtr3 and qtr4 are quarter dummies. INITIAL<8 is a dummy that is equal to 1 if the bank's average compliance from 2005-2007 is than 8%. INITIAL> is a dummy that takes the value 1 if the bank's average compliance from 2005-2007 is equal or more than 8%. ***, ** and *indicate 1%, 5% and 10% levels of significance respectively. T-statistics in parentheses.

	COMP_SMALL%	
	INITIAL<8	**INITIAL>8**
FOREIGN	-1.444	**-13.93*****
	(-0.97)	(-7.91)
CONGLOMERATE	-0.956	**-5.818*****
	(-0.67)	(-3.44)
SIZE	**-1.788*****	**-2.042*****
	(-4.55)	(-3.68)
FUNDING	-0.0125	-0.00581
	(-0.31)	(-0.16)
LESSCOMP	**10.40*****	-0.829
	(3.75)	(-0.40)
POLRATE	1.742	-0.906
	(0.75)	(-0.47)
GDPGR	-0.546	0.774
	(-0.49)	(0.82)
yr2009	8.296*	0.760
	(1.83)	(0.20)
yr2010	12.17**	-3.334
	(2.00)	(-0.69)
qtr2	0.781	0.540
	(0.39)	(0.31)
qtr3	-0.709	0.826
	(-0.35)	(0.50)
qtr4	2.181	1.332
	(0.94)	(0.75)
Constant	34.92**	67.87***
	(2.22)	(4.20)
Sigma		
Constant	10.52***	15.23***
	(8.70)	(25.60)
Pseudo R-squared	0.0991	0.0237
OBS	320	689
OBS left censored	153	50
F-statistic	4.904	19.12

We do not find, however, ownership and affiliation to be significant factors affecting the level of exposure to micro and small firms for banks that can be classified as "just complying" and thus, were affected by the amendment of the regulation.

For banks that *a priori*, are not expected to be affected by the increased mandatory lending to micro and small firms, our results highlight that ownership, affiliation, and size are negatively and significantly related to bank micro and small firm financing from 2008 to 2010. Compared with *INITIAL<8*, these banks do not have any significant changes in their levels of exposure to micro and small firms in 2009 and 2010 compared with the exposure levels in 2008.

5.2. Bank performance as determinant of micro and small firm exposure

We answer in this section two empirical questions that may be important for policymakers: 1) Are well-managed banks able to comply more with the mandatory lending to micro and small firms? 2) Or might the results be dependent on the size of the bank? This investigation is particularly significant in assessing the viability of a small bank business model, of which one of its characteristic models is the high level of micro and small business loans in their portfolios.

In order to test effect of management efficiency, we define bank performance, *PERFORMANCE* as the mean return on average equity (ROE) of each bank from 2000 to 2004. Considering the potential endogeneity between the performance and the dependent variable and other control variables, we use past performance as an indicator of management efficiency. Alternatively, we construct two variables, *HIGHPERF* and *LOWPERF*, which indicates high bank performance and low bank performance, respectively. *HIGHPERF* is a dummy variable that takes the value of 1 if a bank's mean ROE from 2000 to 2004 belongs to the upper 25th percentile in our bank sample, and zero, otherwise. On the other hand, *LOWPERF* is a dummy variable, which is equal to 1 if a bank's mean ROE from 2000 to 2004 belongs to the lower 25th percentile in our bank sample, and zero, otherwise.

We report the findings of our estimations in Tables 12 and 13. A pairwise correlation test indicates that size and performance are weakly correlated (<10%), hence, we include both variables in our regression.

Table 12. Bank performance as a determinant of the extent of bank small firm financing in the Philippines using quarterly data, 2005-2010 The table shows regressions of variables capturing the extent of small and medium firm financing from several factors – ownership, bank-specific variables, macroeconomic and SME-specific variables. COMP_SMALL% is the share of a bank's compliance to the *Magna Carta* for Micro and Small Enterprises (MSEs) to total loans net of exclusions. FOREIGN takes the value 1 if the bank is foreign-owned (foreign branch or subsidiary) and zero, otherwise. CONGLOMERATE is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise. SIZE is the natural logarithm of total assets. PERFORMANCE is the average return on average equity (ROE) of a bank from 2000 to 2004, measuring past performance; FUNDING is the ratio of total deposits to total assets. LESSCOMP is a dummy variable that is equal to 1 if a bank's headquarters is located outside the National Capital Region (NCR), and zero, otherwise. POLRATE is the Central Bank's policy rate. GDPGR is the growth rate of the gross domestic product. yr2008, yr2009 and yr2010 are year dummies. qtr2, qtr3 and qtr4 are quarter dummies. ***, ** and *indicate 1%, 5% and 10% levels of significance respectively. T-statistics in parentheses.

	(1)	(1)	(1)
	COMP_SMALL%		
	Whole Sample	UKBs	Thrift Banks
FOREIGN	-9.616***	-0.198	-18.68***
	(-12.38)	(-0.89)	(-11.35)
CONGLOMERATE	-2.802***	1.077***	-4.279***
	(-3.11)	(4.32)	(-3.13)
SIZE	-2.170***	-0.369***	-0.448
	(-7.83)	(-3.67)	(-0.77)
PERFORMANCE	**-0.148*** **	**-0.0249*** **	**-0.328*** **
	(-4.42)	(-2.88)	(-6.32)
FUNDING	0.0857***	0.0280***	0.0425
	(4.03)	(3.37)	(1.37)
LESSCOMP	0.0791		1.917
	(0.05)		(1.02)
POLRATE	-0.0427	-0.206	0.289
	(-0.06)	(-1.24)	(0.29)
GDPGR	0.841*	-0.234**	1.411**
	(1.92)	(-2.18)	(2.17)
yr2008	0.0928	-0.511	1.353
	(0.06)	(-1.22)	(0.58)
yr2009	3.354	-1.335*	7.597*
	(1.10)	(-1.69)	(1.68)
yr2010	-0.985	0.129	-0.0854
	(-0.41)	(0.21)	(-0.02)
qtr2	0.205	0.0252	0.192
	(0.22)	(0.10)	(0.14)
qtr3	0.380	-0.339	1.017
	(0.40)	(-1.26)	(0.73)
qtr4	0.690	-0.256	1.345
	(0.73)	(-1.02)	(0.96)
Constant	56.08***	17.08***	17.56
	(6.66)	(6.34)	(1.20)
Sigma			
Constant	14.25***	2.233***	16.91***
	(36.10)	(15.21)	(35.78)
Pseudo R-squared	0.0327	0.0261	0.0106
OBS	1905	674	1231
OBS left censored	202	114	88
F-stat	42.88	7.910	18.15

Table 13. Bank performance as a determinant of the extent of bank small firm financing in the Philippines using quarterly data, 2005-2010 The table shows regressions of variables capturing the extent of small and medium firm financing from several factors – ownership, bank-specific variables, macroeconomic and SME-specific variables. COMP_SMALL% is the share of a bank's compliance to the *Magna Carta* for Micro and Small Enterprises (MSEs) to total loans net of exclusions. FOREIGN takes the value 1 if the bank is foreign-owned (foreign branch or subsidiary) and zero, otherwise. CONGLOMERATE is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise. SIZE is the natural logarithm of total assets. HIGHPERF is a dummy variable indicating high past bank performance taking the value of 1 if a bank's average return on average equity is higher than the 75th percentile value, and zero, otherwise; LOWPERF is a dummy variable indicating low past bank performance taking the value of 1 if a bank's average return on average equity is lower than 25th percentile valuee, and zero, otherwise; FUNDING is the ratio of total deposits to total assets. LESSCOMP is a dummy variable that is equal to 1 if a bank's headquarters is located outside the National Capital Region (NCR), and zero, otherwise. POLRATE is the Central Bank's policy rate. GDPGR is the growth rate of the gross domestic product. Yr2008, yr2009 and yr2010 are year dummies. Qtr2, qtr3 and qtr4 are quarter dummies. ***, ** and *indicate 1%, 5% and 10% levels of significance respectively. T-statistics in parentheses.

	COMP_SMALL%					
	Whole Sample		UKBs		Thrift Banks	
FOREIGN	-8.601***	-9.470***	-0.467*	-0.333	-12.13***	-12.73***
	(-11.30)	(-11.25)	(-1.88)	(-1.52)	(-11.58)	(-9.51)
CONGLOMERATE	-1.880**	-2.181**	1.151***	1.137***	-2.779**	-4.003***
	(-2.19)	(-2.55)	(4.73)	(4.65)	(-1.99)	(-2.95)
SIZE	-2.257***	-2.393***	-0.507***	-0.395***	-0.585	-0.827
	(-7.85)	(-9.29)	(-4.56)	(-3.89)	(-0.99)	(-1.52)
HIGHPERF	**-2.807*** **		0.280		**-7.051*** **	
	(-3.94)		(1.27)		(-5.71)	
LOWPERF		1.469		**0.438***		**3.501****
		(1.49)		(1.91)		(2.22)
FUNDING	0.0988***	0.0872***	0.0291***	0.0292***	0.0650**	0.0336
	(4.54)	(4.06)	(3.67)	(3.58)	(2.11)	(1.07)
LESSCOMP	0.107	-0.600			2.221	0.755
	(0.07)	(-0.43)			(1.10)	(0.43)
POLRATE	-0.0662	-0.0764	-0.216	-0.208	0.219	0.193
	(-0.10)	(-0.11)	(-1.28)	(-1.24)	(0.22)	(0.19)
GDPGR	0.834*	0.867**	-0.229**	-0.235**	1.361**	1.437**
	(1.90)	(1.97)	(-2.12)	(-2.19)	(2.09)	(2.19)
yr2008	0.0667	0.168	-0.488	-0.527	1.136	1.400
	(0.04)	(0.10)	(-1.14)	(-1.24)	(0.49)	(0.59)
yr2009	3.235	3.393	-1.313	-1.368*	6.980	7.418
	(1.06)	(1.11)	(-1.65)	(-1.72)	(1.54)	(1.62)
yr2010	-1.090	-1.120	0.134	0.112	-0.484	-0.502
	(-0.45)	(-0.46)	(0.21)	(0.18)	(-0.14)	(-0.14)
qtr2	0.213	0.204	0.0266	0.0260	0.247	0.220
	(0.22)	(0.21)	(0.11)	(0.11)	(0.18)	(0.15)
qtr3	0.396	0.412	-0.340	-0.340	1.044	1.073
	(0.42)	(0.44)	(-1.25)	(-1.26)	(0.75)	(0.77)
qtr4	0.721	0.742	-0.245	-0.257	1.386	1.435
	(0.76)	(0.78)	(-0.98)	(-1.02)	(0.99)	(1.01)
Constant	57.23***	60.28***	20.30***	17.49***	19.80	25.40*
	(6.63)	(7.40)	(7.00)	(6.33)	(1.33)	(1.80)
Sigma						
Constant	14.28***	14.30***	2.241***	2.238***	16.98***	17.11***
	(35.94)	(36.31)	(15.75)	(15.27)	(35.62)	(36.86)
Pseudo R-squared	0.0321	0.0316	0.0240	0.0248	0.00968	0.00787
OBS	1905	1905	674	674	1231	1231
OBS left censored	202	202	114	114	88	88
F-stat	42.95	45.71	6.540	7.458	22.98	25.26

Our results indicate that best-practices ROE for both universal and commercial banks (UKBs) and thrift banks have lower exposures to micro and small firm lending, and at the same time, worst-practices ROE, regardless of the bank type have higher micro and small business loans. Particularly for thrift banks, which have higher shares of small business loans in their loan portfolio compared with UKBs, this may indicate that a large number of thrift banks may not be operating the model of small business lending in a fully profitable and efficient manner, which may probably be caused by poor management practices. This finding suggests that it may not be sufficient for policymakers to attribute attention towards increasing access to finance to micro and small firms but more importantly, to a sustainable access to bank finance.

In order to evaluate how size affects the relationship between bank performance and the level of exposure to micro and small firms, we interact our performance and size variables. We report the results of our estimation in Table 14 for our whole sample of banks and the subsample of UKBs and thrift banks. The marginal effects of performance at varying levels of size are reported in the lower section of the table. Our results show statistically and economically significant results at different levels of size from a change in bank performance using our whole sample of banks. More specifically, our finding indicates that as the size of the bank increases, the negative effect of bank performance on micro and small firm exposure decreases in magnitude. Increased performance is shown to have larger adverse effects on micro and small firm financing for small banks compared to bigger banks.

5.3. Duration analysis

We also analyze the determinants of the duration until the bank complies with the regulation increasing the mandatory lending to micro and small firms from 6% to 8% of bank loan portfolio in 2008. In order to test this, we estimate a hazard function, which is used in several duration relationship studies in banks (Ongena and Smith, 2001; DeYoung, 2003). The hazard rate is the probability that a bank will comply at time *t* given that it has not complied in the previous time periods leading up to time *t* (expressed in quarters). *T* represents the duration of time that passes before a bank complies to the 8% financing to micro and small firms and F(t) be the cumulative distribution function of the duration:

$$F(t) = \int_0^T f(t)dt \qquad \text{Eq 2}$$

Where f(t) is the association probability density function. The hazard function can be written as a function of F(t) and f(t) as follows:

$$\lambda(t) = \frac{f(t)}{1-F(t)} = \frac{f(t)}{S(t)}, \qquad \text{Eq 3}$$

Where 1-F(t)= S(t) is the survival function, the probability that a bank has not complied as of time *t.* When estimating hazard functions, it is econometrically convenient to assume a proportional hazard specification, such that

$$\lambda(t, X(t), \beta) = \lim_{\Delta t \to 0} \frac{P(t \le T < t + \Delta t \mid T \ge t, X(t), \beta)}{\Delta t} = \lambda_0(t) \exp(\beta' X_t) \qquad \text{Eq 4}$$

Where X_t is a set of observable, possibly time-varying explanatory variables. β is a vector if unknown parameters associated with the explanatory variables, $\lambda_0(t)$ is the baseline hazard function and $\exp(\beta' X_t)$ is chosen because it is non-negative. Since the logarithm of $\lambda_0(t, X(t), \beta)$ is linear in X_t, β indicates the partial impact of each variable in X on the log of the estimated hazard rate.

The baseline hazard function determines the shape of the hazard function with respect to time. Two commonly used parametric specifications for the baseline hazard are the exponential and Weibull distributions. The Weibull distribution assumes that $\lambda_0(t)= \lambda\alpha t^{\alpha-1}$, and allows for duration dependence. The exponential distribution, on the other hand, exhibits constant duration dependence, and thus is nested within the Weibull as the case where α=1. We thus estimate the hazard functions using the exponential and Weibull specifications, as well as the Cox proportional hazard model and Cox partial likelihood proportional hazard model to check the robustness of our results.

We thus analyze the determinants of duration to comply, given that the bank has not complied to the regulation at time *t=0,* or at Q2:2008. Our determinants include FOREIGN, CONGLOMERATE, PERFORMANCE, SIZE and FUNDING. Similar to the arguments in Sections 4.1 and 4.2, foreign banks, affiliated banks and large banks are expected to comply more slowly compared with domestic banks, non-affiliated banks and small banks. Well-managed banks on the other hand are expected to comply faster with the regulation than poorly-run banks because they are in a better position to do so and they have better and superior management practices. We report the results of our estimations in Table 15.

Our results indicate that foreign banks' hazard function is more or less 30% that of domestic banks, which suggests that they are less likely to comply with the regulation and that

they comply at a slower rate compared with domestic banks. Moreover, we find well-managed UKBs/large banks to comply faster than poorly-run large banks with the regulation. In other words, well-managed large banks' hazard function is around 110% that of poorly-run large banks.

Table 14. Bank performance as a determinant of the extent of bank small firm financing in the Philippines using quarterly data, 2005-2010 The table shows regressions of variables capturing the extent of small and medium firm financing from several factors – ownership, bank-specific variables, macroeconomic and SME-specific variables. COMP_SMALL% is the share of a bank's compliance to the *Magna Carta* for Micro and Small Enterprises (MSEs) to total loans net of exclusions. FOREIGN takes the value 1 if the bank is foreign-owned (foreign branch or subsidiary) and zero, otherwise. CONGLOMERATE is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise. SIZE is the natural logarithm of total assets. PERFORMANCE is the average return on average equity (ROE) of a bank from 2000 to 2004, measuring past performance; PERFORMANCE*SIZE is the interaction between PERFORMANCE and SIZE; FUNDING is the ratio of total deposits to total assets. LESSCOMP is a dummy variable that is equal to 1 if a bank's headquarters is located outside the National Capital Region (NCR), and zero, otherwise. POLRATE is the Central Bank's policy rate. GDPGR is the growth rate of the gross domestic product. Yr2008, yr2009 and yr2010 are year dummies. Qtr2, qtr3 and qtr4 are quarter dummies. ***, ** and *indicate 1%, 5% and 10% levels of significance respectively. T-statistics in parentheses.

	COMP_SMALL%		
	Whole Sample	UKBs	Thrift Banks
FOREIGN	-10.27***	-0.198	-18.90***
	(-12.45)	(-0.88)	(-11.96)
CONGLOMERATE	-3.121***	1.078***	-4.125***
	(-3.40)	(4.30)	(-2.76)
SIZE	**-2.237*** **	**-0.369*** **	-0.381
	(-8.02)	(-3.68)	(-0.56)
PERFORMANCE	**-1.323*** **	-0.0220	-0.0144
	(-3.78)	(-0.14)	(-0.01)
PERFORMANCE*SIZE	**0.0519*** **	-0.000116	-0.0150
	(3.60)	(-0.02)	(-0.32)
FUNDING	0.0816***	0.0280***	0.0427
	(3.83)	(3.36)	(1.39)
LESSCOMP	0.432		1.943
	(0.30)		(1.03)
POLRATE	-0.0355	-0.207	0.291
	(-0.05)	(-1.24)	(0.29)
GDPGR	0.853*	-0.234**	1.403**
	(1.95)	(-2.18)	(2.15)
yr2008	0.124	-0.511	1.337
	(0.08)	(-1.21)	(0.57)
yr2009	3.444	-1.335*	7.558*
	(1.13)	(-1.68)	(1.67)
yr2010	-0.919	0.129	-0.0813
	(-0.38)	(0.21)	(-0.02)
qtr2	0.195	0.0252	0.196
	(0.21)	(0.10)	(0.14)
qtr3	0.348	-0.339	1.023
	(0.37)	(-1.26)	(0.74)
qtr4	0.689	-0.256	1.338
	(0.73)	(-1.02)	(0.95)
Constant	57.62***	17.08***	16.19
	(6.83)	(6.33)	(0.99)
Sigma			
Constant	14.18***	2.233***	16.91***
	(36.01)	(15.22)	(35.77)
Pseudo R-squared	0.0336	0.0261	0.0106
OBS	1905	674	1231
OBS left censored	202	114	88
F-stat	41.21	7.345	18.49
Marginal Effects of PERFORMANCE			
Evaluated at SIZE= Mean	**-0.1689*** **	**-0.0249*** **	**-0.3262*** **
	(-4.62)	(-2.66)	(-6.00)
SIZE= 25th percentile	**-0.2812*** **	**-0.0248***	**-0.3012*** **
	(-4.39)	(-1.95)	(-2.68)
SIZE= 75th percentile	**-0.0548*** **	**-0.0250*** **	**-0.3451*** **
	(-2.40)	(-2.71)	(-5.68)

Table 15. Robustness tests: Regression estimations of hazard models (3Q:2008 – 4Q:2010). Determinants of the duration to comply with the regulation increasing exposure to micro and small firms from 6% to 8% in 2008.

The estimates in this table are based on ML estimation of the proportional hazard model using Exponential, Weibull baseline distributions and the Cox and Cox Partial Likelihood functions as *hazard rates*. FOREIGN takes the value 1 if the bank is foreign-owned (foreign branch or subsidiary) and zero, otherwise. CONGLOMERATE is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise. PERFORMANCE is the mean return on average equity (ROE) of a bank from 2000 to 2004, measuring bank performance SIZE is the natural logarithm of total assets. FUNDING is the ratio of total deposits to total assets.

	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(1)	(2)	(3)
	Censored: Failure=Comply											
Method	**Exponential**			**Weibull**			**Cox Regression**			**Cox Partial Likelihood**		
Sample	Whole	UKBs	Thrifts	Whole	UKBs	Thrift	Whole	UKBs	Thrifts	Whole	UKBs	Thrifts
FOREIGN	**0.317***	0.348	**0.134***	**0.271***	**0.223***	**0.0820****	**0.369***	0.489	0.199	**0.261***	0.254	0.122
	(-1.90)	(-1.27)	(-1.96)	(-1.94)	(-1.68)	(-2.14)	(-1.76)	(-0.92)	(-1.61)	(-1.83)	(-1.06)	(-1.17)
CONGLOMERATE	0.867	1.531	0.649	0.817	1.876	0.509	0.894	1.432	0.691	0.841	1.868	0.596
	(-0.25)	(0.65)	(-0.58)	(-0.32)	(0.79)	(-0.76)	(-0.25)	(0.60)	(-0.55)	(-0.29)	(0.59)	(-0.57)
PERFORMANCE	1.003	**1.085****	0.968	1.004	**1.121****	0.960	1.003	**1.061****	0.982	1.007	**1.122***	0.973
	(0.12)	(2.51)	(-1.25)	(0.14)	(2.56)	(-1.10)	(0.23)	(2.16)	(-0.91)	(0.25)	(1.66)	(-0.71)
SIZE	0.940	0.660	0.919	0.920	**0.497****	0.892	0.981	0.763	0.965	0.951	0.518	0.909
	(-0.58)	(-1.52)	(-0.48)	(-0.74)	(-2.02)	(-0.58)	(-0.23)	(-1.12)	(-0.22)	(-0.38)	(-1.39)	(-0.38)
FUNDING	0.992	**1.066***	0.988	0.990	**1.104***	0.981	0.988	1.044	0.985	0.985	1.104	0.983
	(-0.45)	(1.68)	(-0.89)	(-0.50)	(1.89)	(-1.06)	(-0.55)	(1.19)	(-0.69)	(-0.65)	(1.63)	(-0.59)
Observations	140	91	49	140	91	49	140	91	49	140	91	49
Subjects	39	22	17	39	22	17	39	22	17	39	22	17
Failures	26	14	12	26	14	12	26	14	12	26	14	12
Log likelihood	-47.71	-23.60	-19.84	-46.76	-21.82	-18.32	-83.38	-36.03	-28.28	-41.64	-16.60	-15.91
Chi2	8.975	22.96	9.904	9.773	22.31	13.94	5.715	15.42	3.702	4.648	7.298	3.140
Proportionality test for Cox:												
Global test (zero slope)- Chi square							1.39	1.00	1.82			
P(Chi-square)							(0.9255)	(0.9627)	(0.8730)			

6. Conclusion

This chapter mainly provides an overview of the state of bank SME financing in the context of an emerging economy where banks are not only encouraged, but mandated by law to provide financing to the SME sector. Although we do not directly assess the impact of the mandated credit program on the SMEs' access to external finance, our research findings in this chapter (and in the succeeding two chapters) are important from a policy perspective because of two reasons: first, the supply of bank SME finance positively affects the growth and expansion prospects of SMEs, which comprise almost half of the total employment in the country. Second, lending to smaller businesses is relatively riskier for banks than providing finance to large firms because the former are more informationally opaque. Especially for banks whose business strategy focus on non-traditional intermediation activities, mandating them to lend to SMEs may be inefficient from these banks' perspective as they are constrained to choose the portfolio of income generating activities that will give them the highest returns.

This chapter consists of two main parts: 1) a descriptive overview providing main stylized facts regarding bank SME financing and, 2) an empirical investigation where we determine the factors that could affect bank SME financing and their time to comply with the law. We use individual bank compliance ratios to the *Magna Carta* for SMEs (the mandated credit program) to define the level of bank SME financing. We particularly note two important events during our study period (2005-2010), which could affect the levels of bank SME finance. First, in 2008, the government raised the required lending to micro and small firms from 6% to 8% and second, the global financial crisis.

We highlight the following key findings from our study. First, universal and commercial banks (UKBs) and foreign-owned banks, in general, struggle to provide bank finance to micro and small firms. Their financing exposures to the said firms are concentrated around the minimum required 8%; hence, they are "just" complying with the law. The increase in the required financing to small firms from 6% to 8% in 2008 makes it even harder for them to comply. We stress, however, that the UKBs have high financing exposures to medium firms relative to what is required of them, which is indicative of the higher informational opacity of micro and small business borrowers. These could be explained by the differences in the business strategies between UKBs and the smaller thrift banks. UKBs have broader markets and are authorized to offer a wider variety of financial services that include underwriting activities and

investment banking. As we will show in Chapter 3, a shift towards non-interest generating activities increases profit for this group of banks. Moreover, there are UKBs that have high exposures to small business borrowers and most of them find that the SME segment is profitable (Tacneng *et al*., 2012). Chapter 2 will discuss that usage of certain arms-length lending technologies such as credit scoring helps these larger banks to mitigate the information problems that make them hesitant to lend to these micro and small firms. We note, however, that due to the limit of the information provided by the compliance ratios, it is hard to verify whether the compliance ratios of UKBs and foreign-owned banks consist purely of direct lending to SMEs. Alternative forms of compliance with the mandated credit program, such as purchasing of government securities from an organization (the Small Business Corporation), which provides financial services to small enterprises, may actually be viable substitutes especially for the larger banks/UKBs and foreign-owned banks that find it difficult to lend to the smaller firms. Although the provision of other ways for banks to comply defeats the social objective of the law to increase access of SMEs to external finance, it may be a less inefficient alternative for banks whose main activity is to engage in non-interest activities. Moreover, initial interviews with the Small Business Corporation suggest that in practice, the banks' compliance ratios reflect primarily banks' direct lending to SMEs.

Second, our empirical investigation which initially looks into ownership and size as primary determinants to banks small firm financing provides evidence that supports the "*foreign-owned bank barrier hypothesis"* and *"small bank advantage hypothesis"*, which state that foreign banks are disadvantaged in lending to SMEs and smaller banks are in a better position to lend to small businesses. This is consistent with our first key finding from the descriptive overview. In terms of medium firm financing, we find that bank size does not matter, particularly for the universal and commercial banks. Third, our results show that small firm financing is cyclical for the banks that have high financing exposures to the micro and small firms, the thrift banks. Indeed, the end of 2008 towards the latter parts of 2009 has been marked by low business confidence indices, sometimes negative, which are indicative of the spillover effects of the global financial turmoil. The Global Financial Crisis has had adverse effects on the thrift banks, but they have slowly coped by the start of 2010.

Lastly, examining how performance affects bank financing to small firms, we find that regardless of the bank type, well-managed banks have lower micro and small firm financing

while poorly-run banks have higher exposures to micro and small business loans. These results are alarming, especially when looking into the viability of the thrift banks to provide sustainable bank finance to the smaller firms as small business loans comprise a significant percentage of their loan portfolio. These may be indicative that the thrift banks are not operating the small bank business lending in a fully profitable and efficient manner. Policymakers should not only focus attention in promoting access to bank finance but must ensure that bank financing to SMEs especially for the thrift banks is sustainable.

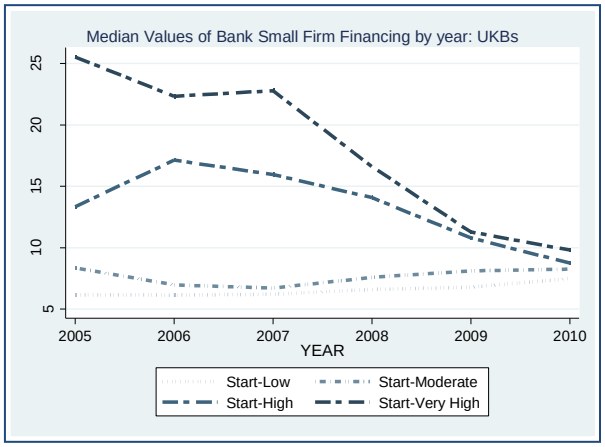
Annex

Annex 1: Variable Definitions

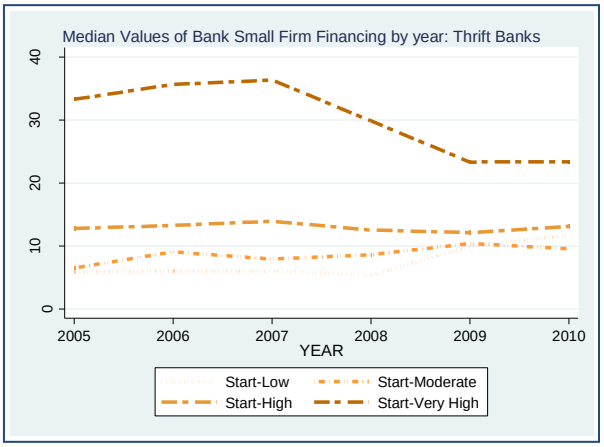
Name of Variable	Variable Definition	Data Sources/Frequency
COMP_SMALL%	Ratio of a bank's compliance to the *Magna Carta* for Micro and Small Enterprises (MSEs) to total loans net of exclusions	Bangko Sentral ng Pilipinas, quarterly
DIFFCOMP_SMALL%	The difference between COMP_SMALL% and the legal limit of the required lending to MSEs (6% up to the 2nd quarter of 2008, 8%, thereafter)	Authors' own computations
COMP_MED%	Ratio of a bank's compliance to the *Magna Carta* for Medium-Sized Enterprises to total net of exclusions	Bangko Sentral ng Pilipinas, quarterly
DIFFCOMP_MED%	The difference between COMP_MED% and the legal limit of the required lending to MSEs (2%)	Authors' own computations
INITIAL<8	A dummy variable that is equal to 1 if a bank's average compliance to small firm financing in the 2005-2007 period (before amendment) is less than 8%, and zero, otherwise.	Authors' own computations
INITIAL>8	A dummy variable that is equal to 1 if a bank's average compliance to small firm financing in the 2005-2007 period (before amendment) is at least 8%, and zero, otherwise	Authors' own computations
FOREIGN	A dummy variable that is equal to 1 if a bank is a foreign bank (subsidiary or branch), and 0, otherwise.	Bangko Sentral ng Pilipinas
CONGLOMERATE	A dummy variable that is equal to 1 if a bank is part of a financial conglomerate	
SIZE	Natural logarithm of total assets	Bangko Sentral ng Pilipinas, quarterly
FUNDING	The ratio of total deposits to total assets	Bangko Sentral ng Pilipinas, quarterly
LESSCOMP	A dummy variable that is equal to 1 if the bank's headquarters is located outside the National Capital Region or the metropolitan	Bangko Sentral ng Pilipinas,ADB SME Financing Survey, Bank Annual Reports
POLRATE	The policy rate by the Central Bank, the overnight repurchase agreement	Bangko Sentral ng Pilipinas, quarterly
GDPG	The growth rate of the gross domestic product	National Statistics Coordination Board, quarterly
BCI	The confidence index of the firms' overall outlook of the economy	Business Expectations Survey, BSP; quarterly
CREDIT_ACCESS	The credit access confidence index of the firms	Business Expectations Survey, BSP; quarterly
PERFORMANCE	The mean return on average equity (ROE) of each bank from 2000 to 2004	Bangko Sentral ng Pilipinas, quarterly; Authors' own computations
LOWPERF	A dummy variable that takes the value of 1 if a bank's mean ROE from 2000 to 2004 belongs to the lower 25th percentile in our bank sample, and zero, otherwise.	Authors' own computations
HIGHPERF	A dummy variable that takes the value of 1 if a bank's mean ROE from 2000 to 2004 belongs to the upper 25th percentile in our bank sample, and zero, otherwise.	Authors' own computtations
yr2008, yr2009, yr2010	Year dummies	
qtr2, qtr3, qtr4	Quarter dummies	

Annex 2: Bank SME Financing according to initial level of financing in 2005-2007

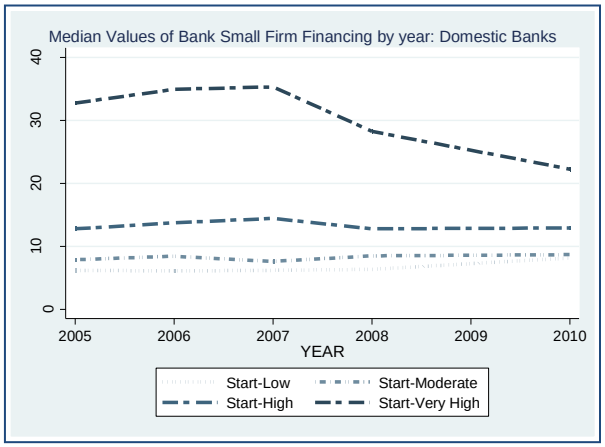
Figure A1. Median Values of Bank Small Firm Financing according to the extent of financing in the 2005-2007 period



a.1) UKBs



a.2) Thrift Banks



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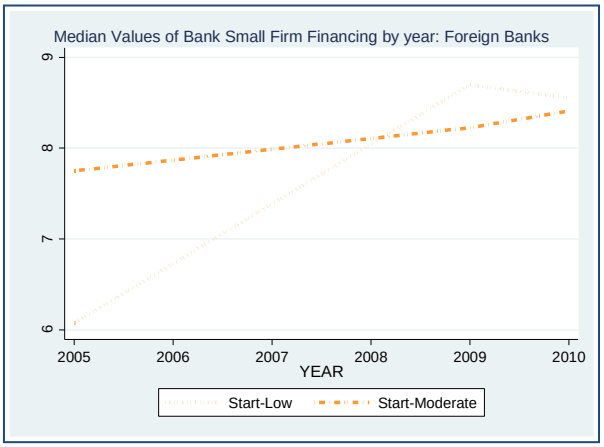
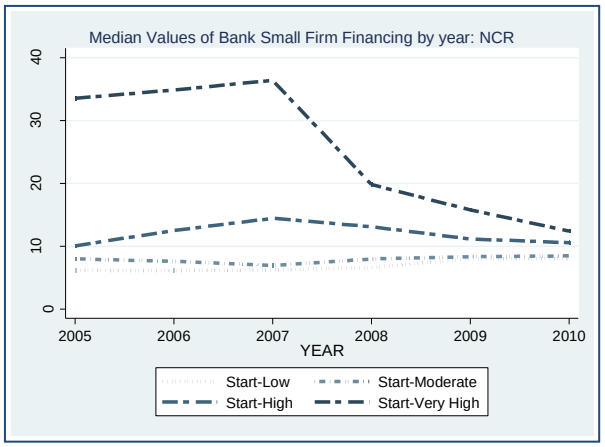
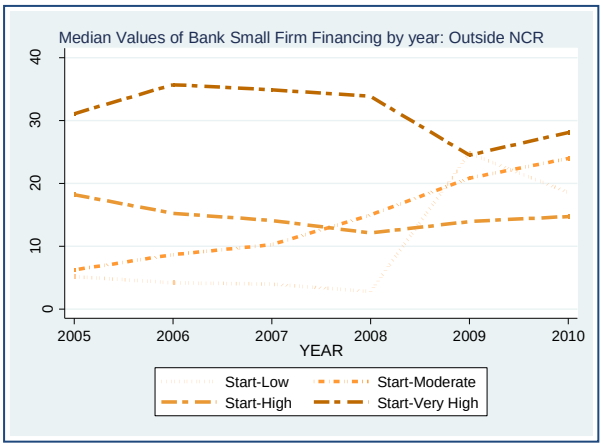


b.2) Foreign Banks

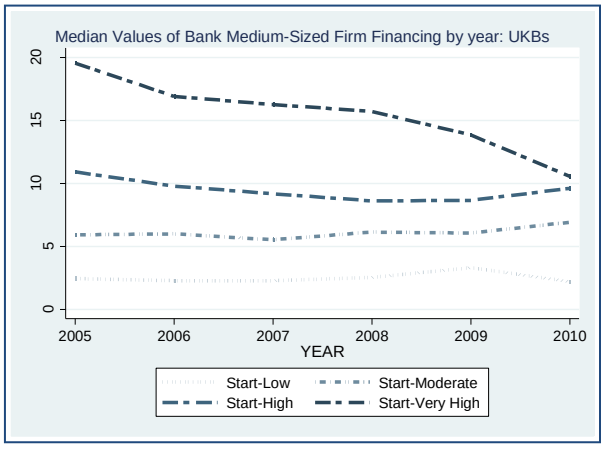


c.1) NCR



c.2) Outside NCR

Figure A2. Median Values of Bank Medium-Sized Firm Financing according to the extent of financing in the 2005-2007 period



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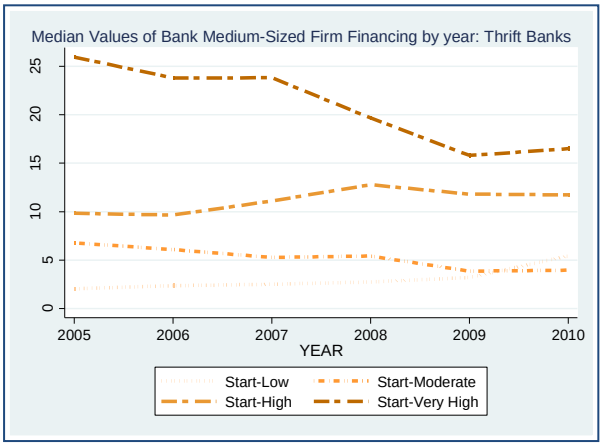

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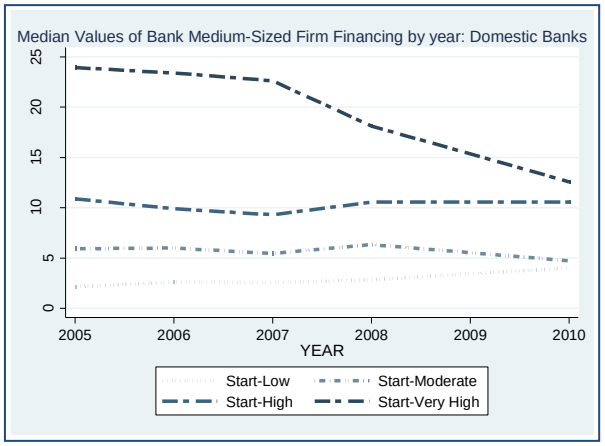

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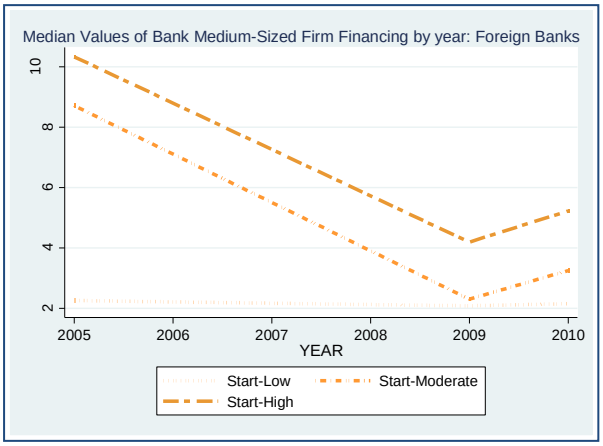
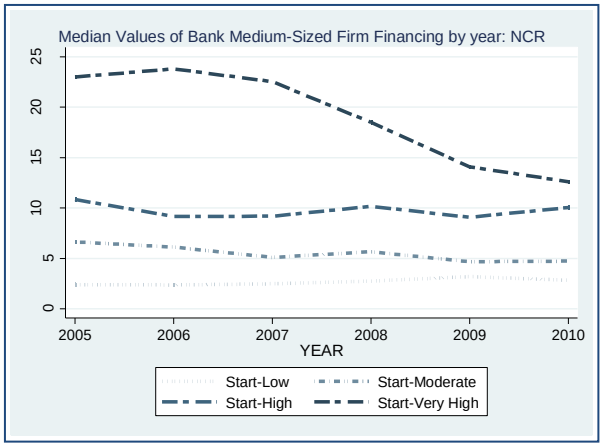
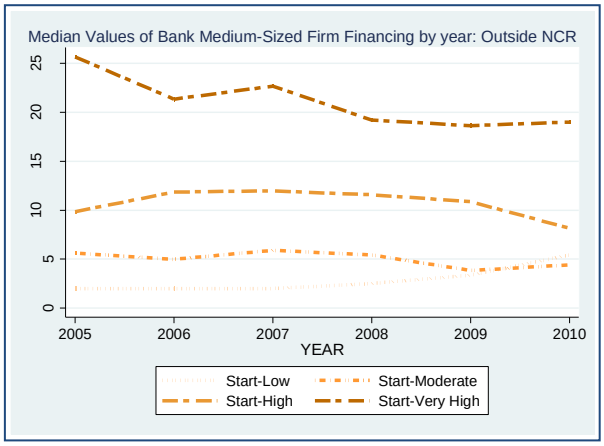


b.2) Foreign Banks



c.1) NCR (metropolitan)



c.2) Outside NCR (rural)

CHAPTER 2 Banking the SMEs in the Philippines: Lending Technologies and Bank SME exposure

1. Introduction

Improving access to external sources of funding is one of the main challenges of firm finance especially in emerging and developing economies. Removing barriers to finance is especially beneficial for small firms, which represent much of an economy's latent dynamism (World Bank, 2008). According to Lucas (1978), the financial conditions of small businesses differ from those of large firms. It is relatively more difficult for smaller firms to signal their creditworthiness to banks and other financial institutions because they suffer from more severe informational asymmetries between lenders and borrowers and incentive asymmetries between owners and managers than large firms (Scholtens, 1999). Often, this results in low access to small firm finance, which may compromise profitable project ventures of even high quality small firms. Without access to external finance, smaller firms often resort to internal resources, limiting their productivity potential, chance to innovate and grow.

Scholtens (1999) propose several control mechanisms, which may reduce information problems in order to increase incentives for external financiers to finance firm projects - ownership, collateral and covenants, relationship and reputation. Among these, the establishment of relationship is regarded to be the most viable way smaller and younger firms could mitigate information problems. This is because they are less capable to put up collateral, do not have the reputation yet and are limited in using signaling devices. Relationship lending allows the investor to gather information about the borrower over a considerable time period and their continuous contact is valuable for lenders especially in making decisions pertaining to the pricing of loans, or to whether credit has to be extended (Elyasiani and Goldberg, 2004).

In the SME finance literature, a conventional view exists, which attributes to small banks the advantage to lend to small businesses over larger banks, of which the primary key is the capability of the former to analyze and produce better "soft" information, which is essential in relationship lending. This is under the notion that relationship lending is the only viable lending technology banks could use when lending to small businesses. However, Berger and Udell (2006), view the traditional stance to be oversimplified, neglecting key elements of the financial system, which could lead to misleading conclusions. Several SME financing studies that followed (de la Torre *et al*., 2010; Beck *et al*., 2011) have empirically shown support in favor of a new paradigm to financing SMEs, that is, transactions lending is not a single homogeneous lending technology and that several of the distinct transactions lending technologies used by financial institutions are targeted to opaque borrowers. These include credit scoring, asset-based lending, factoring, fixed-asset lending and leasing.

A large body of literature in recent years has been dedicated to the study of SME finance from a firm perspective (Beck and Demirgüç-Kunt, 2006; Beck *et al*, 2006; Ayyagari *et al*., 2007). Until the recent empirical works examining the behavior of banks in providing SME finance (Beck *et al*., 2008; 2011; de la Torre *et al*., 2010; Rocha *et al*., 2011; and Calice *et al*., 2012), research efforts are relatively scarce in examining the supply side of SME financing. Results from recent bank studies show that investing in the SME market can be a lucrative business. Beck *et al*. (2008), examining how large banks perceive the SME market in 45 developed and developing countries, find that although banks are more exposed to larger firms, they consider the SMEs as an attractive, profitable market. De la Torre *et al*., (2010), relying on interviews conducted in 37 banks in Argentina, Chile, Colombia and Serbia along with interviews gathered by the International Finance Corporation (IFC) in 8 developing and developed countries and FRS (Inmark Group) across 7 countries, come up with the same result as Beck *et al.* (2008). Their study fills the gap between the "conventional wisdom" that small and niche banks drive the involvement of banks with SMEs to what actually holds in practice. Consistent with Beck *et al*. (2008, 2011), they find that the bank involvement with SMEs is not confined to smaller banks. Not only relationship lending works with SMEs but other lending technologies as well.

The aim of this chapter is two-fold. First, we examine bank behavior towards SME financing using newly gathered data from bank surveys we conducted for a total of 72 universal and commercial banks (UKBs) and thrift banks in the Philippines. UKBs or the larger banks and thrift banks comprise 97% of the total assets in the Philippine banking system and almost 93% of total bank lending to SMEs. We specifically use "hard" evidence collected via bank questionnaires to describe bank SME financing conditions, which include the products and services they offer and distribution channels they use in catering to SMEs. The survey also inquires about the different standard loan criteria imposed by banks on small and medium business compared with large firms. More importantly, we ask banks what drives and constrains them from lending to SMEs and how the government could increase the appeal of the SME sector. We also evaluate differences in bank behavior according to banks' degree of involvement towards SME financing by mapping out the bank survey responses with data on their actual compliance ratios to the *Magna Carta* for micro, small and medium enterprises, a law which mandates banks to lend to micro, small and medium firms. The findings of the survey will help policymakers not only in understanding better the perceptions, drivers and practices of banks in SME financing but also in knowing their constraints and obstacles, which are key towards better financial inclusion. It is also essential to identify the

factors that induce certain banks to finance SMEs more and distinguish the lending practices that may foster higher levels of bank SME financing.

Second, we test the existence of a new paradigm of SME finance as proposed by Berger and Udell (2006) in an emerging economy. Because SME lending technologies are relatively underdeveloped and limited in this type of economies compared with developed ones, it is expected for relationship lending to have an even larger role as a lending technology that works for small businesses. We empirically examine the impact of using different lending technologies, which include credit scoring, financial statement lending, relationship lending, factoring, asset-based lending, leasing and fixed asset lending, on the likelihood that banks will have higher levels of SME financing. To provide more robust results, it is crucial to differentiate between the two types of firms – micro and small firms and medium firms. This is because these two types of firms vary in terms of their informational opacity. While several lending technologies such as financial statement lending would work well with the more transparent firms – the medium-sized ones; other arms-length lending technologies may be more compatible in dealing with micro and small firms. To our knowledge, this is the first empirical study that takes this aspect into account. Our results, thus, contribute to the recent academic debate by distinguishing the lending technologies that work well for micro and small firms from medium firms.

Our study also departs from existing bank SME financing studies (i.e. Beck *et al*., 2008, 2011; de la Torre et al., 2010) in two ways: first, our investigation, which tests the conventional wisdom vis-à-vis the new paradigm of SME finance, examines further the issue by comparing findings for small banks (thrift banks) and bigger banks (universal and commercial banks). Our work, thus, extends the work of Beck *et al*. (2011) who only explored larger banks. It is also important, however, to study the lending technologies used by thrift banks; the results of which would make a stronger case for or against a new paradigm of SME finance. Second, unlike previous studies, our survey questionnaire enables us to examine bank behavior differences in terms of their loan application critera and standard practices on SME loans vs large corporate loans – interest rates, loan to collateral ratio and the length of processing of loans.

The main results from the survey are as follows:

First, profitability and relationship are the main reasons why banks finance and intend to finance SMEs regardless of bank type or size. This is consistent with previous studies by the World Bank based on survey data (de la Torre *et al*., 2010; Beck *et al*., 2008).

Second, bank SME financing portfolio is focused on short term loans and overdrafts. This implies that banks are mostly financing SMEs' working capital needs. Only over half of the banks provide investment loans with medium term maturities and a little over one-third provide long term investment loans. This may indicate that financing services offered to SMEs are shallow, which may have adverse effects especially for smaller firms that need access to funds to acquire fixed assets and other investments that could be essential for them to expand their operations.

Third, universal and commercial banks are more inclined to apply different sets of loan application criteria between SMEs and large firms compared with thrift banks. They often impose higher interest rates on SMEs and have lengthier processing time of SME loans vs large enterprise loans.

Fourth, the banks cited guarantees, better regulatory environment and credit bureaus as the main ways of how the government could increase the appeal of SMEs. Banks that have low credit exposures to SMEs cited that clearer enforceability and tax incentives could help them increase their level of small firm financing exposure. Moreover, banks that are highly involved with financing small firms mentioned that changes in regulations that are SME-specific, such as the speeding up of issuance of business permits and documentary requirements as ways to increase further the appeal of SMEs to this group.

Lastly, regulation and collateral requirements are the main obstacles banks encountered when lending to SMEs. For banks that have low level of involvement to small firm financing, they also cited underdeveloped lending technology as a constraint due to the high cost of technology and absence of centralized credit bureaus and credible SME information. Further, they highlight that the opacity of small firms and their difficulty to distinguish their financial conditions constrain them from lending to SMEs. These findings are in direct contrast with de la Torre *et al*. (2010) who do not find lending technology to be significant obstacles in increasing SME lending in Argentina, Chile and Colombia. The differences in our results, however, may be attributed from the absence of distinction in de la Torre *et al*.'s (2010) study of banks that were highly involved with SMEs from those that are less involved.

Regarding our investigation of whether arms-length lending technologies may be used in financing SMEs, our empirical results using pairwise correlations and multinomial logistic regression confirms a new paradigm of SME finance in the Philippines. Relationship lending is not the sole lending technology associated with high levels of SME financing, but also several arms-length lending technologies such as credit scoring, factoring, financial statement

lending, among others. Reflecting differences in terms of their level of informational opacity, some lending technologies may be more compatible with high bank financing to micro and small firms such as credit scoring while other lending technologies such as financial statement lending and asset-based lending are compatible with high bank medium firm financing. This result confirms Berger and Udell's (2006) claim that when firms increase their size, they tend to have higher quality financial statements, which yield increasing advantage in "hard" or arms-length technologies. In addition, compared with medium firms, micro and small firms are less able to put up collateral, particularly long-lived assets. Moreover, we find that different types of banks' use of different lending technologies is highly likely to result distinctively, in higher levels of small and medium firm financing than low levels of credit exposure to small and medium firms. Universal and commercial banks that use credit scoring are more likely to have high levels of small firm financing exposure than low financing exposure. What makes credit scoring attractive especially to these large/universal and commercial banks, is that it could be applied to very opaque small businesses. Much of the information that are used in computing the credit scores are not only based on "hard" SME information but also information about its owner. Large banks may find it easier to lend to small firms especially when they have banking relationships with existing clients that are owners of small businesses. Meanwhile, we find the UKBs that use financial statement lending, factoring and leasing are more likely to have high medium firm financing exposure. Further confirming a new paradigm of SME finance as proposed by Berger and Udell (2006), we find that for thrift banks or small banks, relationship lending is not the only lending technology compatible with high levels of small and medium firm financing. Thrift banks that use arms-length lending technologies such as credit scoring and factoring are highly likely to finance more small firms while thrift banks that use asset-based lending, fixed asset lending and factoring are more likely to have higher exposures to bank medium firm financing than low credit exposure. Aside from credit scoring, we also highlight the role of factoring as a lending technology in financing the working capital needs of small businesses. Factoring may be a substitute for collateralized lending especially in countries with weak commercial laws and enforcement (Klapper, 2006).

This chapter is organized as follows. Section 2 provides details and a summary of the results of the bank SME financing survey conducted in the Philippines followed by the definition of bank SME exposure in Section 3. Section 4 reports the results of the survey according to bank exposure to small firm financing. Section 5 tackles the link between SME finance, lending technologies and loan application standard practices, followed by an

empirical investigation in Section 6 of the effect of SME lending technologies employed on the ability of banks to comply with the mandated credit allocation to SMEs. Lastly, Section 7 summarizes and concludes.

2. The survey

2.1.Data

In gathering information about bank behavior on financing small and medium enterprises (SMEs) in the Philippines, we designed a survey, the Asian Development Bank (ADB)-SME Financing Survey (ADB-SFS) directed to universal and commercial banks (UKBs), and thrift banks in 2011 (original questionnaire[33] shown in Annex 1). We do not discount the relevance and importance of rural and cooperative banks in SME financing, however, due to logistic constraints, we just focus our study on the UKBs and thrift banks. They account for over 97% of the Philippine banking system's total assets, 70% of the bank branches in the country, and 93% of total SME lending of the Philippine banking industry.

Our survey, which comprises 21 questions, consists primarily of qualitative questions about banks' behavior toward SME financing. We drew several questions in the ADB -SFS in the Philippines from similar bank SME financing surveys on larger banks across countries conducted by the World Bank (Beck *et al*., 2008; de la Torre *et al*., 2010). Moreover, we incorporated new questions to better understand the state of SME lending in the Philippines.

The survey first examines banks' current SME financing conditions, in terms of the products and services they offer to SMEs, including the distribution channels they use to serve the small businesses. Second, the survey inquires about the different criteria used by banks in targeting SMEs, the lending technologies and screening and underwriting policies used by the banks when lending to SMEs. Third, the survey includes questions regarding the drivers and obstacles of banks in catering to SMEs. In addition, the survey also asks banks about their perception of how the government could increase the appeal of SME lending. Fourth, the survey tries to gauge the evolution of bank credit standards as applied to the approval of loans or credit lines to SMEs from 2006 to 2010. Finally, the survey investigates the standard practices and loan application criteria banks impose on SMEs vis-à-vis large corporations. We also collected quantitative information, however, substantial number of

[33] We added additional question regarding the banks' loan application criteria and standard practices when we followed up the banks' answers to the questionnaire. We asked the following: 21) Regarding the loan application criteria/standard practices of your bank, a) Are they different: for SMEs vs large corporations?; b) In terms of interest rates, is it higher for SMEs vs large corporations?; c) In terms of the ratio of loans to collateral? Are they lower for SMEs vs large corporations?; d) in terms of the length of processing of loans: are they longer for SMEs vs large corporations?

banks did not answer these questions and thus, we rely primarily on the qualitative questions to which we report as the results of the survey.

We began by looking at the list of all the commercial banks and thrift banks registered with the central bank, the Bangko Sentral ng Pilipinas (BSP). Out of the 105 banks invited to take part in the survey, 72[34] responded positively rendering a response rate of 68.6%, of which 30[35] are UKBs and 42[36] are thrift banks. In terms of loans, banks in the sample account for over 90% of the banking system.

2.2.Results of the Survey

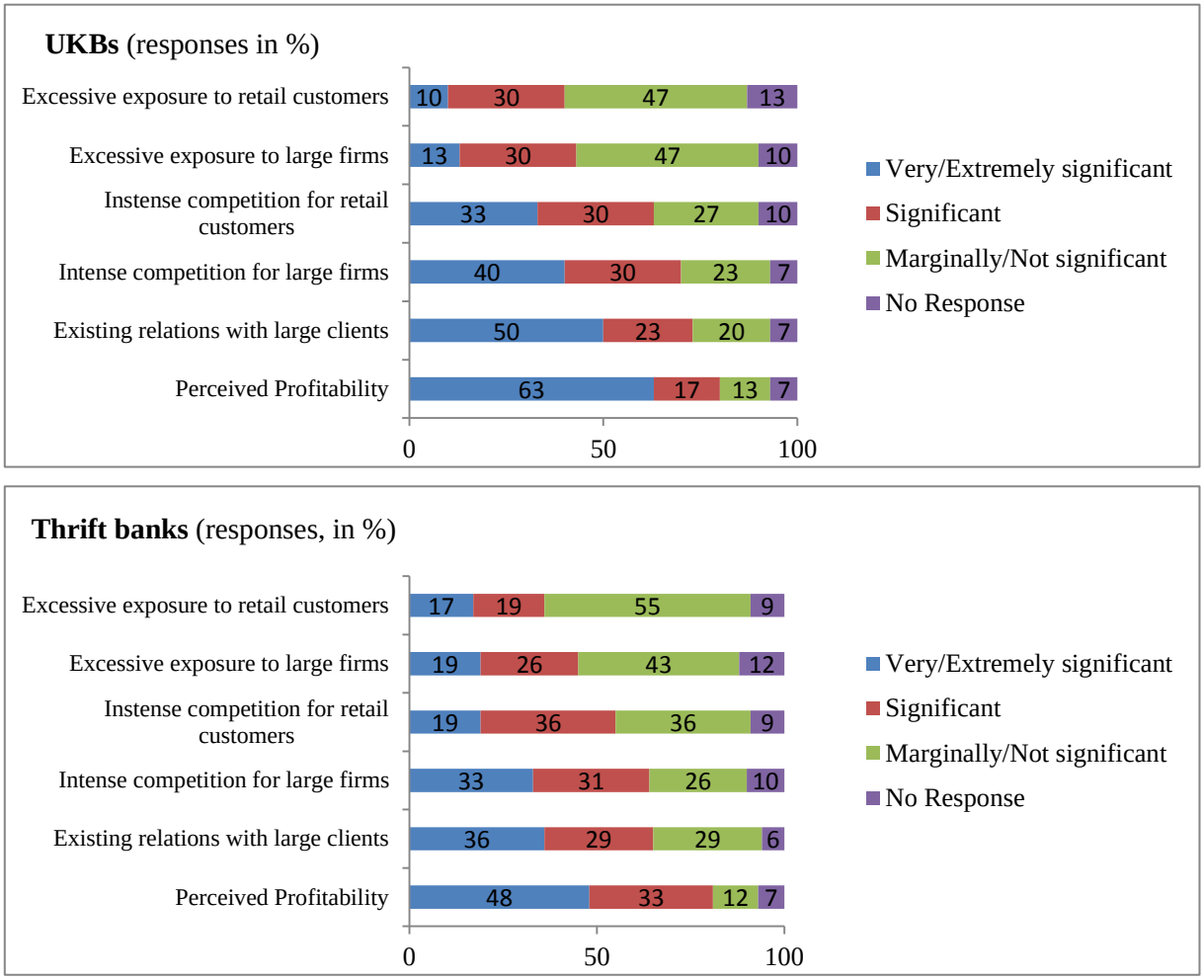
The ADB SME Financing Survey (ADB-SFS) was conducted in order to obtain first-hand information from the banks about their perceptions of the SME market and behavior towards the segment. The gathered survey data, which comprises primarily of qualitative information intended to probe the motivation and reasons behind the observed trends of banks' compliance ratios to the mandated credit program to small and medium enterprises in Chapter 1.

The key findings of the survey are as follows.

First, financial viability and relationship are the main reasons in banks' involvement with SMEs (cf. Figure 1). When asked about the main drivers of bank lending to SMEs[37], over 80% of both UKBs and thrift banks in our sample said profitability is significant, followed by the relationship between the banks and their existing clients (69%[38]).Regarding the screening and underwriting parameters used by the banks, the strength of the firms' financial statement as well as the strength of the tie between the firm and the bank also gets the highest consideration.

[34] Most of the banks that did not participate in the survey are foreign banks because they do not serve the SME segment, are subsidiaries of other banks and are dissolved or merged with another bank.
[35] 30 out of the 37 UKBs responded in our invitation for them to take part in the survey, rendering a response rate of 81% for the UKBs
[36] 42 out of the 68 thrift banks responded in our invitation for them to take part in the survey, rendering a response rate of 62% for the thrift banks.
[37] Banks were not constrained in terms of their responses. They were allowed to indicate all the factors applicable to them.
[38] Average between UKBs and thrift banks.

Figure 1. Factors driving banks to lend to SMEs, by type of bank



Second, the channels used by banks to serve SMEs are fairly narrow. 43% responded that SME lending transactions only happen via a single channel, usually the full service branches. 40% of the banks said that they utilize 2 to 4 channels for credit transfer to SMEs; whereas, only seven banks (less than 10% of the sample) use at least 5 channels in providing financial services to SMEs (See Tables 1 and 2). SME bank financing portfolio also tends to be focused. Apart from lending and savings services, only 14% of the banks indicate that they offer other services to SMEs (cf. Figure 2). In term of loans types, banks' involvement is restrained within investment loans with short to medium-term maturities. Almost all the banks offer loans within 1 year maturity. About 58% of the bank respondents (42 out of 72 banks) indicate that they also extend medium-term loans (1-5 years) to SMEs. But, only a third or fewer of them disclosed that long-term loans and other lending facilities are made available to the non-large enterprises (See Figure 2).

Table 1. Distribution channels used to serve SMEs

	UKBs			ThBs			Total		
	Yes	No	No ans	Yes	No	No ans	Yes	No	No ans
Limited service branch	12	2	16	13	7	22	25	9	38
Full service branch	21	4	5	24	6	12	45	10	17
Mobile branches	0	8	22	0	17	25	0	25	47
ATMs	13	3	14	7	14	21	20	17	35
POS	3	6	21	0	18	24	3	24	45
Agents	1	6	23	4	15	23	5	21	46
Internet	9	4	17	4	15	23	13	19	40
Self-service	3	5	22	6	15	21	9	20	43
Phone	9	4	17	8	10	24	17	14	41
Others	5	2	23	4	5	33	9	7	56

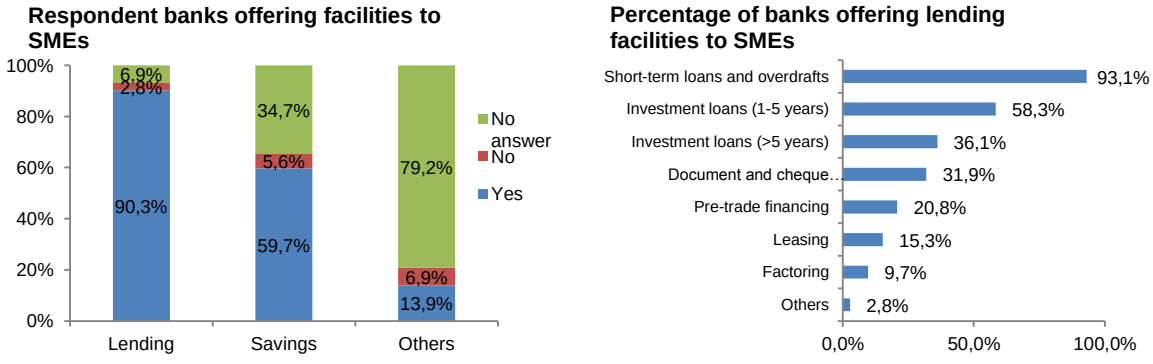
Source: ADB-SFS database

Table 2. Number of distribution channels used to serve SMEs

	Frequency			Distribution (%)		
Number	UKBs	ThBs	Total	UKBs	ThBs	Total
1	8	23	31	26.7	54.8	43.1
2	4	8	12	13.3	19	16.7
3	5	3	8	16.7	7.1	11.1
4	4	3	7	13.3	7.1	9.7
5	2	2	4	6.7	4.8	5.6
6	2	0	2	6.7	0	2.8
7	1	0	1	3.3	0	1.4
No answer	4	3	7	13.3	7.1	9.7
Total	30	42	72	100	100	100

Source: ADB-SFS database

Figure 2. Banking facilities offered to SMEs

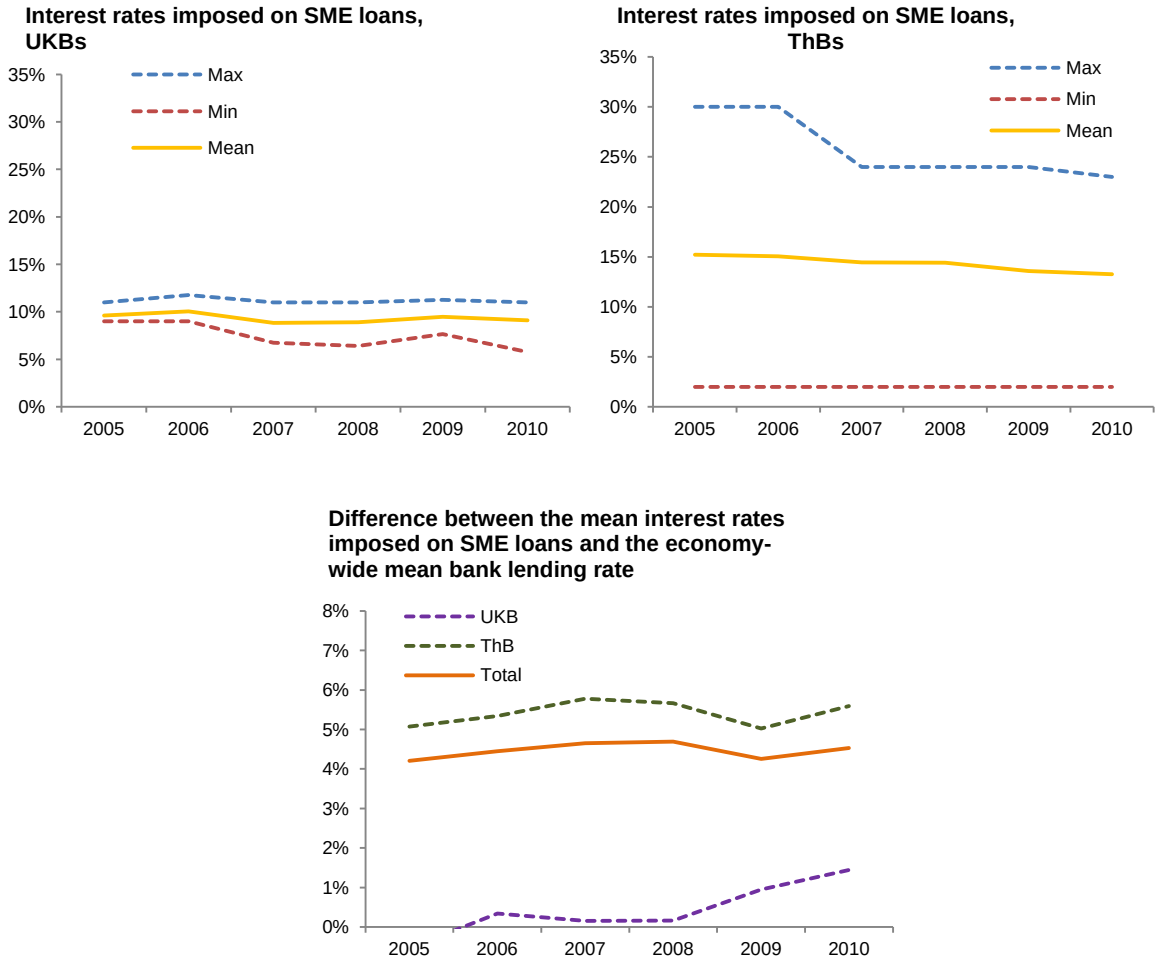


Source: ADB-SFS database

Third, the mean interest rate imposed on SME loans is slowly declining since 2005 but remains higher than the prevailing mean lending rate (See Figure 3). Average loan-to-collateral ratio, on the other hand, has been stable during the period but reflects a highly

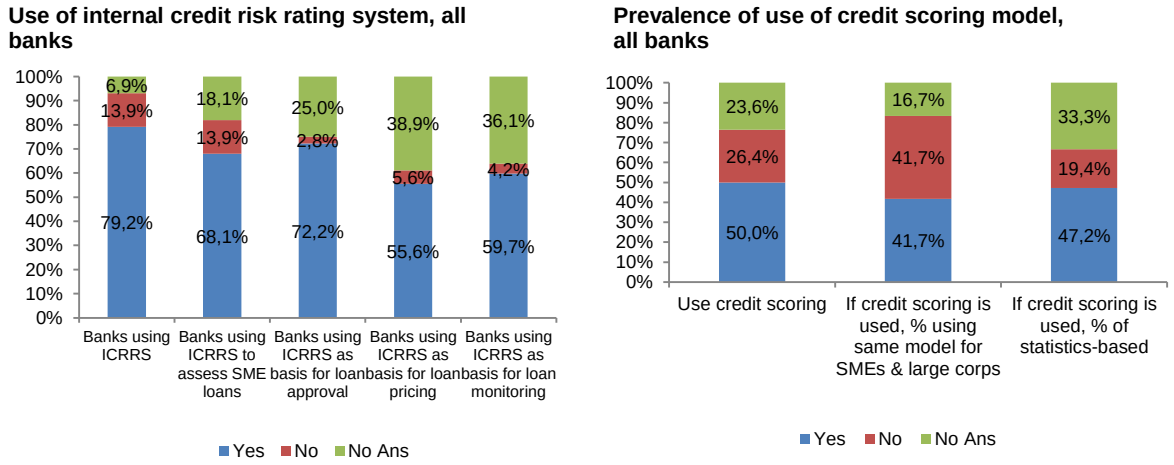
perceptible sentiment of risk aversion. In 2010, the average interest rate is around 9.1% for universal and commercial banks, 13.2% for thrift banks and 12.2% for the entire sample down from 9.6%, 15.2% and 14.4%, respectively, in 2005. Bank responses, however, reveal that mean lending rates for SMEs (entire sample) are higher than what is charged on an average bank credit – by a margin of over 4 percentage points on average, which is stable in the last 6 years. Variations in interest rates are usually wider in the case of thrift banks, on a range of 2% to 23% in 2010 (up to even 30% in 2005) relative to UKBs, which are confined to offer between 5.8% and 11%.

Figure 3. Interest rates imposed by banks on SME loans



Source: ADB-SFS database and BSP (for the differential)

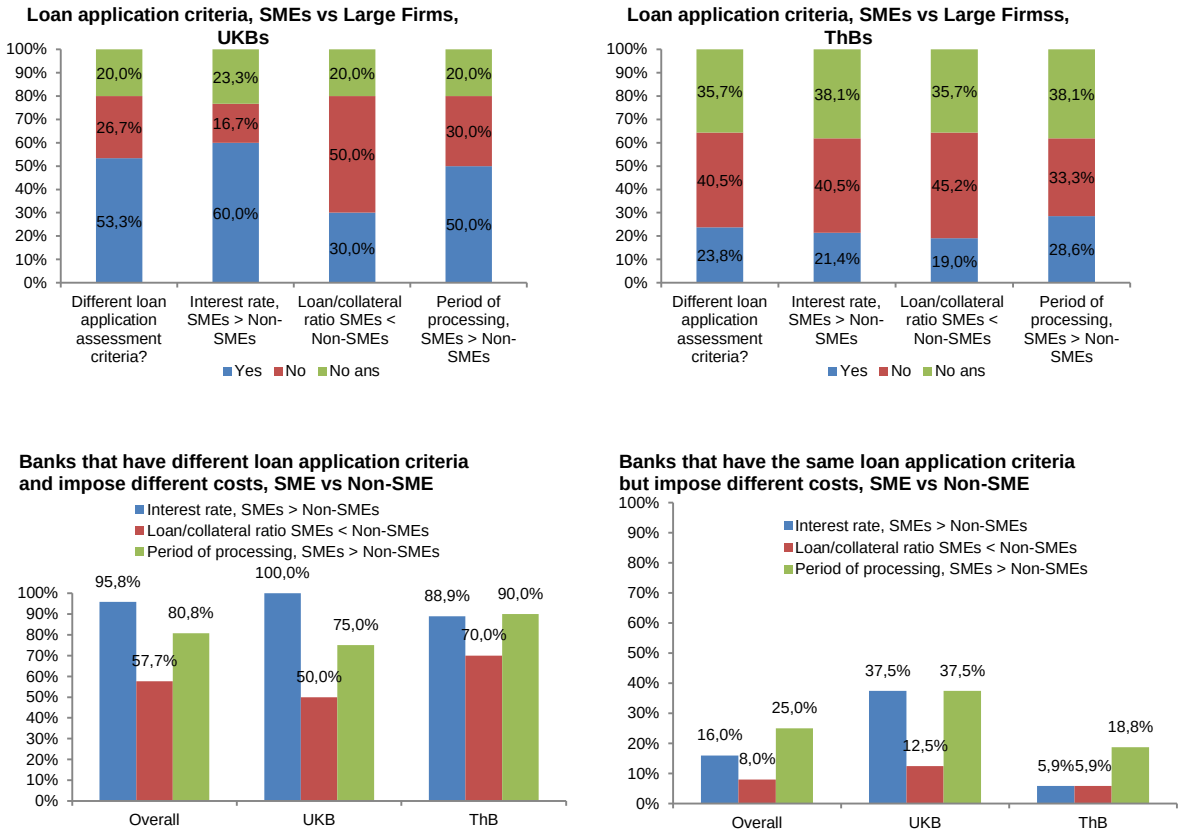
Figure 4. Incidence of use of internal risk rating system and credit scoring models



Source: ADB-SFS database

Fourth, most of the banks have internal credit risk rating systems applied across all nodes of loan approval process. Half of the sample use credit scoring to filter loan applications and a third said that they differentiate loan applications of SMEs from non-SMEs (cf. Figure 4). Figure 5 meanwhile show that 53% of the universal and commercial banks apply a different set of loan assessment criteria to differentiate the loan applications of SMEs from non-SMEs compared with only 24% of the thrift banks. Differentiation, however, is almost always accompanied by higher interest rates and longer processing time for SMEs, albeit not necessarily lower loan-to-collateral ratio. 96% of banks using different loan application criteria impose higher interest rate on SMEs; 81% of them said that processing time for SME loans is longer than non-SMEs loans. On the other hand, within the group of banks that do not impose different loan application criteria among enterprises, the percentage of banks enforcing higher interest rate, observing longer processing time and offering lower loan-to-collateral ratio to SMEs is only 16%, 8% and 25%, respectively.

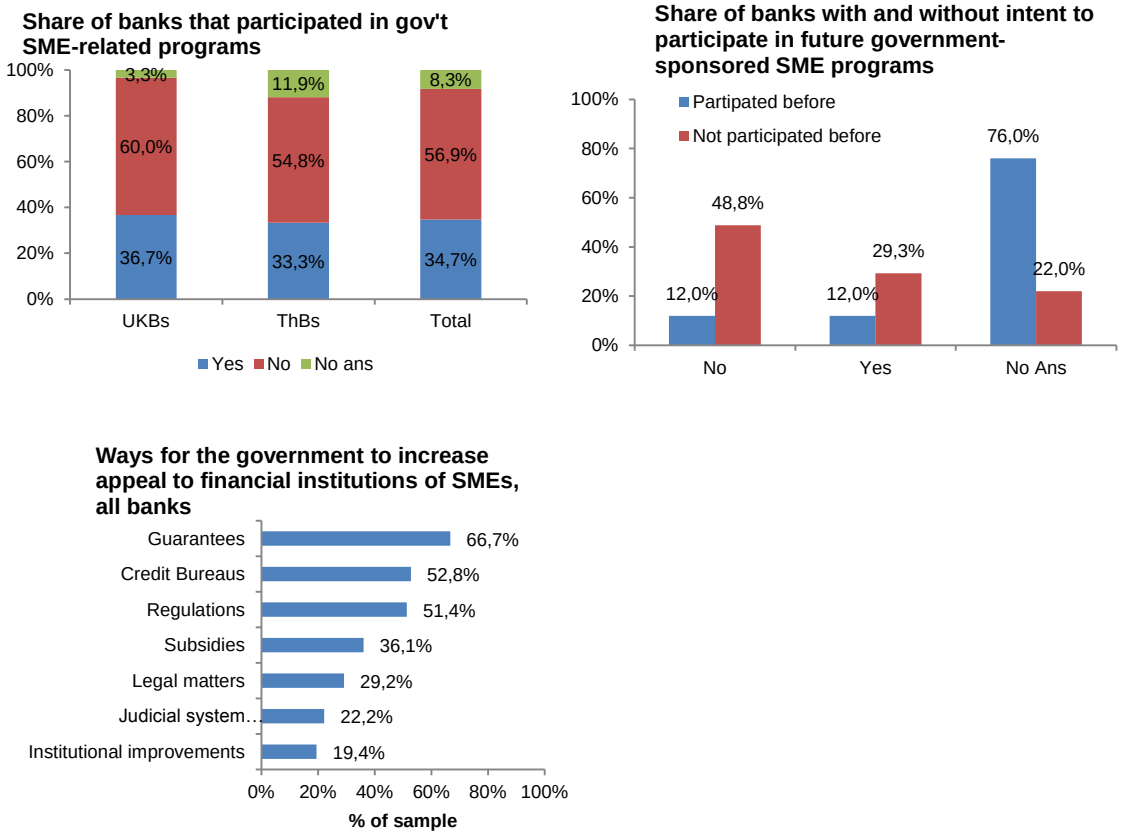
Figure 5. Loan application differentiation, SME vs Large Firms



Source: ADB-SFS database

Lastly, banks appear to have little interest in government-sponsored SME programs (cf. Figure 6). When asked if they had participated in any government program for SMEs, almost 60% said they have not, while only 35% said that they have. Of those banks that said they have already participated before, only 12% intends to participate in the future. Whereas, from those banks that said otherwise, a measly 29% hinted that they intend to take part in similar endeavors. In order to make the SME market more attractive to credit providers, most of the banks call for greater SME loan protection in the form of guarantees, establishment of public credit bureaus and easing of regulations.

Figure 6. Participation in government's SME-related programs and policy suggestions



Source: ADB-SFS database

3. Defining Exposure to SMEs

Unlike previous studies, we deal with the potential heterogeneity of banks in our sample arising from their variations in terms of the degree of their exposure to SME financing. We group the banks according to their actual involvement with SMEs. This approach allows us to differentiate the potential drivers, obstacles that banks face and current lending practices in providing financial services to SMEs, particularly depending on the banks' level of small firm financing exposure.

To implement this, we use the data of bank compliance to the *Magna Carta* for SMEs in 2010 from the Published Statement of Condition provided by the Bangko Sentral ng Pilipinas consistent with Khor *et al*. (2012b) and Chapter 1. To check the robustness of the groupings, we also take into consideration their precedent levels of exposure, thus taking the 2008-2010[39] periods into account. We identify a total of 86 banks that report their compliance ratios in 2010. Out of the 72 banks that responded in the survey, 60 of them have data on the

[39] We note that when we used 2008-2010 as the base years, the groupings did not change significantly.

compliance ratios.[40] 38 of the 60 are thrift banks and 22 are UKBs. The sample of 60 banks represent 77.44%, 78.77%, 85.57%, 87.49%, 87.91% and 86.44% of the total assets in the banking system, respectively for the years 2005, 2006, 2007, 2008, 2009 and 2010. Moreover, we verify that the number of bank responses, which varies according to the question asked, is representative of the banks in the Philippine banking system.

We construct several variables to compare banks that "under" and "just" comply with the mandatory lending requirement[41] to banks that "over" and "super" comply. Banks that belong to the former have low exposures to SME financing, while the latter are highly involved with micro, small and medium firms. We first take the average compliance ratio of banks in 2010 for micro and small and medium-sized enterprises, separately. We define four dummy variables for each firm size *K* as follows (We define all the variables used in this chapter in Annex 2):

UNDERCOMPLY = 1 if the bank's average compliance ratio, *COMP_K%* < mandatory bank lending requirement, LIMIT, to firm *K*, where K=small or medium. LIMIT=8% if K=small and 2% if K=medium;

JUSTCOMPLY = 1 if LIMIT ≤ *COMP_K%* < LIMIT<(1.1*LIMIT);

OVERCOMPLY= 1 if (1.1*LIMIT) ≤ *COMP_K%* < LIMIT<(2*LIMIT);

SUPERCOMPLY= 1 if *COMP_K%* ≥ (2*LIMIT).

Table 3. Descriptive Statistics of the Philippine Banks' Compliance to the *Magna Carta* for Small and Medium Enterprises, 2010

		UNDERCOMPLY	*JUSTCOMPLY*	*OVERCOMPLY*	*SUPERCOMPLY*
		COMP_K%(average compliance ratios)			
SMALL		(Compliance<8%))	(8%≤Compliance<8.8%)	(8.8%≤Compliance<16%)	(Compliance≥16%)
	Mean	5.21	8.34	11	34.8
	Std Dev	2.22	0.2	2.07	16.48
	Min	2.15	8.12	8.85	17.02
	Max	7.65	8.63	15.89	77.87
	No. of Banks	10	8	24	18
MEDIUM		(Compliance<2%)	(2%≤Compliance<2.2%)	(2.2%≤Compliance<4%)	(Compliance≥4%)
	Mean		2.12	2.83	11.87
	Std Dev		0.1	0.52	9.67
	Min		2.01	2.22	4.06
	Max		2.198	3.61	49.7
	No. of Banks		3	10	47

[40] About the 12 banks left: i) three banks do not report their compliance ratios, one of which is foreign and two are local banks; ii) the other nine, however, had reported for less than three years over the period of study. Among the twelve banks, five are foreign banks, and seven local banks (5 are thrift banks, one is a UKB and one is a state UKB).

[41] Chapter 1 of this dissertation discusses more into detail the mandatory credit program for financial insitutions directed to the micro, small and medium enterprises, also known as the *Magna Carta* for micro, small and medium enterprises.

Table 3 describes exposure of each group category to micro and small and medium-sized enterprises, respectively, while Table 4 shows the distribution of banks according to bank size and ownership. The tables reveal that while all banks in our sample comply with the *Magna Carta* for medium-sized enterprises, 17% of the banks do not finance small firms relative to what is required of them by the law. In fact, 30% of the whole sample has small firm loan exposure of less than 8.8%, which could be interpreted as "less than or just" what is required of them by the law. Moreover, majority of the banks (70%) comply more than what is required of them, even reaching an average of 35% of compliance to small firm financing for those that *SUPERCOMPLY*. In terms of medium-sized firm financing, 78% of the banks are very involved, with average implication of almost 12%. This suggests that banks may have preferential bias towards lending to medium-sized enterprises, which are relatively less informationally opaque than their small business counterparts. Moreover, this also implies that the SME group is heterogeneous in terms of their actual supply of finance, which may warrant separate research between micro and small firms and medium firms.

Table 4. Distribution of banks according to the level of exposure to small and medium enterprises by bank type and ownership in the Philippines, 2010

	Bank Type				Ownership			
	Thrift		**UKBs**		**Domestic**		**Foreign**	
	%	average	%	average	%	average	%	average
UNDERCOMPLY								
Small (Compliance<8%)	0%		100%	5.21	70%	5.85	30%	3.72
Medium (Compliance<2%)								
JUSTCOMPLY								
Small (8%≤Compliance<8.8%)	25%	8.36	75%	8.34	75%	8.32	25%	8.41
Medium (2%≤Compliance<2.2%)	33%	2.01	66%	2.17	33%	2.1	66%	2.15
OVERCOMPLY								
Small (8.8%≤Compliance<16%)	75%	11.4	25%	9.78	92%	11.13	8%	9.57
Medium (2.2%≤Compliance<4%)	70%	2.61	30%	3.35	80%	2.9	20%	2.58
SUPERCOMPLY								
Small (Compliance≥16%)	100%	34.8	0%		100%	34.8	0%	
Medium (Compliance≥4%)	62%	13.37	38%	9.45	89%	12.2	11%	9.1

In terms of the distribution of banks according to bank type and ownership, the statistics shown in Table 4 indicates that in terms of small firm financing, most UKBs fall under the categories *UNDERCOMPLY* and *JUSTCOMPLY* and that no UKB in our sample has loan exposure to small firms of at least 16%. This is consistent with what we found in Chapter 1, which uses a longer study period, 2005-2010. In fact, even when the highest small firm and medium firm average compliance ratios are combined, average SME exposure for UKBs is at most equal to 20% (9.78 + 9.45). This is in contrast with de la Torre *et al*. (2010),

where credit exposures of large banks included in their survey studies reached 62% and 28% to SMEs in Argentina and Chile, respectively for those that are more involved. This further reveals that large banks' credit exposures to SMEs in the Philippines are rather limited compared with these emerging economies in Latin America, which may also suggest that the "large bank barrier" problem to financing SMEs as explained in Chapter 1 may be a bigger issue in the country. Thrift banks or the smaller banks, on the other hand, have very high credit exposures to micro and small firms, reaching an average of 34.8%. Participation of foreign banks to both small and medium-sized firm financing, however, remain to be low, with an average of 9%. Moreover, Khor *et al*. (2012b) notes that the level of exposure of foreign banks has been increasing from 2005 to 2010 particularly to medium firms. Hence, we do not discount their potential in providing financial services to SMEs in the future.

4. Survey Responses According to Bank Exposure to Small firm financing

Table 3 in the previous section shows that medium firm financing is relatively high relative to the minimum lending required by the law. Because of the homogeneity of our sample in terms of medium firm financing, we cannot use the precedent groupings to distinguish bank medium firm involvement. Thus, in this section, we specifically look into how banks perceive small and medium firms as clients according to their exposure to micro and small enterprises. We compare the banks that have relatively lower compliance ratios - *UNDERJUST* (*UNDERCOMPLY* and *JUSTCOMPLY*), from those banks that have higher compliance ratios - *OVERSUPER* (*OVERCOMPLY* and *SUPERCOMPLY*). While the latter represents the banks that are highly involved and exposed to micro and small enterprises, we assume that the former represents the banks that may be exposed to micro and small enterprises (MSEs) just to comply with the law, and thus, specific targets of loans to MSEs may have been set, around the minimum compliance of 8%.

We start by looking into the product portfolio offered by banks to their SME clients. Table 5(Panel A) reports the distribution of lending facilities of banks according to small firm exposure. We note that our sample of banks that are less involved with small firms offer a larger variety of SME lending products to SMEs and thus, are more diversified compared to banks that have higher loan exposure to SMEs. This, however, may be more characteristic of the composition of banks that are less involved with micro and small enterprises, dominated by universal and commercial banks. While *OVERSUPER* banks to small enterprises tend to focus on providing short-term loans and medium-term investment loans, *UNDERJUST* banks to small enterprises offer in addition, more lending facilities, such as leasing, pre-trade

financing and factoring, which allows them to have higher cross-selling opportunities. The distribution channels used by banks that are less exposed to small firms are broader compared to banks that are most exposed to small firms, which primarily rely on limited and full-service branches (Table 5(Panel B)). This is indicative of the profile type of banks that are less exposed to SMEs, dominated by the UKBs. Channels such as internet, point-of-sale facilities (POS) and agents are rarely used by banks that cater more especially to the smaller firms.

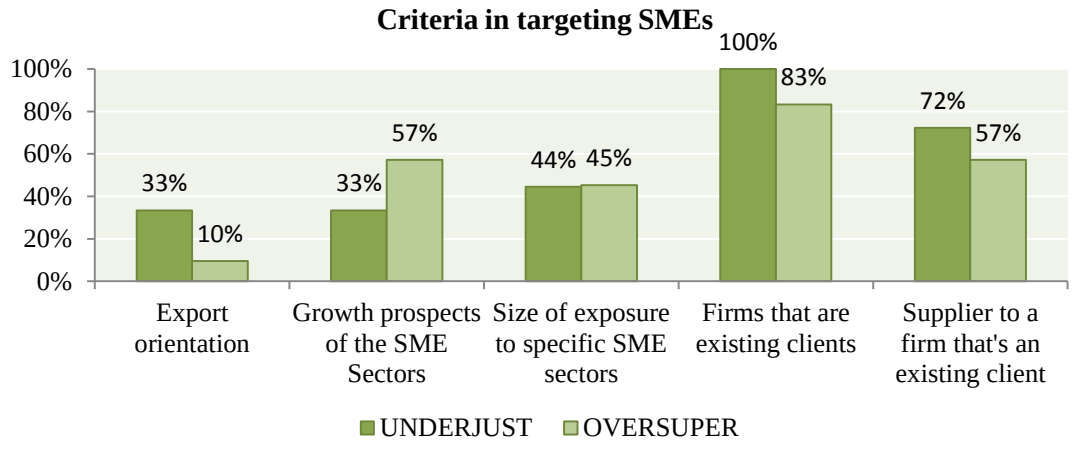
Table 5. Distribution of banks according to small firm exposure, by lending facility, distribution channels used to serve SMEs and economic sector that obtained the highest proportion of the SME lending of the bank

	UNDERJUST	*OVERSUPER*
A. Lending Facilities		
Short term loans & overdrafts	100%	100%
Investment loans (1-5 years)	67%	66%
Investment loans (>5 years)	44%	39%
Document & cheque discounting	67%	24%
Pre-trade financing	44%	17%
Leasing	28%	12%
Factoring	33%	2%
At least 3 lending facilities	78%	49%
B. Distribution channels		
Full	75%	65%
Limited	44%	35%
ATMS	44%	23%
Phone	38%	18%
Self-service	19%	13%
Internet	38%	13%
Agents	6%	10%
POS	19%	0%
C. Economic Sector		
Wholesale, Retail, Trade & Repair	71%	53%
Real Estate, Renting & Business Activities	12%	18%
Manufacturing	12%	10%
Agriculture , Hunting & Forestry	0%	8%
Other Community, Social & Personal Activities	0%	8%
Education	0%	5%
Transportation, Storage & Communication	6%	0%
D. Main Players		
Thrift	67%	85%
Rural	61%	71%
UKB	67%	51%
State Banks	33%	34%
Non-Bank Financial Institutions (NBFI)	50%	34%

Table 5(Panel C) shows the distribution of banks according to the economic sector that obtained the highest proportion of SME lending, by bank micro and small firm financing exposure. The findings indicate that contrary to de la Torre *et al*. (2010) who find that banks do not appear to be sector-specific when targeting SMEs, most banks focus on the *Wholesale, Retail, Trade* & *Repair* sector, which comprises majority of the SMEs, particularly the banks that have low financing exposures to small businesses dominated by commercial banks. Moreover, we find that banks that are highly involved with small firms lend to more sectors. The survey also asked banks about their views regarding the main players in providing finance to SMEs. Table 5(Panel D), shows that regardless of the level of bank exposure to small firms, at least 60% view banks (UKBS, thrift banks and rural banks) as the main players in the SME market and a small proportion of banks in the sample view a rather limited role of state banks. For those banks that are highly exposed to small firms, however, they view smaller banks (rural and thrift) as the main providers of SME finance, while those that have lower exposure to small firm loans dominated by UKBs view themselves with the thrift banks as the primary players in the SME market.

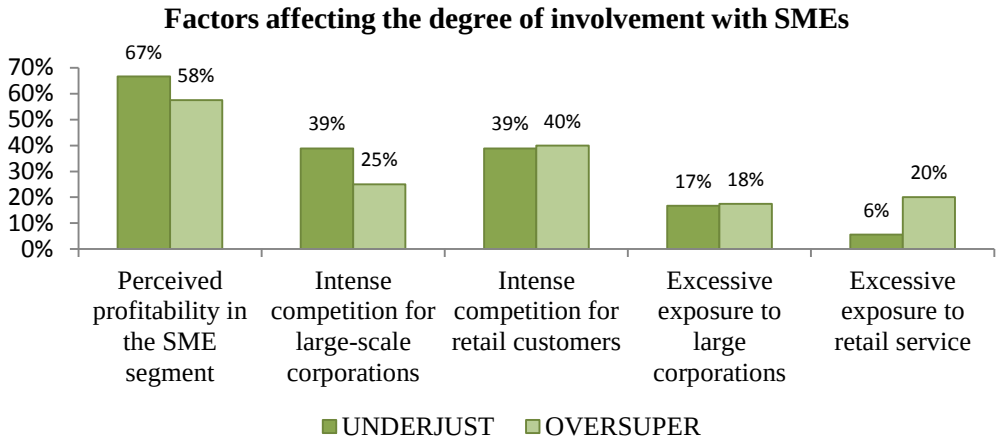
In expanding their involvement with SMEs, we note in Figure 7 that both groups of banks choose to deepen their relationship with existing clients and their suppliers, especially those that are less involved with SMEs. This may suggest a rather conservative behavior by banks that are "just" complying and "under" complying with the law. Moreover, for banks that are more involved with SMEs, the growth prospects of the SME sector also plays a crucial role in targeting their clients.

Figure 7. Criteria in Targeting SMEs according to bank small firm exposure



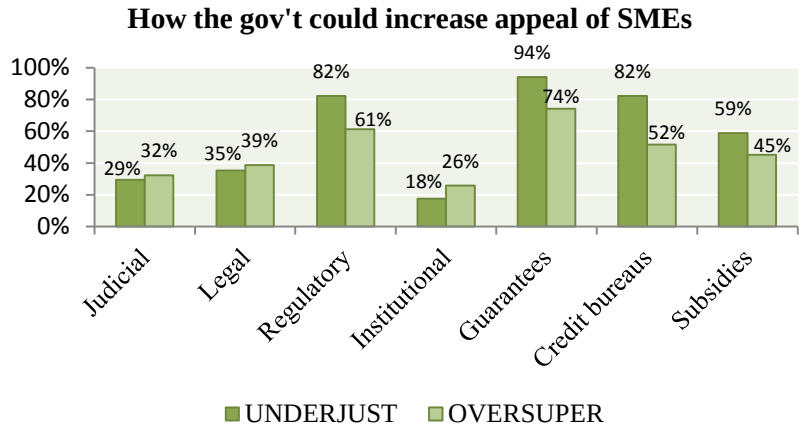
Only a small percentage of these banks, however, look into the export orientation of firms. Among the factors that drive bank involvement with SMEs, we highlight the profitability of the segment to be the main motivating factor across bank groups, a finding which is consistent with de la Torre *et al*. (2010). This may arrive as a viable alternative, especially for those that are less involved with small firms, who face competition for large-scale corporations. Figure 8 shows that almost 40% of the "under" and "just" complying banks experience intense competition in extending financial services to large corporations. Moreover, the survey also indicates that the market for large corporations is far from being saturated.

Figure 8. Factors affecting the degree of bank involvement with SMEs according to bank small firm exposure



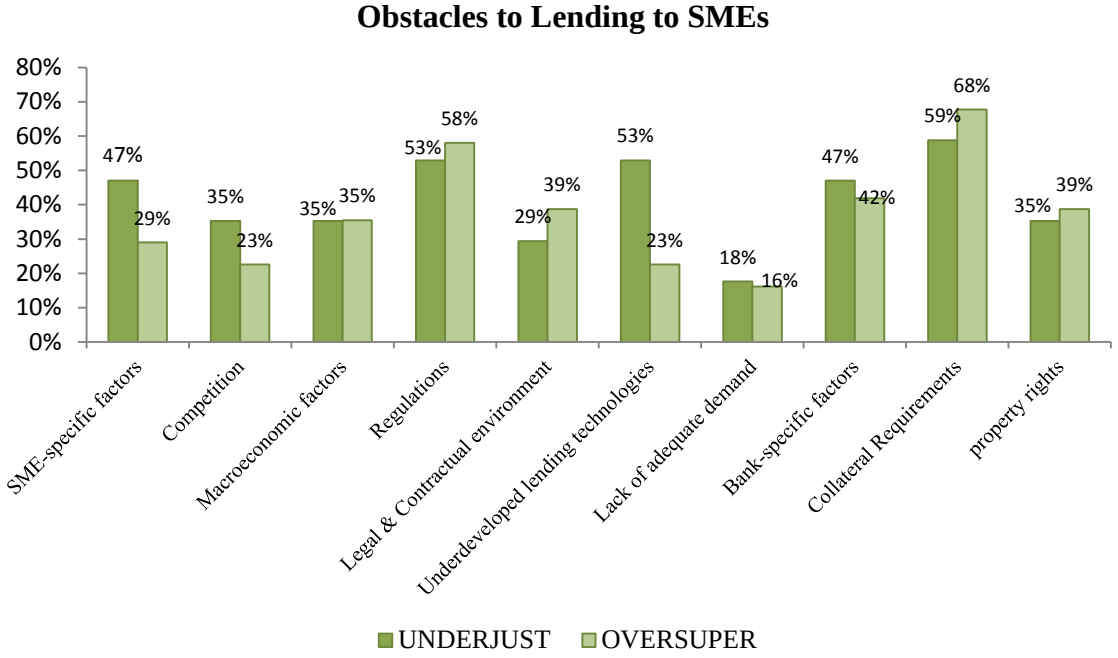
When asked about the ways by which the government could increase the appeal of SMEs, the top three responses were guarantees, better regulatory environment and credit bureaus (See Figure 9). Under the regulatory aspect, banks that are less exposed to small firms cited clearer enforceability and BSP mandate along with tax incentives to SMEs as ways in which the government could aid these banks to increase their involvement with SME financing. On the other hand, for banks that are highly exposed to small firms, frequent responses were actually directed to changes in regulations pertaining to the SMEs, including speeding up of issuance of business permits and documentary requirements. With regards to the establishment of credit bureaus, all banks, frequently cited the establishment of a centralized credit database and updated credit risk-related information.

Figure 9. Factors of how the government could increase the appeal of SMEs according to bank small firm exposure



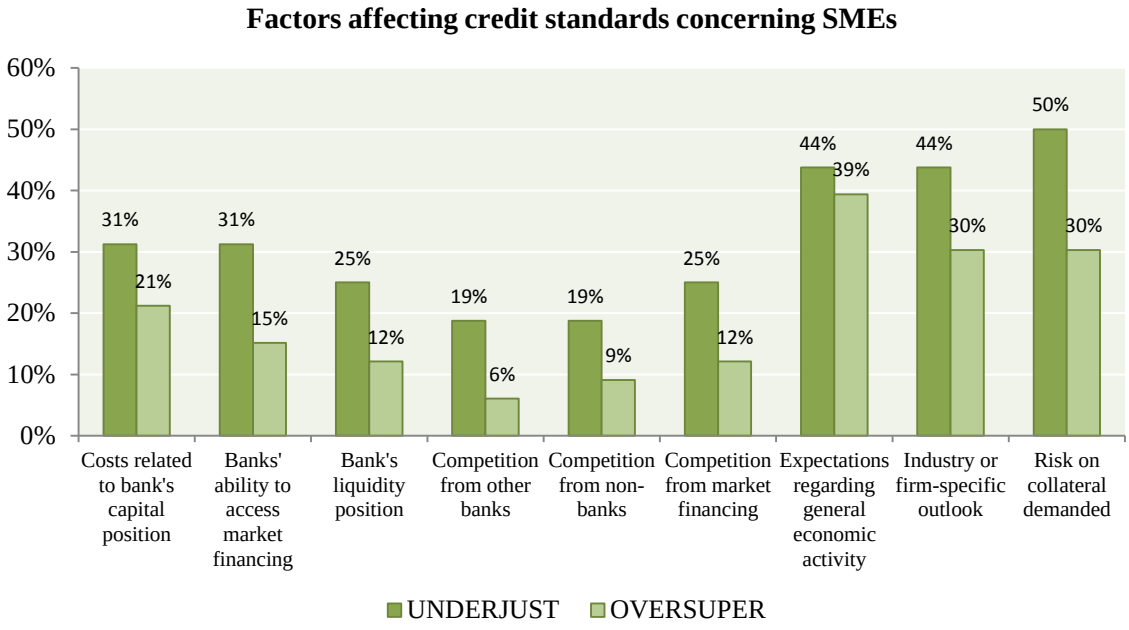
These responses are further confirmed when banks were asked about the obstacles they encounter when lending to SMEs, citing regulations as one of the top responses along with collateral requirements. Not surprisingly, across almost all the factors enumerated, Figure 10 shows that the "under" and "just" complying banks face greater obstacles, citing in additional, SME-specific factors, bank-specific factors, and underdeveloped lending technologies, in catering to SMEs. In terms of the latter, they frequently cited the high cost of technology and at the same time the absence of centralized credit bureaus and credible SME information that would allow them to increase SME lending. This finding is in direct contrast with what is found in the survey of de la Torre *et al*. (2010), with exception to Serbia, which finds that lending technologies do not appear to be significant obstacles for banks to increase their engagement with SME clients. We, however, attribute this result from de la Torre *et al*.'s (2010) lack of differentiation of banks according to level of SME financing exposure. Moreover, the banks that are less involved with SMEs also highlight the opacity of small firms and thus, the information asymmetry problem, mentioning the difficulty to assess the financial condition of these firms and lack of reliable industry-specific information.

Figure 10. Obstacles to lending to SMEs according to level of bank small firm exposure



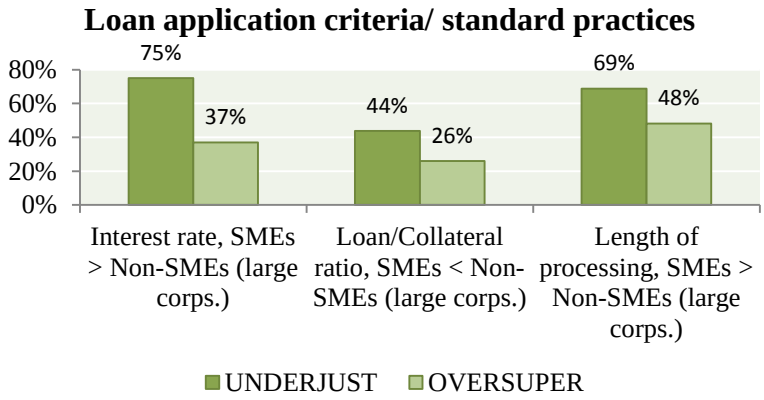
Aside from identifying the significant obstacles that the banks face when lending to SMEs, we also asked about the factors that affect their credit standards concerning SMEs. Across all factors mentioned, we were able to retrieve higher responses/frequency from banks that are less involved with small firms as shown in Figure 11. Moreover, regardless of the level of exposure to micro and small firms, most banks responded to risk on collateral demanded, industry or firm-specific outlook and expectations regarding the general economic activity to be the factors that most affect credit provision to SMEs. In the case of the "over" and "super" complying banks, we highlight that the factor which affect most the credit standards when dealing with SMEs are the expectations regarding the general economic activity. This confirms the empirical results in Chapter 1, which finds that macroeconomic factors and expectations of SMEs of the overall economic activity positively impacts the extent of compliance to the *Magna Carta* for micro and small enterprises, notably for thrift banks that are known to be most exposed to the SME market. We also find that competition weakly affects the credit standards set for SMEs regardless of the level of exposure of banks to small firms.

Figure 11. Factors affecting credit standards concerning SMEs according to bank small firm exposure



Finally, what also differentiate the groups of banks that are less involved from those that are more involved with small firms are the loan application criteria and standard practices implemented by banks when lending to SMEs. We observe in Figure 12 that "under" and "just" complying banks impose stricter standards towards SMEs, in terms of higher interest rates offered to SMEs compared with non-SMEs, lower loan-collateral ratio and longer processing of loans.

Figure 12. Loan application criteria/standard practices according to bank small firm exposure



5. Lending technology, loan application criteria and standard practices and SME finance

It is conventional knowledge that small and local banks have the advantage in lending to relatively opaque small businesses because they are better and are more likely to succeed in relationship lending (Berger *et al*., 2001; Mian, 2006; Sengupta, 2007). Relationship lending, which is financing largely based on "soft" information – information that is gathered by the loan officer over time through direct contact with the SME borrower and all dimensions of the relationship with the SME (Berger and Udell (2006)), is thought of as the sole lending technology that suits small firm lending. Some studies even argue that large banks and foreign banks are disadvantaged in small firm lending because of their organizational structures that do not fit relationship lending. A notable study of Berger and Udell (2006) however, propose a new paradigm in bank financing of SMEs through several arms-length lending technologies.

As mentioned by Berger and Udell (2006), the arms-length lending technologies that could also address the opacity of small and medium business borrowers are the following[42]: credit scoring, financial statement lending, factoring , asset-based lending, leasing, and fixed asset lending. In small business credit scoring, institutions use "hard" information on the SME and/or its owner that could be obtained from credit bureaus. Financial statement lending, meanwhile, is primarily based on the strength of a borrower's financial statements – a borrower must have informative, audited statements and strong financial conditions reflected from the firm's financial ratios. With factoring, firms sell their accounts receivable at a discount and receive immediate cash. Asset-based lending and fixed-asset lending are forms of collateralized lending – the former uses valuation of assets and the latter, long-lived assets such as equipment and real estate as pledged collaterals, respectively. Lastly, leasing involves the purchase of fixed assets by a lender. Simultaneously, the lender enters a rental contract with the borrower specifying the payment schedule.

We examine in this work the potential link between the banks' lending technologies, and bank SME loan application criteria used when approving loans with bank SME financing in the context of the Philippine banking industry. We extend the previous study of Beck *et al*. (2011) by considering both large banks (UKBs) and niche/small banks (thrift banks), which allows for variation in the level of bank involvement in small and medium firm financing. By including niche/small banks (thrift banks), we are able to distinguish particularly the lending technologies that are associated with thrift banks and universal and commercial banks,

[42] We base our descriptions/definitions from Berger and Udell (2006) and Klapper (2006).

distinctively. Unlike Beck *et al*. (2011), we also distinguish between small firm financing from medium firm financing since these firms have different levels of informational opacity and thus, the lending technologies that have to be used and the loan application criteria that have to be imposed may differ between these firms. As we are dealing only with one country, we are also able to isolate institutional differences, financial and regulatory structure differences that are characteristic of cross-country studies and focus more on the differences in bank SME lending practices.

In this section, we correlate the proxies for the different lending technologies employed by banks when catering to SMEs, and loan application criteria with small and medium-sized firm financing. To measure bank SME financing, we use bank compliance ratio to the *Magna Carta* to micro, small and medium enterprises, respectively, COMP_SMALL% and COMP_MED% (See Annex 2 for a complete list of variable definitions). Higher values of COMP_SMALL% and COMP_MED% indicate higher micro and small firm financing and medium firm financing exposures, respectively.

Table 6 presents the pairwise correlations between bank small and medium firm financing and variables, which indicate the lending technology or technologies used by banks in lending to SMEs and SME loan application criteria/standard practices. We find that although the use of relationship lending is associated with financing to small businesses, it is not the sole lending technology where we observe a positive correlation - the usage of financial statement lending and asset-based lending is also positively associated with small firm financing. In terms of medium firm financing, we find it to be positive and significantly correlated with financial statement lending and factoring; while it is negatively correlated with asset-based lending and leasing. We cannot, however, draw any inferences from these results because of the heterogeneity across banks that could influence the lending technology that is used by each bank type – universal and commercial banks and thrift banks. We thus show in Columns 3 to 6 the correlations between the lending technologies and small and medium firm financing.

Table 6. The link between SME finance and lending technologies, credit risk rating systems & loan application criteria/standard practices in the Philippines, over the period 3Q:2008 – 4Q:2010. The table shows pairwise correlations between the extent of small & medium firm financing and those capturing the lending technologies, risk rating systems & loan application standard practices employed by the bank. COMP_SMALL% and COMP_MED% are the compliance ratios to the *Magna Carta* for Micro and Small, and Medium firm financing, respectively, expressed as ratios to total lending net of exclusions. Use of Credit Scoring equals 1 if the bank uses credit scoring as an SME lending technology. Use of Financial Statement Lending takes the value 1 if a bank bases its SME lending on financial statements. Use of Relationship Lending, Use of Factoring, Use of Asset-Based Lending, Use of Leasing and Use of Fixed Asset lending equal 1 if the bank uses respectively, relationship lending ("soft" information) , factoring, asset-based lending, leasing and fixed assets as bases for its lending to SMEs. Interest rate (SMEs>Non-SMEs) equals 1 if the bank imposes higher interest rates on SMEs compared with larger firms. Loan-collateral ratio (SMEs<Non-SMEs) takes the value 1 if a bank's loan-collateral ratio of SMEs is lower than the larger firms. Length of processing (SMEs>Non-SMEs) takes the value 1 if a bank's length of processing SME loans is greater than its processing of non-SME loans. P-values in paretheses. ***,** and * indicate 1%, 5% and 10% levels of significance, respectively.

	COMP_ SMALL%	**COMP_ MED%**	**COMP_ SMALL%**	**COMP_ MED%**	**COMP_ SMALL%**	**COMP_ MED%**
	Whole Sample		UKBs		Thrift banks	
Panel A: Lending Technologies						
Use of Credit Scoring	-0.05	-0.01	**0.19****	0.00	**0.13****	**0.09***
	(0.24)	(0.82)	(0.03)	(0.99)	(0.02)	(0.09)
Use of Financial Statement Lending	**0.13*****	**0.15*****	0.13	**0.25*****	0.07	**0.11****
	(0.00)	(0.00)	(0.15)	(0.00)	(0.17)	(0.03)
Use of Relationship Lending	**0.18*****	0.04	-0.10	-0.07	**0.22*****	**0.10***
	(0.00)	(0.31)	(0.26)	(0.27)	(0.00)	(0.08)
Use of Factoring	0.09	**0.16***	0.01	**0.30*****	**0.15*****	0.21
	(0.06)	(0.00)	(0.94)	(0.00)	(0.00)	(0.00)
Use of Asset-based Lending	**0.19*****	**-0.08****	-0.13	-0.06	**0.11****	**-0.15*****
	(0.00)	(0.05)	(0.15)	(0.34)	(0.05)	(0.00)
Use of Leasing	0.00	**-0.07***	**-0.26*****	0.00	**0.17*****	-0.02
	(0.97)	(0.09)	(0.00)	(0.98)	(0.00)	(0.77)
Use of Fixed Asset Lending	-0.05	0.06	-0.20*	**0.20*****	0.03	0.08
	(0.28)	(0.16)	(0.03)	(0.00)	(0.53)	(0.12)
Panel B: Loan application criteria						
Interest Rate (SMEs > Non-SMEs)	**-0.32*****	-0.07	0.11	-0.11	**-0.28*****	0.10
	(0.00)	(0.13)	(0.26)	(0.14)	(0.00)	(0.15)
Loan-Collateral Ratio (SMEs<Non-SMEs)	**-0.23*****	-0.02	-0.11	-0.09	**-0.27*****	0.06
	(0.00)	(0.74)	(0.23)	(0.22)	(0.00)	(0.38)
Length of Processing (SMEs>Non-SMEs)	**-0.26*****	**0.12*****	0.13	**0.15****	**-0.29*****	**0.18*****
	(0.00)	(0.01)	(0.17)	(0.03)	(0.00)	(0.01)

We find that small firm financing is higher for both UKBs and thrift banks that use credit scoring as a lending technology. We highlight, however, that credit scoring is the sole lending technology that may be compatible with large bank small firm financing in an emerging economy[43], such as the Philippines. Moreover, we find lower small firm financing associated with the use of leasing[44] and fixed asset lending as lending technologies for universal and commercial banks. Collateral in the form of fixed assets demanded by UKBs may be difficult for smaller firms to satisfy. Furthermore, we emphasize that the observed positive correlation between the use of relationship lending and small firm financing using the whole sample is driven by the thrift banks. We also find higher small firm financing for

[43] Several studies that examine the U.S. banks confirm the possibility that banks use "hard" technology to expand their small business lending (Frame et al., 2001; DeYoung et al., 2008).

[44] A study by Berger and Black (2011) using firm data in the U.S. show that large banks have comparative advantage in using leasing as fixed-asset lending technology in lending to small businesses. We argue that this is not the case in the Philippines where lending and information infrastructure is less developed. These lending technologies are largely based on appraised values of the real estate equipment leased or pledged as collateral.

thrift/small banks that use asset-based lending, factoring and leasing as their lending technologies. We also highlight that neither UKB nor thrift bank small firm financing is significantly correlated with bank's use of financial statement lending as a lending technology, but their usage of which corresponds to higher medium firm financing. This shows the relative importance accorded by banks to medium firms' financial statements relative to that of the small firms because the latter's financial statements may not be available, not audited and thus, less reliable. Indeed, Berger and Udell (2006) argue that as firms increase in size, they tend to have higher quality financial statements, which yield increasing advantage in "hard" or arms-length lending technologies.

The results of the correlation between the loan application criteria and small firm financing (and overall SME financing) are clear-cut. Stricter loan application criteria in terms of interest rates imposed, the level of collateral required in proportion to total loans and length of processing are correlated with lower level of small firm financing. These results, however, are driven by the thrift banks as the correlation turns insignificant in the sample of universal and commercial banks.

Overall, we find no single lending technology that is positively related with small firm financing, and hence, diversity in lending technologies employed when lending to small businesses provide support to a new paradigm of bank small business financing. We also find differences between the lending technologies employed by universal and commercial banks and thrift banks in financing particularly the micro and small businesses.

6. Linking SME finance with lending technologies

A new paradigm for bank SME finance as suggested in studies of Berger and Udell (2006), Berger *et al*. (2007), de la Torre *et al*. (2010) and Beck *et al*. (2011) asserts that several arms-length lending technologies such as credit scoring, financial statement lending, factoring, asset-based lending, leasing and fixed-asset lending, are also effective in bank lending to small businesses aside from relationship lending.

In this section, we examine whether the usage of arms-length lending technologies increase the likelihood of high bank SME exposure and thus, test the hypothesis advocating a new paradigm of SME finance. Aside from focusing on an emerging economy, our empirical investigation differs mainly from Beck *et al*. (2011) who study large banks by including thrift banks/small banks, which are also main players in providing SME finance. We also thus test in this section whether different types of banks use different lending technologies.

We first construct dummy variables, LENDINGTECH, indicating which lending technology or lending technologies the bank uses/use in catering to SMEs. *Credit_Scoring, Fin_Statement, Relationship, Factoring, Asset_Based, Leasing* and *Fixed_Asset*, are dummy variables, which takes the value 1 if the bank uses credit scoring, financial statement lending, relationship lending, factoring, asset-based lending, leasing and fixed-assed lending as lending technologies in financing small and medium enterprises, respectively. An excellent description of the different lending technologies is provided by Berger and Udell (2006).

6.1.Empirical Estimation

To examine whether relationship lending and other arms-length lending technologies increase the probability of "super" complying or having very high SME financing separately for small and medium enterprises, we estimate the following regression model Eq (1) using multinomial logistic regression:

$$\mathrm{Y_{it}} = \alpha + \beta_1 \mathrm{LENDINGTECH_i} + + \delta_i \mathrm{Z} + \sum_{k=1,l=2009}^{2,2010} \nu_k \mathrm{yrl} + \sum_{m=1,s=2}^{3,4} \eta_m \mathrm{qtrs} + \varepsilon_{it} \qquad \text{Eq (1)}$$

In estimating this model, we use quarterly data from 3Q:2008-4Q:2010, just right after the *Magna Carta* law for micro and small enterprises was amended, increasing the legal financing requirement to micro and small firms from 6% to 8% of net loans. Y captures the extent of bank compliance with the *Magna Carta* for SMEs. The definitions of Y are summarized in Box 1.

Box 1. Definitions of Y:

For micro and small enterprises,

$$Y = \begin{cases} 1 \text{ if bank } i \text{ is under complying, with compliance ratio<8\%} \\ 2 \text{ if bank } i \text{ is just complying, with compliance ratio}\geq 8\% \text{ but}< 8.8\% \\ 3 \text{ if bank } i \text{ is over complying, with compliance ratio}\geq 8.8\% \text{ but}< 16\% \\ 4 \text{ if bank } i \text{ is super complying, with compliance ratio}\geq 16\% \end{cases}$$

Alternatively, using percentile values, $\forall\, k = micro\ and\ small\ or\ medium\ enterprise$

$$Y = \begin{cases} 1 \text{ if bank } i \text{ has low } k \text{ credit exposure , with compliance ratio <P25} \\ 2 \text{ if bank } i \text{ has medium } k \text{ credit exposure, with compliance ratio}\geq \text{P25 but<P50} \\ 3 \text{ if bank } i \text{ has high } k \text{ credit exposure, with compliance ratio}\geq \text{P50 but<P75} \\ 4 \text{ if bank } i \text{ has very high } k \text{ credit exposure, with compliance ratio}\geq \text{P75} \end{cases}$$

For micro and small enterprises, it is equal to 1 if bank *i* is "under" complying in quarter *t*, or the bank's compliance ratio to micro and small enterprises is less than the legal limit of 8%. It takes the value 2 if bank *i* is "just" complying in quarter *t* with compliance

ratio greater or equal to 8% but less than 1.1*legal limit or 8.8%; 3 if bank *i* is "over" complying in quarter *t* with compliance ratio greater or equal to 8.8% but less than 2*legal limit or 16%; and 4 if bank *i* is "super" complying in quarter *t* with compliance ratio greater or equal to 16%. Alternatively, we also use percentile values to define Y. For medium enterprises, we only use this alternative definition since we do not have sufficient observations where banks "under" comply with the *Magna Carta* for medium enterprises.

Z is a vector of control variables. We use the same set of control variables used in Chapter 1 to determine bank small firm financing: $FOREIGN_i$ is a dummy variable that is equal to 1 if a bank is foreign-owned, and zero, otherwise; $SIZE_{it}$ is the natural logarithm of total assets of bank *i* at quarter *t*; GDPGR or the growth rate of the gross domestic product at quarter *t*; $CONGLOMERATE_i$ is a dummy variable, which takes the value 1 if a bank is part of a domestic financial conglomerate and zero, otherwise; $FUNDING_{it}$ is the ratio of total deposit to total asset of bank *i* at quarter *t.* This variable captures the differences among bank's funding structure that could affect bank SME financing; $LESSCOMP_{it}$ is a dummy variable, which takes the value 1 if a bank is headquartered outside the National Capital Region (NCR) or the metropolitan, and zero, otherwise. This variable captures location and market concentration, broadly defining bank competition; $POLRATE_t$ measures the central bank's policy rate, which affects the cost of credit and thus, small business financing. yrl and qtrs are the year and quarter dummies, respectively. We use 1, which comprises the banks with very low compliance or exposure to SMEs as the base outcome, to which we compare every outcome result.

6.2.Empirical Results

We report the results of the regression in Table 7(A) and 7(B) for micro and small enterprises and Table 7(C) for medium enterprises. The complete results of the regressions, including the coefficients of the control variables are reported in Annex 3.

Consistent with our findings in Table 6, the results of our regressions in Table 7(A) generally show that relationship lending is not the sole lending technology used by Philippine banks in lending to micro and small businesses and that banks also use other arms-length lending technologies in financing small firms. Specifically, our findings indicate that banks that use credit scoring as a lending technology to finance small businesses are very likely to "super" comply or have high compliance ratios, greater or equal to 16% compared with the base outcome, or the banks that are likely to "under" comply or have compliance ratios less than 8%. Moreover, we find the coefficient of relationship lending to be negative and

significant, implying that banks that use relationship lending are less likely to "super" comply with the *Magna Carta* law for micro and small businesses. While this result may be surprising, this may just indicate the relative heterogeneity of our sample of banks, which consists of both universal and commercial banks and thrift banks. We thus test later in this section whether banks with different business strategies use different lending technologies to finance smaller firms. Our results also show that banks that use asset-based lending, leasing and fixed-asset lending are less likely to "super" comply with the *Magna Carta* law or highly exposed to small firms. We generally obtain the same results in Table 7(B), which defines Y using percentile values.

Table 7(C) shows the results examining the link between the extent of bank medium enterprise financing and the use of different lending technologies. We expect banks to use different lending technologies when financing medium-sized businesses because they are more informationally transparent than smaller firms. They have more reliable, audited financial account that banks can use as a screening device and lending technology to finance their projects. Our results in Table 7(C) highlights that banks that use financial statement lending, relationship lending, factoring and fixed-asset lending as lending technologies to finance SMEs, are more likely to have very high exposure to medium enterprises. Overall, our findings suggest that while some lending technologies may be more compatible with high bank financing to small firms such as credit scoring, high bank medium firm financing may be more adept with other lending technologies such as financial statement lending, factoring and asset-based lending. These may reflect the quality of information differences obtained between micro and small firms and medium-sized firms.

Table 7. The link between the extent of bank micro and small and medium firm financing and use of different lending technologies in the Philippines, over the 3Q:2008-4Q:2010 period. Y measures the extent of bank exposure to small and medium enterprises using their compliance ratios to the ***Magna Carta*** for micro and small enterprises. (A) Y is equal to 1 if the bank's compliance ratio is less than the legal limit of 8% (UnderComply); 2 if the bank's compliance ratio is greater than or equal to the the legal limit of 8% but less than 1.1*legal limit or 8.8% (JustComply); 3 if the bank's compliance ratio is greater than or equal to the 1.1*legal limit or 8.8% but less than 2*legal limit or 16% (OverComply); and 4 if the bank's compliance ratio is greater than or equal to 2*legal limit or 16%. (B) and (C) Y is equal to 1 if the bank's compliance ratio is less than the 25th percentile value (Low); 2 if the bank's compliance ratio is greater than or equal to the 25th percentile value but less than the median value (Medium); 3 if the bank's compliance ratio is greater than or equal to the median value but less than the 75th percentile value (High); and 4 if the bank's compliance ratio is greater than or equal to the 75th percentile value (Very High). *Credit_Scoring* is a dummy variable that is equal to 1 if a bank uses credit scoring as a lending technology to finance SMEs and zero, otherwise. *Fin_Statement* is a dummy variable that is equal to 1 if a bank uses financial statement lending as a lending technology to finance SMEs and zero, otherwise. *Relationship* is a dummy variable that is equal to 1 if a bank uses relationship lending as a lending technology to finance SMEs and zero, otherwise. Factoring is a dummy variable that is equal to 1 if a bank uses factoring as a lending technology to finance SMEs and zero, otherwise. *Asset_Based* is a dummy variable that is equal to 1 if a bank uses asset-based lending as a lending technology to finance SMEs and zero, otherwise. *Leasing* is a dummy variable that is equal to 1 if a bank uses leasing as a lending technology to finance SMEs and zero, otherwise. *Fixed_Asset* is a dummy variable that is equal to 1 if a bank uses fixed-asset lending as a lending technology to finance SMEs and zero, otherwise. The control variables used are the following: FOREIGN, CONGLOMERATE, SIZE, LESSCOMP, POLRATE, GDPGR, year dummies and quarter dummies. ***,** and * indicate, respectively, 1%, 5% and 10% levels of significance.

	Main Independent Variables of Interest: **LENDINGTECH**							
Y	*Credit_Scoring*	*Fin_Statement*	*Relationship*	*Factoring*	*Asset_based*	*Leasing*	*Fixed_Asset*	Control Variables
A) Micro and small firm financing: Y is defined according to extent of compliance								
Base Outcome = 1 or UNDERCOMPLY								
2 or JUSTCOMPLY	**1.089*****	**-2.395*****	**-1.585*****	**-0.896****	**-3.109*****	-0.543	**-2.109*****	YES
	(3.04)	(-4.51)	(-3.73)	(-2.26)	(-5.94)	(-1.56)	(-4.86)	
3 or OVERCOMPLY	**1.565*****	**-1.632****	**-1.881*****	**-0.737****	**-2.638*****	**-1.241*****	**-2.281*****	YES
	(3.90)	(-2.56)	(-4.53)	(-2.09)	(-4.91)	(-3.40)	(-5.08)	
4 or SUPERCOMPLY	**2.116*****	-1.034	**-1.559*****	0.0256	**-3.175*****	**-1.109*****	**-2.907*****	YES
	(4.69)	(-1.60)	(-3.56)	(0.07)	(-5.32)	(-2.99)	(-6.01)	
B) Micro and small firm financing: Y is defined according to percentile values of compliance								
Base Outcome = 1 or Low Exposure								
2 or Medium Exposure	**0.889*****	**-0.861****	**-1.558*****	-0.219	**-0.869*****	**-0.851****	**-1.276*****	YES
	(2.75)	(-2.19)	(-4.44)	(-0.65)	(-3.01)	(-2.50)	(-4.18)	
3 or High Exposure	**1.287*****	-0.136	**-1.268*****	**-0.596***	**-1.146*****	**-1.785*****	**-2.044*****	YES
	(3.63)	(-0.30)	(-3.76)	(-1.69)	(-3.51)	(-4.59)	(-6.02)	
4 or Very High Exposure	**1.614*****	0.456	**-0.802****	**0.633***	**-1.089*****	**-0.791****	**-1.878*****	YES
	(4.03)	(1.03)	(-2.14)	(1.82)	(-3.16)	(-2.08)	(-5.33)	
C) Medium firm financing: Y is defined according to percentile values of compliance								
Base Outcome = 1 or Low Exposure								
2 or Medium Exposure	0.0509	**0.882*****	0.230	-0.583	**0.714****	-0.284	0.0630	YES
	(0.19)	(2.66)	(0.82)	(-1.15)	(2.49)	(-0.70)	(0.22)	
3 or High Exposure	0.449	**0.802****	0.109	**1.324*****	-0.419	0.498	0.0940	YES
	(1.52)	(2.47)	(0.37)	(3.38)	(-1.55)	(1.20)	(0.32)	
4 or Very High Exposure	-0.0126	**1.423*****	**0.613***	**1.535*****	0.306	-0.153	**0.632****	YES
	(-0.04)	(3.43)	(1.88)	(4.24)	(1.10)	(-0.36)	(2.20)	

6.3. Universal and Commercial Banks (UKBs) vs. Thrift Banks

Universal and commercial banks and thrift banks have different business strategies. They are also governed by laws, which allow or restrict them to engage in certain financial activities. While universal and commercial large banks usually lend to large corporations, thrift banks may have be more concentrated in lending to small and medium enterprises. In order to test whether banks of different types use different lending technologies to finance micro and small firms and medium-sized businesses, we estimate Eq (1) using subsamples of universal and commercial banks and thrift banks. We use the percentile definitions of Y as shown in Box 1 for the two subsamples.

We report the results of our regressions in Tables 8 and 9. Table 8 shows our findings on the link between the extent of bank micro and small firm financing and the use of different lending technologies for the subsample of UKBs and thrift banks. For the universal and commercial banks, we find that the bank usage of credit scoring is associated with higher likelihood of very high exposure to micro and small firms. This is consistent with the results obtained using the whole sample. Moreover, the results indicate that universal and commercial banks that use financial statement lending, relationship lending, asset-based lending, leasing and fixed-asset lending as lending technologies to finance micro and small firms are less likely to have very high exposures to small firm financing. Credit scoring, thus appears to be the most compatible lending technology for universal and commercial banks in financing small firms. Credit scoring, which could be applied to very opaque small businesses may be more suited for the UKBs to use in financing small firms. This is because much of the information that is used in computing the scores may be based on the personal history of the owner rather than the small business (Berger and Udell, 2006). As shown in Figure 1, the second main driver in bank lending to SMEs for the universal and commercial banks is the relationship with prospective clients. For the thrift banks, we find more lending technologies to be compatible with high small firm financing. Thrift banks that use credit scoring, financial statement lending, relationship lending, factoring and leasing to be more likely to have very high rather than low small firm financing exposures. Our results highlight that thrift banks are not restricted to using relationship lending as lending technology to have higher likelihood of having very high exposures to bank small firm financing.

Table 8. The link between the extent of bank micro and small firm financing and use of different lending technologies in the Philippines, over the 3Q:2008-4Q:2010 period for a subsample of UKBs and thrift banks. Y measures the extent of bank exposure to micro and small enterprises using their compliance ratios to the *Magna Carta* for micro and small enterprises. It is equal to 1 if the bank's compliance ratio is less than the 25th percentile value (Low); 2 if the bank's compliance ratio is greater than or equal to the 25th percentile value but less than the median value (Medium); 3 if the bank's compliance ratio is greater than or equal to the median value but less than the 75th percentile value (High); and 4 if the bank's compliance ratio is greater than or equal to the 75th percentile value (Very High). *Credit_Scoring* is a dummy variable that is equal to 1 if a bank uses credit scoring as a lending technology to finance SMEs and zero, otherwise. *Fin_Statement* is a dummy variable that is equal to 1 if a bank uses financial statement lending as a lending technology to finance SMEs and zero, otherwise. *Relationship* is a dummy variable that is equal to 1 if a bank uses relationship lending as a lending technology to finance SMEs and zero, otherwise. *Factoring* is a dummy variable that is equal to 1 if a bank uses factoring as a lending technology to finance SMEs and zero, otherwise. *Asset_Based* is a dummy variable that is equal to 1 if a bank uses asset-based lending as a lending technology to finance SMEs and zero, otherwise. *Leasing* is a dummy variable that is equal to 1 if a bank uses leasing as a lending technology to finance SMEs and zero, otherwise. *Fixed_Asset* is a dummy variable that is equal to 1 if a bank uses fixed-asset lending as a lending technology to finance SMEs and zero, otherwise. The control variables used are the following: FOREIGN, CONGLOMERATE, SIZE, LESSCOMP, POLRATE, GDPGR, year dummies and quarter dummies. ***, ** and * indicate, respectively, 1%, 5% and 10% levels of significance.

	Main Independent Variables of Interest: **LENDINGTECH**							
Y	*Credit_Scoring*	*Fin_Statement*	*Relationship*	*Factoring*	*Asset_based*	*Leasing*	*Fixed_Asset*	Control Variables
A) Micro and small firm financing: Universal and commercial banks (UKBs)								
Base Outcome = 1 or Low Exposure								
2 or Medium Exposure	-0.177	**-15.73*****	0.528	0.239	**-6.735*****	-0.124	**-1.383****	YES
	(-0.17)	(-30.96)	(0.86)	(0.45)	(-4.78)	(-0.26)	(-2.06)	
3 or High Exposure	**1.500***	**-18.06*****	**-1.927*****	-0.726	**-8.224*****	**-0.887***	**-3.000*****	YES
	(1.73)	(-39.68)	(-3.57)	(-1.36)	(-5.83)	(-1.93)	(-4.01)	
4 or Very High Exposure	**3.224***	**-17.47*****	**-2.619*****	-0.0747	**-8.616*****	**-1.990*****	**-3.464*****	YES
	(1.90)	(-35.38)	(-3.43)	(-0.14)	(-5.98)	(-3.18)	(-4.03)	
B) Micro and small firm financing: Thrift Banks								
Base Outcome = 1 or Low Exposure								
2 or Medium Exposure	0.0874	0.646	0.528	0.763	0.516	0.325	-0.527	YES
	(0.23)	(1.24)	(1.36)	(0.88)	(1.29)	(0.26)	(-1.34)	
3 or High Exposure	0.513	0.0512	0.0998	0.884	-0.625	-0.0484	**-1.410*****	YES
	(1.35)	(0.11)	(0.26)	(1.04)	(-1.61)	(-0.04)	(-3.26)	
4 or Very High Exposure	**0.997*****	**0.988***	**1.281*****	**2.217*****	0.386	**3.510****	-0.341	YES
	(2.68)	(1.67)	(3.07)	(3.03)	(0.99)	(2.56)	(-0.89)	

In terms of bank medium firm financing, Table 9 shows the link between the usage of the different lending technologies and the likelihood of having higher exposures to medium firm financing for a subsample of universal and commercial banks and thrift banks. Our findings indicate that universal and commercial banks that use credit scoring, financial statement lending, factoring and fixed asset lending are more likely to be highly exposed to medium firm financing than have low exposure to these firms. When compared with the results in Table 8(A), which shows the link between the extent of bank small firm financing and lending technologies, our results indicate that the usage of large banks or UKBs of several lending technologies such as financial statement lending, fixed-asset lending and leasing may be more compatible for medium-sized firms, suggesting that even for a homogeneous sample of banks, financing small firms and medium-sized firms may require different lending technologies. Reflecting the difference in the level of informational transparence between small and medium firms, our findings on the usage of financial statement lending as lending technology linked to the likelihood of higher medium firm financing indicate that this lending technology may be reserved for the relatively more transparent medium firms. Moreover, medium firms may be more likely and are more able to pledge long-lived assets such as equipment and motor vehicles than smaller firms as collateral and thus, fixed-asset lending may be more suited with this type of firms. For the subsample of thrift banks, we find thrift banks that use factoring, asset-based lending, leasing and fixed-asset lending are more likely to have very high exposures to bank medium firm financing than low exposure. We stress the role of factoring as a lending technology in providing bank SME finance. According to Klapper (2006), factoring may be particularly attractive even in financial systems with weak commercial laws, particularly in providing working capital financing. In factoring, the key is that the risk is more based on the accounts receivable rather than the small business borrower. Further, what makes factoring attractive is that it may substitute for collateralized lending especially in countries with weak enforcement.

Table 9. The link between the extent of bank medium firm financing and use of different lending technologies in the Philippines, over the 3Q:2008-4Q:2010 period for a subsample of UKBs and thrift banks. Y measures the extent of bank exposure to micro and small enterprises using their compliance ratios to the *Magna Carta* for micro and small enterprises. It is equal to 1 if the bank's compliance ratio is less than the 25th percentile value (Low); 2 if the bank's compliance ratio is greater than or equal to the 25th percentile value but less than the median value (Medium); 3 if the bank's compliance ratio is greater than or equal to the median value but less than the 75th percentile value (High); and 4 if the bank's compliance ratio is greater than or equal to the 75th percentile value (Very High). *Credit_Scoring* is a dummy variable that is equal to 1 if a bank uses credit scoring as a lending technology to finance SMEs and zero, otherwise. *Fin_Statement* is a dummy variable that is equal to 1 if a bank uses financial statement lending as a lending technology to finance SMEs and zero, otherwise. *Relationship* is a dummy variable that is equal to 1 if a bank uses relationship lending as a lending technology to finance SMEs and zero, otherwise. *Factoring* is a dummy variable that is equal to 1 if a bank uses factoring as a lending technology to finance SMEs and zero, otherwise. *Asset_Based* is a dummy variable that is equal to 1 if a bank uses asset-based lending as a lending technology to finance SMEs and zero, otherwise. *Leasing* is a dummy variable that is equal to 1 if a bank uses leasing as a lending technology to finance SMEs and zero, otherwise. *Fixed_Asset* is a dummy variable that is equal to 1 if a bank uses fixed-asset lending as a lending technology to finance SMEs and zero, otherwise. The control variables used are the following: FOREIGN, CONGLOMERATE, SIZE, LESSCOMP, POLRATE, GDPGR, year dummies and quarter dummies. ***, ** and * indicate respectively 1%, 5% and 10% levels of significance.

	Main Independent Variables of Interest: **LENDINGTECH**							
Y	*Credit_Scoring*	*Fin_Statement*	*Relationship*	*Factoring*	*Asset_based*	*Leasing*	*Fixed_Asset*	Control Variables
A) Medium firm financing: Universal and commercial banks (UKBs)								
Base Outcome = 1 or Low Exposure								
2 or Medium Exposure	**1.569*****	**3.099*****	0.768	0.0740	**1.203*** **	-0.308	**1.160** **	YES
	(3.07)	(4.30)	(1.40)	(0.11)	(2.43)	(-0.61)	(2.46)	
3 or High Exposure	**1.533** **	**1.963*** **	**1.302** **	**2.499*** **	**-0.991****	-0.549	-0.503	YES
	(2.49)	(3.46)	(2.34)	(3.43)	(-2.23)	(-0.96)	(-1.08)	
4 or Very High Exposure	**1.566*** **	**2.530*** **	0.0013	**4.166*** **	-0.323	0.321	**1.67** **	YES
	(2.90)	(3.63)	(0.00)	(5.17)	(-0.64)	(0.53)	(2.56)	
B) Medium firm financing: Thrift Banks								
Base Outcome = 1 or Low Exposure								
2 or Medium Exposure	**-0.833****	-0.532	-0.421	-1.391	0.785	1.237	-0.589	YES
	(-2.10)	(-1.08)	(-1.09)	(-1.16)	(1.64)	(1.02)	(-1.51)	
3 or High Exposure	-0.0364	-0.380	**-1.044****	**1.595****	-0.0984	1.646	0.119	YES
	(-0.10)	(-0.80)	(-2.48)	(2.39)	(-0.26)	(1.39)	(0.27)	
4 or Very High Exposure	0.0904	-0.203	0.528	**1.199****	**0.761****	**2.396****	**0.803****	YES
	(0.28)	(-0.37)	(1.42)	(2.28)	(2.16)	(2.32)	(2.27)	

7. Conclusion

Access to finance is one of the consistently cited constraints to SME growth. But what constrains banks from financing the small and medium enterprises? This chapter answers this question by: 1) providing a description of the behavior, practices and perceptions of banks toward the SME market using new survey data that we gathered on 72 universal and commercial and thrift banks in the Philippines; and 2) examining the standard loan practices of banks by comparing loan application criteria between SMEs and large firms and more importantly, the obstacles faced by banks in SME lending according to their actual level of micro and small firm financing exposure. From a policy perspective, it is particularly interesting to identify the constraints encountered by banks that generally lend less to the small businesses. Knowledge of how the government could increase the appeal of SMEs is also helpful for the policymakers especially in attaining the objective of increasing access to external finance to the small and medium business borrowers. Moreover, this chapter also empirically investigates the linkage between the usage of different lending technologies and the likelihood of increased micro and small or medium firm financing.

Our findings show that regardless of the bank type, the SMEs are seen to be profitable markets. This is consistent with previous banking studies that rely on cross-country data of mostly large banks (de la Torre *et al*. (2010) and Beck *et al*. (2008)). The financial viability of the small business lending along with existing relations with the clients are the two primary drivers explaining why banks lend or intend to lend to SMEs. Moreover, we find that most banks focus in providing short term finance to SME working capital needs. Only a measly one-third of the banks offer long-term investment loans to the small and medium businesses. This may reflect the hesitation of banks to provide long term financing to smaller firms as they are less able to put up collateral compared with larger firms. This, however, could have adverse effects especially for the smaller firms that primarily rely on external finance for their growth and expansion needs.

Despite the viability of the SME sector, why do some banks lend more, while some lend less to the small businesses? Chapter 1 has shown that the universal and commercial banks lend less to small firms while the smaller thrift banks have high micro and small firm financing exposures. Most of the obstacles cited were regulation and collateral requirements. In addition, banks that have low small firm financing exposures lend less because of underdeveloped lending technologies that could be attributed from the high costs of technology and the absence of centralized credit bureaus and credible SME information.

Because of the information infrastructure and lending infrastructure complaints of the banks that lend less to the SMEs or the UKBs; it is not surprising that they impose different sets of loan application criteria between the SMEs and the large firms. Compared with the larger firms, they impose stricter standards on the SMEs in terms of higher interest rates, lower loan-collateral ratio and lengthier loan processing time.

Following a recent study by Beck *et al*. (2011), who empirically examined both developed and less developed economies, we also test in this chapter whether the new paradigm of SME financing exists in the Philippines. As suggested by Berger and Udell (2006), this new paradigm challenges the conventional view that relationship lending, which primarily relies on "soft" information is the sole lending technology that suits small firm financing. The results of our empirical investigation provide evidence that supports this new paradigm. We highlight that the usage of credit scoring as an SME lending technology for the large banks or the universal and commercial banks increase the likelihood for this group of banks to have high small firm financing exposures. This lending technology is found to be most compatible to UKBs in serving the small businesses compared with other arms-length lending technologies that especially have to rely on collateral such as fixed-asset lending and asset-based lending. An improvement in the country's information infrastructure such as the establishment of centralized credit bureaus is seen as a way that could increase further the appeal of the SMEs especially to the larger banks. Moreover, we find that other lending technologies are more suited to medium firms, such as financial statement lending and asset-based lending. Indeed, as Berger and Udell (2006) argue, as a firm increases its size, they tend to have higher quality financial statements, which yield increasing advantage in "hard" or arms-length lending technologies. We also particularly highlight the role of factoring in increasing the likelihood of bank small firm financing exposure for both commercial banks and thrift banks. As stressed by Klapper (2006), this lending technology is attractive even in financial systems with weak commercial laws and enforcement as it can substitute for collateralized lending. Overall we find that different banks use different lending technologies according to the level of informational opacity of firms, which can be reflected from their sizes.

Annex

Annex 1. SME Financing Survey

ASIAN DEVELOPMENT BANK SME FINANCING SURVEY 2011

This questionnaire is designed to measure the extent of bank involvement with the small and medium enterprises (SMEs), identify the determinants of the degree of bank financing to SMEs such as the demand factors, competition, corporate strategy, macroeconomic, regulatory and institutional factors and understand the business model and risk management process that banks use when working with SMEs. **Please return this survey to Ms. Iva Sebastian by email (**isebastian@adb.org**) or fax (2)6362361 before February 28, 2011.**

NOTE: The information obtained here will be held in the strictest confidentiality. Neither your name nor the name of your bank will be used in any document based on this survey.

GENERAL INFORMATION ABOUT THE BANK

Name of the bank : _____

Address (Head Office): _____

Year established : _____

Type of bank □ Universal & Commercial □ Thrift □ Rural

Is your bank group-affiliated (part of a group of companies)? □ YES □ NO

What percentage of your bank is owned by:

Private Sector: a) Domestic ☐☐☐ %
b) Foreign ☐☐☐ %
Government/State ☐☐☐ %
Others (please specify) _____ ☐☐☐ %

QUALITATIVE AND QUANTITATIVE INFORMATION

1. How do you classify SMEs?
   - □ By size of employment — Small _____; Medium _____
   - □ By size of assets — Small _____; Medium _____
   - □ By average annual sales — Small _____; Medium _____
   - □ Others (please specify) — Small _____; Medium _____
2. Do you have a separate SME, or SE and ME units? □ YES □ NO
3. At which year did you start catering to SMEs? _____
4. Which of the following products/services do you offer to SMEs? Please also indicate the percentage share of each product/service (in terms of total volume and number of accounts).

			VOLUME	NO. OF ACCOUNTS
A. Lending	□ YES	□ NO	☐☐☐ %	☐☐☐ %
B. Savings	□ YES	□ NO	☐☐☐ %	☐☐☐ %
C. Others (please specify)	□ YES	□ NO		
_____			☐☐☐ %	☐☐☐ %
_____			☐☐☐ %	☐☐☐ %
_____			☐☐☐ %	☐☐☐ %
			100 %	100 %

5. Which of the following main lending products do you offer to SMEs? What is the percentage share of each lending product to total lending to SMEs?

A. Short term loans and overdrafts	□ YES	□ NO	□□□	%
B. Leasing	□ YES	□ NO	□□□	%
C. Investment loans				
1. Medium-term loans (>1 year, ≤5 years)	□ YES	□ NO	□□□	%
2. Long-term loans (>5 years)	□ YES	□ NO	□□□	%
D. Pre-trade financing	□ YES	□ NO	□□□	%
E. Document and check discounting	□ YES	□ NO	□□□	%
F. Factoring	□ YES	□ NO	□□□	%
G. Others (please specify) _____	□ YES	□ NO	□□□	%
			100	%

6. Pick the **top 3** economic sectors (from the list below) where SME lending in your bank are highest (where 1 is the sector with the largest SME loans)

   1. _____
   2. _____
   3. _____

   <u>Economic sectors</u>: i) Agriculture, Hunting & Forestry; ii) Fishery; iii) Mining and Quarrying; iv) Manufacturing; v) Electricity, Gas & Water; vi) Construction; vii) Wholesale, Retail, Trade & Repair; viii) Hotel & Restaurants; ix)Transportation, Storage & Communication; x) Financial Intermediation; xi) Real Estate, Renting & Business Activities; xii) Education; xiii) Health & Social Work; xiv) Other Community, Social & Personal Activities

7. What is the market structure of the SME loan market?

   □ Smaller number of banks dominate the market
   □ Market very segmented
   □ Market atomized (Each individual customer is a unique market segment)

8. Who are the main players in SME financing? (Check all that apply)

   □ Universal and commercial banks □ State banks □ Thrift banks
   □ Rural and cooperative banks □ Non-bank financial institutions

9. Which of the following distribution channels do you use to serve SMEs?

A. Limited-service branch	□ YES	□ NO
B. Full-service branch	□ YES	□ NO
C. Mobile branches	□ YES	□ NO
D. ATMs	□ YES	□ NO
E. POS	□ YES	□ NO
F. Agents	□ YES	□ NO
G. Internet	□ YES	□ NO
H. Self-service	□ YES	□ NO
I. Phone	□ YES	□ NO
J. Others (please specify) _____	□ YES	□ NO

10. What are the criteria used by your bank in targeting SMEs?

A. Export orientation	□ YES	□ NO
B. Growth prospects of specific SME sectors	□ YES	□ NO
C. Size of exposure to specific SME sectors	□ YES	□ NO
D. Firms that are existing clients	□ YES	□ NO
E. Supplier to a firm that's an existing client	□ YES	□ NO

F. Others (please specify) _____ □ YES □ NO

11. Which of the different lending technologies to SMEs does/do your bank implement? Please provide information when your bank started implementing this lending technology.

<u>Lending technologies and the corresponding screening and underwriting policies</u>: A) Credit scoring – based on the SME's score in a statistical model; B) Financial statement lending -Based on the strength of the SME's financial ratios; C) Relationship lending – Based primarily on the decision or the recommendation of the loan officer; D) Factoring – Based on the quality of the enterprise's clients; E) Asset-Based Lending – Based on the value of collateral; F) Leasing – Based on the value of the asset; G) Fixed Asset Lending – Based on the assessed market value of the asset and coverage ratios measuring the SME's ability to service debt

			YEAR STARTED
A. Credit scoring	□ YES	□ NO	_____
If YES, Do you use the same credit scoring model for both SMEs and large firms?	□ YES	□ NO	
Is your credit scoring model statistical-based?	□ YES	□ NO	
B. Financial statement lending	□ YES	□ NO	_____
C. Relationship lending	□ YES	□ NO	_____
D. Factoring	□ YES	□ NO	_____
E. Asset-based lending	□ YES	□ NO	_____
F. Leasing	□ YES	□ NO	_____
G. Fixed asset lending	□ YES	□ NO	_____
H. Others (please specify)	□ YES	□ NO	_____

12. Does your institution have an internal credit risk rating system? □ YES □ NO
    If YES, do you apply it to assess SME loan applications? □ YES □ NO
    If YES, do you use this as a basis for
    - Loan Approval? □ YES □ NO
    - Loan Pricing? □ YES □ NO
    - Loan Monitoring? □ YES □ NO

13. To what degree is your involvement with SMEs driven by the following?:

(0 = not significant; 1=marginally significant; 2= significant; 3 = very significant; 4 = extremely significant/crucial)

	<u>MAIN DRIVERS</u>				
A. Perceived profitability in the SME segment	0	1	2	3	4
B. Intense competition for large corporations	0	1	2	3	4
C. Intense competition for retail customers	0	1	2	3	4
D. Excessive exposure to large corporations	0	1	2	3	4
E. Excessive exposure to retail customer service	0	1	2	3	4
F. Seek out SMEs through existing relations with large clients	0	1	2	3	4
G. Others (please specify)_____	0	1	2	3	4

14. Indicate to what degree the following factors are important obstacles to lending to SMEs. Rate them and **specify up to the three most important aspects** within these categories.

0 = not significant; 1=marginally significant; 2= significant; 3 = very significant; 4 = extremely significant/crucial

		MAIN OBSTACLE				
A.	SME-specific sectors (please specify)	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					
B.	Competition in the SME segment (please specify)	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					
C.	Macroeconomic factors (please specify)	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					
D.	Regulation (please specify)	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					
E.	Legal and contractual environment (please specify)	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					
F.	Underdeveloped SME lending technology (please specify)	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					
G.	Lack of adequate demand (please specify)	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					
H.	Bank-specific factors (please specify)	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					
I.	Collateral requirements on SME loans (please specify)	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					
J.	Property rights of the collateral (please specify)	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					
K.	Others (please specify)_____	0	1	2	3	4
	1. _____					
	2. _____					
	3. _____					

15. Do you think the government could increase the appeal of SME lending through actions in the following areas?

			IF YES, IN WHICH WAY?
A. Judicial	□ YES	□ NO	_____
B. Legal	□ YES	□ NO	_____
C. Regulatory	□ YES	□ NO	_____
D. Institutional	□ YES	□ NO	_____
E. Guarantees	□ YES	□ NO	_____
F. Credit bureaus	□ YES	□ NO	_____
G. Subsidies	□ YES	□ NO	_____

16. Have you ever participated in a government program to facilitate lending to SMEs? □ YES □ NO
    If YES, please specify which program ? _____
    If NO, do you intend to participate in these programs? (i.e. SULONG) □ YES □ NO

17. Over the past five years (2006-2010), how have your bank's credit standards as applied to approval of loans or credit lines to SMEs changed?

	TIGHTENED CONSIDERABLY	**TIGHTENED SOMEWHAT**	**REMAINED BASICALLY UNCHANGED**	**EASED SOMEWHAT**	**EASED CONSIDERABLY**
2006	□	□	□	□	□
2007	□	□	□	□	□
2008	□	□	□	□	□
2009	□	□	□	□	□
2010	□	□	□	□	□

18. Over the past five years, how have the following factors affected your bank's credit standards as applied to the approval of loans or credit lines to SMEs (as described in question 17)?

0 = Contributed considerably to tightening; 1 = Contributed somewhat to tightening; 2 = Contributed to basically unchanged credit standards; 3 = Contributed somewhat to easing; 4 = Contributed considerably to easing

	FACTORS AFFECTING CREDIT STANDARDS				
A. Cost of funds and balance sheet constraints					
1. Costs related to your bank's capital position	0	1	2	3	4
2. Your bank's ability to access market financing	0	1	2	3	4
3. Your bank's liquidity position	0	1	2	3	4
B. Pressure from competition					
1. Competition from other banks	0	1	2	3	4
2. Competition from non-banks	0	1	2	3	4
3. Competition from market financing	0	1	2	3	4
C. Perception of risk					
1. Expectations regarding general economic activity	0	1	2	3	4
2. Industry or firm-specific outlook	0	1	2	3	4
3. Risk on collateral demanded	0	1	2	3	4

19. Over the past five years, what is the average percentage of collateral required for loans?

	2006	2007	2008	2009	2010
Average % collateral					

20. Please provide data for the last 6 years of the following.

	2005	2006	2007	2008	2009	2010
1.Number of branches that serve SMEs						
2.Total number of branches						
3.Number of employees dedicated to SMEs						
4.Total number of employees						
5.Total number of SME deposits						
6.Total number of deposits						
7.Number of SME borrowers						
8.Number of total borrowers						
9.Amount of loans to SMEs (in PhP)						
10.Amount of loans to the private sector (in PhP)						
11.Number of loans to SMEs						
12.Number of loans to the private sector						
13.Amount of SME banking services other than loans (in PhP)						
14.Average number of SME loan applications						
15. Amount of secured SME loans (i.e. backed up by collateral, in PhP)						
16. Number of secured SME loans (i.e. backed up by collateral)						
17. Average interest rate on SME loans						

-END OF SURVEY-
THANK YOU!
Please return this survey to Ms. Iva Sebastian by email (isebastian@adb.org) or fax (2)6362361 before February 28, 2011

Annex 2: Variable Definitions

Name of Variable	Variable Definition	Data Sources/Frequency
UNDERCOMPLY to firm K Where K= Small, Medium	A dummy variable that is equal to 1 if the banks COMP_K is less than the mandatory credit required (LIMIT), which is 8% for micro and small firms and 2% for medium-sized firms.	Authors' own computations
JUSTCOMPLY to firm K Where K= Small, Medium	A dummy variable that is equal to 1 if the banks COMP_K is greater than the LIMIT but less than (1.1*LIMIT)	Authors' own computations
OVERCOMPLY to firm K Where K= Small, Medium	A dummy variable that is equal to 1 if the banks COMP_K is greater than or equal to (1.1* LIMIT) but less than (2*LIMIT)	Authors' own computations
SUPERCOMPLY to firm K	A dummy variable that is equal to 1 if the banks COMP_K is greater than or equal to (2* LIMIT)	Authors' own computations
COMP_SMALL%	Bank's Compliance to the *Magna Carta* for Micro and Small Enterprises	Bangko Sentral ng Pilipinas, quarterly
COMP_MED%	Bank's Compliance to the *Magna Carta* for Medium-Sized Enterprises	Bangko Sentral ng Pilipinas, quarterly
UNDERJUST	A dummy variable that is equal to 1 if UNDERCOMPLY=1 or JUSTCOMPLY=1 to micro and small firms	Authors' own computations
OVERSUPER	A dummy variable that is equal to 1 if OVERCOMPLY=1 or SUPERCOMPLY=1 to micro and small firms	Authors' own computations
FOREIGN	A dummy variable that is equal to 1 if a bank is a foreign bank (subsidiary or branch), and 0, otherwise.	Bangko Sentral ng Pilipinas
CONGLOMERATE	A dummy variable that is equal to 1 if a bank is part of a financial conglomerate	
SIZE	Natural logarithm of total assets	Bangko Sentral ng Pilipinas, quarterly
FUNDING	The ratio of total deposits to total assets	Bangko Sentral ng Pilipinas, quarterly
GDPGR	The growth rate of the gross domestic product	National Statistics Coordination Board, quarterly
LESSCOMP	A dummy variable, which takes the value 1 if a bank is headquartered outside the National Capital Region (NCR) or the metropolitan, and zero, otherwise. $POLRATE_t$	
POLRATE	This variable measures the central bank's policy	
LENDINGTECH	A dummy variable indicating the usage of a	ADB SME Financing Survey
Credit_Scoring	A dummy variable that is equal to 1 if the bank	ADB SME Financing Survey
Fin_Statement	A dummy variable that is equal to 1 if the bank	ADB SME Financing Survey
Relationship	A dummy variable that is equal to 1 if the bank	ADB SME Financing Survey
Factoring	A dummy variable that is equal to 1 if the bank employs factoring as an SME lending technology, and zero, otherwise.	ADB SME Financing Survey
Asset_Based	A dummy variable that is equal to 1 if the bank employs asset-based lending as an SME lending technology, and zero, otherwise.	ADB SME Financing Survey
Leasing	A dummy variable that is equal to 1 if the bank employs leasing as an SME lending technology, and zero, otherwise.	ADB SME Financing Survey
Fixed_Asset	A dummy variable that is equal to 1 if the bank employs fixed-asset lending as an SME lending technology, and zero, otherwise.	ADB SME Financing Survey

Annex 3: Complete Multinomial Logit Regression Outputs

Table 7A. The link between the extent of bank small firm financing and use of different lending technologies in the Philippines, over the period 3Q:2008-4Q:2010. Y measures the extent of bank exposure to small enterprises using their compliance ratios to the *Magna Carta* for micro and small enterprises. It is equal to 1 if the bank's compliance ratio is less than the legal limit of 8% (UnderComply); 2 if the bank's compliance ratio is greater than or equal to the the legal limit of 8% but less than 1.1*legal limit or 8.8% (JustComply); 3 if the bank's compliance ratio is greater than or equal to the 1.1*legal limit or 8.8% but less than 2*legal limit or 16% (OverComply); and 4 if the bank's compliance ratio is greater than or equal to 2*legal limit or 16%. *Credit_Scoring* is a dummy variable that is equal to 1 if a bank uses credit scoring as a lending technology to finance SMEs and zero, otherwise. *Fin__Statement* is a dummy variable that is equal to 1 if a bank uses financial statement lending as a lending technology to finance SMEs and zero, otherwise. *Relationship* is a dummy variable that is equal to 1 if a bank uses relationship lending as a lending technology to finance SMEs and zero, otherwise. *Factoring* is a dummy variable that is equal to 1 if a bank uses factoring as a lending technology to finance SMEs and zero, otherwise. *Asset_based* is a dummy variable that is equal to 1 if a bank uses asset-based lending as a lending technology to finance SMEs and zero, otherwise. *Leasing* is a dummy variable that is equal to 1 if a bank uses leasing as a lending technology to finance SMEs and zero, otherwise. *Fixed_Asset* is a dummy variable that is equal to 1 if a bank uses fixed-asset lending as a lending technology to finance SMEs and zero, otherwise. The control variables used are the following: FOREIGN – a dummy variable that is equal to 1 if a bank is foreign-owned and zero, otherwise; CONGLOMERATE – a dummy variable that is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise; SIZE – natural logarithm of bank total assets; LESSCOMP – a dummy variable that is equal to 1 if a bank is headquartered outside the metropolitan and zero, otherwise; POLRATE – central bank's policy rate; GDPGR – growth rate of the gross domestic product; yr2009 and yr2010 are year dummies; qtr2, qtr3 and qtr4 are quarter dummies.

	MULTINOMIAL LOGIT REGRESSION						
	Y (1=UnderComply; 2=JustComply; 3=OverComply; 4=SuperComply)						
2							
FOREIGN	-1.030**	-0.410	-0.566	-0.549	-1.445***	-0.586	-2.130***
	(-2.23)	(-1.04)	(-1.36)	(-1.42)	(-2.75)	(-1.48)	(-3.53)
CONGLOMERATE	0.230	0.445	-0.150	0.111	-0.106	0.185	-0.387
	(0.62)	(1.26)	(-0.38)	(0.32)	(-0.28)	(0.50)	(-1.07)
SIZE	-0.586***	-0.569***	-0.514***	-0.349***	-0.848***	-0.394***	-0.552***
	(-4.12)	(-4.67)	(-4.31)	(-3.00)	(-4.54)	(-3.32)	(-4.53)
FUNDING	0.0237*	0.0212*	0.0213	0.0151	0.0463***	0.0220*	0.0311**
	(1.95)	(1.75)	(1.57)	(1.27)	(3.36)	(1.89)	(2.40)
LESSCOMP	-1.917**	-2.183**	-2.289***	-1.387*	-3.767***	-1.636**	-3.219***
	(-2.55)	(-2.55)	(-3.03)	(-1.81)	(-3.71)	(-2.21)	(-3.59)
POLRATE	-1.154	-1.236	-1.220	-1.150	-1.491	-1.141	-1.288
	(-1.06)	(-1.13)	(-1.09)	(-1.06)	(-1.32)	(-1.05)	(-1.17)
GDPGR	-0.708**	-0.740**	-0.709**	-0.702**	-0.825***	-0.695**	-0.740**
	(-2.43)	(-2.50)	(-2.46)	(-2.46)	(-2.63)	(-2.43)	(-2.54)
yr2009	-4.170	-4.447*	-4.269	-4.180	-5.051*	-4.138	-4.462*
	(-1.59)	(-1.69)	(-1.59)	(-1.61)	(-1.81)	(-1.59)	(-1.69)
yr2010	0.573	0.510	0.470	0.519	0.384	0.508	0.458
	(0.27)	(0.24)	(0.21)	(0.24)	(0.18)	(0.24)	(0.21)
qtr2	-0.0431	-0.0571	-0.0611	-0.0481	-0.103	-0.0510	-0.0677
	(-0.08)	(-0.11)	(-0.12)	(-0.09)	(-0.20)	(-0.10)	(-0.13)
qtr3	-1.484**	-1.583**	-1.527**	-1.488**	-1.812***	-1.474**	-1.599**
	(-2.23)	(-2.38)	(-2.26)	(-2.25)	(-2.66)	(-2.24)	(-2.43)
qtr4	-1.327	-1.437*	-1.356	-1.350	-1.588*	-1.329	-1.404*
	(-1.52)	(-1.65)	(-1.57)	(-1.57)	(-1.82)	(-1.54)	(-1.65)
Credit_Scoring	1.089***						
	(3.04)						
Fin_Statement		-2.395***					
		(-4.51)					
Relationship			-1.585***				
			(-3.73)				
Factoring				-0.896**			
				(-2.26)			
Asset_based					-3.109***		
					(-5.94)		
Leasing						-0.543	
						(-1.56)	
Fixed_Asset							-2.109***
							(-4.86)
Constant	22.58***	25.55***	23.31***	18.20**	33.15***	18.66**	24.54***
	(2.72)	(3.14)	(2.75)	(2.29)	(3.38)	(2.34)	(2.90)
3							
FOREIGN	-1.767***	-1.211***	-1.316***	-1.295***	-1.922***	-1.316***	-2.924***
	(-3.32)	(-2.82)	(-2.63)	(-2.96)	(-3.37)	(-2.89)	(-4.19)
CONGLOMERATE	1.740***	1.646***	1.194***	1.477***	1.342***	1.652***	1.016***
	(3.93)	(4.25)	(2.86)	(3.73)	(3.46)	(3.94)	(2.60)
SIZE	-1.016***	-0.825***	-0.883***	-0.690***	-1.127***	-0.708***	-0.887***
	(-5.71)	(-6.06)	(-6.49)	(-5.62)	(-5.77)	(-5.69)	(-6.70)
FUNDING	0.0243**	0.0165	0.0209	0.0120	0.0382***	0.0166	0.0263**
	(2.01)	(1.52)	(1.64)	(1.12)	(2.96)	(1.62)	(2.15)
LESSCOMP	-0.154	0.0406	-0.564	0.447	-1.653*	0.320	-1.366*
	(-0.24)	(0.07)	(-0.90)	(0.78)	(-1.78)	(0.59)	(-1.72)
POLRATE	-0.654	-0.681	-0.736	-0.645	-0.911	-0.648	-0.783
	(-0.62)	(-0.65)	(-0.68)	(-0.61)	(-0.84)	(-0.61)	(-0.71)
GDPGR	0.0000322	-0.00799	-0.00339	0.0102	-0.0937	0.0161	-0.0268

	(0.00)	(-0.03)	(-0.01)	(0.04)	(-0.35)	(0.06)	(-0.10)
yr2009	-0.118	-0.233	-0.249	-0.116	-0.819	-0.0887	-0.387
	(-0.05)	(-0.09)	(-0.10)	(-0.05)	(-0.31)	(-0.04)	(-0.15)
yr2010	-0.0861	-0.155	-0.219	-0.163	-0.249	-0.185	-0.222
	(-0.04)	(-0.08)	(-0.10)	(-0.08)	(-0.12)	(-0.09)	(-0.10)
qtr2	-0.0419	-0.0554	-0.0649	-0.0499	-0.0957	-0.0543	-0.0680
	(-0.08)	(-0.11)	(-0.13)	(-0.10)	(-0.20)	(-0.11)	(-0.14)
qtr3	-0.169	-0.214	-0.224	-0.170	-0.435	-0.165	-0.282
	(-0.28)	(-0.35)	(-0.36)	(-0.28)	(-0.70)	(-0.27)	(-0.45)
qtr4	0.336	0.272	0.296	0.310	0.114	0.329	0.265
	(0.45)	(0.37)	(0.38)	(0.41)	(0.16)	(0.43)	(0.35)
Credit_Scoring	1.565***						
	(3.90)						
Fin_Statement		-1.632**					
		(-2.56)					
Relationship			-1.881***				
			(-4.53)				
Factoring				-0.737**			
				(-2.09)			
Asset_based					-2.638***		
					(-4.91)		
Leasing						-1.241***	
						(-3.40)	
Fixed_Asset							-2.281***
							(-5.08)
Constant	24.50***	23.05***	24.49***	18.56**	31.53***	18.67**	24.96***
	(2.90)	(2.78)	(2.88)	(2.34)	(3.26)	(2.35)	(2.87)
4							
FOREIGN	-17.96***	-17.16***	-17.21***	-18.07***	-18.85***	-17.15***	-19.00***
	(-38.78)	(-48.61)	(-42.23)	(-51.42)	(-32.91)	(-46.73)	(-28.39)
CONGLOMERATE	0.0488	-0.00415	-0.350	-0.143	-0.261	0.0484	-0.450
	(0.10)	(-0.01)	(-0.82)	(-0.34)	(-0.58)	(0.11)	(-0.97)
SIZE	-1.242***	-0.972***	-1.025***	-0.901***	-1.366***	-0.887***	-1.103***
	(-6.98)	(-6.98)	(-7.40)	(-7.32)	(-6.50)	(-7.00)	(-7.56)
FUNDING	0.0474***	0.0367***	0.0395***	0.0373***	0.0652***	0.0390***	0.0527***
	(3.71)	(3.27)	(2.98)	(3.32)	(4.68)	(3.52)	(3.79)
LESSCOMP	-1.206*	-0.737	-1.342**	-0.590	-2.789***	-0.651	-2.463***
	(-1.89)	(-1.32)	(-2.18)	(-1.03)	(-2.98)	(-1.16)	(-3.00)
POLRATE	-0.593	-0.603	-0.634	-0.550	-0.857	-0.556	-0.720
	(-0.51)	(-0.53)	(-0.55)	(-0.48)	(-0.71)	(-0.49)	(-0.59)
GDPGR	-0.103	-0.105	-0.0962	-0.0852	-0.201	-0.0809	-0.130
	(-0.37)	(-0.38)	(-0.34)	(-0.31)	(-0.67)	(-0.29)	(-0.44)
yr2009	-0.523	-0.589	-0.557	-0.441	-1.247	-0.427	-0.788
	(-0.19)	(-0.22)	(-0.20)	(-0.16)	(-0.42)	(-0.16)	(-0.27)
yr2010	0.0952	0.0348	0.00489	0.0494	-0.0580	0.0313	-0.0379
	(0.04)	(0.02)	(0.00)	(0.02)	(-0.03)	(0.01)	(-0.02)
qtr2	0.0184	0.00505	-0.00182	0.0123	-0.0350	0.00748	-0.00709
	(0.03)	(0.01)	(-0.00)	(0.02)	(-0.06)	(0.01)	(-0.01)
qtr3	-0.304	-0.340	-0.342	-0.290	-0.578	-0.288	-0.418
	(-0.44)	(-0.49)	(-0.50)	(-0.43)	(-0.80)	(-0.42)	(-0.59)
qtr4	0.174	0.111	0.145	0.155	-0.0580	0.171	0.106
	(0.21)	(0.14)	(0.17)	(0.19)	(-0.07)	(0.21)	(0.12)
Credit_Scoring	2.116***						
	(4.69)						
Fin_Statement		-1.034					
		(-1.60)					
Relationship			-1.559***				
			(-3.56)				
Factoring				0.0256			
				(0.07)			
Asset_based					-3.175***		
					(-5.32)		
Leasing						-1.109***	
						(-2.99)	
Fixed_Asset							-2.907***
							(-6.01)
Constant	28.83***	25.40***	26.96***	22.33***	36.59***	22.05**	29.29***
	(3.16)	(2.84)	(2.97)	(2.63)	(3.42)	(2.57)	(3.03)
Pseudo R-squared	0.247	0.245	0.247	0.232	0.279	0.233	0.268
OBS	553	553	553	553	553	553	553
Log Likelihood	-560.0	-561.7	-560.2	-571.1	-535.9	-570.5	-544.2
Chi-square	9026.4	8845.0	8558.5	10151.1	7705.9	8651.9	7903.3
Base Outcome	UnderComply	UnderComply	UnderComply	UnderComply	UnderComply	UnderComply	UnderComply

Table 7B. The link between the extent of bank small firm financing and use of different lending technologies in the Philippines, over the period 3Q:2008-4Q:2010. Y measures the extent of bank exposure to small enterprises using their compliance ratios to the *Magna Carta* for micro and small enterprises. It is equal to 1 if the bank's compliance ratio is less than the 25th percentile value (LOW); 2 if the bank's compliance ratio is greater than or equal to the 25th percentile value but less than the median value (MEDIUM); 3 if the bank's compliance ratio is greater than or equal to the median value but less than the 75th percentile value (HIGH); and 4 if the bank's compliance ratio is greater than or equal to the 75th percentile value (VERYHIGH). *Credit_Scoring* is a dummy variable that is equal to 1 if a bank uses credit scoring as a lending technology to finance SMEs and zero, otherwise. *Fin_Statement* is a dummy variable that is equal to 1 if a bank uses financial statement lending as a lending technology to finance SMEs and zero, otherwise. *Relationship* is a dummy variable that is equal to 1 if a bank uses relationship lending as a lending technology to finance SMEs and zero, otherwise. *Factoring* is a dummy variable that is equal to 1 if a bank uses factoring as a lending technology to finance SMEs and zero, otherwise. *Asset_based* is a dummy variable that is equal to 1 if a bank uses asset-based lending as a lending technology to finance SMEs and zero, otherwise. *Leasing* is a dummy variable that is equal to 1 if a bank uses leasing as a lending technology to finance SMEs and zero, otherwise. *Fixed_Asset* is a dummy variable that is equal to 1 if a bank uses fixed-asset lending as a lending technology to finance SMEs and zero, otherwise. The control variables used are the following: FOREIGN – a dummy variable that is equal to 1 if a bank is foreign-owned and zero, otherwise; CONGLOMERATE – a dummy variable that is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise; SIZE – natural logarithm of bank total assets; LESSCOMP – a dummy variable that is equal to 1 if a bank is headquartered outside the metropolitan and zero, otherwise; POLRATE – central bank's policy rate; GDPGR – growth rate of the gross domestic product; yr2009 and yr2010 are year dummies; qtr2, qtr3 and qtr4 are quarter dummies.

	MULTINOMIAL LOGIT REGRESSION Y (1= LOW; 2= MEDIUM; 3=HIGH; 4=VERYHIGH)						
2							
FOREIGN	-1.032***	-0.710**	-0.583	-0.801**	-0.943***	-0.734**	-1.528***
	(-2.69)	(-2.04)	(-1.58)	(-2.31)	(-2.58)	(-2.04)	(-3.59)
CONGLOMERATE	0.353	0.354	-0.0440	0.231	0.188	0.334	-0.0231
	(1.02)	(1.13)	(-0.13)	(0.72)	(0.59)	(1.00)	(-0.07)
SIZE	-0.618***	-0.526***	-0.569***	-0.465***	-0.539***	-0.437***	-0.505***
	(-5.01)	(-5.23)	(-5.48)	(-4.71)	(-5.52)	(-4.31)	(-5.58)
FUNDING	0.0220**	0.0169*	0.0221**	0.0155	0.0214**	0.0157	0.0203*
	(2.09)	(1.67)	(2.04)	(1.54)	(2.07)	(1.59)	(1.94)
LESSCOMP	-0.183	-0.265	-0.586	0.0191	-0.321	0.0871	-0.648
	(-0.37)	(-0.52)	(-1.09)	(0.04)	(-0.63)	(0.18)	(-1.18)
POLRATE	-0.0397	-0.0274	-0.0807	-0.0323	-0.0671	-0.0515	-0.0963
	(-0.04)	(-0.03)	(-0.08)	(-0.03)	(-0.07)	(-0.05)	(-0.09)
GDPGR	-0.105	-0.0975	-0.106	-0.101	-0.106	-0.1000	-0.103
	(-0.44)	(-0.41)	(-0.42)	(-0.42)	(-0.44)	(-0.41)	(-0.42)
yr2009	-0.137	-0.104	-0.205	-0.123	-0.191	-0.141	-0.214
	(-0.06)	(-0.04)	(-0.09)	(-0.05)	(-0.08)	(-0.06)	(-0.09)
yr2010	0.939	0.921	0.861	0.922	0.870	0.883	0.817
	(0.52)	(0.50)	(0.46)	(0.50)	(0.46)	(0.48)	(0.43)
qtr2	0.160	0.160	0.152	0.160	0.153	0.154	0.146
	(0.36)	(0.36)	(0.34)	(0.36)	(0.34)	(0.34)	(0.32)
qtr3	-0.341	-0.337	-0.374	-0.339	-0.362	-0.350	-0.373
	(-0.62)	(-0.60)	(-0.65)	(-0.60)	(-0.63)	(-0.62)	(-0.65)
qtr4	0.508	0.500	0.502	0.496	0.488	0.500	0.500
	(0.74)	(0.71)	(0.69)	(0.70)	(0.69)	(0.71)	(0.70)
Credit_Scoring	0.889***						
	(2.75)						
Fin_Statement		-0.861**					
		(-2.19)					
Relationship			-1.558***				
			(-4.44)				
Factoring				-0.219			
				(-0.65)			
Asset_based					-0.869***		
					(-3.01)		
Leasing						-0.851**	
						(-2.50)	
Fixed_Asset							-1.276***
							(-4.18)
Constant	12.71*	11.98	13.45*	10.04	12.18	9.549	11.90
	(1.72)	(1.64)	(1.80)	(1.39)	(1.64)	(1.33)	(1.60)
3							
FOREIGN	-1.575***	-1.456***	-1.450***	-1.540***	-1.606***	-1.590***	-2.564***
	(-3.19)	(-2.96)	(-2.63)	(-3.09)	(-3.12)	(-3.00)	(-4.27)
CONGLOMERATE	2.539***	2.378***	2.158***	2.344***	2.508***	2.608***	2.536***
	(5.50)	(5.59)	(4.89)	(5.50)	(5.40)	(5.79)	(5.24)
SIZE	-1.000***	-0.816***	-0.880***	-0.773***	-0.920***	-0.758***	-0.941***
	(-7.44)	(-7.64)	(-8.22)	(-7.25)	(-8.09)	(-6.95)	(-8.77)
FUNDING	0.0275**	0.0204**	0.0240**	0.0178*	0.0261**	0.0174*	0.0274***
	(2.47)	(2.03)	(2.22)	(1.77)	(2.45)	(1.76)	(2.58)
LESSCOMP	0.885	1.066**	0.609	1.123**	0.738	1.196**	0.232
	(1.58)	(1.99)	(1.09)	(2.03)	(1.30)	(2.27)	(0.39)
POLRATE	-0.820	-0.810	-0.837	-0.802	-0.837	-0.827	-0.880
	(-0.78)	(-0.78)	(-0.81)	(-0.76)	(-0.79)	(-0.79)	(-0.80)
GDPGR	0.0595	0.0663	0.0655	0.0671	0.0587	0.0713	0.0647
	(0.23)	(0.26)	(0.26)	(0.26)	(0.23)	(0.27)	(0.24)
yr2009	-0.727	-0.698	-0.730	-0.680	-0.758	-0.694	-0.802
	(-0.29)	(-0.28)	(-0.29)	(-0.27)	(-0.30)	(-0.28)	(-0.31)
yr2010	-1.502	-1.522	-1.544	-1.502	-1.541	-1.559	-1.644

	(-0.76)	(-0.77)	(-0.78)	(-0.76)	(-0.77)	(-0.78)	(-0.79)
qtr2	-0.314	-0.315	-0.320	-0.313	-0.318	-0.324	-0.330
	(-0.67)	(-0.67)	(-0.69)	(-0.67)	(-0.67)	(-0.69)	(-0.68)
qtr3	-0.149	-0.148	-0.168	-0.142	-0.166	-0.152	-0.176
	(-0.26)	(-0.25)	(-0.29)	(-0.24)	(-0.28)	(-0.26)	(-0.29)
qtr4	0.182	0.166	0.188	0.176	0.166	0.185	0.187
	(0.25)	(0.23)	(0.26)	(0.24)	(0.23)	(0.25)	(0.24)
Credit_Scoring	1.287***						
	(3.63)						
Fin_Statement		-0.136					
		(-0.30)					
Relationship			-1.268***				
			(-3.76)				
Factoring				-0.596*			
				(-1.69)			
Asset_based					-1.146***		
					(-3.51)		
Leasing						-1.785***	
						(-4.59)	
Fixed_Asset							-2.044***
							(-6.02)
Constant	23.70***	20.68***	22.96***	19.79**	23.47***	19.63**	24.36***
	(2.98)	(2.67)	(2.96)	(2.57)	(2.93)	(2.55)	(3.01)
4							
FOREIGN	-17.43***	-17.21***	-17.13***	-17.24***	-17.41***	-17.51***	-18.03***
	(-51.95)	(-57.19)	(-53.42)	(-58.06)	(-46.74)	(-56.15)	(-43.51)
CONGLOMERATE	-0.999**	-1.120**	-1.255***	-1.158**	-1.117**	-0.953**	-1.247***
	(-2.03)	(-2.41)	(-2.77)	(-2.42)	(-2.36)	(-2.01)	(-2.62)
SIZE	-0.985***	-0.752***	-0.787***	-0.786***	-0.850***	-0.732***	-0.809***
	(-7.16)	(-7.00)	(-7.08)	(-7.49)	(-7.34)	(-6.66)	(-7.33)
FUNDING	0.0395***	0.0307***	0.0304***	0.0339***	0.0393***	0.0302***	0.0382***
	(3.52)	(3.16)	(2.76)	(3.36)	(3.64)	(3.03)	(3.42)
LESSCOMP	-0.557	-0.138	-0.484	-0.326	-0.648	-0.193	-0.984*
	(-1.07)	(-0.29)	(-0.94)	(-0.66)	(-1.24)	(-0.38)	(-1.73)
POLRATE	-0.657	-0.653	-0.645	-0.617	-0.656	-0.633	-0.714
	(-0.60)	(-0.60)	(-0.59)	(-0.57)	(-0.59)	(-0.59)	(-0.61)
GDPGR	0.0274	0.0334	0.0401	0.0363	0.0279	0.0398	0.0327
	(0.10)	(0.13)	(0.15)	(0.14)	(0.10)	(0.15)	(0.12)
yr2009	-0.646	-0.620	-0.568	-0.548	-0.638	-0.558	-0.705
	(-0.25)	(-0.24)	(-0.22)	(-0.21)	(-0.24)	(-0.22)	(-0.25)
yr2010	-0.936	-0.966	-0.940	-0.896	-0.944	-0.938	-1.070
	(-0.45)	(-0.47)	(-0.45)	(-0.43)	(-0.44)	(-0.45)	(-0.48)
qtr2	-0.0428	-0.0467	-0.0474	-0.0379	-0.0450	-0.0477	-0.0604
	(-0.08)	(-0.09)	(-0.10)	(-0.08)	(-0.09)	(-0.10)	(-0.11)
qtr3	-0.174	-0.178	-0.187	-0.164	-0.188	-0.171	-0.207
	(-0.28)	(-0.28)	(-0.30)	(-0.26)	(-0.30)	(-0.28)	(-0.31)
qtr4	0.239	0.210	0.247	0.233	0.224	0.243	0.239
	(0.31)	(0.27)	(0.32)	(0.30)	(0.29)	(0.31)	(0.29)
Credit_Scoring	1.614***						
	(4.03)						
Fin_Statement		0.456					
		(1.03)					
Relationship			-0.802**				
			(-2.14)				
Factoring				0.633*			
				(1.82)			
Asset_based					-1.089***		
					(-3.16)		
Leasing						-0.791**	
						(-2.08)	
Fixed_Asset							-1.878***
							(-5.33)
Constant	23.05***	18.65**	20.46**	19.30**	21.56***	18.55**	21.33**
	(2.80)	(2.30)	(2.51)	(2.43)	(2.59)	(2.34)	(2.47)
Pseudo R-squared	0.234	0.228	0.239	0.225	0.230	0.232	0.248
OBS	553	553	553	553	553	553	553
Log Likelihood	-585.7	-590.4	-582.0	-592.5	-588.8	-587.9	-575.0
Chi-square	7579.6	7281.8	7213.6	7921.5	6674.4	7464.5	6417.6
Base Outcome	LOW	LOW	LOW	LOW	LOW	LOW	LOW

Table 7C. The link between the extent of bank medium-sized firm financing and use of different lending technologies in the Philippines, over the period 3Q:2008-4Q:2010. Y measures the extent of bank exposure to small enterprises using their compliance ratios to the *Magna Carta* for micro and small enterprises. It is equal to 1 if the bank's compliance ratio is less than the legal limit of 8% (UnderComply); 2 if the bank's compliance ratio is greater than or equal to the the legal limit of 8% but less than 1.1*legal limit or 8.8% (JustComply); 3 if the bank's compliance ratio is greater than or equal to the 1.1*legal limit or 8.8% but less than 2*legal limit or 16% (OverComply); and 4 if the bank's compliance ratio is greater than or equal to 2*legal limit or 16%. *Credit_Scoring* is a dummy variable that is equal to 1 if a bank uses credit scoring as a lending technology to finance SMEs and zero, otherwise. *Fin_Statement* is a dummy variable that is equal to 1 if a bank uses financial statement lending as a lending technology to finance SMEs and zero, otherwise. *Relationship* is a dummy variable that is equal to 1 if a bank uses relationship lending as a lending technology to finance SMEs and zero, otherwise. *Factoring* is a dummy variable that is equal to 1 if a bank uses factoring as a lending technology to finance SMEs and zero, otherwise. *Asset_based* is a dummy variable that is equal to 1 if a bank uses asset-based lending as a lending technology to finance SMEs and zero, otherwise. *Leasing* is a dummy variable that is equal to 1 if a bank uses leasing as a lending technology to finance SMEs and zero, otherwise. *Fixed_Asset* is a dummy variable that is equal to 1 if a bank uses fixed-asset lending as a lending technology to finance SMEs and zero, otherwise. The control variables used are the following: FOREIGN – a dummy variable that is equal to 1 if a bank is foreign-owned and zero, otherwise; CONGLOMERATE – a dummy variable that is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise; SIZE – natural logarithm of bank total assets; LESSCOMP – a dummy variable that is equal to 1 if a bank is headquartered outside the metropolitan and zero, otherwise; POLRATE – central bank's policy rate; GDPGR – growth rate of the gross domestic product; yr2009 and yr2010 are year dummies; qtr2, qtr3 and qtr4 are quarter dummies.

	MULTINOMIAL LOGIT REGRESSION						
	Y (exposure to medium enterprises: 1=low; 2=medium; 3=high; 4=very high)						
2							
FOREIGN	-0.583*	-0.597*	-0.585*	-0.514	-0.454	-0.558	-0.578
	(-1.72)	(-1.78)	(-1.71)	(-1.46)	(-1.28)	(-1.61)	(-1.59)
CONGLOMERATE	0.759**	0.583*	0.816**	0.775**	0.751**	0.770**	0.739**
	(2.32)	(1.79)	(2.41)	(2.42)	(2.29)	(2.32)	(2.21)
SIZE	0.170*	0.253***	0.188**	0.200**	0.223**	0.189**	0.167**
	(1.89)	(2.89)	(2.15)	(2.20)	(2.57)	(2.21)	(1.99)
FUNDING	0.00242	-0.00164	0.000773	-0.000185	0.00115	0.00266	0.00212
	(0.26)	(-0.17)	(0.08)	(-0.02)	(0.12)	(0.28)	(0.23)
LESSCOMP	0.745*	1.138**	0.854*	0.865*	0.890**	0.787*	0.710*
	(1.73)	(2.46)	(1.81)	(1.90)	(1.99)	(1.80)	(1.67)
POLRATE	0.0100	-0.0487	-0.00701	0.00953	-0.00108	0.00748	0.00666
	(0.01)	(-0.05)	(-0.01)	(0.01)	(-0.00)	(0.01)	(0.01)
GDPGR	0.161	0.172	0.163	0.159	0.171	0.160	0.161
	(0.71)	(0.76)	(0.73)	(0.70)	(0.75)	(0.71)	(0.71)
yr2009	0.831	0.790	0.814	0.833	0.862	0.822	0.828
	(0.39)	(0.36)	(0.38)	(0.39)	(0.40)	(0.38)	(0.38)
yr2010	-0.149	-0.258	-0.184	-0.133	-0.181	-0.154	-0.150
	(-0.09)	(-0.14)	(-0.11)	(-0.08)	(-0.10)	(-0.09)	(-0.09)
qtr2	-0.0644	-0.0834	-0.0661	-0.0638	-0.0680	-0.0660	-0.0654
	(-0.15)	(-0.19)	(-0.15)	(-0.15)	(-0.16)	(-0.15)	(-0.15)
qtr3	0.0669	0.0574	0.0661	0.0671	0.0723	0.0676	0.0676
	(0.12)	(0.10)	(0.12)	(0.12)	(0.13)	(0.12)	(0.12)
qtr4	0.203	0.211	0.204	0.198	0.211	0.199	0.205
	(0.30)	(0.31)	(0.30)	(0.29)	(0.31)	(0.29)	(0.30)
Credit_Scoring	0.0509						
	(0.19)						
Fin_Statement		0.882***					
		(2.66)					
Relationship			0.230				
			(0.82)				
Factoring				-0.583			
				(-1.15)			
Asset_based					0.714**		
					(2.49)		
Leasing						-0.284	
						(-0.70)	
Fixed_Asset							0.0630
							(0.22)
Constant	-5.375	-7.395	-5.732	-5.849	-7.001	-5.740	-5.240
	(-0.82)	(-1.10)	(-0.87)	(-0.89)	(-1.06)	(-0.87)	(-0.80)
3							
FOREIGN	-2.184***	-2.171***	-2.128***	-2.410***	-2.245***	-2.214***	-2.132***
	(-4.07)	(-3.95)	(-3.94)	(-3.86)	(-4.20)	(-3.86)	(-3.88)
CONGLOMERATE	-0.348	-0.506	-0.301	-0.393	-0.433	-0.416	-0.384
	(-0.93)	(-1.35)	(-0.78)	(-1.03)	(-1.11)	(-1.06)	(-0.98)
SIZE	0.442***	0.557***	0.490***	0.416***	0.429***	0.460***	0.478***
	(4.58)	(5.90)	(5.02)	(4.31)	(4.58)	(4.91)	(5.21)
FUNDING	-0.0165	-0.0209*	-0.0182	-0.0120	-0.0121	-0.0179*	-0.0169
	(-1.53)	(-1.91)	(-1.64)	(-1.08)	(-1.15)	(-1.67)	(-1.58)
LESSCOMP	1.574***	2.011***	1.700***	1.430***	1.388***	1.570***	1.594***
	(3.41)	(4.15)	(3.38)	(3.12)	(3.09)	(3.35)	(3.50)
POLRATE	0.229	0.172	0.213	0.201	0.226	0.219	0.222
	(0.24)	(0.18)	(0.22)	(0.20)	(0.23)	(0.22)	(0.23)
GDPGR	0.0482	0.0612	0.0538	0.0638	0.0444	0.0529	0.0527

	(0.20)	(0.26)	(0.23)	(0.27)	(0.19)	(0.22)	(0.22)
yr2009	0.469	0.426	0.457	0.463	0.433	0.463	0.468
	(0.20)	(0.18)	(0.20)	(0.20)	(0.19)	(0.20)	(0.20)
yr2010	0.0412	-0.0872	-0.0126	-0.0753	0.0263	-0.00250	0.0115
	(0.02)	(-0.05)	(-0.01)	(-0.04)	(0.01)	(-0.00)	(0.01)
qtr2	0.0639	0.0459	0.0619	0.0500	0.0596	0.0626	0.0614
	(0.14)	(0.10)	(0.13)	(0.10)	(0.13)	(0.13)	(0.13)
qtr3	-0.112	-0.120	-0.108	-0.102	-0.112	-0.112	-0.106
	(-0.19)	(-0.20)	(-0.18)	(-0.17)	(-0.19)	(-0.19)	(-0.18)
qtr4	0.122	0.128	0.124	0.135	0.115	0.122	0.127
	(0.17)	(0.17)	(0.17)	(0.18)	(0.16)	(0.17)	(0.18)
Credit_Scoring	0.449						
	(1.52)						
Fin_Statement		0.802**					
		(2.47)					
Relationship			0.109				
			(0.37)				
Factoring				1.324***			
				(3.38)			
Asset_based					-0.419		
					(-1.55)		
Leasing						0.498	
						(1.20)	
Fixed_Asset							0.0940
							(0.32)
Constant	-10.79	-13.28*	-11.56	-10.31	-10.15	-10.87	-11.33
	(-1.51)	(-1.83)	(-1.61)	(-1.42)	(-1.41)	(-1.52)	(-1.59)
4							
FOREIGN	-2.014***	-2.055***	-2.080***	-2.058***	-1.971***	-2.007***	-1.846***
	(-4.58)	(-4.61)	(-4.39)	(-4.30)	(-4.53)	(-4.61)	(-4.19)
CONGLOMERATE	-0.189	-0.391	-0.119	-0.213	-0.228	-0.169	-0.276
	(-0.47)	(-0.96)	(-0.29)	(-0.48)	(-0.57)	(-0.41)	(-0.67)
SIZE	0.172*	0.267***	0.211**	0.101	0.193**	0.174*	0.174*
	(1.76)	(2.76)	(2.06)	(1.03)	(2.04)	(1.87)	(1.87)
FUNDING	-0.0435***	-0.0479***	-0.0487***	-0.0387***	-0.0446***	-0.0436***	-0.0471***
	(-4.39)	(-4.91)	(-4.44)	(-3.77)	(-4.42)	(-4.37)	(-4.53)
LESSCOMP	-0.0891	0.455	0.197	-0.186	-0.0402	-0.0828	0.0226
	(-0.20)	(1.02)	(0.42)	(-0.42)	(-0.09)	(-0.19)	(0.05)
POLRATE	-0.0529	-0.118	-0.0767	-0.0828	-0.0606	-0.0522	-0.0644
	(-0.05)	(-0.12)	(-0.08)	(-0.08)	(-0.06)	(-0.05)	(-0.07)
GDPGR	0.203	0.211	0.204	0.214	0.206	0.203	0.201
	(0.87)	(0.90)	(0.88)	(0.90)	(0.88)	(0.87)	(0.87)
yr2009	0.362	0.298	0.325	0.340	0.370	0.363	0.344
	(0.16)	(0.13)	(0.14)	(0.15)	(0.16)	(0.16)	(0.15)
yr2010	-1.009	-1.128	-1.067	-1.111	-1.025	-1.011	-1.008
	(-0.54)	(-0.59)	(-0.57)	(-0.58)	(-0.55)	(-0.54)	(-0.54)
qtr2	-0.0340	-0.0534	-0.0292	-0.0502	-0.0347	-0.0342	-0.0369
	(-0.07)	(-0.11)	(-0.06)	(-0.10)	(-0.07)	(-0.07)	(-0.08)
qtr3	0.0886	0.0667	0.0810	0.0904	0.0889	0.0886	0.0868
	(0.15)	(0.11)	(0.14)	(0.15)	(0.15)	(0.15)	(0.15)
qtr4	0.267	0.267	0.263	0.264	0.269	0.267	0.271
	(0.37)	(0.36)	(0.37)	(0.36)	(0.37)	(0.37)	(0.38)
Credit_Scoring	-0.0126						
	(-0.04)						
Fin_Statement		1.423***					
		(3.43)					
Relationship			0.613*				
			(1.88)				
Factoring				1.535***			
				(4.24)			
Asset_based					0.306		
					(1.10)		
Leasing						-0.153	
						(-0.36)	
Fixed_Asset							0.632**
							(2.20)
Constant	-1.092	-3.863	-1.990	0.0634	-1.696	-1.140	-1.133
	(-0.16)	(-0.53)	(-0.28)	(0.01)	(-0.24)	(-0.16)	(-0.16)
Pseudo R-squared	0.0971	0.105	0.0981	0.123	0.107	0.0987	0.0990
OBS	546	546	546	546	546	546	546
Log likelihood	-682.2	-676.1	-681.4	-662.3	-674.6	-681.0	-680.8
Chi-square	136.5	156.6	133.2	184.2	151.5	143.3	142.5
Base outcome	LOW	LOW	LOW	LOW	LOW	LOW	LOW

Table 8A. The link between the extent of bank small firm financing and use of different lending technologies in the Philippines, over the period 3Q:2008-4Q:2010 for UKBs. Y measures the extent of bank exposure to small enterprises using their compliance ratios to the *Magna Carta* for micro and small enterprises. It is equal to 1 if the bank's compliance ratio is less than the 25th percentile value (LOW); 2 if the bank's compliance ratio is greater than or equal to the 25th percentile value but less than the median value (MEDIUM); 3 if the bank's compliance ratio is greater than or equal to the median value but less than the 75th percentile value (HIGH); and 4 if the bank's compliance ratio is greater than or equal to the 75th percentile value (VERYHIGH). *Credit_Scoring* is a dummy variable that is equal to 1 if a bank uses credit scoring as a lending technology to finance SMEs and zero, otherwise. *Fin_Statement* is a dummy variable that is equal to 1 if a bank uses financial statement lending as a lending technology to finance SMEs and zero, otherwise. *Relationship* is a dummy variable that is equal to 1 if a bank uses relationship lending as a lending technology to finance SMEs and zero, otherwise. *Factoring* is a dummy variable that is equal to 1 if a bank uses factoring as a lending technology to finance SMEs and zero, otherwise. *Asset_based* is a dummy variable that is equal to 1 if a bank uses asset-based lending as a lending technology to finance SMEs and zero, otherwise. *Leasing* is a dummy variable that is equal to 1 if a bank uses leasing as a lending technology to finance SMEs and zero, otherwise. *Fixed_Asset* is a dummy variable that is equal to 1 if a bank uses fixed-asset lending as a lending technology to finance SMEs and zero, otherwise. The control variables used are the following: FOREIGN – a dummy variable that is equal to 1 if a bank is foreign-owned and zero, otherwise; CONGLOMERATE – a dummy variable that is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise; SIZE – natural logarithm of bank total assets; LESSCOMP – a dummy variable that is equal to 1 if a bank is headquartered outside the metropolitan and zero, otherwise; POLRATE – central bank's policy rate; GDPGR – growth rate of the gross domestic product; yr2009 and yr2010 are year dummies; qtr2, qtr3 and qtr4 are quarter dummies.

	MULTINOMIAL LOGIT REGRESSION (Universal and Commercial Banks (UKBs)) Y (1= LOW; 2= MEDIUM; 3=HIGH; 4=VERYHIGH)						
2							
FOREIGN	-3.870*	-4.005***	-3.654***	-4.385***	-7.060***	-4.335***	-5.125***
	(-1.89)	(-2.58)	(-2.77)	(-2.74)	(-4.88)	(-2.59)	(-3.04)
CONGLOMERATE	1.522*	1.852**	1.297*	1.633*	1.839**	1.530*	1.206*
	(1.74)	(2.23)	(1.66)	(1.92)	(2.19)	(1.78)	(1.67)
SIZE	-0.812	-0.873**	-0.707	-0.956**	-2.486***	-0.834*	-0.951**
	(-1.33)	(-1.97)	(-1.59)	(-2.07)	(-4.75)	(-1.86)	(-2.21)
FUNDING	-0.0220	-0.0446	-0.0124	-0.0241	0.0427	-0.0317	-0.0132
	(-0.67)	(-1.38)	(-0.37)	(-0.77)	(1.27)	(-0.89)	(-0.42)
LESSCOMP							
POLRATE	-0.739	-0.679	-0.727	-0.714	-0.358	-0.723	-0.624
	(-0.41)	(-0.39)	(-0.42)	(-0.41)	(-0.18)	(-0.42)	(-0.37)
GDPGR	0.674	0.683	0.700*	0.671*	1.039**	0.672*	0.712*
	(1.60)	(1.64)	(1.70)	(1.66)	(2.03)	(1.66)	(1.75)
yr2009	-0.524	-0.371	-0.450	-0.449	0.463	-0.477	-0.316
	(-0.12)	(-0.09)	(-0.11)	(-0.11)	(0.10)	(-0.12)	(-0.08)
yr2010	-4.144	-4.032	-4.257	-4.050	-4.992	-4.120	-4.160
	(-1.15)	(-1.17)	(-1.23)	(-1.17)	(-1.25)	(-1.19)	(-1.23)
qtr2	-0.306	-0.255	-0.332	-0.297	-0.385	-0.301	-0.290
	(-0.44)	(-0.37)	(-0.48)	(-0.43)	(-0.49)	(-0.44)	(-0.43)
qtr3	1.045	1.045	1.055	1.038	1.742	1.018	1.129
	(1.08)	(1.09)	(1.10)	(1.09)	(1.58)	(1.07)	(1.18)
qtr4	0.307	0.381	0.268	0.345	1.009	0.338	0.437
	(0.25)	(0.32)	(0.22)	(0.30)	(0.72)	(0.28)	(0.37)
Credit_Scoring	-0.177						
	(-0.17)						
Fin_Statement		-15.73***					
		(-30.96)					
Relationship			0.528				
			(0.86)				
Factoring				0.239			
				(0.45)			
Asset_based					-6.735***		
					(-4.78)		
Leasing						-0.124	
						(-0.26)	
Fixed_Asset							-1.383**
							(-2.06)
Constant	24.35	42.44***	20.36	27.84*	64.62***	25.56	27.62*
	(1.36)	(2.66)	(1.28)	(1.75)	(3.59)	(1.63)	(1.84)
3							
FOREIGN	-3.557***	-2.148**	-2.662***	-2.548***	-5.916***	-2.269***	-4.784***
	(-3.09)	(-2.52)	(-3.56)	(-3.36)	(-5.97)	(-2.85)	(-4.20)
CONGLOMERATE	1.151	2.503***	1.534**	1.370*	1.376*	1.340*	0.606
	(1.44)	(3.28)	(2.27)	(1.84)	(1.67)	(1.74)	(0.93)
SIZE	-1.349***	-1.506***	-1.426***	-1.121***	-3.050***	-1.057***	-1.457***
	(-2.86)	(-4.08)	(-3.96)	(-3.08)	(-5.91)	(-2.99)	(-3.87)
FUNDING	0.0351	0.0110	0.0112	0.0299	0.118***	0.0418	0.0682**
	(1.14)	(0.39)	(0.42)	(1.12)	(3.93)	(1.47)	(2.57)
LESSCOMP							
POLRATE	0.692	0.677	0.703	0.600	0.901	0.566	0.651
	(0.45)	(0.40)	(0.45)	(0.39)	(0.48)	(0.37)	(0.41)
GDPGR	-0.0880	-0.0859	-0.0939	-0.0817	0.294	-0.0666	-0.0503
	(-0.22)	(-0.20)	(-0.23)	(-0.21)	(0.61)	(-0.16)	(-0.12)
yr2009	-0.0643	-0.149	0.0241	-0.254	0.561	-0.285	-0.201
	(-0.02)	(-0.04)	(0.01)	(-0.07)	(0.12)	(-0.08)	(-0.05)
yr2010	1.515	1.512	1.649	1.263	0.149	1.086	1.161

	(0.51)	(0.46)	(0.54)	(0.43)	(0.04)	(0.37)	(0.37)
qtr2	0.433	0.507	0.482	0.400	0.293	0.374	0.417
	(0.62)	(0.63)	(0.70)	(0.58)	(0.37)	(0.55)	(0.58)
qtr3	0.360	0.353	0.352	0.319	1.005	0.329	0.432
	(0.37)	(0.33)	(0.36)	(0.33)	(0.91)	(0.35)	(0.44)
qtr4	0.425	0.471	0.483	0.307	1.009	0.320	0.463
	(0.36)	(0.37)	(0.41)	(0.27)	(0.74)	(0.27)	(0.38)
Credit_Scoring	1.500*						
	(1.73)						
Fin_Statement		-18.06***					
		(-39.68)					
Relationship			-1.927***				
			(-3.57)				
Factoring				-0.726			
				(-1.36)			
Asset_based					-8.224***		
					(-5.83)		
Leasing						-0.887*	
						(-1.93)	
Fixed_Asset							-3.000***
							(-4.01)
Constant	27.15*	50.42***	32.80**	23.46*	69.85***	21.21	31.04**
	(1.90)	(3.51)	(2.40)	(1.80)	(3.80)	(1.63)	(2.26)
4							
FOREIGN	-3.345**	-1.571*	-2.111**	-2.093**	-5.732***	-1.346	-4.541***
	(-2.15)	(-1.79)	(-2.14)	(-2.44)	(-5.26)	(-1.41)	(-3.37)
CONGLOMERATE	0.765	1.780**	1.289	0.997	1.053	1.031	0.155
	(0.83)	(2.25)	(1.54)	(1.22)	(1.15)	(1.16)	(0.19)
SIZE	-1.010*	-0.910**	-1.118**	-0.741*	-2.796***	-0.548	-1.100**
	(-1.67)	(-2.22)	(-2.28)	(-1.90)	(-5.26)	(-1.23)	(-2.41)
FUNDING	0.0233	-0.00570	-0.0136	0.0169	0.112***	0.0396	0.0585
	(0.53)	(-0.16)	(-0.40)	(0.47)	(2.69)	(0.95)	(1.47)
LESSCOMP							
POLRATE	0.783	0.712	0.772	0.640	0.966	0.595	0.716
	(0.43)	(0.37)	(0.42)	(0.35)	(0.44)	(0.32)	(0.37)
GDPGR	0.317	0.334	0.312	0.347	0.725	0.350	0.365
	(0.76)	(0.77)	(0.72)	(0.86)	(1.41)	(0.83)	(0.82)
yr2009	2.186	2.043	2.279	1.963	2.789	1.848	2.004
	(0.53)	(0.46)	(0.53)	(0.48)	(0.55)	(0.43)	(0.45)
yr2010	0.478	0.275	0.607	0.0290	-1.033	-0.188	0.0140
	(0.14)	(0.07)	(0.17)	(0.01)	(-0.24)	(-0.05)	(0.00)
qtr2	0.166	0.205	0.218	0.109	0.0149	0.0747	0.141
	(0.18)	(0.23)	(0.24)	(0.12)	(0.02)	(0.08)	(0.16)
qtr3	1.202	1.187	1.184	1.172	1.874	1.155	1.282
	(1.03)	(1.00)	(1.00)	(1.02)	(1.50)	(0.97)	(1.10)
qtr4	1.670	1.651	1.748	1.519	2.260	1.506	1.700
	(1.27)	(1.26)	(1.30)	(1.17)	(1.56)	(1.12)	(1.25)
Credit_Scoring	3.224*						
	(1.90)						
Fin_Statement		-17.47***					
		(-35.38)					
Relationship			-2.619***				
			(-3.43)				
Factoring				-0.0747			
				(-0.14)			
Asset_based					-8.616***		
					(-5.98)		
Leasing						-1.990***	
						(-3.18)	
Fixed_Asset							-3.464***
							(-4.03)
Constant	14.28	33.10**	23.56	11.28	60.49***	5.343	19.46
	(0.81)	(1.99)	(1.37)	(0.73)	(3.05)	(0.33)	(1.15)
Pseudo R-squared	0.199	0.244	0.222	0.163	0.320	0.181	0.231
OBS	200	200	200	200	200	200	200
Log-likelihood	-218.5	-206.2	-212.4	-228.4	-185.7	-223.5	-209.7
Chi-square	70.31	4293.4	83.06	53.05	102.9	78.48	84.51
Base Outcome	LOW	LOW	LOW	LOW	LOW	LOW	LOW

Table 8B. The link between the extent of bank small firm financing and use of different lending technologies in the Philippines, over the period 3Q:2008-4Q:2010 for thrift banks. Y measures the extent of bank exposure to small enterprises using their compliance ratios to the *Magna Carta* for micro and small enterprises. It is equal to 1 if the bank's compliance ratio is less than the 25th percentile value (LOW); 2 if the bank's compliance ratio is greater than or equal to the 25th percentile value but less than the median value (MEDIUM); 3 if the bank's compliance ratio is greater than or equal to the median value but less than the 75th percentile value (HIGH); and 4 if the bank's compliance ratio is greater than or equal to the 75th percentile value (VERYHIGH). *Credit_Scoring* is a dummy variable that is equal to 1 if a bank uses credit scoring as a lending technology to finance SMEs and zero, otherwise. *Fin_Statement* is a dummy variable that is equal to 1 if a bank uses financial statement lending as a lending technology to finance SMEs and zero, otherwise. *Relationship* is a dummy variable that is equal to 1 if a bank uses relationship lending as a lending technology to finance SMEs and zero, otherwise. *Factoring* is a dummy variable that is equal to 1 if a bank uses factoring as a lending technology to finance SMEs and zero, otherwise. *Asset_based* is a dummy variable that is equal to 1 if a bank uses asset-based lending as a lending technology to finance SMEs and zero, otherwise. *Leasing* is a dummy variable that is equal to 1 if a bank uses leasing as a lending technology to finance SMEs and zero, otherwise. *Fixed_Asset* is a dummy variable that is equal to 1 if a bank uses fixed-asset lending as a lending technology to finance SMEs and zero, otherwise. The control variables used are the following: FOREIGN – a dummy variable that is equal to 1 if a bank is foreign-owned and zero, otherwise; CONGLOMERATE – a dummy variable that is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise; SIZE – natural logarithm of bank total assets; LESSCOMP – a dummy variable that is equal to 1 if a bank is headquartered outside the metropolitan and zero, otherwise; POLRATE – central bank's policy rate; GDPGR – growth rate of the gross domestic product; yr2009 and yr2010 are year dummies; qtr2, qtr3 and qtr4 are quarter dummies.

	MULTINOMIAL LOGIT REGRESSION (Thrift Banks) Y (1=LOW; 2=MEDIUM; 3=HIGH; 4=VERYHIGH)						
2							
FOREIGN	-1.500***	-1.545***	-1.394**	-1.431**	-1.389**	-1.459***	-1.792***
	(-2.68)	(-2.72)	(-2.53)	(-2.52)	(-2.32)	(-2.59)	(-3.05)
CONGLOMERATE	2.265***	2.281***	2.320***	2.184***	1.911***	2.160***	2.500***
	(3.65)	(3.71)	(3.56)	(3.58)	(2.87)	(3.55)	(4.35)
SIZE	0.00777	0.0184	0.107	0.0399	0.130	0.0343	-0.0346
	(0.05)	(0.14)	(0.78)	(0.30)	(0.85)	(0.27)	(-0.28)
FUNDING	-0.00722	-0.00865	-0.0144	-0.00777	-0.0103	-0.00613	-0.00351
	(-0.65)	(-0.77)	(-1.27)	(-0.71)	(-0.95)	(-0.54)	(-0.31)
LESSCOMP	1.105**	1.325***	1.469***	1.171**	1.212***	1.112**	1.056**
	(2.44)	(2.66)	(2.85)	(2.42)	(2.62)	(2.41)	(2.22)
POLRATE	-0.924	-0.951	-0.944	-0.926	-0.947	-0.922	-0.909
	(-0.72)	(-0.73)	(-0.73)	(-0.72)	(-0.73)	(-0.71)	(-0.70)
GDPGR	0.394	0.393	0.409	0.396	0.402	0.386	0.389
	(1.21)	(1.21)	(1.26)	(1.22)	(1.23)	(1.19)	(1.19)
yr2009	0.548	0.519	0.592	0.572	0.550	0.523	0.533
	(0.18)	(0.17)	(0.19)	(0.19)	(0.18)	(0.17)	(0.17)
yr2010	-2.185	-2.213	-2.225	-2.176	-2.240	-2.169	-2.176
	(-0.90)	(-0.91)	(-0.91)	(-0.89)	(-0.92)	(-0.89)	(-0.89)
qtr2	-0.221	-0.228	-0.234	-0.222	-0.236	-0.217	-0.212
	(-0.38)	(-0.39)	(-0.40)	(-0.38)	(-0.40)	(-0.37)	(-0.37)
qtr3	0.819	0.810	0.822	0.820	0.817	0.812	0.826
	(1.11)	(1.09)	(1.11)	(1.11)	(1.10)	(1.10)	(1.12)
qtr4	0.699	0.692	0.715	0.698	0.700	0.685	0.698
	(0.74)	(0.73)	(0.76)	(0.74)	(0.74)	(0.73)	(0.74)
Credit_Scoring	0.0874						
	(0.23)						
Fin_Statement		0.646					
		(1.24)					
Relationship			0.528				
			(1.36)				
Factoring				0.763			
				(0.88)			
Asset_based					0.516		
					(1.29)		
Leasing						0.325	
						(0.26)	
Fixed_Asset							-0.527
							(-1.34)
Constant	2.391	1.771	0.352	1.712	-0.175	1.840	3.190
	(0.26)	(0.20)	(0.04)	(0.19)	(-0.02)	(0.20)	(0.35)
3							
FOREIGN	-17.69***	-17.89***	-19.16***	-16.82***	-18.03***	-18.74***	-18.75***
	(-33.16)	(-34.12)	(-34.78)	(-31.70)	(-36.69)	(-33.78)	(-30.10)
CONGLOMERATE	2.042***	2.061***	2.186***	1.997***	2.366***	2.072***	3.060***
	(2.79)	(2.87)	(2.80)	(2.81)	(3.00)	(2.85)	(3.85)
SIZE	0.0867	0.149	0.157	0.163	0.0210	0.159	-0.101
	(0.60)	(1.09)	(1.11)	(1.12)	(0.14)	(1.25)	(-0.74)
FUNDING	0.00133	-0.000435	-0.00501	-0.000532	0.00163	0.000458	0.00708
	(0.12)	(-0.04)	(-0.43)	(-0.04)	(0.15)	(0.04)	(0.61)
LESSCOMP	2.054***	2.163***	2.257***	2.184***	2.007***	2.177***	1.870***
	(3.79)	(3.80)	(3.87)	(3.67)	(3.55)	(3.98)	(3.46)
POLRATE	0.812	0.823	0.815	0.812	0.823	0.824	0.867
	(0.61)	(0.63)	(0.62)	(0.62)	(0.63)	(0.62)	(0.65)
GDPGR	0.238	0.239	0.244	0.242	0.224	0.228	0.234
	(0.72)	(0.72)	(0.73)	(0.73)	(0.67)	(0.69)	(0.70)
yr2009	2.614	2.646	2.652	2.657	2.590	2.598	2.668
	(0.85)	(0.86)	(0.87)	(0.86)	(0.84)	(0.84)	(0.85)
yr2010	0.832	0.858	0.838	0.847	0.888	0.871	0.908

	(0.33)	(0.34)	(0.33)	(0.33)	(0.35)	(0.34)	(0.36)
qtr2	0.466	0.469	0.464	0.464	0.482	0.476	0.494
	(0.72)	(0.73)	(0.73)	(0.72)	(0.75)	(0.74)	(0.78)
qtr3	1.005	1.007	1.008	1.008	1.001	1.001	1.039
	(1.25)	(1.26)	(1.27)	(1.26)	(1.25)	(1.25)	(1.29)
qtr4	0.912	0.916	0.923	0.914	0.906	0.901	0.939
	(0.88)	(0.89)	(0.90)	(0.88)	(0.88)	(0.87)	(0.90)
Credit_Scoring	0.513						
	(1.35)						
Fin_Statement		0.0512					
		(0.11)					
Relationship			0.0998				
			(0.26)				
Factoring				0.884			
				(1.04)			
Asset_based					-0.625		
					(-1.61)		
Leasing						-0.0484	
						(-0.04)	
Fixed_Asset							-1.410***
							(-3.26)
Constant	-9.880	-11.04	-10.97	-11.31	-7.987	-11.22	-6.126
	(-1.03)	(-1.17)	(-1.17)	(-1.19)	(-0.84)	(-1.18)	(-0.63)
4							
FOREIGN	-17.77***	-18.12***	-19.20***	-16.88***	-17.93***	-18.85***	-18.25***
	(-35.39)	(-37.36)	(-39.49)	(-33.86)	(-32.35)	(-38.90)	(-34.62)
CONGLOMERATE	-16.40***	-16.34***	-17.04***	-15.37***	-16.52***	-18.05***	-16.14***
	(-27.24)	(-27.36)	(-26.98)	(-26.64)	(-26.68)	(-16.79)	(-28.58)
SIZE	0.0558	0.168	0.296**	0.139	0.240	0.141	0.124
	(0.36)	(1.20)	(2.08)	(0.96)	(1.47)	(0.96)	(0.94)
FUNDING	0.0212	0.0160	-0.00151	0.0214	0.0128	0.0119	0.0198
	(1.61)	(1.22)	(-0.11)	(1.62)	(0.99)	(0.89)	(1.45)
LESSCOMP	-0.694	-0.241	0.203	-0.618	-0.366	-0.664	-0.544
	(-1.33)	(-0.46)	(0.38)	(-1.15)	(-0.69)	(-1.28)	(-1.05)
POLRATE	-0.249	-0.260	-0.226	-0.215	-0.225	-0.227	-0.213
	(-0.19)	(-0.20)	(-0.17)	(-0.16)	(-0.17)	(-0.17)	(-0.16)
GDPGR	0.493	0.494	0.533	0.518	0.510	0.521	0.493
	(1.48)	(1.47)	(1.58)	(1.51)	(1.51)	(1.53)	(1.47)
yr2009	1.907	1.935	2.150	2.136	2.051	2.097	1.983
	(0.60)	(0.61)	(0.68)	(0.66)	(0.65)	(0.66)	(0.63)
yr2010	-1.293	-1.275	-1.278	-1.221	-1.252	-1.257	-1.221
	(-0.52)	(-0.51)	(-0.52)	(-0.48)	(-0.50)	(-0.50)	(-0.49)
qtr2	-0.248	-0.257	-0.276	-0.257	-0.260	-0.271	-0.242
	(-0.41)	(-0.43)	(-0.46)	(-0.44)	(-0.44)	(-0.45)	(-0.41)
qtr3	0.701	0.690	0.714	0.726	0.713	0.711	0.708
	(0.92)	(0.90)	(0.93)	(0.96)	(0.94)	(0.92)	(0.94)
qtr4	0.682	0.677	0.725	0.711	0.701	0.706	0.689
	(0.71)	(0.70)	(0.75)	(0.73)	(0.72)	(0.72)	(0.72)
Credit_Scoring	0.997***						
	(2.68)						
Fin_Statement		0.988*					
		(1.67)					
Relationship			1.281***				
			(3.07)				
Factoring				2.217***			
				(3.03)			
Asset_based					0.386		
					(0.99)		
Leasing						3.510**	
						(2.56)	
Fixed_Asset							-0.341
							(-0.89)
Constant	-3.574	-6.224	-8.395	-5.562	-7.134	-4.784	-4.688
	(-0.37)	(-0.65)	(-0.87)	(-0.58)	(-0.73)	(-0.49)	(-0.49)
Pseudo R-squared	0.185	0.181	0.188	0.191	0.188	0.194	0.187
OBS	353	353	353	353	353	353	353
Log-likelihood	-395.6	-397.7	-394.4	-392.8	-394.5	-391.3	-394.6
Chi-square	11768.4	11028.3	13157.1	10373.6	12494.1	8919.4	11126.2
Base Outcome	LOW	LOW	LOW	LOW	LOW	LOW	LOW

Table 9A. The link between the extent of bank medium-sized firm financing and use of different lending technologies in the Philippines for a subsample of universal and commercial banks (UKBs), over the period 3Q:2008-4Q:2010. Y measures the extent of bank exposure to small enterprises using their compliance ratios to the *Magna Carta* for micro and small enterprises. It is equal to 1 if the bank's compliance ratio is less than the legal limit of 8% (UnderComply); 2 if the bank's compliance ratio is greater than or equal to the the legal limit of 8% but less than 1.1*legal limit or 8.8% (JustComply); 3 if the bank's compliance ratio is greater than or equal to the 1.1*legal limit or 8.8% but less than 2*legal limit or 16% (OverComply); and 4 if the bank's compliance ratio is greater than or equal to 2*legal limit or 16%. *Credit_Scoring* is a dummy variable that is equal to 1 if a bank uses credit scoring as a lending technology to finance SMEs and zero, otherwise. *Fin_Statement* is a dummy variable that is equal to 1 if a bank uses financial statement lending as a lending technology to finance SMEs and zero, otherwise. *Relationship* is a dummy variable that is equal to 1 if a bank uses relationship lending as a lending technology to finance SMEs and zero, otherwise. *Factoring* is a dummy variable that is equal to 1 if a bank uses factoring as a lending technology to finance SMEs and zero, otherwise. *Asset_based* is a dummy variable that is equal to 1 if a bank uses asset-based lending as a lending technology to finance SMEs and zero, otherwise. *Leasing* is a dummy variable that is equal to 1 if a bank uses leasing as a lending technology to finance SMEs and zero, otherwise. *Fixed_Asset* is a dummy variable that is equal to 1 if a bank uses fixed-asset lending as a lending technology to finance SMEs and zero, otherwise. The control variables used are the following: FOREIGN – a dummy variable that is equal to 1 if a bank is foreign-owned and zero, otherwise; CONGLOMERATE – a dummy variable that is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise; SIZE – natural logarithm of bank total assets; LESSCOMP – a dummy variable that is equal to 1 if a bank is headquartered outside the metropolitan and zero, otherwise; POLRATE – central bank's policy rate; GDPGR – growth rate of the gross domestic product; yr2009 and yr2010 are year dummies; qtr2, qtr3 and qtr4 are quarter dummies.

	MULTINOMIAL LOGIT REGRESSION : Subsample of UKBs						
	Y (exposure to medium enterprises: 1=low; 2=medium; 3=high; 4=very high)						
2							
FOREIGN	-0.00560	0.271	0.535	0.706	1.078	0.658	1.277
	(-0.01)	(0.30)	(0.67)	(0.80)	(1.27)	(0.82)	(1.43)
CONGLOMERATE	2.227***	1.904**	2.570***	2.843***	2.783***	2.641***	3.110***
	(2.77)	(2.05)	(3.06)	(3.26)	(3.25)	(3.14)	(3.52)
SIZE	-0.0823	0.237	-0.0564	-0.191	0.120	-0.0814	-0.0679
	(-0.39)	(0.88)	(-0.26)	(-0.89)	(0.49)	(-0.40)	(-0.33)
FUNDING	0.00692	0.0246	0.0287	0.0326	-0.00403	0.0183	0.00463
	(0.29)	(0.86)	(1.23)	(1.38)	(-0.17)	(0.83)	(0.21)
LESSCOMP							
POLRATE	-1.699	-2.369	-1.777	-1.735	-1.819	-1.688	-1.751
	(-1.10)	(-1.34)	(-1.16)	(-1.12)	(-1.13)	(-1.09)	(-1.10)
GDPGR	-0.153	-0.0619	-0.144	-0.164	-0.150	-0.151	-0.144
	(-0.42)	(-0.16)	(-0.40)	(-0.45)	(-0.42)	(-0.42)	(-0.41)
yr2009	-3.220	-4.055	-3.418	-3.408	-3.405	-3.282	-3.319
	(-0.90)	(-1.03)	(-0.97)	(-0.95)	(-0.92)	(-0.92)	(-0.91)
yr2010	-2.708	-4.227	-3.029	-2.874	-2.953	-2.826	-2.869
	(-0.89)	(-1.20)	(-0.99)	(-0.94)	(-0.94)	(-0.93)	(-0.93)
qtr2	-0.0454	-0.312	-0.147	-0.124	-0.0808	-0.0886	-0.0480
	(-0.06)	(-0.34)	(-0.19)	(-0.16)	(-0.10)	(-0.11)	(-0.06)
qtr3	-0.392	-0.402	-0.362	-0.398	-0.338	-0.348	-0.315
	(-0.39)	(-0.35)	(-0.37)	(-0.40)	(-0.34)	(-0.35)	(-0.32)
qtr4	-1.039	-1.231	-1.092	-1.105	-1.070	-1.059	-1.021
	(-0.87)	(-0.93)	(-0.93)	(-0.94)	(-0.89)	(-0.90)	(-0.86)
Credit_Scoring	1.569***						
	(3.07)						
Fin_Statement		3.099***					
		(4.30)					
Relationship			0.768				
			(1.40)				
Factoring				0.0740			
				(0.11)			
Asset_based					1.203**		
					(2.43)		
Leasing						-0.308	
						(-0.61)	
Fixed_Asset							1.160**
							(2.46)
Constant	10.52	3.981	9.194	12.40	6.729	10.55	10.45
	(0.89)	(0.30)	(0.80)	(1.07)	(0.54)	(0.91)	(0.88)
3							
FOREIGN	-3.767***	-3.190***	-2.967***	-4.993***	-3.681***	-2.940***	-3.537***
	(-4.84)	(-4.62)	(-5.25)	(-4.54)	(-6.33)	(-4.76)	(-5.48)
CONGLOMERATE	-0.413	-0.547	-0.280	-0.199	-0.385	-0.0706	-0.277
	(-0.66)	(-0.75)	(-0.42)	(-0.33)	(-0.59)	(-0.11)	(-0.43)
SIZE	-0.155	0.104	0.0237	-0.428	-0.263	-0.0773	-0.194
	(-0.52)	(0.31)	(0.08)	(-1.45)	(-0.99)	(-0.27)	(-0.70)
FUNDING	-0.0165	0.0107	0.0167	-0.0379	-0.00290	-0.00307	-0.00671
	(-0.70)	(0.41)	(0.68)	(-1.36)	(-0.13)	(-0.14)	(-0.28)
LESSCOMP	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
POLRATE	-1.827	-2.272	-1.903	-1.915	-1.839	-1.798	-1.838
	(-1.14)	(-1.34)	(-1.18)	(-1.15)	(-1.14)	(-1.13)	(-1.15)

GDPGR	-0.0648	-0.0130	-0.0638	-0.00934	-0.0681	-0.0692	-0.0688
	(-0.16)	(-0.03)	(-0.16)	(-0.02)	(-0.17)	(-0.18)	(-0.17)
yr2009	-3.014	-3.639	-3.241	-2.959	-3.077	-3.055	-3.071
	(-0.79)	(-0.91)	(-0.84)	(-0.75)	(-0.80)	(-0.81)	(-0.80)
yr2010	-3.241	-4.272	-3.547	-3.493	-3.312	-3.294	-3.304
	(-1.06)	(-1.29)	(-1.15)	(-1.11)	(-1.06)	(-1.08)	(-1.07)
qtr2	-0.196	-0.392	-0.296	-0.178	-0.219	-0.227	-0.231
	(-0.23)	(-0.43)	(-0.35)	(-0.20)	(-0.26)	(-0.28)	(-0.28)
qtr3	-0.801	-0.817	-0.780	-0.743	-0.777	-0.758	-0.777
	(-0.77)	(-0.71)	(-0.73)	(-0.67)	(-0.74)	(-0.73)	(-0.74)
qtr4	-1.154	-1.310	-1.234	-1.056	-1.168	-1.170	-1.171
	(-0.95)	(-0.98)	(-0.98)	(-0.82)	(-0.94)	(-0.96)	(-0.94)
Credit_Scoring	1.533**						
	(2.49)						
Fin_Statement		1.963***					
		(3.46)					
Relationship			1.302**				
			(2.34)				
Factoring				2.499***			
				(3.43)			
Asset_based					-0.991**		
					(-2.23)		
Leasing						-0.549	
						(-0.96)	
Fixed_Asset							-0.503
							(-1.08)
Constant	16.85	10.75	10.49	26.37*	20.26	14.73	18.42
	(1.22)	(0.73)	(0.73)	(1.83)	(1.53)	(1.08)	(1.38)
4							
FOREIGN	-6.502***	-5.313***	-6.060***	-7.480***	-5.522***	-5.601***	-4.144***
	(-4.59)	(-4.34)	(-3.86)	(-4.98)	(-4.52)	(-4.19)	(-3.69)
CONGLOMERATE	2.117***	1.795**	2.588***	2.348***	2.318***	2.347***	3.092***
	(3.79)	(2.47)	(3.91)	(3.50)	(3.69)	(3.65)	(4.45)
SIZE	-1.230***	-0.799**	-1.292***	-1.698***	-1.193***	-1.111***	-1.019***
	(-3.69)	(-2.22)	(-3.26)	(-4.00)	(-3.89)	(-3.63)	(-3.32)
FUNDING	-0.0218	0.00464	-0.0172	-0.0337	-0.00373	-0.0264	-0.0338
	(-0.64)	(0.14)	(-0.51)	(-0.99)	(-0.11)	(-0.74)	(-1.05)
LESSCOMP	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
POLRATE	-0.844	-1.419	-0.902	-0.854	-0.924	-0.810	-0.873
	(-0.47)	(-0.72)	(-0.50)	(-0.44)	(-0.51)	(-0.44)	(-0.49)
GDPGR	0.0478	0.0907	0.0536	0.132	0.0373	0.0500	0.0487
	(0.12)	(0.21)	(0.13)	(0.27)	(0.09)	(0.12)	(0.11)
yr2009	-1.462	-2.346	-1.597	-1.304	-1.658	-1.460	-1.561
	(-0.36)	(-0.53)	(-0.39)	(-0.28)	(-0.40)	(-0.35)	(-0.38)
yr2010	-1.592	-2.874	-1.804	-1.833	-1.764	-1.633	-1.717
	(-0.45)	(-0.74)	(-0.51)	(-0.49)	(-0.50)	(-0.46)	(-0.49)
qtr2	0.557	0.347	0.492	0.706	0.524	0.547	0.576
	(0.59)	(0.34)	(0.54)	(0.76)	(0.56)	(0.59)	(0.63)
qtr3	0.116	0.0617	0.147	0.263	0.133	0.162	0.173
	(0.10)	(0.05)	(0.13)	(0.22)	(0.11)	(0.14)	(0.15)
qtr4	-0.0414	-0.290	-0.0663	0.168	-0.0964	-0.0350	-0.0444
	(-0.03)	(-0.20)	(-0.05)	(0.12)	(-0.07)	(-0.03)	(-0.03)
Credit_Scoring	1.566***						
	(2.90)						
Fin_Statement		2.530***					
		(3.63)					
Relationship			0.00126				
			(0.00)				
Factoring				4.166***			
				(5.17)			
Asset_based					-0.323		
					(-0.64)		
Leasing						0.321	
						(0.53)	
Fixed_Asset							1.670**
							(2.56)
Constant	36.22**	26.30	38.65**	48.58***	35.57**	34.17**	31.28**
	(2.34)	(1.62)	(2.29)	(2.71)	(2.38)	(2.23)	(2.06)
Pseudo R-squared	0.212	0.248	0.206	0.285	0.228	0.197	0.225
OBS	205	205	205	205	205	205	205
Log-likelihood	-223.4	-213.2	-225.2	-202.6	-219.0	-227.6	-219.8
Chi-square	123.5	116.5	104.3	113.5	126.3	114.9	117.8
Base Outcome	Low	Low	Low	Low	Low	Low	Low

Table 9B. The link between the extent of bank medium-sized firm financing and use of different lending technologies in the Philippines for a subsample of thrift banks, over the period 3Q:2008-4Q:2010. Y measures the extent of bank exposure to small enterprises using their compliance ratios to the *Magna Carta* for micro and small enterprises. It is equal to 1 if the bank's compliance ratio is less than the legal limit of 8% (UnderComply); 2 if the bank's compliance ratio is greater than or equal to the the legal limit of 8% but less than 1.1*legal limit or 8.8% (JustComply); 3 if the bank's compliance ratio is greater than or equal to the 1.1*legal limit or 8.8% but less than 2*legal limit or 16% (OverComply); and 4 if the bank's compliance ratio is greater than or equal to 2*legal limit or 16%. *Credit_Scoring* is a dummy variable that is equal to 1 if a bank uses credit scoring as a lending technology to finance SMEs and zero, otherwise. *Fin_Statement* is a dummy variable that is equal to 1 if a bank uses financial statement lending as a lending technology to finance SMEs and zero, otherwise. *Relationship* is a dummy variable that is equal to 1 if a bank uses relationship lending as a lending technology to finance SMEs and zero, otherwise. *Factoring* is a dummy variable that is equal to 1 if a bank uses factoring as a lending technology to finance SMEs and zero, otherwise. *Asset_based* is a dummy variable that is equal to 1 if a bank uses asset-based lending as a lending technology to finance SMEs and zero, otherwise. *Leasing* is a dummy variable that is equal to 1 if a bank uses leasing as a lending technology to finance SMEs and zero, otherwise. *Fixed_Asset* is a dummy variable that is equal to 1 if a bank uses fixed-asset lending as a lending technology to finance SMEs and zero, otherwise. The control variables used are the following: FOREIGN – a dummy variable that is equal to 1 if a bank is foreign-owned and zero, otherwise; CONGLOMERATE – a dummy variable that is equal to 1 if a bank is part of a domestic financial conglomerate and zero, otherwise; SIZE – natural logarithm of bank total assets; LESSCOMP – a dummy variable that is equal to 1 if a bank is headquartered outside the metropolitan and zero, otherwise; POLRATE – central bank's policy rate; GDPGR – growth rate of the gross domestic product; yr2009 and yr2010 are year dummies; qtr2, qtr3 and qtr4 are quarter dummies.

	MULTINOMIAL LOGIT REGRESSION: Subsample of Thrift Banks						
	Y (exposure to medium enterprises: 1=low; 2=medium; 3=high; 4=very high)						
2							
FOREIGN	-16.00***	-15.40***	-15.86***	-15.76***	-14.78***	-15.04***	-15.40***
	(-32.01)	(-34.28)	(-30.15)	(-33.25)	(-32.57)	(-31.91)	(-28.41)
CONGLOMERATE	0.542	0.419	0.422	0.453	0.167	0.427	0.927
	(0.88)	(0.69)	(0.67)	(0.76)	(0.27)	(0.70)	(1.29)
SIZE	0.176	0.105	0.0442	0.145	0.225	0.105	-0.0107
	(1.08)	(0.73)	(0.30)	(0.97)	(1.37)	(0.75)	(-0.07)
FUNDING	-0.00446	-0.000559	0.00132	-0.00883	-0.00395	-0.00333	0.000647
	(-0.32)	(-0.04)	(0.10)	(-0.59)	(-0.29)	(-0.23)	(0.05)
LESSCOMP	0.742	0.451	0.380	0.730	0.759	0.615	0.507
	(1.50)	(0.89)	(0.71)	(1.40)	(1.48)	(1.24)	(1.04)
POLRATE	1.298	1.286	1.288	1.268	1.270	1.267	1.273
	(1.04)	(1.05)	(1.04)	(1.03)	(1.03)	(1.03)	(1.02)
GDPGR	-0.158	-0.150	-0.158	-0.158	-0.147	-0.156	-0.153
	(-0.44)	(-0.42)	(-0.44)	(-0.44)	(-0.41)	(-0.43)	(-0.42)
yr2009	0.923	0.957	0.934	0.902	0.952	0.899	0.936
	(0.29)	(0.31)	(0.30)	(0.29)	(0.30)	(0.29)	(0.30)
yr2010	3.245	3.201	3.232	3.200	3.162	3.163	3.195
	(1.34)	(1.35)	(1.35)	(1.35)	(1.33)	(1.33)	(1.34)
qtr2	0.266	0.256	0.254	0.262	0.260	0.258	0.262
	(0.45)	(0.45)	(0.44)	(0.46)	(0.46)	(0.45)	(0.45)
qtr3	0.178	0.189	0.181	0.177	0.176	0.169	0.173
	(0.24)	(0.25)	(0.24)	(0.24)	(0.24)	(0.23)	(0.23)
qtr4	-0.234	-0.235	-0.245	-0.244	-0.250	-0.247	-0.244
	(-0.23)	(-0.23)	(-0.24)	(-0.24)	(-0.25)	(-0.24)	(-0.24)
Credit_Scoring	-0.833**						
	(-2.10)						
Fin_Statement		-0.532					
		(-1.08)					
Relationship			-0.421				
			(-1.09)				
Factoring				-1.391			
				(-1.16)			
Asset_based					0.785		
					(1.64)		
Leasing						1.237	
						(1.02)	
Fixed_Asset							-0.589
							(-1.51)
Constant	-10.81	-9.251	-8.235	-9.934	-12.60	-9.479	-7.269
	(-1.13)	(-0.99)	(-0.87)	(-1.06)	(-1.31)	(-1.02)	(-0.77)
3							
FOREIGN	-14.45***	-14.17***	-14.48***	-14.16***	-13.88***	-13.80***	-13.78***
	(-23.97)	(-24.62)	(-24.05)	(-24.15)	(-23.54)	(-23.79)	(-21.86)
CONGLOMERATE	-0.841	-0.830	-1.455*	-0.867	-0.979	-0.841	-0.967
	(-1.32)	(-1.31)	(-1.72)	(-1.35)	(-1.47)	(-1.32)	(-1.46)
SIZE	0.686***	0.675***	0.585***	0.689***	0.641***	0.642***	0.710***
	(4.37)	(4.40)	(3.53)	(4.49)	(3.96)	(4.23)	(4.43)
FUNDING	-0.0172	-0.0153	-0.00523	-0.0126	-0.0125	-0.0154	-0.0178
	(-1.14)	(-1.05)	(-0.32)	(-0.82)	(-0.87)	(-1.02)	(-1.23)
LESSCOMP	2.402***	2.281***	1.755**	2.423***	2.184***	2.258***	2.394***
	(3.69)	(3.50)	(2.56)	(3.82)	(3.45)	(3.49)	(3.60)
POLRATE	0.611	0.626	0.651	0.588	0.605	0.625	0.605
	(0.47)	(0.49)	(0.50)	(0.44)	(0.47)	(0.48)	(0.47)
GDPGR	-0.0159	-0.00941	-0.0291	-0.00994	-0.0193	-0.0114	-0.0147

	(-0.05)	(-0.03)	(-0.09)	(-0.03)	(-0.06)	(-0.04)	(-0.05)
yr2009	0.426	0.478	0.436	0.421	0.400	0.452	0.428
	(0.14)	(0.16)	(0.14)	(0.14)	(0.13)	(0.15)	(0.14)
yr2010	0.582	0.595	0.699	0.493	0.570	0.570	0.573
	(0.23)	(0.24)	(0.27)	(0.19)	(0.23)	(0.22)	(0.23)
qtr2	0.0273	0.0287	0.0129	0.0129	0.0222	0.0327	0.0267
	(0.04)	(0.05)	(0.02)	(0.02)	(0.04)	(0.05)	(0.04)
qtr3	-0.105	-0.0915	-0.0968	-0.121	-0.110	-0.103	-0.107
	(-0.13)	(-0.12)	(-0.12)	(-0.15)	(-0.14)	(-0.13)	(-0.14)
qtr4	-0.0438	-0.0357	-0.0768	-0.0470	-0.0582	-0.0396	-0.0486
	(-0.05)	(-0.04)	(-0.08)	(-0.05)	(-0.06)	(-0.04)	(-0.05)
Credit_Scoring	-0.0364						
	(-0.10)						
Fin_Statement		-0.380					
		(-0.80)					
Relationship			-1.044**				
			(-2.48)				
Factoring				1.595**			
				(2.39)			
Asset_based					-0.0984		
					(-0.26)		
Leasing						1.646	
						(1.39)	
Fixed_Asset							0.119
							(0.27)
Constant	-17.91**	-17.57*	-15.75*	-18.37*	-17.00*	-17.18*	-18.36**
	(-1.99)	(-1.95)	(-1.73)	(-1.96)	(-1.89)	(-1.89)	(-1.98)
4							
FOREIGN	-0.0799	-0.123	-0.0435	0.142	0.242	0.0188	0.245
	(-0.12)	(-0.19)	(-0.06)	(0.21)	(0.39)	(0.03)	(0.36)
CONGLOMERATE	-1.921***	-1.871***	-1.742***	-2.053***	-2.261***	-2.154***	-2.244***
	(-4.18)	(-4.16)	(-4.02)	(-4.38)	(-5.01)	(-4.46)	(-4.31)
SIZE	0.634***	0.632***	0.673***	0.676***	0.774***	0.613***	0.723***
	(5.00)	(5.32)	(5.27)	(5.13)	(5.72)	(5.09)	(5.34)
FUNDING	-0.0606***	-0.0590***	-0.0645***	-0.0583***	-0.0639***	-0.0571***	-0.0642***
	(-5.51)	(-5.81)	(-5.65)	(-5.28)	(-5.90)	(-5.25)	(-5.98)
LESSCOMP	0.575	0.501	0.799*	0.731	0.721	0.442	0.741
	(1.28)	(1.18)	(1.76)	(1.58)	(1.61)	(1.01)	(1.64)
POLRATE	0.576	0.581	0.552	0.561	0.575	0.576	0.558
	(0.52)	(0.52)	(0.49)	(0.50)	(0.51)	(0.51)	(0.50)
GDPGR	0.136	0.138	0.139	0.138	0.145	0.141	0.138
	(0.51)	(0.52)	(0.52)	(0.52)	(0.54)	(0.52)	(0.52)
yr2009	0.994	1.014	0.976	0.997	1.033	1.006	0.989
	(0.38)	(0.39)	(0.37)	(0.38)	(0.39)	(0.38)	(0.38)
yr2010	0.160	0.165	0.109	0.118	0.131	0.129	0.143
	(0.07)	(0.08)	(0.05)	(0.05)	(0.06)	(0.06)	(0.07)
qtr2	0.146	0.146	0.150	0.134	0.146	0.144	0.140
	(0.27)	(0.27)	(0.28)	(0.25)	(0.27)	(0.26)	(0.26)
qtr3	0.382	0.388	0.383	0.374	0.384	0.385	0.389
	(0.54)	(0.55)	(0.54)	(0.53)	(0.55)	(0.54)	(0.55)
qtr4	0.387	0.388	0.390	0.383	0.387	0.388	0.400
	(0.48)	(0.48)	(0.48)	(0.46)	(0.47)	(0.47)	(0.49)
Credit_Scoring	0.0904						
	(0.28)						
Fin_Statement		-0.203					
		(-0.37)					
Relationship			0.528				
			(1.42)				
Factoring				1.199**			
				(2.28)			
Asset_based					0.761**		
					(2.16)		
Leasing						2.396**	
						(2.32)	
Fixed_Asset							0.803**
							(2.27)
Constant	-13.02	-12.88	-13.91*	-14.11*	-16.30**	-12.78	-14.81*
	(-1.60)	(-1.58)	(-1.70)	(-1.71)	(-1.98)	(-1.55)	(-1.81)
Pseudo R-squared	0.145	0.138	0.155	0.157	0.145	0.146	0.149
OBS	341	341	341	341	341	341	341
Log-likelihood	-392.2	-395.2	-387.6	-386.5	-391.9	-391.6	-390.3
Chi-square	6625.1	6230.3	6837.2	7319.6	5818.5	7149.8	6464.9
Base Outcome	Low	Low	Low	Low	Low	Low	Low

CHAPTER 3 Is Bank Income Diversification Beneficial? Evidence from an Emerging Economy[45]

[45] This chapter refers to the working paper titled "Is Bank Income Diversification Beneficial? Evidence from an Emerging Economy", co-authored with Céline Meslier and Amine Tarazi.

1. Introduction

Over the last three decades, the financial industry in developed as well as in developing countries has experienced major changes. Deregulation and increased competition has led banks to expand their activities and to develop new lines of businesses beside their traditional interest activities. Banks have diversified their income sources by performing new activities, such as underwriting and trading securities, brokerage and investment banking and other activities, which generate non-interest income. The implications of such changes on bank performance, i.e. profitability and risk, have been broadly addressed in the literature but no consensus has been reached at this stage. Most studies find that non-interest activities are often associated with profitability gains but also higher risk because of their unstable nature. By investigating the US banking industry, Stiroh (2004a and b), Stiroh (2006) and Stiroh and Rumble (2006) find that a higher share of non-interest income positively affects the volatility of bank returns inducing higher risk. Consistent with US studies, Lepetit *et al*. (2008a) show that banks that are more reliant on non-interest activities exhibit higher default risk than banks which mainly supply loans. This positive link mainly holds for small banks and is essentially driven by commission and fee activities. Specifically, a higher share of trading activities is not associated in their study with higher risk and for small banks it implies, in some cases, lower asset and default risks. Mercieca *et al.* (2007) find that small European banks do not benefit from diversification. Higher non-interest income shares are associated with lower profitability and increased risk implying lower risk-adjusted profits. Furthermore, they find trading activities to be both risky and unprofitable. Conversely, analyzing Italian banks, Chiorazzo *et al.* (2008) find that income diversification improves the risk/return trade-off. Such diversification gains are stronger for large banks.

Whereas the case of developed countries (US and Europe) is well documented in the empirical literature, very few papers focus on emerging countries. In a cross-country study conducted for a sample of listed banks from 11 emerging countries, Sanya and Wolfe (2011) find that diversification between interest and non-interest activities as well as within both types of activities increases profitability and reduces bank insolvency risk. Berger *et al.* (2010) examine the case of the Chinese banking industry and find evidence of a diversification discount[46], which is stronger for domestic banks than for foreign banks, suggesting that different ownership structures induce different effects of diversification on

[46]Their diversification discount indicators are profit premiums and cost discounts. They are measured as the difference between the predicted profits (respectively the predicted cost) between the observed diversified bank and a hypothetical quasi-focused bank.

bank valuation. Focusing on the Mexican banking system, Maudos and Solis (2009) highlight the existence of a negative relationship between banks' interest margin and non-interest income. Their findings are consistent with the results obtained for European banks by Lepetit *et al.* (2008b) indicating possible cross-subsidization of non-interest activities with traditional intermediation activities where banks use loans as a loss leader.

The objective of this paper is to contribute to the scarce literature dedicated to the impact of diversification on bank profitability and risk in the case of emerging and developing countries. As financial markets are less mature in such countries than in developed countries, banks play a crucial role in the financing of the private sector and specifically for small and medium enterprises (SMEs). As discussed in the Financial Access 2010 Report provided by the IFC, access to finance by SMEs is one of the main policy issues for developing countries and specific regulations encouraging banks to lend to priority sectors, including SMEs, are implemented in some emerging countries like Afghanistan, India, the Philippines and Pakistan. By imposing constraints on bank lending behavior, such regulations may influence how banks may efficiently allocate scarce financial resources. Another important issue for emerging and developing countries is the role of corporate ownership and governance in affecting bank behavior. As reported by De Nicolo and Loukoianova (2007), two main trends in bank ownership structure in emerging countries can be highlighted over the 1993-2004 period. While foreign ownership substantially increased, state-ownership remained stable and still tends to increase in some group of countries. Several papers have investigated the effect of a higher foreign presence in local banking markets. Foreign bank entry is generally found to positively impact competition and, in some cases, improve the efficiency of the local banking system (Claessens *et al*., (2001); Lensink and Hermes (2003)). However, studies regarding credit availability provide mixed results. While for some authors, foreign bank entry reduces credit constraints (Clarke *et al.* (2006)), others such as Detragiache *et al.* (2008) and Gormley (2010) find that foreign bank entry does not necessarily improve access to finance for local firms. Meanwhile, in terms of government ownership of banks, an abundant theoretical literature stresses its negative effect in terms of efficiency and risk (Shleifer (1998); Shleifer and Vishny (1998)).

In order to assess the bank diversification/profitability and risk nexus in emerging countries, we focus on the case of the Philippines. Focusing on a single country enables us to analyze the effects of diversification within a uniform environment and extend the paper of Sanya and Wolfe (2011) by going deeper into the investigation, using a detailed breakdown of non-interest income of Philippine banks. Specifically, our data allow us to distinguish

traditional from non-traditional sources of non-interest income, which may have different effects on bank performance. Size as well as ownership effects are also taken into account as the Philippine banking system has experienced foreign bank entry after the financial liberalization in the early 90s and is also characterized by the presence of some state-owned banks. We also take into consideration a specific regulation on Philippine banks, which is also implemented in several emerging economies. Philippine banks are required to set aside at least 6% and 2% of their loan portfolio to small and medium enterprises, respectively during our study period. Other ways to comply, however, are present, which include the purchase of government notes, securities and negotiable instruments offered by the Small Business Guarantee and Finance Corporation (SBGFC)[47]. These may be the best alternatives, especially for banks that have underdeveloped lending technologies in financing small businesses. To our knowledge, this is the first study of bank diversification in an emerging economy that looks into this regulatory aspect[48]. This question is of particular interest for emerging countries where small business lending is a crucial issue. Our study does not aim to provide a direct assessment of the effect of such SME financing regulation on bank diversification behavior as data on individual bank loan portfolio disaggregated according to the size of borrowing firms are not available. Nevertheless, it provides insights on the impact of mandated credit programs to SMEs on the benefits or drawbacks of an increase in bank income diversification in terms of profitability and risk.

We conduct our empirical investigation over the 1999-2005 period using a sample of 39 universal and commercial banks in the Philippines with a very detailed breakdown of annual data on income structure provided by the Central Bank of the Philippines. This allows us to deeply analyze bank diversification behavior by examining the effect on profitability and risk not only of the main components of non-interest income (fee-based, trading and other non-interest income) but also by considering a detailed categorization of such components. Estimations are conducted to control for size and bank ownership profiles that may cause divergence in the diversification-profit/risk relation. We also examine the effect of diversification for a specific category of banks in the Philippines, universal banks. In addition to the powers of a commercial bank, universal banks in the Philippines have investment house

[47] Republic Act No. 6977, Section 13. Mandatory Allocation of Credit Resources of Small and Medium Enterprises.

[48] Wolfe and Sanya (2011) find that a higher banking freedom and better investor protection are associated with higher profitability. However, they do not explicitly explore the effect of such regulations on the risk implications of increased bank diversification.

functions, which include engagement in the underwriting of securities of other corporations[49]. In this regard, we examine whether there are pronounced differences in the effects of diversification for such banks. In addition, we look closely on how income generated from activities that are related to the additional function of universal banks affect their risk and profitability.

Our results indicate that income diversification and a shift towards non-interest income has a positive influence on the profitability and risk-adjusted profitability of Philippine banks. The impact is stronger for foreign banks and smaller banks. The gains from diversification are derived mainly from involvement in non-traditional, non-interest generating activities of banks, such as trading securities. We explain the contrasting results with the U.S. banking studies to be caused by the difference in the income structure. 90% of fee-based income in the Philippines is considered traditional, and fee-based income growth is strongly correlated with net interest income. On the other hand, trading income comprises almost half of non-interest income, compared with less than 10% in US banks. Standard portfolio theory predicts that, a shift towards trading activities, being the least correlated with traditional intermediation activities, derive larger benefits from diversification. In contrast with what is observed in the U.S., we do not find evidence that trading income's volatility cancels out its positive impact on profitability. Overall, our main result is consistent with Sanya and Wolfe (2011), who find revenue diversification to be beneficial for emerging economies.

Our findings also show that banks that are lending less to SMEs are the beneficiaries of diversification gains, implying possible high switching costs from lending to non-lending activities for banks that have the expertise in lending to small and medium businesses. Banks, which are more likely to alternatively comply with the mandated credit program (i.e. through the purchase of SBGCF liability instruments), are in a better position to diversify from interest income activities to non-interest activities rather than to diversify their loan portfolio by catering to SMEs. For these banks, reallocating resources away from profitable non-interest income generating activities to less familiar SME market may be very costly, which may discourage compliance by directly lending to SMEs. Finally, we also investigate a subsample of universal banks and find that higher involvement in investment house activities is associated with higher risk.

[49]Republic Act 8791; Presidential Decree No. 129.

The remainder of the paper is organized as follows. Section 2 discusses the data and variables used in our study and presents recent trends in the income structure of the Philippine banking industry. Section 3 describes the hypotheses tested, the method and the econometric specifications. Section 4 provides the results of our estimations while section 5 goes deeper by investigating further issues. Section 6 presents the robustness checks and Section 7 summarizes the findings and concludes the paper.

2. Data and Variables, Descriptive Statistics and Trends in the Philippine Banking Industry

The nature and structure of banks in emerging economies has been changing in the past decades because of several factors. Hawkins and Mihaljek (2001) cites four global forces of change, responsible for shaping the emerging economies' banking industries – technological innovation, deregulation of financial services, changes in corporate behavior and the crises that struck Asia and Latin America in the 90s.

The introduction of universal banking in 1980 and the financial liberalization that opened up the economy to international competition have paved way to the changes in the way Philippine banks do business. Growing competition over the period in the Philippine banking market has provided incentives for commercial banks to diversify their activities and to increase the share of non-interest activities (Gochoco-Bautista (1999)). Banks have been providing a broader array of financial services, which include not only the extension of loans but also underwriting and distributing securities, sale of investments, online banking and commission and fee activities[50]. In the Philippines, banks are classified in six main categories[51]: universal banks, commercial banks, thrift and savings banks, rural banks, cooperative banks and Islamic banks. In 2005, universal and commercial banks alone comprise 89.29%, 89.47% and 90%[52] of the total assets, deposit liabilities and loans and investments outstanding, respectively of the entire Philippine banking system. Universal banks have the authority to exercise, in addition to the functions authorized for a commercial bank[53], the powers of an investment house[54]. These figures show that universal and

[50] Over the past twenty years, noninterest income has grown over 700% (200% more than the growth rate in interest income) Source: Bangko Sentral ng Pilipinas.
[51] The General Banking Law of 2000 (Republic Act No. 8791).
[52] Author's computations from the Banking Statistics published in the Bangko Sentral ng Pilipinas website.
[53] Article II- Operations of Commercial Banks (Republic Act No.8791). A commercial bank shall have, in addition to the general powers incident to corporations, all such powers as may be necessary to carry on the business of commercial banking, such as accepting drafts and issuing letters of credit; discounting and negotiating pormissory notes, drafts, bills of exchange, and other evidence of debt; accepting or creating demand deposits; receiving other types of deposits and deposit substitutes; buying and selling foreing exchange and gold

commercial banks are the primary lenders to both households and institutions in the country. Their behavior generally shapes that of the banking system and impacts the economy.

2.1.Data Collection and Sample Selection

The sample used in this study includes 39 universal and commercial banks in the Philippines from 1999 to 2005. The amendment[55] of the manual of accounts and the Central Bank's reportorial requirements for banks implemented in 2006 does not allow us to have the same income categorizations after 2006. We construct our sample using two criteria: (1) banks must have at least data for three years and, (2) the gross income components must be non-negative. The first criterion is set in order to confine the panel regressions on banks with sufficient number of observations. Meanwhile, the second criterion ensures that the diversification measures, particularly the indices and income shares are bounded from 0 to 1. We also apply several measures to check the presence of outliers and influential observations[56]. We also exclude banks that merged and/or were acquired during the period. We hence end up with an unbalanced panel consisting of 39 banks and 218 observations.

Our sample of banks represents 86.81%[57] of the Philippine banking system and 96.3% of the universal and commercial banking system in terms of total assets[58].

The whole sample consists of 23 domestic and 16 foreign banks[59], and 16 listed and 23 non-listed entities. In terms of asset size, we identify 8 large banks (Average Asset > 140

or silver bullion; acquiring marketable bonds and other debt securities; and extending credit, subject to such rules as the Monetary Board may promulgate.

[54] From the Omnibus Rules and Regulations for Investment Houses and Universal banks registered as underwriters of securities, an investment house is defined as any enterprise which primarily engages, whether regularly or on an isolated basis, in underwriting securities of another person or enterprise, including securities of the Government or its instrumentalities.

[55] Circular No. 512. Amendment of the Manual of Accounts and BSP Reportorial Requirements for Banks. The Financial Reporting Package (FRP) is designed to align the Manual of Accounts and the BSP Reportorial requirements with the provisions of the Philippine Financial Reporting Standards (PFRS) and Philippine Accounting Standards (PAS). The new BSP reportorial requirements shall become effective starting with the 31 December 2006 month-end/quarter-end reports.

[56] Aside from graphically looking at box plots and scatter plots to identify outliers, we confirm these outliers by computing the DFBETA and leverage measures after the estimations. The DFBETA measures the distance that a regression coefficient would shift when an observation is included or excluded from the regression, scaled by the estimated standard error of the coefficient (Baum, 2006).

[57] Mean over the period of the study.

[58] In 1999, there are a total of 46 universal and commercial banks, and in 2005, 41 universal and commercial banks.

[59] Banks are classified as foreign if: 1) they are subsidiaries of foreign banks, or 2) branches of foreign banks. This classification is mainly drawn from the Monetary Board's authorized mode of entry (Sec. 2, Republic Act NO. 7721) of foreign banks to operate in the Philippine banking system. Sec. 2. Modes of Entry – The Monetary Board may authorize foreign banks to operate in the Philippine banking system through any of the following modes of entry: (i) by acquiring, purchasing or owning up to sixty percent (60%) of the voting stock of an existing bank; (ii) by investing in up to sixty percent (60%) of the voting stock of a new banking subsidiary incorporated under the laws of the Philippines; or (iii) by establishing branches with full banking authority: provided, that a foreign bank may avail itself of only one(1) domestic bank of new banking subsidiary. (Republic

billion pesos), 13 medium-sized (30 billion pesos < Average Asset < 120 billion pesos) and 18 small ones (Average Asset < 30 billion pesos). Bank classifications in terms of size are defined from an examination of the distribution of banks both in terms of their average assets over the period of the study and bank asset distribution by their yearly amounts. We note that most of the smaller banks in the sample are foreign-owned, branches or subsidiaries of foreign banks and that the largest banks are dominantly domestic banks. Among the 8 large banks, 2 are government banks. Excluding the state banks, our sample of domestic banks is composed of 12 universal banks and 9 commercial banks. The sample description is summarized in Table 1.

Table 1. Sample description, universal and commercial banks in the Philippines, 1999-2005

Category	Description	Total
SIZE	(in billion pesos)	39
Large	Average Asset >140	8
Large excluding state banks		6
Medium	30<Average Asset <140	13
Small	Average Asset<30	18
LISTED VERSUS UNLISTED		
Listed		16
Unlisted		23
DOMESTIC VERSUS FOREIGN		
Domestic		23
Foreign		18
UNIVERSAL VERSUS COMMERCIAL		
Universal		14
Universal excluding state banks		12
Commercial		9

Balance sheet and net income information are obtained from the Data Center of the Bangko Sentral ng Pilipinas and its website on an annual basis[60]. Our dataset provides us a detailed breakdown of operating income and its components. This enables us to carry out an in depth study on non-interest income, its main components – fee-based, trading and other non-interest income, and their respective disaggregation. Fee-based and trading activities include respectively bank commissions, service charges/fees and other commissions and income from trading government securities, private equity/debt; financial futures, forwards and swaps; profit from the sale of investments; and profit from foreign exchange.

For the listed banks of our sample, daily market data for stock prices are obtained from *Datastream International*.

Act NO. 7721, An Act Liberalizing the Entry and Scope of Operations of Foreign Banks in the Philippines and for other purposes).

[60] www.bsp.gov.ph

2.2. Main trends in portfolio structure and income structure in the Philippine banking system

Tables 2A and 2B highlight significant differences of income structure according to bank size (large, medium and small), bank type (universal and commercial banks) and ownership type (foreign and domestic).

Over the 1999-2005 sample period, the share of non-interest income in total operating income is, on average, equal to 35.92%. Most of the non-interest income is drawn from trading activities (45.30%) compared to fee-based activities (38%). Trading in government securities and foreign exchange profit are the largest source of trading income (30.60% and 51.50%), while service charges dominate the fee-based income sources (61.40%). We can observe different profiles of diversification and non-interest income structure according to the size and ownership structure of the bank. Larger banks present a higher level of non-interest income in total operating income (38.16 % for large banks and 39% for medium-sized banks) than small banks (32.22%). However, the difference between large and medium-sized banks becomes more pronounced when we exclude state banks. On average, the larger is the bank, the higher is its non-interest income share. On the other hand, the degree of involvement in non-interest activities is similar in domestic banks and foreign banks which operate in the Philippines. Trading income represents the main source of non-interest income for large banks (41.30%), medium-sized banks (47.20%) and small banks (46%). Fee-based activities have a slightly higher share compared to trading activities when state banks are excluded from the sample of large banks. Within trading activities, foreign exchange profit and trading of government securities are the two main sources of income for all types of banks. However, whereas foreign exchange profit represents the main component for large and small banks (38.50% and 67.60%), trading of government securities is the main source of trading activities for medium-sized banks (43.10%). For foreign banks, fee-based activities represent the main source of non-interest income (47.70%), followed by trading activities (40.80%). For these banks, foreign exchange profit is the main source of revenue in trading activities (74.70%). On the contrary, domestic banks are more involved in trading activities (47.80%), of which government securities trading is the largest component (41.90%). Marked differences are also observed between universal and commercial banks. Universal banks have higher shares of non-interest income compared to commercial banks (39.38% and 34.62%). In addition, commercial banks have higher shares on both fee-based and trading income but universal banks present a higher involvement in other non-interest activities.

Philippine banks exhibit higher levels of involvement in non-interest activities than those reported in Sanya and Wolfe (2011) for their set of emerging countries and similar

levels of involvement in non-interest income activities in direct comparison with those reported in US and European studies. We observe differences, however, in the structure of the non-interest income. We stress the relatively high involvement in trading activities for Philippine banks. In 2000, Stiroh (2004b) reports that in the case of US banks, an average bank's fees and other income makes up 27% of net operating income, while only 3.5% come from trading income. In Europe, Lepetit *et al.* (2008) show that over the 1996-2002 period, average commission income comprises 23.16% of net operating income, and 9.7% from trading income. Indeed the difference in the income structure of banks may contribute to how a shift towards non-interest income may impact bank profits and risk-adjusted profits.

Table 2A: Descriptive statistics for Philippine universal and commercial banks over the 1999-2005 period

	Whole sample			Large Banks			Large Banks excluding government banks			Medium-sized Banks			Small Banks		
	1999	2005	1999-2005	1999	2005	1999-2005	1999	2005	1999-2005	1999	2005	1999-2005	1999	2005	1999-2005
Assets	71.7	102	87.9	208	272	253	211	277	266	53.4	101	69.6	12.1	18.3	13.9
Loans	50.4	48.98	49.02	52.53	46.62	49.59	52.44	46.22	49.81	55.22	39.7	46.22	45.54	56.79	50.96
Equity	13.1	11.11	12.94	11.68	9.34	11.09	12.3	9.31	11.49	12.72	10.24	11.81	14.15	12.61	14.86
Deposits	57.88	56.9	58.88	68.98	64.79	64.7	68.47	70.19	70.03	69.04	67.72	70.5	43.32	45.23	46.39
NII	**34.16**	**32.49**	**35.92**	**35.65**	**31.45**	**38.16**	**35.54**	**35.35**	**43.53**	**34.64**	**36.15**	**39**	**32.99**	**30.41**	**32.22**
FEE	**13.16**	**13.56**	**13.37**	**12.75**	**13.9**	**14.14**	**14.39**	**17.85**	**17.48**	**14.94**	**11.87**	**13.6**	**12.01**	**14.59**	**12.78**
BC	4.07	3.7	4.01	3.69	3	3.93	4.19	4.08	5.06	4.29	2.37	2.68	4.12	5.01	5.14
SC	7.68	7.93	8.07	7.81	9.74	8.96	8.77	12.26	10.88	9.9	9.41	10.64	5.91	5.97	5.53
OC	1.4	1.93	1.29	1.25	1.17	1.25	1.44	1.51	1.53	0.76	0.08	0.28	1.98	3.63	2.12
TRAD	**16.48**	**14.29**	**16.82**	**15.77**	**11.51**	**15.45**	**13.18**	**10.95**	**16.24**	**14.65**	**18.09**	**19.47**	**18.27**	**12.97**	**15.41**
GS	5.45	6.79	6.8	3.21	3.91	6.93	3.47	5.89	8.76	4.87	13.1	9.78	6.89	4.31	4.58
PD	2.43	0.6	2.14	2.87	1.85	1.82	0.94	1.55	1.67	4.7	0.06	2.16	0.66	0.39	2.27
FF	0.04	0.26	0.39	0	0.52	0.6	0	0.08	0.57	0.03	0.47	0.59	0.07	0.03	0.16
PI	0.86	1.44	1.43	2.84	3.27	2.64	0.35	2.27	1.04	0.79	2.01	2.43	0	0.11	0.2
FP	8.38	5.78	6.65	6.67	5.04	6.39	7.52	4.7	7.16	6.2	3.27	5.02	10.64	7.6	8.03
Other	**4.52**	**4.64**	**5.85**	**7.13**	**6.03**	**8.81**	**7.96**	**6.55**	**10.16**	**5.04**	**6.19**	**6.05**	**2.71**	**2.84**	**4.09**
ROA	0.62	1.54	0.94	0.33	1.04	0.76	0.33	0.97	0.68	0.75	1.02	0.92	0.67	2.14	1.04
ROE	8.95	14.33	8.36	8.94	14.38	9.06	8.44	14	8.59	8.02	13.28	9.11	9.72	14.98	7.32

Variable definitions (All variables are expressed in percentage except for total assets, which is expressed in billion pesos) Loans: ratio of net loans to total assets; Equity: ratio of equity to total assets; Deposits: ratio of total deposits to total assets; NII: ratio of non-interest income to total net operating income; FEE: ratio of fee-based income to total net operating income; BC: ratio of bank commissions and fees to total net operating income; SC: ratio of service charges to total net operating income; OC: ratio of other commissions and fees to total net operating income; TRAD: ratio of trading income to total net operating income; GS: ratio of income from trading government securities to total net operating income; PD: ratio of income from trading private debt/equity to total net operating income; FF: ratio of income from trading financial futures and other derivatives to total net operating income; PI: ratio of profit from sale of investments to total net operating income; FP: ratio of foreign exchange profit to total net operating income; Other: ratio of other non-interest income to total net operating income; ROA: return on average asset; ROE: return on average equity.

Table 2A (continued). Descriptive statistics for Philippine universal and commercial banks over the 1999-2005 period

	Domestic Banks			Domestic Banks (excluding government banks)			Foreign Banks			Universal Banks			Commercial Banks		
	1999	2005	1999-2005	1999	2005	1999-2005	1999	2005	1999-2005	1999	2005	All	1999	2005	1999-2005
Assets	104	141	119	98	127	110	29.8	41.1	32.8	127	190	169	10.7	37.2	26.9
Loans	53.81	43.69	47.95	53.87	43.22	47.86	45.93	57.36	50.93	55.61	44.42	48.67	48.63	41.52	46.73
Equity	17.16	12.42	15.63	17.74	12.77	16.17	7.78	9.03	8.13	14.33	11.28	13.41	27.95	14.91	20.07
Deposits	68.6	66.24	65.46	68.38	68	67.11	43.87	42.12	47.08	69.96	71.25	71.39	63.63	63.36	61.07
NII	**33.08**	**33.05**	**36.02**	**32.87**	**34.38**	**37.41**	**35.57**	**31.62**	**35.73**	**31.95**	**36.86**	**39.38**	**35.65**	**30.84**	**34.62**
Fee-based	**11.41**	**11.59**	**11.59**	**11.94**	**12.48**	**12.34**	**15.46**	**16.67**	**16.57**	**10.8**	**12.89**	**12.66**	**15.37**	**11.9**	**11.89**
BC	2.4	2.2	2.52	2.51	2.43	2.73	6.26	6.1	6.69	2.95	3.09	3.4	1.19	1.48	1.77
SC	7.86	7.8	8.17	8.22	8.31	8.67	7.45	8.14	7.89	6.86	9.05	8.49	12.31	7.26	8.93
OC	1.15	1.59	0.89	1.21	1.74	0.94	1.73	2.46	1.99	0.99	0.75	0.77	1.87	3.16	1.19
Trading	**16.05**	**15.72**	**17.83**	**15.1**	**16.06**	**18.29**	**17.03**	**12.02**	**15.01**	**15.15**	**17.01**	**18.74**	**14.95**	**14.7**	**17.66**
GS	5.55	9.76	8.97	5.81	11.12	9.59	5.35	1.83	3.08	4.9	9.69	8.43	8.08	12.79	11.13
PD	4.29	0.65	2.33	3.71	0.39	2.33	0.28	0.51	1.83	4.7	0.73	2.9	1.22	0	1.56
FF	0	0.4	0.34	0	0.28	0.31	0.1	0.04	0.49	0	0.32	0.31	0	0.23	0.31
PI	1.56	2.19	2.15	0.64	1.77	1.65	0	0.24	0.38	0.87	2.28	2.45	0	1.04	0.55
FP	5.84	3.93	5.29	6.14	3.75	5.43	11.31	8.29	8.8	6.34	4.11	6.07	5.65	3.11	4.46
Other	**5.62**	**5.73**	**6.85**	**5.83**	**5.84**	**7.06**	**3.09**	**2.93**	**4.07**	**6**	**6.96**	**8.28**	**5.33**	**4.25**	**5.32**
ROA	0.77	1.19	0.94	0.8	1.18	0.93	0.41	2.08	0.94	0.71	0.95	0.9	1.07	1.52	0.97
ROE	6.82	11.22	7.44	6.5	10.7	7.15	12.57	19	10.11	7.22	10.14	7.7	4.36	11.42	6.38

Variables definitions (All variables are expressed in percentage except for total assets, which is expressed in billion pesos) Loans: ratio of net loans to total assets; Equity: ratio of equity to total assets; Deposits: ratio of total deposits to total assets; NII: ratio of non-interest income to total net operating income; FEE: ratio of fee-based income to total net operating income; BC: ratio of bank commissions and fees to total net operating income; SC: ratio of service charges to total net operating income; OC: ratio of other commissions and fees to total net operating income; TRAD: ratio of trading income to total net operating income; GS: ratio of income from trading government securities to total net operating income; PD: ratio of income from trading private debt/equity to total net operating income; FF: ratio of income from trading financial futures and other derivatives to total net operating income; PI: ratio of profit from sale of investments to total net operating income; FP: ratio of foreign exchange profit to total net operating income; Other: ratio of other non-interest income to total net operating income; ROA: return on average asset; ROE: return on average equity.

Table 2B: Non-interest income components for Philippine universal and commercial banks over the 1999-2005 period (in %)

	Whole sample	Domestic banks	Foreign banks	Large banks	Medium-sized banks	Small banks	Universal banks	Commercial banks
Fee-based activities	**38**	**32.70**	**47.70**	**35.70**	**36.50**	**40.80**	**33.40**	**40.60**
Bank commissions	28.60	21.10	42.20	23.50	19.80	38.50	24.10	31
Services charges	61.40	69.30	47.20	64.50	78.30	46.10	69.50	57.10
Other commissions	10	9.60	10.60	12	1.90	15.40	6.40	11.90
Trading activities	**45.30**	**47.80**	**40.80**	**41.30**	**47.20**	**46**	**46**	**44.90**
Government securities	30.60	41.90	13.90	31.20	43.10	21.40	36.90	27.60
Private debt/equity	8.10	8.20	7.90	9	6.20	9	9.90	7.20
Financial futures	2.50	2.40	2.80	4.90	4	0.60	2.50	2.60
Profit from sale of inv	7.30	11.80	0.70	16.40	10.90	1.40	12.70	4.80
Foreign exchange profit	51.50	35.70	74.70	38.50	35.80	67.60	38	57.80
Other	**16.70**	**19.50**	**11.50**	**23**	**16.30**	**13.20**	**20.60**	**14.50**

Variables definitions: Fee-based activities: ratio of fee-based income to non-interest income; Bank commission: ratio of bank commissions and fees to fee-based income ; Service charges: ratio of service charges to fee-based income; Other commissions: ratio of other commissions and fees to fee-based income; Trading activities: ratio of trading income to non-interest income; Government securities: ratio of income from trading government securities to trading income; Private debt/equity: ratio of income from trading private debt/equity to trading income; Financial futures: ratio of income from trading financial futures and other derivatives to trading income; Profit from sale of inv: ratio of profit from sale of investments to trading income; Other: ratio of other non-interest activities to non-interest income.

2.3. Definition of variables

2.3.1 Diversification measures

In this study, three sets of diversification indicators are computed and alternatively used to assess the effect of the increased diversification of Philippine banks on their profitability and risk.

A first set of indicators used in this study consists of ratios which represent the share of non-interest income in total operating income, as well as the shares of each component of non-interest income in total operating income. The variable *NII* is equal to the percentage share of non-interest income in total operating income, where non-interest income[61] is the sum of fee-based income, trading income and other non-interest income. We use the gross values because there is no categorical expense attributed to these activities alone in the income statement provided in our data. In addition, the reported non-interest expense is independent of the non-interest income. The variable *NII* is then computed as follows:

NII = Non-interest Income/Total Operating Income (1)

where Non-interest Income = Fee-based Income + Trading Income + Other Non-interest Income, and Total Operating Income = Non-interest Income + Interest Income – Interest Expense

We also disaggregate *NII* into three components – *FEE*, *TRAD* and *Other*. These variables are computed as follows:

FEE = Fee-based income/Total Operating Income (2)
TRAD = Trading income/Total Operating Income (3)
Other = Other income/Total Operating Income (4)

Where Fee-based income [62] = Bank commissions + service charges/fees + other fees/commissions and Trading income = Trading gains/(losses) (from government securities, private debt/equity securities, and financial futures, options) + Foreign exchange profits/(losses)+Gold trading gains/(losses) + Profit/(loss) on sale of redemption of investments.

[61] The definition of the non-interest income accounts are shown in the Annex 1.
[62] The definition of the different components of non-interest income are drawn from the Bangko Sentral ng Pilipinas' glossary of terms, which can be found in the BSP website, www.bsp.gov.ph/banking/glossary.asp

For the components of non-interest income, we draw the definition of our variables from the Bangko Sentral ng Pilipinas' glossary of terms (BSP website[63]). Our definition of total operating income is consistent with the studies of Stiroh (2004b), Stiroh and Rumble (2006) and Chiorazzo *et al.* (2008).

A second set of indicators used in this paper, *FOCUSk*, consists of Herfindahl indexes which indicate the degree of bank focus/specialization in its revenue generating activities. As in Chiorazzo *et al.* (2008), Stiroh and Rumble (2006) and Sanya and Wolfe (2011), the indices measure how focused or specialized a bank is on its income generating activities. We compute them as follows:

Let $X_{i,t}^{j}$ be the nominal exposure of bank i at time t to activity j where j = 1,....,n. $x_{i,t}^{j}$ denotes the corresponding relative exposure, i.e.

$$x_{i,t}^{j} = \frac{X_{i,t}^{j}}{\sum_{j=1}^{n} X_{i,t}^{j}} \tag{5}$$

$$FOCUSk_{i,t}^{j} = \sum_{j=1}^{n} \left(x_{i,t}^{j} \right)^{2} \tag{6}$$

where k = 1,…, 4.

FOCUSk is an index equal to 1 when total income is generated from one source (specialized) and $\frac{1}{n}$ when exposures to each income component are equal (well-diversified). A lower value of the index indicates that a bank is more diversified. The subscript 'k' denotes the level of disaggregation of operating income (*FOCUS1*), or of non-interest income (*FOCUS2*) and its components (*FOCUS3* and *FOCUS4*) used to compute the indicator. Our first index, *FOCUS1* is based on the disaggregation of the operating income – net interest income and non-interest income. The three other indices we use, *FOCUS2*, *FOCUS3* and *FOCUS4*[64], are based on the disaggregation of non-interest income, fee-based income and trading income, respectively.

[63] www.bsp.gov.ph

[64] *FOCUS2* = (share of interest income to total operating income)^2+(share of fee-based income to total operating income)^2+(share of trading income to total operating income)^2+(share of other noninterest income to total operating income)^2.

FOCUS3 = (share of interest income to total operating income)^2+(share of bank commissions to total operating income)^2+(share of service charges to total operating income)^2+(share of other commissions/fees to

2.3.2 Bank Profitability and Performance Measures

To measure the profitability of a bank, we use the bank income statement return on average assets (*ROA*) and construct a risk-adjusted profitability measure, *SHROA*, following Chiorazzo *et al*. (2008). We define it as the ratio of ROA for a given year to the standard deviation of ROA over the period of study, 1999-2005.

$$ROA_{it} = \frac{NetIncomeAfterTax_{it}}{((Asset_{it} + Asset_{it-1})/2)} \quad (7)$$

$$SHROA_{it} = \frac{ROA_{it}}{\sigma ROA_{i}} \quad (8)$$

2.3.3 Bank Risk Measures

For the 16 listed banks in our sample, we compute risk and insolvency measures using market data obtained from DataStream International. There are a total of 16 listed banks in our sample; however, sufficient data are only available for 15 banks. We compute risk-taking measures such as i) the market model beta (*Beta*)[65] coefficient estimated through a GARCH model measuring systematic risk, ii) total risk (*TotRisk*), which is the standard deviation of weekly returns[66] and iii) specific risk (*RiskSpec*)[67], which is the standard deviation of the market model residual. We also compute a default risk measure using a market-data-based Z-score (*MZ*)[68]. This measure represents the number of standard deviations below the mean by which profits would have to fall to deplete equity capital (Boyd *et al.* (1993)).

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total operating income)^2+(share of trading income to total operating income)^2+(share of other noninterest income to total operating income)^2.

FOCUS4 = (share of interest income to total operating income)^2+(share of fee-based income to total operating income)^2+(share of trading gain from government securities to total operating income)^2+(share of trading gain from private debt/equity to total operating income)^2+(share of trading gain from financial futures to total operating income)^2+(share of foreign exchange profit to total operating income)^2+(share of profit from sale of redemption of investments to total operating income)^2+(share of other non-interest income to total operating income)^2.

[65] We estimate the single index market model over the period [*t-100, t]* to calculate the value of the beta at date *t*.

[66] Daily stock prices are used to calculate weekly stock returns. The standard deviation of weekly stock returns at date *t* is computed over the period [*t-100, t*].

[67] The single index market model is computed for each trading day over the period [*t-100, t*]. We use the standard deviation of residuals to estimate specific risk at date t.

[68] $MZ = \frac{\bar{R}+1}{\sigma}$ where $\bar{R}$ is the mean of the weekly returns R_t for a given year and σ is the standard deviation of weekly returns.

3. Theoretical Framework, Hypotheses and Models

The structural changes in the banking industry and the proliferation of alternative financing sources for firms have enabled banks to consistently look out for other ways to increase their profits besides lending. From a theoretical point of view, banks benefit from economies of scope when they diversify their income (Klein and Saidenberg, 1997). Banks increase their efficiency and enhance profitability as they tend to eliminate redundant operations and capitalize on obtained client information when they process loans to facilitate provision of other financial services.

Conventional wisdom asserts that revenue diversification, or a shift from interest to non-interest income, should reduce total risk. Activities that generate non-interest income are thought to be negatively, weakly or imperfectly correlated with those that produce interest income, thereby stabilizing profits and improving the risk-return trade-off. In addition, a shift toward non-interest income is believed to reduce cyclical variations of bank profits, depending less on overall business conditions (Stiroh, 2004b).

While it may seem that diversification is largely desirable for a bank, arguments that refute the ability of income diversification to reduce risk are offered in several banking studies. Notably, DeYoung and Roland (2001) offers three ways by which non-interest income may increase bank earnings' volatility. First, the presence of high switching costs for borrowers associated with lending relationships may suggest that banks tend to easily lose clients from a fee-based one. Second, a bank tends to additionally invest in technology and human resources as it moves towards activities that generate noninterest income; hence, increasing operating leverage and thus, earnings volatility. Third, some fee-based activities that may be carried out with little or no regulatory capital could be associated with a high degree of financial leverage, which increases earnings volatility. Financial innovation, such as the increased bank usage of derivative instruments and other financial transactions has also provided various opportunities to leverage a portfolio. New risks are compounded on top of existing risks, potentially offsetting or cancelling out the benefits from diversification.

We thus test the following hypothesis:

Hypothesis 1: A shift towards non-interest income enhances bank profitability and reduces risk, improving therefore bank risk-adjusted profits.

Model 1:

$$Y_{it} = \alpha_{it} + \beta_1 FOCUS1_{it} + \beta_2 NII_{it} + \delta Z_{it} + \varepsilon_{it} \quad (9)$$

where Y_{it} is either a measure of profitability, risk-adjusted profitability or risk ; $FOCUS1_{it}$ is the measure of diversification based on the breakdown of total operating income in two components (interest and non-interest income) and NII_{it} is the share of non-interest income.

β_1 measures the impact of diversification and β_2 the direct effect of a shift from interest activities to non-interest activities. If income diversity leads to higher profits and risk-adjusted profits, one would expect β_1 to be negative.

We follow here the methodology developed by Stiroh and Rumble (2006) in order to assess the effects of diversification towards non-interest activities. The impact of a change in non-interest income on profitability and risk is measured using the first derivative of our dependent variables with respect to non-interest income:

$$\left(\frac{\partial Y_{it}}{\partial NII_{it}}\right) = \beta_1' \left(\frac{\partial FOCUS1_{it}}{\partial NII_{it}}\right) + \beta_2' \quad (10)$$

This methodology allows us to distinguish the direct and indirect effect of an increased exposure to non-interest activities through the estimated values of β_1' and β_2'. The first term on the right-hand side of equation (10) measures the effect of a change in the non-interest income share through its effect on diversification. As in Stiroh and Rumble (2006), we refer to this as the indirect effect of a change in non-interest income. As this effect depends both on the sign of β_1'and the magnitude of the non-interest income share, the indirect effect is calculated accordingly for different levels of non-interest income. Meanwhile, β_2' captures the direct effect of a shift from interest income to non-interest income. Using a portfolio-style interpretation, β_1' measures the covariance effect, while β_2' measures the variance effect.

The net effect, which is the sum of the direct and indirect effects, determines how profitability and risk vary with an increase in the share of non-interest income.

The dependence, however, between β_1' and β_2' raises econometric issues since *NII* and *FOCUS1* are collinear. Although both estimates may be unbiased, their variance and covariance are overestimated (Chiorazzo *et al.* 2008). Wald tests need to be conducted to check the joint statistical significance of β_1' and β_2' in the various estimations. Moreover, we also estimate the equation by using only *NII* to check for robustness.

Several empirical research studies argue that the potential benefits/disadvantages from diversification may diverge because of bank size and ownership differences. Larger banks are in a better position to manage operating leverage associated with shifts towards activities generating non-interest income because of economies of scale and their capability to intensively invest in information technology (DeYoung and Roland, 2001). Furthermore, Mercieca *et al.* (2007) argue that smaller banks, whose expertise may be greater in performing traditional interest income activities, may suffer from lack of know-how in efficiently carrying out new lines of businesses. Bank strategies may also differ not only because of asset size, but also by differences in customer preferences, information quality and production methods, which could be driven by differences in bank ownership profiles. There is a tendency for foreign-owned institutions or foreign banks to be more oriented towards transactions lending and provide financial services to large corporate clients rather than to lend to smaller firms, more likely catered by domestic banks. Empirical studies show that foreign banks tend to have wholesale orientation and may favorably lend to large corporate affiliates of their customers in their home nation (DeYoung and Nolle, 1996; Grosse and Goldberg, 1991). In addition, foreign banks are more exposed to developed country banking markets, which tend to be more competitive and use more sophisticated information and communication technologies (Claessens *et al.*, 2001). These advantages could favor foreign banks in managing operating and financial leverage when diversifying towards non-interest activities.

To assess the possible divergence in the effect of a shift towards non-interest income by size and ownership, we also test the following as extensions to Hypothesis 1.

Hypothesis 1a: Larger banks derive greater benefits from a shift towards non-interest income.
Hypothesis 1b: A shift towards non-interest income has a stronger/weaker impact on profitability and risk according to bank ownership type.

In testing Hypothesis 1a, we introduce an interaction term NII*ASSET, which is the product of the share of non-interest income in net operating income and the natural logarithm of total assets. In testing Hypothesis 1b, we estimate Model 1 on two sub-samples, one which includes domestic banks and the other only foreign banks.

Knowing the sources of non-interest income is important in better understanding the mechanisms by which income diversification may affect a bank's profitability and risk. According to DeYoung and Rice (2004), it is fundamentally misunderstood that commercial

banks earn non-interest income mainly from non-traditional banking activities. They demonstrate that the largest source of non-interest income of banks in the US come from payment services – one of the most traditional of all the banking services. Banks have always traditionally earned non-interest income from deposit account services, lending, cash management and trust account service. Nontraditional banking activities would include investment banking, securities brokerage, insurance and trading activities. The growth of traditional banking activities that generate non-interest income is expected to be positively correlated with the growth of interest-generating activities like lending[69] and non-traditional banking activities to be weakly or negatively correlated with interest-generating activities.

We follow Stiroh's (2004a) framework of the decomposition of portfolio growth volatility as shown in Equation 11. Net operating revenue is composed of non-interest income and net interest income. Non-interest income is a function of income from traditional (*TRADTL)* and nontraditional (*NONTRADTL)* banking activities.

$$\sigma^2_{d\ln OPREV} = \alpha^2\sigma^2_{d\ln NON} + (1-\alpha)^2\sigma^2_{d\ln NON} + 2\alpha(1-\alpha)Cov(d\ln NON, d\ln NET) \qquad (11)$$

Where $NON = f(TRADTL; NONTRADTL)$

A shift towards non-interest income generated from traditional banking activities may not imply diversification benefits (or a reduction of diversification benefits) since they are subject to the same fluctuations as interest-generating activities and may lead to increased earnings volatility. This may be the case when banks cross-sell their other financial products to a core customer base. Diversification benefits, however, is higher when a bank shifts toward non-interest income generated from non-traditional banking activities. However, standard portfolio theory also implies that the overall variance of operating revenue rises as the volatilities of the growth rates of income from both traditional and non-traditional banking activities increase.

We disaggregate non-interest income into fee-based, trading and other non-interest income. As shown in Tables 2A and 2B, in the case of banks in the Philippines, we may, however, associate fee-based income and other non-interest income as non-interest income generated from traditional banking activities. Fee-based income are primarily generated from bank commissions collected for services as in opening of letters of credit and sale of demand drafts; and service charges collected for handling loans. Other commissions and fees, which

[69] We do not discount the possibility that the growth of traditional banking activities may be due to the use of new, non-traditional methods, such as advances in information technology.

are collected for services in connection with the investment house functions of the bank, however, is low to cause significant variations in the bank's revenue. We highlight this as one of the main differences between banks in emerging economies and developed economies such as the U.S. (DeYoung and Rice, 2004). On the other hand, we associate trading income to be non-interest income generated from non-traditional banking activities. We confirm these assumptions by performing pairwise correlations of the growth rates of operating income, its components (interest income and non-interest income) and the non-interest income components (fee-based income, trading income). It is shown in Table 3 that the growth rate of fee-based income is positively and significantly correlated with the growth rate of net interest income while trading income is weakly and negatively correlated with net interest income growth. Similarly, we also find that the growth of interest income from loans is positively and significantly correlated with fee-based income, suggesting that most banks seize cross-selling opportunities, which may lessen benefits derived from diversification.

Table 3. Pairwise correlations of the growth rates of the non-interest income and its components to net interest income growth rate and interest income from loans growth rate of Philippine universal and commercial banks over the 1999-2005 period

	II	**Loan Income**
NII	0.0166	0.0697
FEE	0.1568**	0.1120*
TRAD	-0.0538	-0.0433

Variable definitions: II: interest income; NII: non-interest income; FEE: fee-based income; TRAD: trading income.

We test the following hypothesis,

Hypothesis 2: A shift towards non-interest income from non-traditional banking activities may derive greater benefits from diversification compared to non-interest income generated from traditional banking activities.

This hypothesis will be tested by using a three-level breakdown of non-interest income – fee-based income, trading income and other non-interest income (Model 2a).

Model 2a:

$$Y_{it} = \alpha_{it} + \beta_1 FOCUS2_{it} + \beta_2 FEE_{it} + \beta_3 TRAD_{it} + \beta_4 Other_{it} + Z_{it} + \varepsilon_{it} \quad (12)$$

Y_{it} is either a measure of profitability, risk-adjusted profitability or risk; $FOCUS2_{it}$ is the measure of diversification based on the breakdown of non-interest income in three components (fee-based, trading and other incomes); FEE_{it}, $TRAD_{it}$ and $Other_{it}$ are the shares of fee-based income, trading income and other non-interest income, respectively, in total operating income.

We use the following control variables – *ASSETS*, *GROWTH*, *EQUITY*, *LOANS* and *GDP* in all our models.

ASSETS, is the natural logarithm of bank assets adjusted to the GDP deflator. This variable, following Chiorazzo *et al.* (2008), Behr *et al.* (2007), Stiroh and Rumble (2006), and Stiroh (2004a, 2004b) captures the effects of bank size on returns and risk. Larger-sized banks are able to invest in more advanced technologies and generally, have better risk management. They are also able to expand into other business lines. We therefore expect a positive sign for the relationship between size and profits and negative between size and risk.

GROWTH, is the growth rate of total assets. As in Stiroh (2004b) and Chiorazzo *et al.* (2008), we use this variable as a proxy for bank manager's preference for risk taking. Banks with lower risk aversion grow more rapidly and thus, have different operating strategies. Moreover, it may also be interpreted as control for growth-by-acquisition.

EQUITY, is the leverage ratio computed as the ratio of total capital to total assets. Banks that hold a lower level of equity in their asset-liability portfolio tend to be riskier. A higher level of capital then translates to the bank manager's risk aversion. This control variable is also used by several bank diversification studies (Chiorazzo *et al.*, 2008, Stiroh, 2004b).

LOANS, is the ratio of total loans to total assets. Consistent with Chiorazzo *et al.* (2008), Stiroh and Rumble (2006) and DeYoung and Roland (2001), this variable captures the performance of bank's lending strategies relative to its other earning assets.

GDP is the logarithm of the gross domestic product. This variable controls for macroeconomic fluctuations and overall performance of the economy. We expect a positive sign as banks tend to expect higher profits when the economy is doing well.

We run two-way fixed-effects panel regressions to estimate our models. In performing these estimations, we check for the appropriateness of our estimation method using the Hausman test to check whether a fixed effects model is more appropriate than a random effects model. In addition, we use a Huber/White estimator of variance that is robust to some types of misspecifications along with the fixed effects model.

Since the alternative dependent variables we use, particularly profitability, show the tendency to persist in time [70], reflecting impediments to competition, informational asymmetry, and change in business strategies, we consider that their previous values could partially determine their current values (Berger *et al.*, 2000). We therefore also estimate our equations using a dynamic model using the methodology proposed by Arellano and Bover (1995) and Blundell and Bond (1998). In this approach, the system of equations is simultaneously estimated in both first-differences and levels. The two step GMM estimator is used to provide a more robust inference from the results[71]. Since we are considering a small sample, the two step standard errors are computed to conform to Windmeijer's (2005) finite-sample correction. We also take into account the possibility that the explanatory variables might not be strictly exogenous, which is presumably the case of the non-interest income variables. Following Maudos and Solis (2009), to address this endogeneity problem, the lagged levels and lagged differences of the explanatory variables are used as instruments. To determine the consistency of the estimators and verify the validity of the instruments, we use a Sargan test of over identifying restrictions. Meanwhile, we also check for the appropriateness of using the Blundell dynamic panel data estimation technique using the statistic proposed by Arellano and Bond (1991) to test the absence of second-order serial correlation of the first difference residuals.

4. Empirical Results

Table 4A reports the results obtained for Model 1. The regressions with profitability and risk-adjusted profitability show positive benefits derived from income diversity and a shift from interest to non-interest income, which is consistent with Hypothesis 1. The coefficient of the share of non-interest income is positive and highly significant, which is consistent with results obtained by Chiorazzo *et al.* (2008), studying Italian banks. This finding however is in contrast with several US banking studies like Stiroh (2004a; 2004b) and

[70] In the banking literature, few studies consider profits to be persistent (Roland, 1997; Eichengreen and Gibson, 2001; Goddard *et al.*, 2004)

[71] We also use the one-step estimator but results are not reported because it yields similar results as using the two step GMM. Estimator.

Stiroh and Rumble (2006) and a study of emerging economies by Sanya and Wolfe (2011), which associates risk-reduction benefits from increased share of NII but no significant effect in terms of risk-adjusted profits.

Table 4A. Income diversification and profitability/risk for Philippine universal and commercial banks over the 1999-2005 period (H1)

	Fixed Effects Panel Regression				*Dynamic Panel Data Estimation*							
					Two-step GMM S.E.		Two-step GMM S.E.		Two-step Robust S.E.		Two-step Robust S.E.	
	ROA	SHROA	ROA	SHROA	ROA	SHROA	ROA	SHROA	ROA	SHROA	ROA	SHROA
ROA (t-1)					0.345***	0.315***	0.371***	0.316***	0.345***	0.315**	0.371***	0.316*
					(15.50)	(4.79)	(12.03)	(4.49)	(3.55)	(2.20)	(3.55)	(1.69)
FOCUS1	-0.00579	-0.365			**-0.0217*** **	**-4.630*** **			**-0.0217** **	**-4.630** **		
	(-0.54)	(-0.27)			(-4.47)	(-4.55)			(-2.45)	(-2.41)		
NII	**0.0167** **	**2.040*** **	**0.0178*** **	**2.114*** **	**0.0187*** **	**1.994*** **	**0.0223*** **	**2.531*** **	**0.0187** **	1.994	**0.0223*** **	2.531
	(2.62)	(3.55)	(3.03)	(3.52)	(4.27)	(2.97)	(7.57)	(4.55)	(2.18)	(1.43)	(2.76)	(1.58)
ASSET	0.0257**	2.814**	0.0262**	2.847**	-0.0071***	1.094***	-0.00514**	1.124***	-0.00714	1.094	-0.00514	1.124
	(2.30)	(2.62)	(2.33)	(2.61)	(-3.45)	(2.87)	(-2.56)	(3.21)	(-1.48)	(1.34)	(-1.07)	(1.35)
GROWTH	-0.0053***	-0.0983	-0.0054***	-0.103	-0.000913	-0.661*	-0.00200	-0.654*	-0.000913	-0.661	-0.00200	-0.654
	(-3.28)	(-0.94)	(-3.32)	(-1.05)	(-0.53)	(-1.68)	(-0.92)	(-1.65)	(-0.16)	(-0.57)	(-0.30)	(-0.52)
EQUITY	0.0343	5.612*	0.0343	5.611*	-0.0309***	-2.624	-0.0292***	-2.999*	-0.0309	-2.624	-0.0292	-2.999
	(0.92)	(1.74)	(0.93)	(1.76)	(-3.22)	(-1.40)	(-2.93)	(-1.77)	(-1.33)	(-0.45)	(-1.25)	(-0.50)
LOANS	0.0246**	1.090	0.0242**	1.064	-0.0170***	-0.0999	-0.0213***	-0.763	-0.0170*	-0.0999	-0.0213**	-0.763
	(2.62)	(1.48)	(2.66)	(1.52)	(-8.34)	(-0.16)	(-10.45)	(-1.08)	(-1.93)	(-0.06)	(-2.57)	(-0.39)
GDP	0.0241**	4.000***	0.0242**	4.007***	0.0152***	1.447***	0.0151***	1.599***	0.0152*	1.447	0.0151*	1.599
	(2.65)	(4.25)	(2.66)	(4.30)	(3.53)	(2.64)	(3.75)	(2.67)	(1.65)	(1.02)	(1.71)	(0.99)
Constant	-0.449***	-57.15***	-0.459***	-57.77***	-0.00192	-17.67***	-0.0346	-21.57***	-0.00192	-17.67	-0.0346	-21.57
	(-4.05)	(-6.00)	(-4.08)	(-6.01)	(-0.05)	(-3.47)	(-0.99)	(-4.29)	(-0.02)	(-1.37)	(-0.49)	(-1.59)
R-squared	0.311	0.262	0.310	0.262								
OBS	218	218	218	218	187	187	187	187	187	187	187	187
Wald Test	5.32***	6.63***			34.73***	52.59***			15.60***	26.17***		
Sargan Test					22.04	24.55	22.01	28.04				
Test for autocorr												
M1: 1st order					0.04	0.00	0.03	0.00	0.04	0.01	0.03	0.01
M2: 2nd order					0.11	0.97	0.13	0.79	0.11	0.97	0.14	0.79

***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively. T-statistics are corrected for heteroskedasticity following White's methodology for the fixed effects panel regression. Variable definitions: ROA: return on average assets; SDROA: standard deviation of ROA (quarterly data); ADJROA: ratio of mean of return on average assets to standard deviation of ROA (quarterly data); SHROA: ratio of return on average assets to standard deviation of ROA (annual data); FOCUS1= focus index based on a two part operating income breakdown- noninterest income and interest income; NII: ratio of non-interest income to total operating income; Asset: logarithm of total assets; Growth: average asset growth; Equity: ratio of equity to total assets; Loans: ratio of net loans to total assets; GDP: logarithm of the gross domestic product.

Table 4B Estimated impact of a change in share of non-interest income on profitability and risk-adjusted profitability

	ROA				**SHROA**			
	Fixed Effect		Two-Step Robust S.E.		Fixed Effects		Two-Step Robust S.E.	
NII	*Indirect*	*Net*	*Indirect*	*Net*	*Indirect*	*Net*	*Indirect*	*Net*
10th	0.007	**0.024***	**0.028** **	**0.046*** **	0.463	2.503	**5.88** **	**7.87*** **
	(0.014)	(0.012)	(0.011)	(0.012)	(1.706)	(1.72)	(2.44)	(1.74)
25th	0.006	**0.022** **	**0.021** **	**0.039*** **	0.35	**2.39***	**4.42** **	**6.41*** **
	(0.01)	(0.009)	(0.008)	(0.010)	(1.28)	(1.331)	(1.83)	(1.28)
50th	0.004	**0.02*** **	**0.0132** **	**0.032*** **	0.23	**2.270** **	**2.83** **	**4.82*** **
	(0.007)	(0.007)	(0.005)	(0.009)	(0.846)	(0.95)	(1.17)	(0.99)
75th	0.001	**0.018*** **	**0.005** **	**0.024*** **	0.09	2.13***	**1.07*** **	**3.06*** **
	(0.003)	(0.006)	(0.002)	(0.008)	(0.333)	(0.619)	(0.44)	(1.12)
90th	-0.001	**0.016** **	**-0.007** **	0.012	-0.059	**1.981*** **	**-1.50** **	0.49
	(0.001)	0.007	(0.003)	(0.010)	(0.216)	(0.642)	(0.62)	(1.89)

As discussed in the previous section, a shift towards non-interest income has two effects: a direct effect from an increased reliance on non-interest income and an indirect effect through changes in diversification. Table 4B reports the indirect and net effects of a change in the share of non-interest income at various percentile levels of non-interest income share. Regardless of the level of non-interest income, our results suggest that an increased share of non-interest income offers no significant indirect effects through diversification on both profitability and risk-adjusted profitability. To measure the economic significance of these estimates, we consider the net effect of a change in non-interest income share as shown in Table 4B. Overall at 50^{th} percentile value of *NII*, the results predict that a one standard deviation increase in non-interest income share will lead to an increase in the *ROA* and *SHROA* of 0.02 and 2.27, respectively. Moreover, we highlight the decreasing net effects of *NII* as the level of non-interest income share increases. This result confirms the lack or diminishing marginal benefits when banks diversify beyond risk efficient levels (Stiroh and Rumble 2006).

Chiorazzo *et al.* (2008) argue that the inconsistency with the results of the US and European banking studies is due to structural and regulatory differences between the European and US markets, which include bank size, longevity of fee-based relationships and diffusion of credit scoring methods. In our interpretation, the contrast in the results of most US banking studies and our study comes from two main differences between the income structure of the Philippine banking system and that of the US: first, the correlation between the growth rates of interest income and non-interest income and second, the distribution of the components of non-interest income. Stiroh (2004b) shows the relatively high correlation between interest income and non-interest income in US banks from 1984 to 2001, implying less diversification benefits as the banking industry shifts towards non-interest revenue. In the Philippines, however, we show in Table 3 that the correlation between the growth rates of interest income and non-interest income is weak. The diversification benefits from increased economies of scope coupled with the weak correlation between non-interest income growth and interest income growth fuels the positive impact of a shift towards non-interest income on risk-adjusted profitability. We also observe significant differences in the distribution of non-interest income between banks in the Philippines and the US. Stiroh (2004b) highlights that in the US in 2000, an average bank's fees and other income comprises 27% of net operating income while trading income's share in the net operating income is only 3.5%. We show that in the case of the Philippines (cf. Table 2A), in 1999, trading income (16.5% of net operating income) dominates fee-based income (13.2%). Consistent with our sample, U.S. banks exhibit

high correlation between the growth rates of net interest income and fee-based income, while a weak correlation exists between trading income growth and net interest income growth. This is reasonable as trading income is more dependent on market fluctuations than traditional banking activities, implying greater diversification benefits should a bank decide to shift its interest income towards this particular component (Stiroh, 2004a).

We also examine the influence of size on the relationship between income diversification and profitability and risk-adjusted profitability by interacting *NII* with *ASSET*. Table 5A reports the regression results while Table 5B shows the estimated impact of an increase in non-interest income share. We highlight that as the size of the bank increases, the increase in profits and risk-adjusted profits derived from diversification diminishes. The latter finding is not consistent with Chiorazzo *et al.* (2008), suggesting that the positive impact of an increased share of non-interest income on risk-adjusted returns is stronger in smaller banks. We do not find evidence in favor of an advantage by large banks in terms of economies of scale to manage operating leverage associated with a shift towards non-interest activities. The decreasing impact of diversification when the share of non-interest income and size increases is in line with the existing literature that stresses the limits from the diversification gains as a bank gets larger. Since larger banks are generally more diversified, their gains from further diversification are limited as possible saturation occurs upon reaching an optimum level and size (Demsetz and Strahan, 1997; Stiroh and Rumble, 2006; Chiorazzo *et al.*, 2008).

The impact of an increase in income diversification, more precisely, a shift towards non-interest activities on profitability and risk-adjusted profitability diverges according to bank ownership profile. Table 6A shows the results on a subsample of foreign versus domestic banks. Our findings indicate that increased income diversity does not affect profits and risk-adjusted profits both within domestic and foreign banks. The direct effect of an increase in the share of non-interest income, however, translates to higher profits for foreign banks and a positive and significant impact on risk-adjusted profits in both subsamples. To gauge the economic significance of the estimated impact of a shift towards non-interest income, we report the net effects as presented in Table 6B. These estimates predict that a one standard deviation increase in non-interest income share will lead to an increase in the risk-adjusted profits of 1.63 and 4.45, respectively, for domestic banks and foreign banks at higher shares of *NII* (75^{th} percentile). Hence, only the domestic and foreign banks, which are already heavily involved in non-interest activities can actually benefit from a further shift from traditional interest-generating activities to activities that generate non-interest income.

Table 5A. Income diversification and profitability/risk for Philippine universal and commercial banks over the 1999-2005 period: impact of differences in bank size (H1a)

	Fixed Effects Panel Regression				*Dynamic Panel Data Estimation*							
					Two-step GMM S.E.		Two-step GMM S.E.		Two-step Robust S.E.		Two-step Robust S.E.	
	ROA	SHROA	ROA	SHROA	ROA	SHROA	ROA	SHROA	ROA	SHROA	ROA	SHROA
ROA (t-1)					0.310***	0.311***	0.307***	0.291***	0.310***	0.311**	0.307***	0.291*
					(10.90)	(4.30)	(11.08)	(3.89)	(3.48)	(2.25)	(3.54)	(1.79)
FOCUS1	0.00383	-0.107			-0.00463	-3.221**			-0.00463	-3.221		
	(0.30)	(-0.07)			(-0.44)	(-2.25)			(-0.22)	(-1.04)		
NII	**0.280****	9.097	**0.265****	9.523	**0.597*****	**33.19***	**0.641*****	**70.51*****	0.597	33.19	**0.641*****	**70.51****
	(2.19)	(0.60)	(2.30)	(0.73)	(4.72)	(1.76)	(7.66)	(4.03)	(1.32)	(0.71)	(2.80)	(2.11)
ASSET	**0.0367*****	**3.108****	**0.0358*****	**3.133****	**0.0142*****	**1.947****	**0.0164*****	**3.319*****	0.0142	1.947	**0.0164***	**3.319****
	(2.81)	(2.60)	(2.78)	(2.61)	(2.74)	(2.56)	(4.64)	(4.31)	(0.88)	(1.20)	(1.67)	(2.21)
NII*ASSET	**-0.0247****	-0.660	**-0.0233****	-0.698	**-0.0531*****	**-2.855***	**-0.0572*****	**-6.255*****	-0.0531	-2.855	**-0.0572*****	**-6.255****
	(-2.09)	(-0.46)	(-2.17)	(-0.57)	(-4.53)	(-1.65)	(-7.16)	(-3.87)	(-1.27)	(-0.67)	(-2.73)	(-2.04)
GROWTH	-0.00509***	-0.0919	-0.00506***	-0.0928	-0.00194	-0.535	-0.00160	-0.347	-0.00194	-0.535	-0.00160	-0.347
	(-3.23)	(-0.85)	(-3.24)	(-0.87)	(-0.75)	(-1.43)	(-0.56)	(-0.91)	(-0.22)	(-0.49)	(-0.17)	(-0.33)
EQUITY	0.0410	5.791*	0.0406	5.801*	-0.0347***	-2.528	-0.0335***	-1.247	-0.0347	-2.528	-0.0335	-1.247
	(1.09)	(1.78)	(1.07)	(1.77)	(-3.06)	(-1.31)	(-2.68)	(-0.63)	(-1.02)	(-0.41)	(-0.91)	(-0.21)
LOANS	0.0241**	1.078	0.0244**	1.070	-0.00724	0.174	-0.00559	0.762	-0.00724	0.174	-0.00559	0.762
	(2.58)	(1.47)	(2.69)	(1.52)	(-1.22)	(0.20)	(-0.92)	(0.86)	(-0.45)	(0.09)	(-0.34)	(0.39)
GDP	0.0209**	3.916***	0.0211**	3.913***	0.00684*	1.365**	0.00675	1.520**	0.00684	1.365	0.00675	1.520
	(2.20)	(4.06)	(2.22)	(4.04)	(1.67)	(2.25)	(1.64)	(2.39)	(0.86)	(0.96)	(0.83)	(1.09)
Constant	-0.550***	-59.86***	-0.539***	-60.18***	-0.189***	-27.48***	-0.216***	-45.83***	-0.189	-27.48	-0.216*	-45.83***
	(-4.58)	(-5.75)	(-4.57)	(-5.99)	(-3.03)	(-3.06)	(-5.63)	(-5.51)	(-1.03)	(-1.29)	(-1.92)	(-2.84)
R-squared	0.326	0.263	0.326	0.263								
OBS	218	218	218	218	187	187	187	187	187	187	187	187

***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively. T-statistics are corrected for heteroskedasticity following White's methodology for the fixed effects panel regression. Variable definitions: ROA: return on average assets; SHROA: ratio of return on average assets to standard deviation of ROA (annual data); FOCUS1: focus index based on a two part operating income breakdown- non-interest income and interest income; NII: ratio of non-interest income to total operating income; Asset: logarithm of total assets; Growth: average asset growth; Equity: ratio of equity to total assets; Loans: ratio of net loans to total assets; GDP: logarithm of the gross domestic product.

Table 5B: Estimated impact of an increase in the share of non-interest income on profitability: impact of differences in bank size

		ROA						**SHROA**					
		Fixed Effects			*Two-step Robust S.E.*			*Fixed Effects*			*Two-step Robust S.E.*		
NII	ASSET	*25th*	*50th*	*75th*	*25th*	*50th*	*75th*	*25th*	*50th*	*75th*	*25th*	*50th*	*75th*
25th		**0.026****	0.015	0.002	**0.061*****	**0.038****	0.011	**2.481***	2.20	1.859	**7.22*****	**6.00*****	4.52
		(0.010)	(0.010)	(0.013)	(0.018)	(0.017)	(0.034)	(1.32)	(1.45)	(1.88)	(1.83)	(1.61)	(3.24)
50th		**0.027*****	**0.016****	0.004	**0.059*****	**0.036****	0.009	**2.44****	**2.16****	1.82	**6.11*****	**4.89*****	3.42
		(0.010)	(0.006)	(0.010)	(0.021)	(0.014)	(0.027)	(0.97)	(0.98)	(1.41)	(2.29)	(1.13)	(2.30)
75th		**0.028*****	**0.018*****	0.005	**0.057****	**0.035****	0.007	**2.40*****	**2.12*****	**1.78***	4.88	**3.67****	2.19
		(0.010)	(0.005)	(0.010)	(0.027)	(0.0148)	(0.022)	(0.86)	(0.62)	(0.97)	(3.16)	(1.56)	(1.47)

Table 6A. Income diversification and profitability of Philippine universal and commercial banks over the 1999-2005 period: impact of differences in bank ownership type (H1b)

	DOMESTIC BANKS				FOREIGN BANKS			
	ROA	SHROA	ROA	SHROA	ROA	SHROA	ROA	SHROA
FOCUS1	-0.00149	-0.151			0.0751	4.971		
	(-0.14)	(-0.10)			(0.94)	(1.04)		
NII	0.00627	**1.585****	0.00648	**1.606****	**0.0818***	**5.550****	**0.0510*****	**3.511*****
	(1.43)	(2.44)	(1.41)	(2.30)	(1.87)	(2.37)	(2.95)	(3.19)
ASSET	0.0118	2.121	0.0120	2.139	0.0450*	3.736**	0.0418*	3.523**
	(1.08)	(1.49)	(1.05)	(1.47)	(1.85)	(2.37)	(1.85)	(2.23)
GROWTH	0.00463*	0.208	0.00463*	0.208	-0.006***	-0.0974	-0.006***	-0.0565
	(1.80)	(0.55)	(1.82)	(0.55)	(-5.46)	(-0.88)	(-5.49)	(-0.52)
EQUITY	0.0206	5.351	0.0206	5.355	0.107	10.43	0.0900	9.316
	(0.64)	(1.34)	(0.65)	(1.35)	(0.98)	(1.36)	(0.86)	(1.23)
LOANS	-0.00260	-0.676	-0.00274	-0.690	0.0254*	2.004*	0.0296**	2.279**
	(-0.20)	(-0.51)	(-0.22)	(-0.56)	(1.79)	(1.99)	(2.47)	(2.31)
GDP	0.0154**	4.406***	0.0154**	4.409***	0.0270	2.565	0.0280	2.629
	(2.11)	(4.05)	(2.13)	(4.11)	(1.37)	(1.41)	(1.56)	(1.50)
Constant	-0.229**	-51.93***	-0.232**	-52.23***	-0.732***	-61.21***	-0.653***	-55.95***
	(-2.53)	(-4.18)	(-2.34)	(-4.07)	(-3.13)	(-4.45)	(-3.16)	(-4.59)
R-squared	0.167	0.241	0.167	0.241	0.550	0.400	0.533	0.385
No of obs	140	140	140	140	78	78	78	78
Wald test	1.04	2.98*			4.4**	3.99**		

***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively. T-statistics are corrected for heteroskedasticity following White's methodology for the fixed effects panel regression. Variable definitions: ROA: return on average assets; SHROA: ratio of return on average assets to standard deviation of ROA (annual data); FOCUS1: focus index based on a two part operating income breakdown- non-interest income and interest income; NII: ratio of non-interest income to total operating income; Asset: logarithm of total assets; Growth: average asset growth; Equity: ratio of equity to total assets; Loans: ratio of net loans to total assets; GDP: logarithm of the gross domestic product.

Table 6B: Estimated impact of an increased share in non-interest income: impact of differences in bank ownership type

	DOMESTIC		FOREIGN			
NII Percentiles	SHROA		ROA		SHROA	
	Indirect	*Net*	*Indirect*	*Net*	*Indirect*	*Net*
10th	0.198	1.784	-0.086	-0.004	-5.688	-0.138
	(2.063)	(2.218)	(0.091)	(0.053)	(5.45)	(3.78)
25th	0.149	1.734	-0.069	0.013	-4.558	0.993
	(1.543)	(1.728)	(0.073)	(0.036)	(4.367)	(2.797)
50th	0.095	1.68	-0.046	**0.036***	-3.066	2.484
	(0.988)	(1.230)	(0.049)	(0.017)	(2.938)	(1.693)
75th	0.041	**1.626***	-0.017	**0.065****	-1.099	**4.452****
	(0.426)	(0.809)	(0.018)	(0.028)	(1.053)	(1.604)
90th	-0.055	**1.53***	0.010	0.091	0.639	**6.189****
	(0.571)	(0.826)	(0.010)	(0.053)	(0.612)	(2.868)

Moreover, we highlight that the effect on risk-adjusted profits goes down in the case of domestic banks, as non-interest income increases. In contrast, as foreign banks tend to focus on non-interest activities, a further shift generates bigger risk-adjusted profits. This may suggest that it pays for foreign banks to specialize in non-interest activities, consistent with the studies of Stein (2002), Berger and Udell (2006), which highlight the disadvantage of foreign-owned institutions in collecting "soft" information that is crucial in lending to small local firms and lack of knowledge of the local domestic market.

We report results of the impact of a shift towards the different components of non-interest income on profits and risk-adjusted profits in Table 7. Consistent with our second hypothesis, our findings suggest the presence of greater benefits from diversification if a bank shifts from traditional interest generating activities toward non-traditional banking activities that generate non-interest income. Indeed, we observe positive and significant direct effects of an increase in the share of trading income to operating income on risk-adjusted profits. Moreover, we find a negative effect of a shift towards fee-based income on risk-adjusted profits, which is consistent with several US banking studies like Stiroh and Rumble (2006) and Stiroh (2004b). As highlighted in Table 3, the results may be driven by the positive correlation between the growth rates of net interest income and fee-based income, implying that cross-selling is highly likely in Philippine banks and the presence of a blurring demarcation line between income from lending and fee-based income. Furthermore, it is reasonable that a shift towards trading income translates to greater benefits from increased diversification as its growth shows weak correlation with traditional banking activities, responding more to different shocks such as market fluctuations.

For our control variables, overall, we find that bank size, *ASSET*, measured by the natural logarithm of bank assets has a positive impact on *ROA* and *SHROA*, but of which the impact decreases as the level of non-interest income increases. When we examine the subsample of domestic banks and foreign banks, however, we observe a positive relationship between profits and an increase in bank size but only for foreign banks. This may suggest that foreign banks are better able to exploit scale economies and more efficient risk management techniques. The coefficients associated with *LOANS* are positive and significant in terms of *ROA*, but only for our fixed effects panel regressions. We do not find, however, any significant relation between an increase in lending activity and risk-adjusted profits. Our results are in line with DeYoung and Rice (2004) but slightly differ from those of Chiorazzo *et al.* (2008) who find a positive impact of increased loans to risk-adjusted returns. The ratio of equity to total assets has an ambiguous effect on profits and risk-adjusted profits. We observe a negative relationship between *ROA* and *EQUITY*, suggesting that an increase in bank capitalization translates to lower profits. Our fixed effects regression results, however, suggests that an increase in bank capitalization increases risk-adjusted profits. *GROWTH*, meanwhile has contradicting effects on *ROA*, notably in domestic and foreign banks. We find that as banks grow rapidly, profits also soar in the case of domestic banks, while profits decline in the case of foreign banks. We do not find, however, any significant impact of a change in asset growth on risk-adjusted profits. We also control for the level of growth of the

economy, *GDP*, and overall, our results show that expected bank profits and risk-adjusted profits benefit from stronger economic growth.

Table 7. Product mixes within non-interest activities and profitability/risk for Philippine universal and commercial banks over the 1999-2005 period (H2, model 2)

	Fixed Effects Panel Regression				*Dynamic Panel Data Estimation*							
					Two Step GMM S.E.		Two Step Robust S.E.		Two Step GMM S.E.		Two Step Robust S.E.	
	ROA	SHROA	ROA	SHROA	ROA	SHROA	ROA	SHROA	ROA	SHROA	ROA	SHROA
ROA(t-1)					0.260***	0.13***	0.260**	0.132	0.3***	0.188***	0.25**	0.188*
					(5.66)	(2.74)	(2.32)	(1.31)	(6.16)	(3.28)	(1.99)	(1.70)
FOCUS2	-0.0040	-0.337			**-0.0137****	**-2.12*****	-0.0137	-2.123				
	(-0.26)	(-0.19)			(-2.15)	(-2.60)	(-0.65)	(-1.07)				
FEE	0.0053	-0.441	0.0075	-0.260	**-0.0233*****	**-2.599***	-0.0233	-2.599	**-.01*****	-2.157	-0.0119	-2.157
	(0.35)	(-0.31)	(0.63)	(-0.26)	(-4.11)	(-1.82)	(-0.99)	(-0.85)	(-3.64)	(-1.53)	(-0.72)	(-0.76)
TRAD	0.0230	**2.9*****	**.03*****	**3.161*****	**0.0172*****	**1.61*****	0.0172	1.612	**.02*****	**2.148*****	**0.02****	2.148**
	(1.67)	(2.80)	(2.90)	(4.80)	(4.71)	(3.03)	(1.10)	(1.02)	(9.37)	(5.47)	(2.39)	(2.03)
Other	-0.0199	-2.025	-0.0163	-1.724	-0.00710	**-4.97*****	-0.0071	-4.970	-0.0152	**-5.06*****	-0.0152	-5.058
	(-0.93)	(-0.82)	(-0.85)	(-0.81)	(-0.61)	(-4.71)	(-0.31)	(-1.34)	(-1.21)	(-3.96)	(-0.58)	(-1.35)
ASSET	0.02**	2.58**	0.03**	2.600**	-0.0084***	1.55***	-0.0084	1.553**	-0.004	1.113***	-0.0044	1.113
	(2.49)	(2.68)	(2.52)	(2.68)	(-3.38)	(4.14)	(-1.57)	(2.14)	(-1.49)	(4.06)	(-0.67)	(1.59)
GROWTH	-0.01***	-0.186*	-.01***	-0.188*	0.000519	-0.7***	0.00052	-0.695	-0.0023	-1.05***	-0.0023	-1.053
	(-3.77)	(-1.79)	(-3.78)	(-1.85)	(0.30)	(-3.47)	(0.09)	(-1.60)	(-1.35)	(-4.28)	(-0.37)	(-1.52)
EQUITY	0.0234	4.636	0.0232	4.623	-0.0367***	-4.157**	-0.0367	-4.157	-.04***	-8.69***	-0.0350	-8.7***
	(0.68)	(1.46)	(0.69)	(1.48)	(-4.50)	(-2.13)	(-1.37)	(-1.37)	(-5.62)	(-5.73)	(-1.30)	(-2.66)
LOANS	0.0276**	1.140	0.03**	1.125	-0.0156***	-0.0444	-0.016*	-0.0444	-.02***	0.0620	-0.018*	0.0620
	(2.42)	(1.45)	(2.44)	(1.49)	(-6.38)	(-0.10)	(-1.76)	(-0.03)	(-6.49)	(0.15)	(-1.78)	(0.04)
GDP	0.029***	4.6***	.03***	4.561***	0.0237***	3.09***	0.024**	3.09**	.02***	2.976***	0.02*	2.976**
	(3.09)	(4.49)	(3.09)	(4.55)	(6.27)	(5.26)	(2.27)	(2.15)	(4.72)	(4.86)	(1.68)	(2.17)
Constant	-0.46***	-58***	-0.5***	-58.6***	-0.0463***	-33.9***	-0.0463	-33.9***	-0.1***	-29.2***	-0.0684	-29***
	(-4.42)	(-6.66)	(-4.43)	(-6.76)	(-3.16)	(-7.39)	(-0.61)	(-2.87)	(-5.99)	(-10.20)	(-0.92)	(-3.43)
R-squared	0.365	0.340	0.364	0.340								
OBS	212	212	212	212	181	181	181	181	181	181	181	181
Wald test	3.77**	8.64***			180.15***	197***	12.77**	32.1***				
Sargan test					0.9	0.9			0.9	0.9		
Test for autocorr												
M1:1st order					0.03	0.01	0.05	0.01	0.03	0.01	0.05	0.02
M2:2nd order					0.17	0.79	0.21	0.69	0.16	0.80	0.21	0.80
Partial coeff:												
FeeBased	0.004	-0.531			**-0.027*****	**-3.170****	-0.027	-3.170				
Trading	0.022	**2.886***			**0.013****	0.894	0.013	0.894				
Other	-0.020	-2.064			-0.009	-5.229	-0.009	-5.229				

***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively. T-statistics are corrected for heteroskedasticity following White's methodology for the fixed effects panel regression. Variable definitions: ROA: return on average assets; SDROA: standard deviation of ROA (quarterly data); ADJROA: ratio of mean of return on average assets to standard deviation of ROA (quarterly data); SHROA: ratio of return on average assets to standard deviation of ROA (annual data); FOCUS2: focus index based on a four-part operating income breakdown- fee based income, trading income and other non-interest income; FEE: ratio of fee-based income to total operating income; TRAD: ratio of trading income to total operating income; Other: ratio of other non-interest income to total operating income; Asset: logarithm of total assets; Growth: average asset growth; Equity: ratio of equity to total assets; Loans: ratio of net loans to total assets; GDP: logarithm of the gross domestic product.

5. Further Investigation

5.1.SME Lending and Income Diversification

The history of Philippine banking reveals a developmental role assigned to the banking system. Several mandated credit programs are imposed with the aim of allocating credit to sectors that are critical from a social standpoint. Lending targets set for priority sectors are imposed in several emerging economies like India, Afghanistan, the Philippines, Pakistan and Sri Lanka (CGAP Financial Access 2010). From a theoretical point of view, mandated credit programs are inefficient ways to allocate scarce financial resources, potentially distorting bank strategies (Medalla and Ravalo, 1997).

One of the mandated credit programs in the Philippines is the *Magna Carta* for Small and Medium Enterprises (SMEs). As stipulated in the RA 6977[72], all lending institutions, such as banks are mandated to set aside at least six percent (6%) and at least two percent (2%) of their total loan portfolio to small and medium enterprises, respectively. There are, however, alternative ways to comply with this specific regulation. Banks may subscribe to the preferred shares of the Small Business Guarantee and Finance Corporation (SBGFC) or subscribe or purchase liability instruments as may be offered by SBGFC[73].

As highlighted in the literature (Berger *et al.*, 2001), small business lending tends to rely more on relationship lending where banks have to gather "soft" information. The alternative ways of complying may be more desirable from the point of view of larger and foreign banks as they are less likely to be involved in relationship lending. Moreover, foreign banks which do not have the specific knowledge of local domestic markets could be disadvantaged in collecting "soft" information.

We report in Table 8 the aggregate data on the compliance to the *Magna Carta* for Small and Medium Enterprises of the universal and commercial banks (UKBs) over the period of study. Although the UKBs collectively allocate more funds than the minimum amount to be allocated for SMEs (in 2005, 19.77% versus the required 8%), an average of 2.07% alternative/indirect compliance (to total net loan portfolio) indicates the presence of banks that do not comply by lending to the set minimum. The distribution of the total credit to

[72] Republic Act No. 6977 (later amended by Republic Act No. 8929)– An act to promote, develop and assist small and medium scale enterprises through the creation if a Small and Medium Enterprise Development (SMED) Coucil, and the rationalization of government assistance, programs and agencies concerned with the development of Small and Medium Enterprises, and for other purposes. It was later amended by Republic Act No. 9501 in 2008 to increase the percentage set aside for small enterprises from six percent (6%) to eight percent (8%).

[73] This organisation is now known as the Small Business Corporation.

SMEs, however, is disproportionate. Of the 19.77% compliance to the mandated credit to SMEs, 9.24% (versus 6% required) are allocated to small enterprises, while 10.53% (versus 2% required) are allotted to medium enterprises. It is also worthy to note that funds set aside to SMEs[74], which is also another way to comply to the *Magna Carta* for Small and Medium Enterprises has been consistently increasing over our study period.

Because of organizational diseconomies of providing relationship lending services along with providing transactions lending and other wholesale capital market services to large corporate customers, it may be too costly to provide financial services to small firms while maintaining provision of different banking services to large clients (Berger *et al.*, 2001). A shift towards non-interest income may therefore more likely benefit banks that are less inclined to directly comply with the *Magna Carta* for SMEs by lending, indicating their expertise on the provision of other financial services besides lending.

Since we do not have detailed information which provides disaggregated data of the compliance ratios[75] of individual banks isolating direct lending from alternative compliance, we assume that banks with compliance ratios less than 7% are those that are more likely to alternatively comply by purchasing liability instruments or set aside funds for small enterprises[76]. Data on compliance ratios for individual banks are only available from 2005. We identify 23 banks which are less likely to comply through direct lending and 16 banks, with compliance ratios greater than or equal to 7%. We test Hypothesis 1 on these two subsamples and examine a bigger subsample, which gradually increases the threshold (Compliance to *Magna Carta* (for small firms) < 8%; Compliance to *Magna Carta* (for small firms) < 10%.

[74] Consists of either "Cash on Hand" and "Due from BSP" which are free, unencumbered, not hypothecated, not utilized or earmarked for other purposes. The "Due from BSP" is a special account deposited with the BSP and does not form part of the bank's legal reserves. Under the new mandatory credit allocation (RA 9501) beginning 2008, Funds Set Aside is no longer considered as a mode of compliance.

[75] Our data of the compliance ratios of the *Magna Carta* for SMEs of individual banks do not distinguish direct compliance through lending and alternative compliance through several means.

[76] We focus our study on the micro and small enterprises, where bank financing may be more constrained compared with medium enterprises. In addition, most of the MSMEs in the Philippines belong to the micro and small enterprises group (90%). It is also more probable that banks alternatively comply in the micro and small enterprises group than in the medium enterprises group.

Table 8. Aggregate Data on the Compliance with Micro, Small and Medium Enterprises Credit Required under the Magna Carta of Universal and Commercial Banks (UKBs) in the Philippines from 1999 to 2005 (in million pesos)

	Dec 2005	Dec 2004	Dec 2003	Dec 2002	Dec 2001	Dec 2000	Dec 1999
MICRO, SMALL AND MEDIUM ENTERPRISES (MSME) CREDIT (6% & 2%)							
Direct Compliance for MSMEs	154 275	163 204	163 304	183 486	184 862	180 951	174 959
Alternative/Indirect Compliance for MSMEs	14 277	14 489	13 175	38 620	7 465	8 622	27 699
Funds Set Aside for MSMEs	11 946	11 003	10 992	9 909	7 706	6 150	5 181
Total Compliance for MSMEs	180 498	188 696	187 471	232 015	200 033	195 723	207 839
Total Loan Portfolio Net of Exclusions	912 867	903 565	888 287	798 264	857 073	911 968	902 839
% of Compliance for MSMEs	**19.77**	**20.88**	**21.10**	**29.06**	**23.34**	**21.46**	**23.02**
% of Compliance for MSMEs (direct)	**16.90**	**18.06**	**18.38**	**22.99**	**21.57**	**19.84**	**19.38**
% of Compliance for MSMEs (alternative)	**1.56**	**1.60**	**1.48**	**4.84**	**0.87**	**0.95**	**3.07**
MICRO AND SMALL ENTERPRISES (MSE) CREDIT (6% minimum)							
Direct Compliance for MSEs	67 583	72 854	75 632	103 272	112 892	95 873	105 491
Alternative/Indirect Compliance for MSEs	7 311	7 689	6 565	18 811	3 849	4 630	14 068
Funds Set Aside for MSEs	9 444	8 451	8 323	7 518	5 971	4 681	4 040
Total Compliance for MSEs	84 337	88 994	90 520	129 600	122 712	105 184	123 599
Total Loan Portfolio Net of Exclusions	912 867	903 565	888 287	798 264	857 073	911 968	902 839
% of Compliance for MSEs	**9.24**	**9.85**	**10.19**	**16.24**	**14.32**	**11.53**	**13.69**
% of Compliance for MSEs (direct)	**7.40**	**8.06**	**8.51**	**12.94**	**13.17**	**10.51**	**11.68**
% of Compliance for MSEs (alternative)	**0.80**	**0.85**	**0.74**	**2.36**	**0.45**	**0.51**	**1.56**
MEDIUM ENTERPRISES (ME) CREDIT (2% minimum)							
Direct Compliance for MEs	86 693	90 350	87 672	80 214	71 970	85 078	69 468
Alternative/Indirect Compliance for MEs	6 966	6 800	6 610	19 810	3 616	3 992	13 631
Funds Set Aside for MEs	2 503	2 552	2 669	2 392	1 735	1 469	1 141
Total Compliance for MEs	96 161	99 702	96 950	102 415	77 321	90 539	84 240
Total Loan Portfolio Net of Exclusions	912 867	903 565	888 287	798 264	857 073	911 968	902 839
% of Compliance for MEs	**10.53**	**11.03**	**10.91**	**12.83**	**9.02**	**9.93**	**9.33**
% of Compliance for MEs (direct)	**9.50**	**10.00**	**9.87**	**10.05**	**8.40**	**9.33**	**7.69**
% of Compliance for MEs (alternative)	**0.76**	**0.75**	**0.74**	**2.48**	**0.42**	**0.44**	**1.51**

The results of the estimations are shown in Table 9A while the estimated impact of a shift towards non-interest income is reported in Table 9B. In terms of profitability, the findings indicate that a shift towards non-interest income increases profitability (*through the direct effect)* but only for banks that are more likely to alternatively comply with the mandated SME lending program by acquiring designated securities. Conversely, banks that directly comply by lending to SMEs, and assumed to have more expertise in SME lending, do not derive greater profits from shifting traditional interest-generating activities to non-interest generating ones. Although positive and significant for both subsamples, we observe sizable differences in terms of the coefficients of the direct effect of a shift towards non-interest income on risk-adjusted profitability. Consistent with the earlier finding, banks that are more specialized and chose to engage in SME lending face lesser benefits from diversification.

When we loosen the restriction (of 7%) and include in the subsample of banks that are less adept in lending to SMEs, banks with less than 8% and 10% compliance ratios, we find that the coefficients, which measure the direct effect of a shift towards non-interest income on profitability and risk-adjusted profitability, decrease[77]. This suggests that benefits derived from diversification moves down with increased SME lending, implying that additional opportunity costs (of lost profits and risk-adjusted profits) are present for banks that have less expertise on SME lending to directly and adequately comply to lending to small firms. Even with the presence of mandated credit programs, these banks may not have incentives to reallocate their funds towards priority sectors, such as the SMEs.

We also test Hypothesis 2 with our subsample of banks categorized according to their compliance ratios from the *Magna Carta* to Micro and Small Enterprises. The results are shown in Table 10. Our findings indicate that banks that are less likely to directly lend to SMEs are those that benefit from a shift towards non-traditional interest activities, such as those that earn non-interest income from trading securities. This may suggest that the benefits from income diversification in the case of emerging economies may be largely derived from the expertise and specialization of these banks with regard to non-traditional banking activities. Moreover, consistent with our previous finding, the higher the probability that a bank uses alternative compliance to the *Magna Carta* for micro and small enterprises, the higher the benefits derived from a shift towards non-traditional banking activities through increased profitability and risk-adjusted profitability.

[77] Table of results not reported for the sake of brevity.

Table 9A. The effect of income diversification on profitability and risk-adjusted profitability according to compliance with the mandated credit program, *Magna Carta* for Small Firms

	Compliance to *Magna Carta* (Small Firms) <7%				Compliance to *Magna Carta* (Small Firms)>=7%			
	ROA	ROA	SHROA	SHROA	ROA	ROA	SHROA	SHROA
FOCUS1	0.0109		0.416		-0.00311		-0.544	
	(0.33)		(0.16)		(-0.26)		(-0.31)	
NII	**0.0351***	**0.0307****	**3.700*****	**3.534*****	0.00886	0.00893	**1.258***	**1.271***
	(1.74)	(2.69)	(3.48)	(3.41)	(1.36)	(1.35)	(2.03)	(2.02)
ASSET	0.0127	0.0120	1.456	1.431	0.0477**	0.0478**	5.057***	5.080***
	(1.08)	(1.02)	(1.03)	(1.00)	(2.17)	(2.18)	(3.85)	(3.88)
EQUITY	-0.00736	-0.00864	1.908	1.859	0.122	0.123	11.50*	11.65*
	(-0.17)	(-0.19)	(0.55)	(0.52)	(1.56)	(1.59)	(2.02)	(2.08)
GROWTH	-0.0059***	-0.0058***	-0.0379	-0.0330	-0.00880	-0.00865	-0.557	-0.530
	(-3.76)	(-3.93)	(-0.27)	(-0.27)	(-1.22)	(-1.19)	(-0.86)	(-0.80)
LOANS	0.0191	0.0204	1.477	1.526	0.0128	0.0127	-0.0880	-0.106
	(1.20)	(1.43)	(0.98)	(1.09)	(1.11)	(1.13)	(-0.07)	(-0.09)
GDP	0.0246*	0.0244*	4.551***	4.543***	0.0275*	0.0279*	3.665**	3.738**
	(2.05)	(1.97)	(3.15)	(3.13)	(1.96)	(2.13)	(2.39)	(2.68)
Constant	-0.318***	-0.302**	-46.9***	-46.3***	-0.72***	-0.72***	-78.96***	-80.04***
	(-3.04)	(-2.62)	(-3.66)	(-3.45)	(-3.02)	(-3.09)	(-8.03)	(-8.82)
R2	0.396	0.394	0.279	0.278	0.324	0.323	0.339	0.339
Obs	117	117	117	117	93	93	93	93

***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively. T-statistics are corrected for heteroskedasticity following White's methodology for the fixed effects panel regression. Variable definitions: ROA: return on average assets; SHROA: ratio of return on average assets to standard deviation of ROA (annual data); FOCUS1: focus index based on a two part operating income breakdown- non-interest income and interest income; NII: ratio of non-interest income to total operating income; Asset: logarithm of total assets; Growth: average asset growth; Equity: ratio of equity to total assets; Loans: ratio of net loans to total assets; GDP: logarithm of the gross domestic product.

Table 9B. Estimated impact of an increase in the share of non-interest income on profitability and risk-adjusted profitability

	Compliance to *Magna Carta* (Small Firms) <7%				**Compliance to *Magna Carta* (Small Firms) >7%**			
	ROA		SHROA		ROA		SHROA	
NII	*Indirect*	*Net*	*Indirect*	*Net*	*Indirect*	*Net*	*Indirect*	*Net*
25th	-0.0102	0.0248	-0.3909	3.3088	0.0032	0.0120	0.5548	1.8123
	(0.0313)	(0.0184)	(2.4896)	(2.1498)	(0.0122)	(0.0143)	(1.7692)	(2.1237)
50th	-0.0064	**0.0286****	-0.2458	**3.4539****	0.0022	0.0111	0.3916	1.6491
	(0.0197)	(0.0117)	(1.5653)	(1.3707)	(0.0086)	(0.0112)	(1.2488)	(1.6268)
75th	-0.0035	**0.0315****	-0.1349	**3.5648*****	0.004	0.0093	0.0701	**1.3276***
	(0.0108)	(0.0127)	(0.8591)	(0.9668)	(0.0015)	(0.0068)	(0.2234)	(0.7474)

Table 10. The effect of income diversification (disaggregated components of non-interest income) on profitability and risk-adjusted profitability according to compliance with the mandated credit program, *Magna Carta* for Small Firms

	Compliance to *Magna Carta* (Small Firms) <7%				Compliance to *Magna Carta* (Small Firms) >=7%			
	ROA	ROA	SHROA	SHROA	ROA	ROA	SHROA	SHROA
FOCUS2	0.0366		3.100		-0.0138		-2.125	
	(0.95)		(1.18)		(-1.11)		(-0.96)	
FEE	0.0411	0.00892	4.021	1.301	0.00994	0.0149	-0.133	0.631
	(0.82)	(0.28)	(1.05)	(0.43)	(0.46)	(0.76)	(-0.07)	(0.42)
TRAD	0.0571	**0.0342****	**5.917*****	**3.971*****	0.00704	0.0123	1.419	**2.226****
	(1.63)	(2.46)	(3.67)	(4.01)	(0.93)	(1.45)	(1.41)	(2.35)
OTHER	0.0434	0.00538	4.070	0.852	**-0.0652***	-0.0543	**-8.083****	**-6.411****
	(1.03)	(0.22)	(0.99)	(0.27)	(-1.83)	(-1.46)	(-2.57)	(-2.47)
ASSET	0.0154	0.0136	1.683	1.528	0.0398**	0.0401**	4.166**	4.209**
	(1.41)	(1.16)	(1.29)	(1.10)	(2.20)	(2.23)	(2.74)	(2.92)
GROWTH	-0.0066**	-0.0066***	-0.108	-0.113	-0.00925	-0.00880	-0.791	-0.721
	(-2.82)	(-2.89)	(-0.56)	(-0.59)	(-1.46)	(-1.33)	(-1.17)	(-1.00)
EQUITY	-0.00758	-0.00983	1.955	1.765	0.0880	0.0906	8.823	9.217
	(-0.16)	(-0.19)	(0.53)	(0.44)	(1.31)	(1.43)	(1.36)	(1.54)
LOANS	0.0184	0.0186	1.288	1.312	0.0207	0.0197	0.243	0.0799
	(1.09)	(1.13)	(0.82)	(0.83)	(1.14)	(1.08)	(0.18)	(0.07)
GDP	0.0264*	0.0255*	4.914***	4.842***	0.0326**	0.0338**	4.071**	4.266***
	(2.05)	(1.91)	(3.27)	(3.10)	(2.46)	(2.54)	(2.79)	(2.98)
Constant	-0.376***	-0.322***	-53.6***	-48.96***	-0.66***	-0.68***	-70.6***	-73.8***
	(-3.45)	(-2.94)	(-4.22)	(-3.69)	(-2.97)	(-3.17)	(-5.56)	(-7.34)
R-squared	0.428	0.415	0.318	0.308	0.403	0.399	0.446	0.438
OBS	114	114	114	114	90	90	90	90

***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively. T-statistics are corrected for heteroskedasticity following White's methodology for the fixed effects panel regression. Variable definitions: ROA: return on average assets; SHROA: ratio of return on average assets to standard deviation of ROA (annual data); FOCUS2: focus index based on a four-part operating income breakdown- fee based income, trading income and other non-interest income; FEE: ratio of fee-based income to total operating income; TRAD: ratio of trading income to total operating income; Other: ratio of other non-interest income to total operating income; Asset: logarithm of total assets; Growth: average asset growth; Equity: ratio of equity to total assets; Loans: ratio of net loans to total assets; GDP: logarithm of the gross domestic product.

5.2.Listed Banks

We also study the effects of income diversification on the risk, profitability and risk-adjusted profitability of listed and universal listed banks in the Philippines. Unlike commercial banks, universal banks are allowed to perform the activities of investment houses (RA 8791[78], PD 129[79]) and generally, are bigger in terms of size. Hence, the impact of income diversification may diverge between the two types of banks. Because of a scope and size advantage, we argue that universal banks are in a better position to diversify away from traditional interest-generating activities towards activities that generate non-interest income,

[78] Republic Act No. 8791. An Act Providing For the Regulation of the Organization and Operations of Banks, Quasi-Banks, Trust Entities and for Other Purposes. Artcile 1, Section 23. Powers of a Universal Bank. – A universal bank shall have the authority to exercise, in addition to the powers authorized for a commercial bank, the powers of an investment hourse as provided in existing laws and the power to invest in non-allied enterprises.

[79] Presidential Decree No. 129. The Investment Houses Law. Section 2. Definitions: A) Investment House is any enterprise which primarily engages, whether regularly or on an isolated basis, in the underwriting of securities of another person or enterprise, including securities of the Government or its instrumentalities.

particularly the non-traditional ones. We thus study the listed and universal listed banks[80] and test hypotheses 1 and 2. The results are reported in Tables 11 and 12. While we find in both subsamples a positive and significant direct effect of a shift towards non-interest income on profitability and risk-adjusted profitability, the value of the coefficient is higher in the case of universal listed banks. Moreover, in terms of risk, our results suggest that universal listed banks derive greater risk-reduction benefits from an increase in the share of non-interest income derives using market-based indicators. This result is driven primarily by a shift towards trading income, effectively increasing profits, reducing risk and hence, increasing risk-adjusted profits.

[80] Since there are not enough observations to investigate commercial listed banks, we compare all listed and universal banks.

Table 11. Income diversification and profitability/risk for Philippine listed banks over the 1999-2005 period (H1)

	LISTED BANKS						UNIVERSAL LISTED BANKS					
	ROA	SHROA	Beta	RiskSpec	TotRisk	MZ	ROA	SHROA	Beta	RiskSpec	TotRisk	MZ
FOCUS1	-0.00922	-1.628	0.000168	0.0488	0.0488	-104.8*	-0.00400	-0.413	-0.0000598	0.00692	0.00637	-65.97
	(-0.98)	(-1.09)	(0.14)	(0.61)	(0.60)	(-1.97)	(-0.41)	(-0.23)	(-0.17)	(0.38)	(0.34)	(-1.22)
NII	**0.0146****	**3.029*****	-0.00112	-0.0498	-0.0509	**133.1****	**0.0225*****	**4.086*****	**-0.00058****	**-0.0357*****	**-0.037*****	**137.1****
	(2.75)	(3.77)	(-1.30)	(-0.77)	(-0.77)	(2.38)	(4.35)	(4.49)	(-2.41)	(-3.92)	(-4.00)	(3.10)
ASSET	0.00176	0.539	0.000970	0.0221	0.0232	36.37	-0.0144	-1.987	0.000545	0.00369	0.00448	-29.05
	(0.15)	(0.29)	(0.69)	(0.21)	(0.22)	(0.44)	(-0.97)	(-1.13)	(1.18)	(0.44)	(0.50)	(-0.68)
GROWTH	0.00290	0.142	-0.000866	-0.0581	-0.0587	0.758	-0.000085	0.0467	-0.0000333	-0.00669**	-0.0066**	14.52*
	(0.93)	(0.28)	(-1.18)	(-1.21)	(-1.21)	(0.04)	(-0.02)	(0.05)	(-0.78)	(-2.39)	(-2.32)	(2.21)
EQUITY	0.0322	8.077	-0.0099**	-0.773**	-0.779**	-331.4	0.0401	3.486	0.00433*	0.240**	0.244**	-375.4*
	(1.17)	(1.49)	(-2.19)	(-2.55)	(-2.54)	(-1.58)	(0.84)	(0.35)	(1.94)	(2.32)	(2.34)	(-2.20)
LOANS	-0.00658	-0.976	-0.000094	0.00582	0.00595	20.15	-0.0313	-3.850**	-0.000493	-0.0181	-0.0178	-78.95
	(-0.46)	(-0.59)	(-0.12)	(0.10)	(0.10)	(0.20)	(-1.67)	(-2.71)	(-1.23)	(-0.95)	(-0.91)	(-0.91)
GDP	0.0243**	5.849***	-0.00163	-0.141	-0.143	125.3	0.0422***	8.686***	-0.000145	-0.0242	-0.0251	81.37
	(2.40)	(3.06)	(-0.94)	(-1.22)	(-1.23)	(1.60)	(3.74)	(7.70)	(-0.69)	(-1.17)	(-1.20)	(1.74)
Constant	-0.180*	-44.7***	0.00281	0.870	0.873	-1160.9	-0.119	-35.05	-0.00504	0.132	0.129	-106.7
	(-2.06)	(-3.40)	(0.49)	(1.33)	(1.32)	(-0.95)	(-0.87)	(-1.78)	(-1.01)	(0.93)	(0.90)	(-0.30)
R-squared	0.183	0.284	0.204	0.188	0.188	0.217	0.292	0.373	0.173	0.410	0.406	0.282
OBS	99	99	86	86	86	74	72	72	64	64	64	60
Wald Test	4.64**	9.69***	1.62	.31	.32	3.65*	14.94***	10.53***	3.58*	10.16***	10.15***	4.83**
Partial Effect of NII on Perf	**0.019****	**3.78*****	-0.001	-0.072	-0.073	**180.7****	**0.024****	**4.28****	-0.001	**-0.039****	**-0.04****	**163.02****

***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Variable definitions: ROA= return on average assets; SHROA: ratio of return on average assets to standard deviation of ROA (annual data); Beta: market model beta; TotRisk: total risk computed as the standard deviation of weekly returns; RiskSpec: specific risk or the standard deviation of the market model residual; MZ: Market Z-score; FOCUS1: focus index based on a two part operating income breakdown- non-interest income and interest income; NII: ratio of non-interest income to total operating income; Asset: logarithm of total assets; Growth: average asset growth; Equity: ratio of equity to total assets; Loans: ratio of net loans to total assets; GDP: logarithm of the gross domestic product.

Table 12. Product mixes within non-interest activities and profitability/risk for Philippine listed banks over the 1999-2005 period (H2, model 2a)

	LISTED BANKS						UNIVERSAL LISTED BANKS					
	ROA	SHROA	Beta	RiskSpec	TotRisk	MZ	ROA	SHROA	Beta	RiskSpec	TotRisk	MZ
FOCUS2	-0.0147	-1.458	0.00103	0.151	0.152	-87.89	-0.00612	1.877	0.000115	0.0208	0.0200	-28.41
	(-1.16)	(-0.62)	(0.56)	(1.23)	(1.22)	(-0.87)	(-0.21)	(0.58)	(0.25)	(0.99)	(0.95)	(-0.47)
FEE	0.0162	-3.390	0.00249	0.179	0.180	-47.85	0.0251	-1.702	-0.000370	-0.0223	-0.0230	-39.91
	(0.34)	(-0.52)	(0.80)	(0.78)	(0.78)	(-0.38)	(0.77)	(-0.38)	(-0.61)	(-1.05)	(-1.10)	(-0.56)
TRAD	0.0121	2.922	**-0.000931***	-0.00607	-0.00698	110.0	**0.0254*** **	**6.215*** **	**-0.000676*** **	**-0.0320*** **	**-0.0338*** **	**153.9****
	(1.62)	(1.71)	(-1.87)	(-0.11)	(-0.12)	(1.22)	(3.38)	(5.53)	(-5.33)	(-3.79)	(-3.92)	(2.39)
Other	-0.0269	-2.098	0.000558	0.104	0.104	34.00	-0.00268	3.606	-0.0000957	0.00601	0.00433	81.28
	(-0.69)	(-0.42)	(0.61)	(1.61)	(1.59)	(0.35)	(-0.06)	(0.89)	(-0.23)	(0.23)	(0.17)	(0.93)
ASSET	0.00410	0.777	0.00117	0.0316	0.0330	38.14	-0.0141	-2.140	0.000580	-0.00134	-0.000288	-30.98
	(0.33)	(0.39)	(0.72)	(0.26)	(0.27)	(0.44)	(-0.86)	(-1.04)	(1.18)	(-0.12)	(-0.02)	(-0.61)
GROWTH	0.00194	-0.103	-0.000791	-0.0537	-0.0543	-1.371	-0.0000152	-0.120	-0.000030	-0.00614	-0.00612	9.590
	(0.64)	(-0.19)	(-1.17)	(-1.22)	(-1.22)	(-0.07)	(-0.00)	(-0.12)	(-0.68)	(-1.67)	(-1.63)	(1.46)
EQUITY	0.0190	5.647	-0.00890**	-0.736**	-0.742**	-376.6*	0.0375	4.572	0.00440	0.234**	0.237**	-406.7**
	(0.66)	(1.10)	(-2.15)	(-2.54)	(-2.53)	(-1.76)	(0.71)	(0.50)	(1.80)	(2.34)	(2.36)	(-2.63)
LOANS	-0.0064	-1.260	0.0000201	0.00697	0.00724	30.02	-0.0335**	-4.898***	-0.000418	-0.0210	-0.0204	-86.00
	(-0.52)	(-0.69)	(0.02)	(0.11)	(0.12)	(0.28)	(-2.47)	(-4.57)	(-1.01)	(-1.08)	(-1.01)	(-0.99)
GDP	0.0258*	5.379**	-0.00161	-0.143	-0.145	106.1	0.0455**	8.394***	-0.000229	-0.0198	-0.0209	65.58
	(1.96)	(2.54)	(-0.87)	(-1.17)	(-1.17)	(1.74)	(2.97)	(4.82)	(-0.83)	(-1.00)	(-1.04)	(1.62)
Constant	-0.21**	-42.64***	-0.000698	0.679	0.679	-1028.9	-0.142	-31.76	-0.00503	0.148	0.144	33.17
	(-2.21)	(-3.01)	(-0.10)	(0.89)	(0.89)	(-0.83)	(-0.97)	(-1.50)	(-0.94)	(1.13)	(1.08)	(0.09)
R-squared	0.239	0.370	0.230	0.211	0.211	0.219	0.345	0.476	0.197	0.441	0.437	0.317
OBS	96	96	84	84	84	72	70	70	62	62	62	58
Wald Test	4.36**	9.03***	1.86	1.96	1.94	3.01*	39.13***	15.96***	9.68***	23.98***	24.26***	13.71***
Partial Effect on Perf:												
FEE	0.013	-3.72	0.003	0.212	0.214	-69.25	0.023	-1.24	-0.000	-0.017	-0.018	-46.94
TRAD	0.01	2.35	-0.001	0.053	0.053	74.33	**0.024***	**6.90*** **	**-0.001****	-0.025	**-0.027***	143.76
Other	-0.03	-2.32	0.001	0.128	0.128	19.20	-0.004	3.92	-0.00	0.009	0.008	76.54

***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Variable definitions: ROA: return on average assets; SHROA: ratio of return on average assets to standard deviation of ROA (annual data); Beta: market model beta; TotRisk: total risk computed as the standard deviation of weekly returns; RiskSpec: specific risk computed as the standard deviation of the market model residual; MZ: Market Z-score; FOCUS2: focus index based on a four part operating income breakdown- fee-based income, trading income, other non-interest income, and interest income; FEE: ratio of fee-based income to total operating income; TRAD: ratio of trading income to total operating income; Other: ratio of other non-interest income to total operating income; Asset: logarithm of total assets; Growth: average asset growth; Equity: equity to total assets; Loans: ratio of net loans to total assets; GDP: logarithm of the gross domestic product.

5.3.Components of Trading and Fee-based Income[81]

We also examine the effects of a shift towards more specific/detailed fee-based and trading activities. We extend Hypothesis 2, investigating further the effect of a shift towards a traditional or a non-traditional banking activity, which earns non-interest income. While this may have been studied using US data as in Stiroh and Rumble (2006), this is the first study on an emerging economy that provides more details on non-interest income components of banks.

We construct two new measures that take into account the separate components of fee-based and trading income. We run a new set of regressions on the basis of the following models:

$$Y_{it} = \alpha_{it} + \beta_1 FOCUS3_{it} + \beta_{21} BC_{it} + \beta_{22} SC_{it} + \beta_{23} OC_{it} + \beta_3 TRAD_{it} + \beta_4 Other_{it} + Z_{it} + \varepsilon_{it} \quad (13)$$

$$Y_{it} = \alpha_{it} + \beta_1 FOCUS4_{it} + \beta_2 FEE_{it} + \beta_{31} GS_{it} + \beta_{32} PD_{it} + \beta_{33} FF_{it} + \beta_{34} PI_{it} + \beta_{35} FP_{it} + \beta_4 Other_{it} + Z_{it} + \varepsilon_{it} \quad (14)$$

$FOCUS3_{it}$ and $FOCUS4_{it}$ are measures of diversification within respectively detailed fee-based and trading incomes; BC_{it}, SC_{it} and OC_{it} are the three components of fee-based activities and represent the shares of respectively bank commissions, service charges and other commissions in total operating income. GS_{it}, PD_{it}, FF_{it}, PI_{it} and FP_{it} are the five components of trading activities and represent the shares of respectively government securities trading gains (losses), private debt trading gains (losses), financial futures gains (losses), profit from investment and foreign exchange profits in total operating income.

In contrast with Chiorazzo *et al.* (2008), we find that gains from diversification are associated with the source of non-interest income. Our findings are not in line with studies on US banks (i.e. Stiroh, 2004b) which report higher risk for banks more reliant on trading activities. However, for European banks, Lepetit *et al.* (2008) do not find evidence of a positive relationship between trading activities and risk.

The econometric investigation conducted on the detailed breakdown of fee-based and trading activities provide a clearer insight of how different product mixes within non-interest activities affect profitability and risk. Two main results are highlighted. First, in the case of fee-based activities, we find that an increased share of "other commissions and fees" to total operating income is associated with increased profitability but not risk-adjusted profitability.

[81] Table of results not reported for the sake of brevity.

The second result relates to trading income. We find that a shift towards trading government securities and financial futures/options/forward/swaps, both non-traditional banking activities, lead to enhanced profitability and risk-adjusted profitability.

Further differences in the diversification effect of Philippine banks into non-interest activities are analyzed by examining the specific case of universal banks, which unlike commercial banks, are allowed to perform the activities of investment houses (RA 8791[82], PD 129[83]). Following existing studies (Bhargava and Fraser (1998), Akhigbe and Whyte (2004), Cornett *et al.* (2002)) which examine the effects of various regulations that pertain to bank expansion into investment banking activities, our aim here is to assess the risk implications of diversifying into such specific non-interest activities. We investigate the effects of the disaggregated shares of fee-based and trading income on the risk of universal banks and focus more particularly on the effect of increased shares in "other commissions/fees" (a component of fee-based income), which are commission and fees collected for investment house activities such as underwriting, securities dealership and equity investments, the non-traditional income component of fee-based activities. Our results show that in the case of universal banks, a shift towards investment house activities, although leading to higher profits, has an adverse effect on risk. This is consistent with some studies on developed countries that find shifts towards fee-based activities to be risky. Fee-based income earned from the investment house functions, are however small compared to other fee-based components. We therefore do not capture the effect of this component using the "aggregate" fee-based income. Looking further on the disaggregation of trading income, we find that higher involvement in trading government securities leads to risk reduction, enhancing both profitability and risk-adjusted profitability.

6. Robustness Checks[84]

We also perform several robustness checks. First, we define alternative measures of diversification, particularly *FOCUS1*. We note that *FOCUS1* has an important shortcoming. This is because the index predicts the same degree of focus for banks that are more reliant on

[82] Republic Act No. 8791. An Act Providing For the Regulation of the Organization and Operations of Banks, Quasi-Banks, Trust Entities and for Other Purposes. Artcile 1, Section 23. Powers of a Universal Bank. – A universal bank shall have the authority to exercise, in addition to the powers authorized for a commercial bank, the powers of an investment hourse as provided in existing laws and the power to invest in non-allied enterprises.

[83] Presidential Decree No. 129. The Investment Houses Law. Section 2. Definitions: A) Investment House is any enterprise which primarily engages, whether regularly or on an isolated basis, in the underwriting of securities of another person or enterprise, including securities of the Government or its instrumentalities.

[84] For the sake of brevity, we do not report all the results discussed under the section of robustness checks.

interest income, and for those that are more oriented towards non-interest income. For example, *FOCUS1* predicts the same degree of focus for a bank that holds 70% interest income and a bank that holds 70% non-interest income. Thus this index does not allow us to differentiate on which activities the bank is focused on. To overcome this problem, we define another indicator, *FOCUSDIV*, which is the interaction term of *FOCUS1* with a dummy variable, *DIV*, which is equal to 1 if the share of non-interest income is higher than 50% and zero, otherwise. The coefficient of *FOCUSDIV* indicates whether it pays to be more focused on non-interest activities compared to interest-generating ones. We also examine different thresholds of *DIV*- 30%, 40% and 60% and find that at a threshold of non-interest income less than 40%, focus on non-interest income does not translate into increased bank profitability. Moreover, with thresholds greater than 40%, we find that focus increases bank profitability. Our results are very robust to the 60% and 70% thresholds, which confirm that focusing in activities that generate non-interest income increases the profitability of Philippine banks.

Second, we use a more limited definition of trading income, which includes only the gains/losses from trading activities (government securities, private/equity securities, and financial futures options/forwards/swaps). When this definition is used, we find "other non-interest income" to be positively related to profitability and risk. This can be explained by the inclusion of other non-traditional, non-interest income generating activities like foreign exchange profit, gold trading gain/loss and the profit on sale or redemption of investments in our definition of "other non-interest income", driving up diversification benefits, notably risk-adjusted profitability. The results however regarding trading income remain unchanged.

Lastly, we also examine if there are significant behavioral differences between listed and non-listed banks. We do not find, however, significant differences over these two subsamples.

7. Summary and concluding remarks

Research on bank revenue diversification in developed countries, namely the U.S., has documented that a higher reliance on non-interest activities lowers risk-adjusted profits (Stiroh, 2004a, 2004b, 2006 and Stiroh and Rumble, 2006). In this paper we find diversification to be beneficial for Philippine banks, consistent with Sanya and Wolfe (2011) who study the income diversification-performance relationship of listed banks in 11 emerging economies. Philippine banks have a different structure of non-interest activities. Higher non-interest income of an average Philippine bank stems from a relatively stronger involvement in

trading activities than an average U.S. bank. Regarding fee-based income, we find trading income growth to be less correlated with net interest income growth, reflecting the dependence of fee-based income generated from the traditional intermediation activities of the bank. From a standard portfolio approach, this may indicate that higher diversification benefits could be derived from shifts towards trading income activities rather than shifts towards fee-based income activities. Our empirical investigation supports this hypothesis, suggesting that that shifts toward trading income, particularly from trading government securities, lead to higher bank profits and risk-adjusted profits.

We also examine the factors that may affect the income diversification-performance relationship, which includes size and ownership. Our findings indicate that smaller banks derive larger gains from further income diversification because larger banks may have the tendency to "over-diversify" and that saturation may occur upon reaching an optimal level and size. Moreover, we find foreign banks to have the upper hand in diversifying income compared with domestic banks. As foreign banks tend to specialize in non-interest income activities, a marginal increase in non-interest income tends to increase further their risk-adjusted profits. In emerging countries, foreign banks generally suffer from insufficient knowledge of the local market and disadvantage in terms of collecting "soft" information, which may be vital in lending not only to small businesses but also to larger firms. Thus it pays for them to specialize in modern non-interest income generating activities rather than traditional intermediation activities.

We extend the study of Sanya and Wolfe (2011) on emerging economies by tackling a specific regulatory aspect that is akin to these economies - the presence of mandated credit program to SMEs. The extent to which high and low exposure to bank financing of SMEs affects the income diversification –profitability/risk relationship is a also an issue we address in this paper. We find revenue diversification, more precisely, a shift towards non-interest income to be most beneficial for banks that lend less to SMEs. This result suggests that for these banks, the presence of an additional opportunity cost in the form of lost profits, further dissuades them to directly comply or with minimum lending requirements to SMEs. The existence of alternative ways to comply with regulation, i.e. by acquiring specific government securities, may have hastened bank inefficiency generally attributed to mandated credit programs but at the expense of the social purpose of such development programs that aim to increase sustainable access to external finance to SMEs. Nevertheless, banks that allocate a bigger percentage of their loan portfolio on SMEs are assumed to have better lending technologies that address opaque small business borrowers and relatively, have less expertise

in diversifying into non-interest income activities, which may arise from high switching costs. On the whole, our findings highlight that the development of nontraditional intermediation activities in banking have different implications in terms of profitability and risk in the case of an emerging economy. Specifically, bank ownership (foreign/domestic) and the engagement in SME funding as well as the presence of specific regulations to promote small scale lending matter.

Annex 1: Non-interest income accounts definitions

NON-INTEREST INCOME ACCOUNTS

Fee-based Income: sum of bank commissions, service charges/fees and other commissions/fees.

Bank Commissions: commissions collected for services rendered as in: (a) opening of letters of credit, (b) handling of collection items, domestic/export/import bills and telegraphic transfers, and (c) sale of demand drafts, traveller's checks and government securities.

Service charges: charges/fees, including commitment fees, collected for services rendered as in: (a) handling of loans and transactions and returned checks, (b) sale of manager's checks.

Fees/commissions (others): fees and commissions earned and collected for services rendered in connected with the investment house functions of the bank such as underwriting, securities dealership and equity investments.

Trading income: sum of trading gain from government securities, private securities/commercial papers/equity securities, financial futures/options/forwards/swaps; foreign exchange profit/loss, gold trading gain/loss; profit on sale or redemption of investments.

Trading gain (government securities): gain or loss on government securities traded in money market operations.

Trading gain (private securities/commercial papers/equity securities): gain or loss in private securities/commercial papers/equity securities traded by the bank.

Trading gain (financial futures/options/forwards/swaps): trading profits and loss (both realized and "mark-to-market") arising from financial futures/options/forward/swap trading transactions.

Foreign exchange profit: realized profit or actual loss incurred on foreign exchange transactions, including profit or loss arising from the adjustment of the peso equivalent of foreign monetary accounts consisting of foreign currencies on hand, due from foreign banks and short-term receivables/payables.

Profit on sale or redemption of investments: profits earned or loss incurred on the sale or redemption of investments.

Other non-interest income: sum of income from trust department and other income.

Income (trust department): commissions and other income earned and collected or loss suffered by the bank's trust department in the handling/administration of trust accounts.

Other income: rental income and miscellaneous income.

(Source : Manual of Accounts for Universal and Commercial Banks, Central Bank of the Philippines)

PART 2 Bank governance mechanisms and bank risk taking in emerging and less developed economies

CHAPTER 4 The impact of minority foreign ownership and controlling shareholder on bank risk and performance: evidence from an emerging economy

1. Introduction

Financial liberalization, competition, and the accelerating pace of globalization have been the primary catalysts in encouraging foreign investor participation in emerging economies. Even years after the wave of liberalization, foreign capital continues to be a driving force in fostering growth and development, enabling such economies to compete in the global market. Along with the influx of foreign investments, foreign investors have begun playing an important role in the decision- making of an organization. Although the academic literature has documented the behavioral predisposition of investor groups such as inside/outside investors and institutional investors (Brickly, Lease and Smith, 1988; Denis, Denis and Sarin, 1997; Gedajlovic and Shapiro, 1998; Kang and Sorensen, 1999; Shleifer and Vishny, 1986), little has been done to closely examine the role of foreign investor ownership and influence (Ramaswany and Li, 2001; Choi, Park and Yoo, 2007) on banks that are domestically majority-owned (with exception to Choi and Hasan (2005)). Most banking studies focus on the impact of foreign bank entry and the effects of foreign majority ownership on bank behavior (notably, Berger et al., 2005; Berger et al., 2007; Unite and Sullivan, 2003).

With the exception of the U.S. and the U.K., most economies in the world are characterized by concentrated ownership in banks (La Porta et al., 1999). In emerging economies, bank owners are mostly families and/or group-affiliated corporations or the state that have less stringent board governance mechanisms (Easterby-Smith *et al.*, 1995). Corporate governance of banks in these economies is also severely affected by extensive political intervention, which ranges from government ownership of banks, distributional cartels and restrictions on foreign bank entry (Arun and Turner, 2004). A study of Claessens and Fan (2004) on Asia clarifies that several important issues remain unknown in the realm of corporate governance in these economies, which include alternative governance mechanisms that may enhance corporate governance such as the roles of reputation, second block holders, and foreign institutional investors. This work, thus attempts to examine the effect of foreign investors as minority owners on the management strategies and bank corporate governance, translated to bank performance and risk-taking behavior. Moreover, we also investigate a different nexus of the principal-agent relationship – controlling shareholder vs. minority foreign shareholder in an environment where monitoring incentives by controlling shareholders might reduce the agency costs derived from the relationship between management and shareholders but increase the agency cost associated with the relationship between a controlling shareholder and a minority shareholder.

To what extent foreign shareholder presence in domestic banks may or may not affect bank behavior has not been thoroughly discussed in the empirical banking literature. But insights on whether such a presence results in better or worse risk-return tradeoff or performance principally relies on the *global advantage* and *home-bias advantage* arguments. The *global advantage* argument purports that foreign investors may improve bank corporate governance practices particularly for those that come from countries with excellent corporate governance. They may also impart their know-how of new banking technologies and risk management strategies to the domestic banks (Berger et al., 2001; Bonin et al., 2005). This may be true even in the presence of controlling shareholders, where their returns may be maximized if they elicit sufficient monitoring to protect their investments. A contrarian view, however, predicts a *home-bias advantage* to purely domestic-owned banks because of less severe agency problems and information asymmetry (Berger et al., 2001; Lensink and Naaborg, 2007) arising from language and cultural differences.

Meanwhile, the presence of foreign directors on the board of an organization can provide a sound governance mechanism that may influence the strategies pursued by management. Generally viewed as outside directors, foreign directors can limit managerial excesses by lowering contracting costs between shareholder and management (Fama, 1980b; Fama and Jensen, 1983). They can channel strategic behavior away from self-interested motives such as involvement in projects that are too risky. Moreover, the foreign directors' possession of knowledge and expertise enable them to monitor and evaluate the strategic directions of the top management (Fama and Jensen, 1983). The presence of controlling shareholders, even in the presence of foreign directors may be a game-changer. Controlling shareholders may dampen the effectiveness of foreign directors in the board especially in soliciting support from other directors when they try to push for changes in bank strategies that may increase the bank value at the expense of the controlling shareholder's personal wealth. The banking literature, however, provides mixed results regarding the effect of foreign board participation on bank performance.

This work also investigates how control and minority foreign ownership might be intertwined to affect performance and risk-taking behavior in banks. We mainly derive our analysis from the agency theory's principal-agent problem, but one where the minority foreign owners act as principals and controlling shareholders as agents. In the literature, bank control or concentration may align the strategies of management to shareholders' interests via increased monitoring exerted by the controlling shareholder. This mechanism helps reduce agency costs derived from the shareholder-management relationship. However, because the

controlling shareholder possesses control, the decisions she makes may be more aligned to her interests at the expense of the other minority shareholders. One example is the incidence of insider lending, which may lead to tunneling. There are two plausible scenarios that may influence how minority foreign shareholders affect corporate governance in domestic banks with controlling shareholders. Because they are assumed to be more knowledgeable and active, minority foreign shareholders are more likely to protest against expropriation from controlling shareholders and instill good corporate governance practices to the bank, and thus, inducing better risk management and performance. This should be observed in economies that are mainly supported by relationship-based exchanges, which could be attributed from the absence of formal legal and regulatory frameworks (Ren, Au and Birtch, 2009). In this case, transaction costs are reduced by constraining opportunistic behavior through informal mechanisms such as mutual trust and cooperative norms, implying that transactions may be supported by a reputation market. Controlling shareholders may fear that if they misbehave and that it will be publicized, consumers may refuse to have transaction with their bank. An equally possible scenario is that the foreign shareholder and the controlling shareholder might collude to extract private benefits of control at the expense of other minority shareholders. This may be applicable especially in countries where there's weak minority shareholder protection.

In 1994, the Philippine banking industry passed an act liberalizing the entry and scope of operations of foreign banks. The objective was to create a more competitive environment and to encourage greater participation through increased foreign ownership of banks operating in the country. This has resulted in the entry of ten foreign banks in 1995. In the said act, non-Filipino citizens could also become members of the board of directors of a bank on the condition that they hold equity shares of the bank they are to be affiliated to. This law, which was a signal that the banking industry has become more open, was also expected to spur foreign investments in domestic banks. Because of these developments in the Philippine banking industry, several studies, for example, Unite and Sullivan (2003) have examined the effects of foreign bank entry on bank competition in terms of interest spreads in domestic banks. Broader studies (Demirgüç-Kunt and Detragiache, 1998; Mehrez and Kaufmann, 2000), however, have looked into the increased financial vulnerability aspect of financial liberalization.

While existing bank studies focus on the effects of financial liberalization on competition or on the impact of foreign entry on bank efficiency, we examine in his chapter how minority foreign ownership and foreign representation in the board of domestic banks

affect bank risk-taking behavior. Moreover, we also investigate this mechanism in the presence of controlling shareholders, which is the case of most emerging economies, like the Philippines. The main question then revolves around the level of active monitoring that is undertaken by the banks' foreign investors and their ability to act against self-interested behavior of managers and controlling shareholders. To our knowledge, this is the first study of banks that looks into this aspect in the case of an emerging country. In addition, certain specificities are present in the Philippine banking industry. First, certain foreign ownership restrictions exist. Foreign banks may purchase only up to 60% of the voting stock of an existing bank, or by investing up to 60% of the voting stock of a new banking subsidiary. In addition, foreign ownership limits are in place in domestic banks (up to 40%, but in some banks, a more restricted 30%). Second, a 30% ceiling is imposed by the Monetary Board on the percentage of assets in the entire banking system foreign banks can hold[85]. This study hence provides an analysis of foreign influence on local banks in emerging economies that are not yet fully open to foreign ownership as is the case of countries such as Malaysia, Ethiopia, Vietnam, Brazil and Mexico. In the presence of such foreign ownership restrictions in domestic/local banks, conventional definitions such as studies that describe banks in a "foreign-owned – domestic-owned" dichotomy ignores the potential role that foreign investors might play in majority domestic-owned banks in shaping the bank's strategies, which may consequently affect bank risk and return. This study therefore focuses, on the heterogeneity within domestic banks that is ignored in most studies. Third, the Philippines has a banking industry that is concentrated, and where its large domestic banks are owned by family-controlled corporations (Tan, 1989).

Examining 20 domestic majority-owned universal and commercial banks in the Philippines from 2000 to 2007, we focus on measures of foreign influence and ownership by looking into the direct and indirect voting rights of minority foreign owners, a dimension that has received less attention from the current literature. Our results indicate that banks where minority foreign shareholders are present in domestic banks have higher asset quality and lower insider lending as compared to purely domestic-owned banks. The findings also highlight that an increase in foreign voting rights lead to an increase in risk-adjusted returns, and lower non-performing loan ratio. We also study how the level of control manifested by the controlling shareholder affect how minority foreign ownership impacts bank risk and performance. The results show that the gains from minority foreign ownership are limited and

[85] From the Republic Act No. 7721.

are constrained when the exercise of control by the largest domestic shareholder increases. This implies that at high levels of control, minority foreign owners either collude with the controlling shareholder or are overpowered in their quest to improve bank practices that may be translated to higher value for their investments. At very high levels of control, the power of the minority foreign owner diminishes and higher degree of insider lending or incidence of tunneling is, hence, observed.

The remainder of this chapter is organized as follows. Section 2 discusses the data and variables used the descriptive statistics and the trends in terms of the openness to foreign participation and ownership in the Philippine banking industry. Section 3 presents the hypotheses tested the method and models used. Section 4 provides the results of our estimations, while our findings are summarized and conclusions are drawn in the last section.

2. Institutional background, Data and Descriptive Statistics

2.1.Financial liberalization, participation in the Philippine Banking Industry

In 1994, the Philippines passed Republic Act No. 7721 (also known as An Act Liberalizing the Entry and Scope of Operations of Foreign Banks in the Philippines and for other purposes) in order to create a more competitive environment and encourage greater participation through an increase in the ownership of domestic banks by foreign banks and the entry of new foreign bank branches. As a result, a total of ten banks entered the market in 1995. In 1994, the share of foreign banks in terms of the total assets of the commercial banking sector was 8.6%. By 2004, ten years after financial liberalization, foreign banks' share of the total assets of the sector nearly doubled to 17.05% (at least 13% far from the 30% ceiling imposed by the Monetary Board on the percentage of assets in the entire banking system the foreign banks can hold). Section 7 of the said RA 7721 also indicates that non-Filipino citizens may become members of the Board of Directors of a bank to the extent of foreign participation in the equity of the said bank. As a whole, liberalization has contributed to the reduction of bank interest spreads (Unite and Sullivan, 2003) but it also increased the vulnerability of the financial system that had led to the financial crisis of 1997 (Demirgüç-Kunt and Detragiache, 1998; Mehrez and Kaufmann, 2000).

Although financial liberalization in the Philippine banking industry has opened doors for foreign banks and other institutional investors to conduct their business in the country either through branching or creation of subsidiaries, their level and share of investments in domestic banks remain limited. This is a fundamental constraint in the Philippines as written

in the Constitution[86], which extend not only to banks but to corporations for various reasons such as national security, and protection of small-scale industries. For public utilities and banks, the foreigners can acquire a maximum of 40% of total outstanding shares. In other instances, some banks even impose a more restrictive percentage (i.e., 30%) on the share that foreign investors can hold in their respective organizations. In the presence of these restrictions, all banks in the Philippines, except for foreign bank branches and subsidiaries are majority-owned by domestic individuals and/or corporations.

In addition to constitutional restrictions, other restrictions on foreign equity and foreign professionals, including discriminatory taxes and fees from which Filipino nationals, but not foreigners are exempt, are in place in the country. Philippines has been lagging behind the rest of the ASEAN-6 (Singapore, Vietnam, Malaysia, Thailand, Indonesia) and is at the bottom third of all the countries surveyed in having a regulatory regime favorable to foreign investment in 2010 (89 out of 142 countries surveyed[87]). Moreover, the country also ranks modestly in terms of the prevalence of foreign ownership in the country (72 out of 142 countries surveyed).

Since the 1994-1998 period is marked by the immediate entry of foreign banks and the financial crisis of 1997 is characterized by excessive risks faced by Asian banks, we selected the 2000-2007 period for this study.

2.2.Data Collection

In this paper, we investigate the effect of minority foreign ownership on the risk-taking behavior and performance of the universal and commercial banks in the Philippines (UKBs, hereafter). In 2007, the UKBs alone make up 87%, 85% and 87% of the total banking system in terms of total assets, loans and deposits. This type of banks offers the widest variety of banking services among financial institutions. Focusing on the domestic UKBs, we analyze 20 banks, which exclude two state-owned banks and a commercial bank, which is a subsidiary of another UKB. Our sample is representative of the domestic UKB industry as these banks make up 83%, 83% and 87%, respectively in terms of total assets, total loans and deposits.

Balance sheet and income statement information are obtained from the Annual Reports of the banks and from the Published Statement of Conditions of these banks from the Central Bank of the Philippines website[88]. Meanwhile, information regarding foreign

[86] Article XII, Section 2, 1987 Constitution of the Republic of the Philippines.
[87] WEF Global Competitiveness Report 2010-2011.
[88] www.bsp.gov.ph

shareholder presence and ownership, voting rights and representation in the board are obtained from the Securities and Exchange Commission, Philippines, based on the General Information Sheet and Annual Reports of domestic banks.

2.3. Definition of variables

2.3.1. Foreign Presence and Control

To measure the presence of foreign shareholders, directors and officers, we use several dummy and continuous variables. First, *D_ForPresence* indicates the presence of foreign shareholders in a domestic bank. It assumes the value one if a domestic bank has foreign shareholders, and zero, otherwise. Second, we define *ForPresence* as the degree of foreign presence in the domestic bank or the percentage share of total foreign shares in the bank. Third, *D_ForBenf* indicates the presence of a foreign beneficial owner[89] in a bank, which holds at least 5% of voting rights. A beneficial owner holds direct or indirect voting rights. *ForeignBenf*, meanwhile, indicates the percentage share of beneficial ownership held by foreign beneficial owners and *ForLargeBenf*, indicate the percentage share of beneficial ownership held by a foreign owner with largest voting rights. We also introduce the dummy variable *D_ForDir*, which indicates the presence of a foreign representation in the board. It assumes the value of one if a domestic bank has a foreign director and zero, otherwise.

To measure the degree of control by the domestic controlling shareholder, we define *Control*, which is the percentage share of direct and indirect voting rights of the largest domestic beneficial owner.

2.3.2. Risk

We measure risk in two dimensions: loan quality and volatility of returns. To measure loan quality, we use the ratio of nonperforming loans to total loans, *NPL*. In addition, we also use the ratio of classified loans and other risk assets to total assets, *CRA.* Classified loans include loans that are especially mentioned, substandard, doubtful, and loss[90].

[89] As defined in the Implementing Rules and Regulations of the Securities Regulation Code, beneficial owner or beneficial ownership means any person who, directly or indirectly, through any contract, arrangement, understanding, relationship or otherwise, has or shares voting power, which includes the power to vote, or to direct the voting of such security; and or investment returns or power, which includes the power to dispose of, or to direct the disposition of such security; provided, however, that a person shall be deemed to have an indirect beneficial ownership interest in any security which is: i) held by members of his immediate family sharing the same household; ii) held by a partnership in which he is a general partner; iii) held be a corporation of which he is a controlling shareholder; or iv) subject to any contract, arrangement or understanding which gives him voting power or investment power with respect to such securities.

[90] *Loans especially mentioned* are loans that have potential weaknesses that deserve Management's close attention. These potential weaknesses, if left uncorrected, may affect the repayment of the loan and thus increase credit risk to the bank. *Substandard loans* are loans or portions thereof, which appear to involve a substantial

In the 1980s, the Bangko Sentral ng Pilipinas (BSP) relaxed its rules regarding loans to directors, officers, stockholders and related interests (DOSRI). Combined with weak enforcement of existing prudential rules at the time, the risk of moral hazard tremendously increased[91]. Excessive exposure to DOSRI loans of several government financial institutions deteriorated the quality of their asset portfolio, which led them to be technically insolvent. Measures to limit DOSRI loans were then introduced (Gochoco-Bautista, 1998). In this work, we thus also consider insider lending, *INSIDELENDING* as a measure of loan quality. We define *INSIDELENDING* as the ratio of loans to directors, officers, stockholders and their related interests to total loans.

Global risk or volatility of returns, *SDROE* is computed on the basis of 4-year rolling windows. *SDROE* stands for the four-year rolling window standard deviation of the return on average equity. *ADJROE,* meanwhile, indicates the returns adjusted to its volatility. It is defined as the return on average equity over *SDROE*. We also measure risk using stock market data for listed banks. We define *STOCK_VOL* as the stock return volatility, computed as the standard deviation of the annualized average weekly returns; and return adjusted to volatility, *STOCK_RET,* computed as the ratio of annualized average weekly returns to its standard deviation.

Annex 1 summarizes the foreign presence and risk variables used in this paper.

2.4. Descriptive Statistics

Table 2 presents descriptive statistics for bank-specific variables that are expected to influence risk and performance. We distinguish subsamples of domestic banks with foreign shareholder presence from those that are purely domestic-owned and domestic banks with foreign investors serving as beneficial owners with voting rights greater than or equal to 5%.

Table 2 shows that over the period of study, loans and deposits are on the average, the banks' main product and source of funding, with an average of 46% and 69%, respectively, in Philippine domestic banks. Share of investments, which include trading account securities

and unreasonable degree of risk to the institution because of unfavourable record or unsatisfactory characteristics. There exists in such loans the possibility of future loss to the institution unless give closer supervision. *Doubtful loans* are loans or portions thereof, which have weaknesses inherent in those classified as "Substandard", with the added characteristics that existing facts, conditions and values make collection or liquidation in full highly improbable and in which substantial loss is probable. *Loss loans* are loans or portions thereof, which are considered uncollectible or worthless and of such little value that their continuance as bankable assets are not warranted although the loans may have some recovery or salvage value. (BSP Circular No. 247. Series of 2000).

[91] Government financial institutions such as the Philippine National Bank (PNB) and Development Bank of the Philippines (DBP) were declared technically insolvent after the quality of their asset portfolio deteriorated because of excessive exposure to DOSRI loans (Gochoco-Bautista, 1999).

equity investments, available for sale securities and investments in bond and other debt instruments, is also remarkably high, constituting 26% of total assets, supporting the observed levels of diversification. An average bank in our sample earns 39% of their total operating income from non-interest income sources and has asset diversity that is approximately equal to 0.70. We observe higher levels of diversification –both in terms of asset and income diversity in domestic banks with foreign shareholder presence and those with foreign beneficial owners with at least 5% of voting rights. But we note that most of these banks are also the larger ones, where banks with foreign shareholders having average assets that are at least thrice the assets of the purely domestic-owned banks (61.3 vs. 162 billion pesos).

Ownership of banks as described in Column II of Table 2 shows the presence of domestic controlling shareholders as indicated by the high average voting rights of the largest beneficial owner at 27.9% in contrast to only 5.7% voting rights of the largest foreign shareholder. Moreover, a closer look at the subsample of domestic banks with foreign beneficial owners highlights that domestic banks in this category benefit from higher shares of total foreign ownership at 21% and on the average, have their largest foreign shareholder 14% of voting rights. Specifically for this category of banks, foreign investors might play significant roles in decision-making and influence how the banks are being governed.

Table 2. Descriptive Statistics of Universal and Commercial Philippine Domestic Banks, 2000-2007

	Column I : Bank-specific characteristics							Column II : Foreign ownership variables			
	Loans	*Depo*	*Equity*	*Asset*	*Div*	*NII*	*INV*	*ForPresence*	*ForeignBenf*	*DomLargeBenf*	*ForLargeBenf*
All sample (20 banks)											
Mean	46.25	69.21	13.71	133	0.69	39.04	26.38	11.94	7.49	27.89	5.67
Std Dev	11.19	12.37	5.1	135	0.2	16.26	9.19	12.26	11.45	21.7	7.78
Min	7.77	8.47	1.56	8.6	0.19	7.76	6.34	0	0	0	0
Max	71.89	85.64	32.52	596	0.98	88.65	51.24	40	38.5	97.45	30.56
OBS	152	152	152	152	152	144	152	152	152	152	152
Banks with no foreign shareholder/s											
Mean	47.71	68.33	14.82	61.3	0.64	35.35	23.02			31.01	
Std Dev	8.9	14.85	7.26	42.2	0.23	17.67	9.77			33.41	
Min	28.41	25.06	1.56	8.6	0.19	13.08	6.34			0	
Max	62.64	85.64	32.52	127	0.98	86.48	42.57			97.45	
OBS	44	44	44	44	44	41	44			44	
Banks with foreign shareholder/s											
Mean	45.65	69.56	13.25	162	0.71	40.5	27.74	16.8	10.54	26.61	7.98
Std Dev	11.99	11.26	3.84	149	0.18	15.52	8.62	11.4	12.35	14.5	8.18
Min	7.77	8.47	6.3	10.8	0.28	7.76	10.47	0.004	0	0	0
Max	71.89	85.6	24.2	596	0.98	88.65	51.24	40	38.5	77.43	30.56
OBS	108	108	108	108	108	103	108	108	108	108	108
Banks with foreign beneficial owner											
Mean	48.85	71.09	13.78	216	0.73	40.63	29.82	20.85	19.29	27.62	14.17
Std Dev	9.73	7.87	3.8	168	0.18	11.64	9.16	10.17	10.46	15.02	5.97
Min	28.57	51.38	8.71	10.8	0.28	17.93	10.47	5.6	5.01	0	5.01
Max	71.89	81.63	23.65	596	0.98	72.61	51.24	40	38.5	54.97	30.56
OBS	59	59	59	59	59	59	59	59	59	59	59
Banks with no foreign beneficial owner/s											
Mean	44.6	68.02	13.66	79.5	0.67	37.93	24.19	6.29		28.05	
Std Dev	11.78	14.43	5.79	69.7	0.21	18.81	8.56	9.94		25.11	
Min	7.77	8.47	1.56	8.6	0.19	7.76	6.34	0		0	
Max	62.64	85.64	32.52	298	0.98	88.65	43.22	34.13		97.45	
OBS	93	93	93	93	93	93	93	93		93	

Variable definitions: *Loans* is the percentage of total loans over total assets; *Depo* is the percentage of total deposits to total assets; *Asset* is total assets in billion pesos; *Equity* is the percentage of total equity to total assets; *Div* is a diversification measure which measures asset diversity; *NII* is the ratio of total non-interest income to total operating income; *INV* is share of total investments other than loans to total assets; *ForPresence* is the percentage share of all foreign shareholders in the domestic bank; *ForeignBenf* is the percentage of total foreign beneficial ownership; *DomLargeBenf* is the percentage of the largest domestic beneficial owner; *ForLargeBenf* is the percentage of the largest foreign beneficial owner.

Table 3. Test of Equality of Means on Risk in Domestic Banks in the Philippines with or without minority foreign ownership

		SDROE	*ADJROE*	*CRA*	*NPL*	*INSIDELENDING*
Foreign shareholder present						
a)	Yes	5.49	2.18	17.06	13.39	3.6
	Obs	108	108	95	102	89
b)	No	8.15	2.07	22.32	15.99	6.33
	Obs	44	44	41	45	42
	t-stat (a vs b)	-1.47	0.19	-2.13**	-1.67*	-2.49**
Foreign beneficial owner present						
c)	Yes	4.36	2.8	14.21	10.04	4.67
	Obs	59	59	54	54	54
d)	No	7.46	1.73	21.57	16.6	4.34
	Obs	93	93	82	93	77
	t-stat (c vs d)	-2.89***	2.05**	-3.42***	-4.78***	0.43
Foreign director present						
e)	Yes	6.37	2.03	20.29	14.07	3.67
	Obs	76	76	72	74	73
f)	No	6.14	2.26	16.8	14.31	5.48
	Obs	76	77	64	73	58
	t-stat (e vs f)	0.17	-0.47	1.57	-0.15	-2.05**
Foreign beneficial ownership>=10						
g)	Yes	3.9	3.03	13.77	8.47	5.23
	Obs	41	41	36	36	36
Foreign beneficial ownership<10 & foreign shareholder present						
h)	Yes	6.45	1.65	19.07	16.08	2.49
	Obs	67	67	59	66	53
	t-stat (g vs h)	-2.74***	2.48***	-1.98**	-4.72***	4.09***
	t-stat (g vs d)	-2.41**	1.40	-2.65***	-4.90***	-1.01
	t-stat (h vs d)	-0.87	-0.69	-1.02	0.05	-3.62***
Foreign beneficial owner = 0 and foreign presence =1						
i)	Yes	6.84	1.42	20.81	17.17	1.94
	Obs	49	49	41	48	35
	t-stat (c vs i)	-2.04**	2.81***	-2.59**	-3.74***	5.33***
	t-stat (i vs b)	-0.63	-1.17	-0.52	0.57	-4.07***
	t-stat (c vs b)	-2.14**	1.15	-3.07***	-3.96***	-1.44

Variable definitions: *SDROE* is the standard deviation of the return on average equity; *ADJROE* is the risk-adjusted returns defined as return on average equity over *SDROE*; *CRA* is the ratio of classified loans and other risky assets to total assets; *NPL* is the ratio of non-performing loans to total loans; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and related interests.

Table 3, meanwhile, presents the test of the equality of means on the risk of Philippine domestic banks at varying degrees of foreign presence. We observe that banks with foreign shareholders have higher loan quality and lower degree of insider lending in comparison with purely domestic-owned banks. Where foreign beneficial ownership is present at 5% voting rights at the minimum, global risk is lower and risk-adjusted profitability is higher. Moreover, when foreign directors are present, the degree of insider lending is lower but not other risk indicators. Although banks with foreign investors holding at least 10% voting rights have lower global risk, lower classified loans and risk assets and higher risk-adjusted profits, insider lending is higher.

3. Hypotheses and Method

This study aims to examine the effect of minority foreign ownership in the presence of controlling shareholders on the risk-taking behavior of domestic banks in an emerging economy. We investigate multiple dimensions of minority foreign shareholder influence that include the presence of foreign shareholders in the bank, the presence of foreign beneficial owners with at least 5% of direct or indirect voting rights, and the presence of foreign directors on the boards of the organization.

Foreign presence, foreign directors, risk and performance

In this section, we explore the mechanisms by which the composition of minority shareholders, specifically the presence of foreign owners, affects bank risk and performance.

Foreign shareholders are typically assumed to be knowledgeable investors. They seize profitable investment opportunities in various companies and organizations, especially those that are listed in the foreign stock exchange. Investments of this kind may actually be costly for foreign investors as they are confronted with more severe information asymmetry problems and larger transaction costs compared with domestic investors. Well aware of these costs, it is plausible to assume that foreign investors choose to diversify risk by consciously making out-of-country investments, and are capable and active investors.

Foreign shareholder presence may or may not affect bank risk and performance behavior. Drawing from the *global advantage argument*, foreign investors are more exposed to modern financial services, including banking technology and risk management strategies, and access to international capital markets compared with their pure domestic-owned counterparts (Berger et al., 2001; Bonin et al., 2005). They may in turn impart these advancements and knowledge skills via a spillover especially to the domestic banks where they invested money with. In addition, they may also introduce good corporate governance measures that may increase the bank's value, eliciting a good risk-return combination for the domestic bank. This may be especially true for foreign investors from countries with excellent corporate governance. In the realm of emerging economies where the presence of controlling shareholders has been a norm, opening up for foreign investment may signal that aside from the benefits of increased capital funds, controlling shareholders may be willing to hear out the ways foreign shareholders may contribute to increase the value of the bank.

On a contrarian view, foreign shareholders in domestic banks may signify the presence of more severe information asymmetry problems the banks have to face with and thus, predict a *home bias advantage* to purely domestic-owned banks. In this case, foreign

investors are both geographically and culturally removed from the organization they invest in and in most cases; their investments are funneled through mutual funds that may be managed by local managers (Useem, 1998). Moreover, it is also plausible for a foreign investor to strike a deal with a controlling shareholder, then exploiting the other minority shareholders. Because of these, the expectation of knowledge and good corporate governance may not materialize.

To study the effect of foreign shareholders on risk and performance of the domestic banks we distinguish presence from the share of foreign ownership. This distinction is important since we are able to investigate differences between purely domestic-owned banks from those that are open and have foreign investors in their banks and examine at the same time the dynamics of foreign shares on bank risk.

Total foreign ownership may not be the most accurate measure to examine whether minority foreign ownership imports better corporate governance that is translated to better risk and performance. It is more probable that foreign owners with significant voting rights have more impact and may bring significant changes to a domestic bank's strategies rather than assume that a bunch of foreign owners collectively make strategic decisions for the bank. Thus, we take into account the presence and the share of foreign beneficial owners with direct or indirect voting rights that is at least 5%.

We also take into account the possible effects of having foreign directors on the bank boards. The presence of foreign directors on the board in an organization provides a tangible direct representation and a sound governance mechanism to influence the strategies pursued by the management. Foreign directors, generally considered as outside directors may possess information and expertise about the intricacies of different strategic approaches. They can play the role of effective monitors by using their position to dampen value-destroying moves from selfish managerial interests, thus, offering a mechanism that militates against managerial excesses (Ramaswany and Li, 2001). While these may be the presumed advantages from having foreign directors/outside directors, the prevalence of controlling shareholders may question the effectiveness of having foreign directors in the board. Controlling shareholders may be able to control the board of directors through the power that they wield within the organization and with such, their effectiveness may be limited.

We hypothesize that:

Hypothesis 1: Foreign shareholder presence improves bank risk management and bank performance depending on the level and/or degree of foreign investment.

Model 1a:

$$Y_{i,t} = \alpha_0 + \alpha_1 D\_For\,\mathrm{Pr}esence_{i,t} + \alpha_2 D\_ForeignBenf_{i,t} + \alpha_3 Control_{i,t} + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

$$Y_{i,t} = \delta_0 + \delta_1 D\_For\,\mathrm{Pr}esence_{i,t} + \delta_2 D\_ForDir_{i,t} + \delta_3 Control_{i,t} + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

Model 1b:

$$Y_{i,t} = \beta_0 + \beta_1 For\,\mathrm{Pr}esence_{i,t} + \beta_2 Control_{i,t} + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

$$Y_{i,t} = \beta_0 + \beta_1 ForeignBenf_{i,t} + \beta_2 Control_{i,t} + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

Where $Y_{i,t}$ is a measure of bank risk, *D_ForPresence* is a dummy variable indicating the presence of foreign shareholders; *D_ForeignBenf* and *D_ForDir* are dummy variables indicating the presence of foreign beneficial owners with at least 5% of voting rights and foreign directors in the board, respectively; $ForPresence_{i,t}$ is a continuous variable measuring the total shares of foreign owners; $ForeignBenf_{i,t}$ is a continuous variable that measures the total shares of foreign beneficial owners; $Control_{i,t}$ measures the degree of control exerted by the largest domestic shareholder; $\mathbf{Z}_{i,t}$ is a vector of the control variables and $\varepsilon_{i,t}$ is the error term.

In Model A, the coefficients α_1 and δ_1, which measure the risk-taking behavior of banks where foreign shareholders are present but with no significant voting rights and no foreign directors, respectively, and $\alpha_1 + \alpha_2$ and $\delta_1 + \delta_2$, which describes the risk-taking behavior of banks where foreign shareholders have significant voting rights and have at least a foreign director, respectively; are compared to banks that are purely domestic-owned.

We use the following control variables – *Asset, Equity, Div, Depo, Growth* and *GDP* in the models.

Asset is the natural logarithm of bank assets. As in Shehzad et al. (2010), this captures bank size, which controls for different behaviors between large and small banks. The nature of the relationship between bank size and risk is ambiguous. Larger banks are able to invest in more advanced technologies, are more diversified, and generally have better risk management than smaller banks. Demsetz and Strahan (1997), however, point out that large bank holding companies have used their diversification advantage to operate with lower capital ratios and pursue riskier activities. Moreover, in the presence of a too-big-to-fail

policy, large banks may have incentives to take higher risk as stipulated by Beck and Laeven (2006).

Equity is the leverage ratio computed as the ratio of total equity to total assets. This controls for differences in bank capitalization. A high level of capital may translate to higher risk aversion by the bank manager. As pointed out by Iannotta et al. (2007), better capitalized banks may reflect higher management quality and thus better risk management.

Div is the lagged value of asset diversity, capturing a bank's preference on its diversification strategies, which is either to lend or engage in other earning asset activities like investments in securities. As in Laeven and Levine (2005), asset diversity is computed as follows:

$$Div = 1 - \left| \frac{Loans - OtherEarningAssets}{TotalEarningAssets} \right|$$

Where *TotalEarningAssets* of a bank is the sum of its lending activities (*Loans*) and non-lending activities (*OtherEarningAssets*). *Loans* measure the bank's loan activities, which is equal to the sum of total consumer loans and other lending minus loan loss reserves. *OtherEarningAssets*, meanwhile, measure the bank's non-lending activities, which consist of securities and investments. *Div* ranges from zero to one and is increasing in the degree of diversification. It is equal to zero when the assets of a bank come from only one source and one if a bank's asset is equally distributed between loans and other earning assets. Higher values of *Div* indicate higher diversity. The relationship between diversification and risk is ambiguous. In the banking literature, more recent studies mostly based on US banks find a positive impact of diversification on earnings volatility and hence, global risk (DeYoung and Roland, 2001; Stiroh, 2004; Stiroh and Rumble, 2006). Only a few studies find some risk reduction benefits from increased diversification. Templeton and Severiens (1992) find that diversifying into other financial markets may reduce unsystematic risk.

Depo is the ratio of deposits to total assets, which measures funding differences of banks. As in Iannotta et al. (2007), we expect a positive relationship between the deposit ratio and risk.

Growth is the growth rate of total assets. We use this variable as a proxy for bank manager's preference for risk taking. Banks that are more risk-averse grow less rapidly. Thus, we expect a positive relationship between *Growth* and risk.

GDP is the natural logarithm of the real gross domestic product per capita. This variable controls for trend changes that can be accounted by a boom or a recession in the Philippine economy.

We employ a pooled ordinary least squares (OLS) method to estimate our models. As in Unite and Sullivan (2003), we consider a more generic generalized method of moments (GMM) approach. However, because we are dealing with a small sample size, its use may result in a finite sample bias (Woolridge, 2001). Moreover, we use the robust Huber/White estimator of variance.

We potentially have an endogeneity problem in our regressions with our foreign ownership variables. Some studies (Demsetz and Lehn, 1985; Gugler and Weigland, 2003) suggest that ownership is endogenous to firm performance and risk. Foreign owners may choose to invest in a bank depending on its risk and profit levels. We test for the presence of an endogeneity bias for *ForPresence* and *ForeignBenf* by using the instrumental variables (2SLS) regressions. We consider several bank-specific instruments, such as whether the bank is listed in the stock exchange or not, the lagged values of *ForPresence* and *ForeignBenf*, and diversity of their investment portfolio and after, verify the validity of our instruments using the Hansen-J statistic since we use the heteroskedastic and autocorrelation-consistent estimators in our regression. Alternatively, we also estimate the regression using two-step feasible general method of moments. Regarding the endogeneity of *ForPresence* and *ForeignBenf*, we test the null hypothesis that the regressors can actually be treated as exogenous. The endogeneity test is defined as the difference of two Sargan-Hansen statistics – one for the equation with smaller set of instruments where *ForeignBenf* or *ForPresence* is treated as endogenous and one for the equation where *ForeignBenf* or *ForPresence* is treated as exogenous. Under conditional homoskedasticity, the endogeneity test statistic that we use is equal to a Hausman test statistic. To further verify, we also test using the Wu-Hausmann F-test. Overall, the tests show that the endogeneity problem is not a major issue, suggesting that the OLS should be an efficient estimator.

Minority foreign shareholders in the presence of controlling shareholders, risk and performance

In the corporate finance literature, Dharwadkar et al (2000) argue that unique agency problems arise in emerging economies, such as the principal-principal goal incongruence emerging between minority and majority owners. We therefore look into the relationship

between a minority foreign shareholder and a controlling shareholder. The presence of a controlling shareholder is prevalent in organizations with concentrated ownership.

Better monitoring may be a viable consequence of having a controlling shareholder in any organization, effectively reducing agency costs that are derived from the relationship between management and shareholders. However, because she possesses control, a controlling shareholder may influence decisions of the management that are more aligned to her interests, at the expense of the other shareholders. The effort exerted by the controlling shareholder may not be the optimal one generating the highest returns, which the minority shareholder would expect (Paloyo, 2007). A deviation from the optimal effort could take the form of "tunneling" or insider lending. Tunneling may occur when benefits that should accrue to minority shareholders go directly into the pockets of the controlling shareholder (Johnson et al., 2000).

Research in emerging economies has found the rampant use of relationships in business transactions that may be due to institutional factors. (Li, Poppo and Zhou, 2008) The absence of formal legal and regulatory frameworks tends to exacerbate reliance on relational transactions, even further amplified by poor development, as is observed in emerging economies (Ren, Au and Birtch, 2009). The economic value of relationship-based exchanges is rooted from the reduction of transaction costs by constraining opportunistic behaviour. This may be achieved through informal mechanisms that include mutual trust, cooperative norms as opposed to formal contracts. In addition, information and resource may be accessed through socially embedded relationships (Granovetter, 1985; Zhou and Peng, 2009). In this setting, transactions are supported by a reputation market. In example, an organization may signal that she is reliable by building a good reputation.

When faced with exploitation from controlling shareholders, minority shareholders are likely to protest. Foreign shareholders may not tolerate this behavior if they are concerned with good corporate governance practices that may be translated to better performance and risk management. Because controlling shareholders are concerned with keeping investors confident in how they conduct business, they are expected to be more prudent. The loss of foreign shareholders or the pulling out of investments by foreign shareholders may signal the public that the bank is not reliable or that the controlling shareholders are mishandling the bank. In this scenario, consumers may lose trust with the bank and refuse to have transaction with it.

On the other hand, the foreign shareholder and the controlling shareholder may collude to extract private benefits of control, at the expense of the other minority

shareholders. This may be applicable to emerging countries such as the Philippines because the country has weak minority shareholder protection (La Porta et al., 1998). In this case, any misbehavior from the controlling shareholder may not be reported, leaving the controlling shareholder unsanctioned.

The degree of how foreign shareholders may affect the behavior of the controlling shareholder may depend on the level of foreign investment in the bank and the degree of control exerted by controlling shareholder. If it is indispensable for the controlling shareholder to retain the foreign shareholders (for example, foreign shareholder holds a large percentage of ownership and voting rights in the bank), it is expected that the presence of a foreign shareholder may be translated to better performance. If the foreign shareholder, however, does not hold significant ownership in the bank, her voice might never be heard in the presence of expropriation and withdrawal of her investment may go unnoticed by the public.

We hypothesize:

Hypothesis 2: In the presence of controlling shareholders, foreign shareholders may induce better or worse risk management or performance depending on the level of foreign investment and the degree of control exerted

Model 2a:

$$Y_{i,t} = \alpha_0 + \alpha_1 D\_For\,\mathrm{Pr}esence_{i,t} + \alpha_2 D\_ForeignBenf + \alpha_3 Control_{i,t} + \alpha_4 (D\_For\,\mathrm{Pr}esence_{i,t} * Control_{i,t})$$
$$+\alpha_5 (D\_ForeignBenf_{i,t} * Control_{i,t}) + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$
$$Y_{i,t} = \delta_0 + \delta_1 D\_For\,\mathrm{Pr}esence_{i,t} + \delta_2 D\_ForeignBenf + \delta_3 Control_{i,t} + \delta_4 (D\_For\,\mathrm{Pr}esence_{i,t} * Control_{i,t})$$
$$+\delta_5 (D\_ForDir_{i,t} * Control_{i,t}) + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

Model 2b:

$$Y_{i,t} = \beta_0 + \beta_1 For\,\mathrm{Pr}esence_{i,t} + \beta_2 Control_{i,t} + \beta_3 (For\,\mathrm{Pr}esence_{i,t} * Control_{i,t}) + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$
$$Y_{i,t} = \beta_0 + \beta_1 ForeignBenf_{i,t} + \beta_2 Control_{i,t} + \beta_3 (ForeignBenf_{i,t} * Control_{i,t}) + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

Where $Y_{i,t}$ is a measure of bank risk, *D_ForPresence* is a dummy variable indicating the presence of foreign shareholders; *D_ForeignBenf* and *D_ForDir* are dummy variables indicating the presence of foreign beneficial owners with at least 5% of voting rights and foreign directors in the board, respectively; $ForPresence_{i,t}$ is a continuous variable measuring

the total shares of foreign owners; $ForeignBenf_{i,t}$ is a continuous variable measure the total shares of foreign beneficial owners; $Control_{i,t}$ measures the degree of control exerted by the largest domestic shareholder ; $\mathbf{Z}_{i,t}$ is a vector of the control variables and $\varepsilon_{i,t}$ is the error term.

4. Estimation Results

We report the regression summary statistics of the variables used in our estimated models in Table 4.

Table 4. Regression Summary Statistics of the Universal and Commercial Banks in the Philippines, over the period, 2000-2007

Variable	OBS	Mean	Std Dev	Min	Max
SDROE	152	6.26	8	0.27	40.29
ADJROE	152	2.14	2.97	-3.95	20.07
NPL	146	14.18	9.48	0.26	51
INSIDELENDING	120	4.5	4.76	0.01	21.42
CRA	135	18.44	12.81	0.01	82.22
Control	152	27.89	21.7	0	97.45
ForPresence	152	11.94	12.27	0	40
ForeignBenf	152	7.49	11.45	0	38.5
ForLargeBenf	152	5.67	7.78	0	30.56
Div	152	0.69	0.2	0.19	0.98
Loans	152	46.25	11.19	7.77	71.89
NII	144	39.04	16.26	7.76	88.65
Equity	152	13.71	5.1	1.56	32.52
Depo	152	69.21	12.37	8.47	85.64
Asset	152	25.1	1.05	22.77	27.11
Growth	152	14.68	23.05	-16.88	1.88
GDP	152	15.24	11.16	15.1	15.43

Variable definitions: *SDROE* measures the volatility of ROE or return on average equity and is computed through a rolling standard deviation of four years; *ADJROE* measures risk-adjusted returns, computed as ROE over *SDROE*; *NPL* measures loan quality and is defined as non-performing loans over total loans; *INSIDELENDING* measures insider lending activity and is defined as the ratio of loans to directors, officers, stockholders and related interests to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *Control* is the share of the domestic majority shareholder in terms of voting rights/beneficial ownership; *ForPresence* is the total share of foreign shareholders in the bank; *Loans* is the ratio of total loans to total assets; *ForeignBenf* is the total share of foreign beneficial ownership/ voting rights, with minimum of 5% in the bank; *ForLargeBenf* is the share of the largest foreign beneficial owner in terms of foreign beneficial ownership or voting rights; *Div* is a measure of asset diversity; *NII* is the ratio of noninterest income to total operating income, measuring income diversification, *Equity* is the ratio of total equity to total assets; *Depo* is the ratio of total deposits to total assets; *Asset* is the natural logarithm of total assets; *GDP* is the natural logarithm of gross domestic product.

4.1. The Effect of the Minority Foreign Ownership and Foreign Shareholders' significant voting rights on domestic bank risk and performance

We first consider the role, in general, of minority foreign owners in domestic bank behavior (Hypothesis 1). Table 5 shows the result using dummy variables which indicate the

presence of foreign owners, presence of significant voting rights of at least 5% and presence of foreign directors in the board. Our results highlight that banks with significant foreign voting rights have higher quality of loans. Meanwhile, banks with foreign directors and foreign shareholders with no significant voting rights, have lower levels of insider lending. This may indicate that foreign directors serve well to constrain loans extended to directors, officers and other related interests in the bank. The findings also show that foreign shareholder presence with no considerable level of voting rights lowers returns volatility.

Table 5. The effect of the presence of foreign shareholders, presence of foreign owners with significant voting rights and the presence of foreign directors in banks on risk and risk-adjusted returns in the Philippine domestic banks, 2000-2007 (Hypothesis 1: MODEL 1A)

$$Y_{i,t} = \alpha_0 + \alpha_1 D\_ForPresence_{i,t} + \alpha_2 D\_ForBenf_{i,t} + \alpha_3 Control_{i,t} + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

$$Y_{i,t} = \delta_0 + \delta_1 D\_ForPresence_{i,t} + \delta_2 D\_ForDir_{i,t} + \delta_3 Control_{i,t} + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

	SDROE	*SDROE*	*ADJROE*	*ADJROE*	*NPL*	*NPL*	*CRA*	*CRA*	*INSIDELENDING*	*INSIDELENDING*
D_ForPresence	**-3.598****	**-4.468*****	-0.318	-0.0749	0.488	-2.408	-0.0240	**-0.0997*****	**-4.320*****	**-3.136****
	(-2.01)	(-2.81)	(-0.69)	(-0.14)	(0.26)	(-1.55)	(-0.83)	(-3.44)	(-3.76)	(-2.45)
D_ForeignBenf	1.320		0.769		**-6.712*****		-0.0316		**2.403*****	
	(1.19)		(1.22)		(-2.84)		(-0.93)		(3.88)	
D_ForDir		2.268*		0.139		0.465		**0.0883*****		-0.0702
		(1.94)		(0.30)		(0.34)		(3.79)		(-0.10)
Control	-0.0567***	-0.0627***	-0.0118	-0.0116	-0.0113	-0.0251	-0.000458	-0.000679	0.0727***	0.0761***
	(-2.62)	(-2.73)	(-0.93)	(-0.89)	(-0.34)	(-0.75)	(-0.95)	(-1.47)	(4.09)	(4.00)
Div	-2.163	-2.815	-2.213*	-2.385**	-2.675	-0.998	0.0280	0.00709	2.299	1.862
	(-0.66)	(-0.86)	(-1.95)	(-2.02)	(-0.72)	(-0.26)	(0.46)	(0.13)	(1.13)	(0.85)
Equity	-109.6***	-101.6***	20.68***	23.59***	-37.28**	-58.52***	-0.899***	-0.836***	-5.630	1.829
	(-5.60)	(-5.34)	(3.10)	(4.28)	(-2.05)	(-3.37)	(-3.01)	(-2.83)	(-0.66)	(0.22)
Depo	-21.48***	-19.42***	6.439***	7.001***	-8.980	-11.74*	-0.230	-0.187	7.461*	9.144**
	(-2.84)	(-2.79)	(2.67)	(2.88)	(-1.39)	(-1.88)	(-1.44)	(-1.45)	(1.83)	(2.23)
Asset	-1.674***	-1.359**	0.0667	0.232	1.340	-0.199	-0.0195	-0.0206**	0.0561	0.488
	(-2.98)	(-2.32)	(0.28)	(1.17)	(1.29)	(-0.29)	(-1.22)	(-2.04)	(0.19)	(1.60)
Growth	-6.339***	-6.523***	2.116**	2.331***	-5.234*	-7.407**	-0.0332	-0.0599	-1.285	-0.533
	(-3.38)	(-3.78)	(2.52)	(2.63)	(-1.86)	(-2.34)	(-0.50)	(-0.96)	(-1.09)	(-0.44)
GDP	-0.815	1.207	10.84***	11.06***	-37.81***	-39.42***	-0.183	-0.121	-6.609*	-6.072
	(-0.12)	(0.18)	(3.15)	(3.16)	(-5.38)	(-5.57)	(-1.57)	(-1.04)	(-1.81)	(-1.56)
Constant	96.57	55.95	-170.5***	-178.7***	572.9***	639.8***	3.778**	2.840*	97.87*	76.92
	(0.98)	(0.57)	(-3.12)	(-3.28)	(5.39)	(5.99)	(2.33)	(1.68)	(1.77)	(1.27)
R-squared	0.361	0.370	0.214	0.205	0.361	0.297	0.164	0.221	0.282	0.248
OBS	152	152	152	152	147	147	136	136	131	131
Wald Test: ($\alpha 1+\alpha 2=0$)	-2.28		0.45		**-6.22*****		-0.06		-1.92	
($\delta 1+\delta 2=0$)		-2.20		0.06		-1.94		-0.01		**-3.21*****

***,**, and* indicate significance at the 1%, 5%, 10% levels, respectively. Variable Definitions: *SDROE* is the standard deviation of the return on average equity; *ADJROE* is the risk-adjusted returns computed as the return on average equity over *SDROE*; *NPL* is the ratio of non-performing loans to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and other related interests to total loans; *D_ForPresence* is a dummy that indicates the value of 1 if bank *i* has foreign shareholders at time *t*, and 0, otherwise; *D_ForeignBenf* is a dummy that indicates the value of 1 if bank *i* has significant voting rights of at least 5% at time *t*, and 0, otherwise; *D_ForDir* is a dummy that indicates the value of 1 if bank *i* has foreign directors at time *t*, and 0, otherwise; *Control* is the share of voting rights of the largest domestic beneficial owner/shareholder; *Div* is the lagged value of asset diversity; *Equity* is the ratio of total equity to total assets; *Depo* is the ratio of total deposits to total assets; *Asset* is the natural logarithm of total assets; *Growth* is the growth rate of total assets; *GDP* is the natural logarithm of the real gross domestic product per capita.

It is important to note the impact of the domestic controlling shareholder on the banks as manifested from its share of voting rights. Our regression estimations emphasize the benefits from close monitoring when the level of control increases by lowering returns volatility. This is consistent with hypotheses that predict lower risk brought by a concentrated ownership structure. However, an increase in the level of control of the controlling shareholder also raises insider lending. High insider lending may increase the incidence of tunneling where the controlling shareholder transfers bank resources i.e. expropriate funds that rightfully belong to minority shareholders for his/her own benefit.

Results in Table 6 show the impact of an increase in shares of foreign ownership and beneficial ownership or the direct and indirect voting rights on bank risk and performance. Our findings reveal that significant ownership of a minority foreign owner channeled through voting rights increases risk-adjusted returns and at the same time lowers non-performing loans. Only examining total foreign ownership, however, does not show any impact on global risk and risk-adjusted returns. Moreover, it is interesting to find a negative relationship between total foreign shares and our measure of insider lending. This implies that foreign ownership may have a role in minimizing this behavior. We do not find, however, increased foreign voting rights to mitigate insider lending that could lead to increased incidence of tunneling.

Table 6. The effect of foreign ownership, and foreign beneficial ownership or voting rights on risk and risk-adjusted returns in the Philippine domestic banks, 2000-2007 (Hypothesis 1: MODEL 1B)

$$Y_{i,t} = \beta_0 + \beta_1 \text{ForPresence}_{i,t} + \beta_2 \text{Control}_{i,t} + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

$$Y_{i,t} = \beta_0 + \beta_1 \text{ForBenf}_{i,t} + \beta_2 \text{Control}_{i,t} + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

	SDROE	*SDROE*	*ADJROE*	*ADJROE*	*NPL*	*NPL*	*CRA*	*CRA*	*INSIDELENDING*	*INSIDELENDING*
ForPresence	0.0430		-0.00481		0.0606		0.000992		**-0.0689****	
	(0.99)		(-0.31)		(0.95)		(0.88)		(-2.10)	
ForeignBenf		0.0344		**0.0308***		**-0.220*****		-0.00147		0.00367
		(1.23)		(1.68)		(-3.20)		(-1.22)		(0.12)
Control	-0.0628***	-0.0629***	-0.00992	-0.0124	-0.0242	-0.000732	-0.000597	-0.000375	0.0868***	0.0802***
	(-2.78)	(-2.80)	(-0.77)	(-0.94)	(-0.75)	(-0.02)	(-1.32)	(-0.78)	(5.04)	(4.38)
Div	-6.162	-6.062	-1.598	-1.735	1.279	2.060	0.0376	0.0451	6.248***	5.840***
	(-1.63)	(-1.60)	(-1.37)	(-1.46)	(0.39)	(0.63)	(0.63)	(0.73)	(3.14)	(3.06)
Equity	-104.7***	-106.4***	22.50***	19.88***	-63.48***	-44.35**	-1.056***	-0.887***	1.017	-1.557
	(-5.45)	(-5.36)	(4.03)	(3.56)	(-3.46)	(-2.48)	(-3.47)	(-2.92)	(0.16)	(-0.23)
Depo	-18.76**	-19.70***	6.823***	6.504***	-10.75*	-9.270	-0.228	-0.214	10.64***	11.07**
	(-2.57)	(-2.64)	(2.85)	(2.71)	(-1.73)	(-1.46)	(-1.48)	(-1.35)	(2.70)	(2.59)
Asset	-1.986***	-1.936***	0.216	0.0371	-1.051	0.427	-0.0389***	-0.0257*	-0.0468	-0.425
	(-3.47)	(-3.76)	(1.18)	(0.21)	(-1.60)	(0.50)	(-2.92)	(-1.73)	(-0.16)	(-1.41)
Growth	-6.470***	-6.591***	2.105**	1.798**	-7.710**	-5.418**	-0.0430	-0.0233	0.304	-0.125
	(-3.50)	(-3.34)	(2.29)	(2.04)	(-2.29)	(-2.01)	(-0.54)	(-0.32)	(0.33)	(-0.13)
GDP	-0.549	-0.414	9.662***	9.418***	-42.18***	-39.88***	-0.189*	-0.170*	-7.074**	-7.631**
	(-0.09)	(-0.07)	(2.82)	(2.75)	(-6.32)	(-6.34)	(-1.88)	(-1.70)	(-2.09)	(-2.27)
Constant	98.25	96.05	-157.2***	-148.4***	699.7***	624.6***	4.335***	3.691***	99.92*	117.7**
	(1.14)	(1.04)	(-2.97)	(-2.82)	(6.90)	(6.69)	(3.01)	(2.68)	(1.94)	(2.32)
R-squared	0.351	0.349	0.196	0.206	0.293	0.343	0.149	0.155	0.236	0.209
OBS	152	152	152	152	147	147	136	136	131	131

***,**, and* indicate significance at the 1%, 5%, 10% levels, respectively. Variable Definitions: *SDROE* is the standard deviation of the return on average equity; *ADJROE* is the risk-adjusted returns computed as the return on average equity over *SDROE*; *NPL* is the ratio of non-performing loans to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and other related interests to total loans; *ForPresence* is the share of total foreign ownership; *ForeignBenf* is the share of foreign beneficial ownership or voting rights ownership, with a lower limit of 5%; *Control* is the share of voting rights of the largest domestic beneficial owner/shareholder; *Div* is the lagged value of asset diversity; *Equity* is the ratio of total equity to total assets; *Depo* is the ratio of total deposits to total assets; *Asset* is the natural logarithm of total assets; *Growth* is the growth rate of total assets; *GDP* is the natural logarithm of the real gross domestic product per capita.

4.2. The Effect of the Minority Foreign Ownership and Foreign Shareholders' significant voting rights at different levels of control on domestic bank risk and performance

Our previous findings show that foreign ownership, more particularly, the presence and degree of significant voting rights of foreign shareholders, increases loan quality and risk-adjusted returns. On the other hand, an increase in the level of control translates to increased level of insider lending. These have led us to question whether minority foreign ownership serves to reduce incidence of tunneling by lowering insider lending, and further increase risk-adjusted returns by instilling good corporate governance practices in the bank. We present in Tables 7 and 8 the results of interacting two of our variables: foreign presence and control, which addresses our questions pertaining to whether minority foreign ownership mitigates or reinforces barriers to effective governance. As we have purported in Hypothesis 2, the level of control held by the largest domestic controlling shareholder may influence the impact of minority foreign ownership on bank risk and performance.

As presented in Table 7, our results highlight that banks with foreign shareholders but no significant voting rights, have lower shares of non-performing loans but only significant at lower levels of control. Meanwhile, these banks also have a lower ratio of classified loans and risk assets to total assets; the coefficient, however, decreases as the level of control increases. Insider lending is also lower for these banks. Although the same can be inferred for banks with foreign voting rights of at least 5%, the results in terms of higher loan and asset quality are stronger and significant even at higher levels of control. Insider lending, however, increases as the level of control increases for these banks. The presence of foreign directors in the board proves to be effective but only at levels when domestic controlling shareholder can be challenged. Their efficiency in lowering default risk is only significant up to 20% level of domestic shareholder control, implying that any gains derived from having a foreign director may be overpowered by mishandling practices of the domestic controlling shareholder. In terms of the incidence of tunneling, our results however, highlight their effectiveness even at high levels of control.

Table 7. The effect of the presence of foreign shareholders, presence of foreign owners with significant voting rights and the presence of foreign directors in banks on risk and risk-adjusted returns at different levels of control in the Philippine domestic banks, 2000-2007 (Hypothesis 2: MODEL 2A)

$$Y_{i,t} = \alpha_0 + \alpha_1 D\_For\,Presence + \alpha_2 D\_ForBenf + \alpha_3 Control_{i,t} + \alpha_4 (D\_For\,Presence * Control_{i,t}) + \alpha_5 (D\_ForBenf * Control_{i,t}) + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

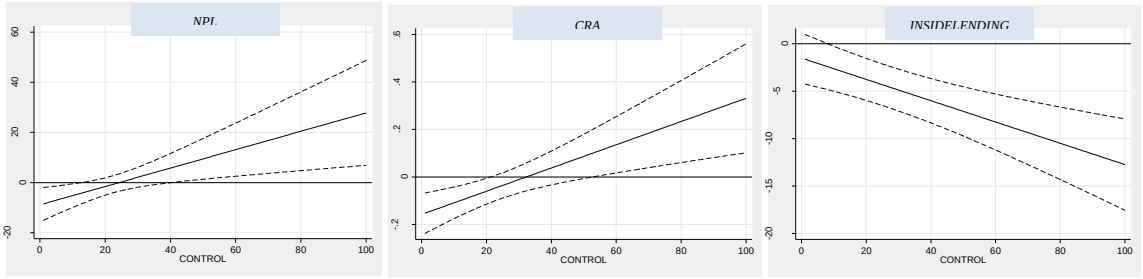
$$Y_{i,t} = \delta_0 + \delta_1 D\_For\,Presence + \delta_2 D\_ForDir + \delta_3 Control_{i,t} + \delta_4 (D\_For\,Presence * Control_{i,t}) + \delta_5 (D\_ForDir * Control_{i,t}) + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

	SDROE	*SDROE*	*ADJROE*	*ADJROE*	*NPL*	*NPL*	*CRA*	*CRA*	*INSIDELENDING*	*INSIDELENDING*
D_ForPresence	-3.939	**-6.553*** **	-1.059	-0.644	**-8.898** **	-2.900	**-0.158*** **	**-0.164*** **	-1.515	**-5.537** **
	(-1.41)	(-3.03)	(-1.48)	(-0.83)	(-2.57)	(-0.81)	(-3.53)	(-3.03)	(-1.12)	(-2.39)
D_ForeignBenf	0.936		2.643		2.101		0.0131		**-5.977*** **	
	(0.38)		(1.63)		(0.53)		(0.24)		(-3.74)	
D_ForDir		**5.091** **		1.251		-4.936		0.0528		1.417
		(2.53)		(1.33)		(-1.28)		(0.91)		(0.78)
Control	**-0.0631** **	**-0.0617** **	-0.0102	-0.00839	**-0.078*** **	**-0.073*** **	**-0.0017*** **	**-0.0016*** **	**0.072*** **	**0.0644*** **
	(-2.37)	(-2.34)	(-0.58)	(-0.47)	(-3.61)	(-3.31)	(-4.03)	(-3.85)	(3.08)	(2.73)
*D_ForPresence*Control*	0.0127	**0.0987** **	0.0303	0.0278	**0.367*** **	0.0116	**0.00489*** **	0.00241	**-0.112*** **	0.0967
	(0.23)	(1.98)	(1.37)	(0.95)	(2.71)	(0.10)	(3.28)	(1.50)	(-3.81)	(1.27)
*D_ForeignBenf*Control*	0.0127		**-0.0665** *		**-0.320** **		-0.00191		**0.270*** **	
	(0.19)		(-1.75)		(-2.25)		(-1.01)		(5.78)	
*D_ForDir*Control*		**-0.124** **		-0.0463		0.187		0.000885		-0.0660
		(-2.14)		(-1.59)		(1.34)		(0.43)		(-0.85)
Div	-2.089	-2.636	-2.719**	-2.319*	-5.418	-1.038	-0.0187	-0.0102	3.756*	1.470
	(-0.61)	(-0.80)	(-2.14)	(-1.96)	(-1.57)	(-0.28)	(-0.30)	(-0.18)	(1.76)	(0.67)
Equity	-109.0***	-101.0***	19.62***	23.74***	-36.99**	-59.07***	-0.761**	-0.780***	0.762	4.018
	(-5.50)	(-5.29)	(2.77)	(4.31)	(-2.09)	(-3.58)	(-2.47)	(-2.80)	(0.09)	(0.48)
Depo	-21.05***	-18.97***	5.660**	7.063***	-8.842	-11.14*	-0.183	-0.158	10.32**	10.71**
	(-2.64)	(-2.68)	(2.19)	(2.93)	(-1.38)	(-1.86)	(-1.15)	(-1.26)	(2.36)	(2.42)
Asset	-1.679***	-1.345**	-0.0120	0.251	0.706	-0.453	-0.0195	-0.0217*	0.654*	0.514*
	(-3.12)	(-2.39)	(-0.04)	(1.23)	(0.81)	(-0.65)	(-1.34)	(-1.92)	(1.88)	(1.67)
Growth	-6.321***	-6.920***	2.078**	2.166**	-5.096*	-6.839**	-0.0229	-0.0511	-1.177	-0.559
	(-3.35)	(-3.75)	(2.49)	(2.46)	(-1.76)	(-2.12)	(-0.34)	(-0.79)	(-1.01)	(-0.47)
GDP	-0.864	0.738	11.37***	10.90***	-34.97***	-38.92***	-0.141	-0.108	-7.368**	-6.131
	(-0.13)	(0.11)	(3.40)	(3.08)	(-5.32)	(-5.92)	(-1.26)	(-0.95)	(-2.15)	(-1.56)
Constant	97.20	62.28	-175.7***	-176.9***	548.8***	639.6***	3.151*	2.674	90.96*	76.40
	(0.99)	(0.62)	(-3.30)	(-3.21)	(5.11)	(6.34)	(1.89)	(1.63)	(1.76)	(1.25)
R-squared	0.362	0.376	0.230	0.211	0.433	0.330	0.247	0.273	0.371	0.257
OBS	152	152	152	152	147	147	136	136	131	131
Marginal impact of foreign shareholder presence										
Control=10%	**-3.81** *	**-4.49** **	-0.76	0.039	**-5.23** **	**-5.32** **	**-0.11*** **	**-0.15*** **	**-2.64** **	**-.382*** **
Control=20%	**-3.69** *	**-4.63*** **	-0.45	-0.08	-1.56	-1.95	**-0.06** **	**-0.11*** **	**-3.76*** **	**-4.17*** **
Control=30%	**-3.56** **	**-4.78*** **	-0.15	-0.20	2.10	1.40	-0.01	**-0.07** **	**-4.88*** **	**-4.53*** **
Marginal impact of presence of significant foreign voting rights										
Control=10%	-2.75	-1.71	1.22	0.42	**-6.32** **	**-5.86*** **	**-0.11*** **	**-0.08*** **	**-5.91*** **	**-3.81*** **
Control=20%	-2.50	-1.96	0.86	0.24	**-5.85*** **	**-4.87** **	**-0.085*** **	**-0.05** *	**-4.33*** **	**-3.51*** **
Control=30%	-2.24	-2.21	0.50	0.05	**-5.38*** **	-1.89	**-0.06** *	-0.01	**-2.74** **	**-3.20*** **

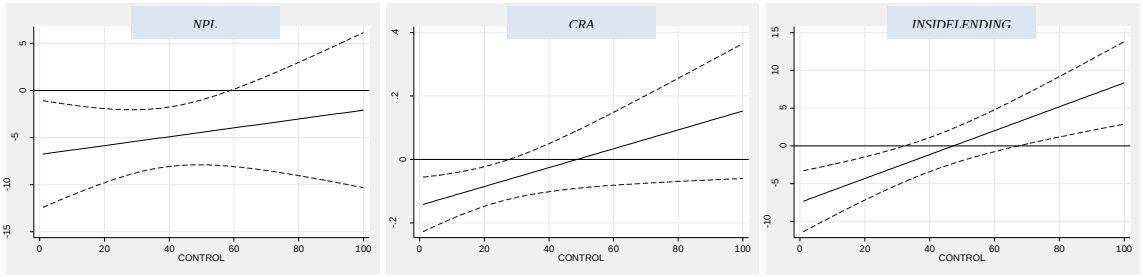
***,**, and* indicate significance at the 1%, 5%, 10% levels, respectively. Variable Definitions*: SDROE* is the standard deviation of the return on average equity; *ADJROE* is the risk-adjusted returns computed as the return on average equity over *SDROE*; *NPL* is the ratio of non-performing loans to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and other related interests to total loans; *D_ForPresence* is a dummy that indicates the value of 1 if bank *i* has foreign shareholders at time *t*, and 0, otherwise; *D_ForeignBenf* is a dummy that indicates the value of 1 if bank *i* has significant voting rights of at least 5% at time *t*, and 0, otherwise; *D_ForDir* is a dummy that indicates the value of 1 if bank *i* has foreign directors at time *t*, and 0, otherwise; *Control* is the share of voting rights of the largest domestic beneficial owner/shareholder; *Div* is the lagged value of asset diversity; *Equity* is the ratio of total equity to total assets; *Depo* is the ratio of total deposits to total assets; *Asset* is the natural logarithm of total assets; *Growth* is the growth rate of total assets; *GDP* is the natural logarithm of the real gross domestic product per capita.

FIGURE 1. Marginal Impact of the Minority Foreign Ownership on Different Risk and Performance Measures varying across different levels control by the domestic controlling shareholder in Domestic Banks in the Philippines, 2000-2007

A. Presence of Minority foreign shareholders with no significant voting rights



B. Presence of Minority foreign shareholders with significant voting rights



C. Presence of Foreign Directors in the Board

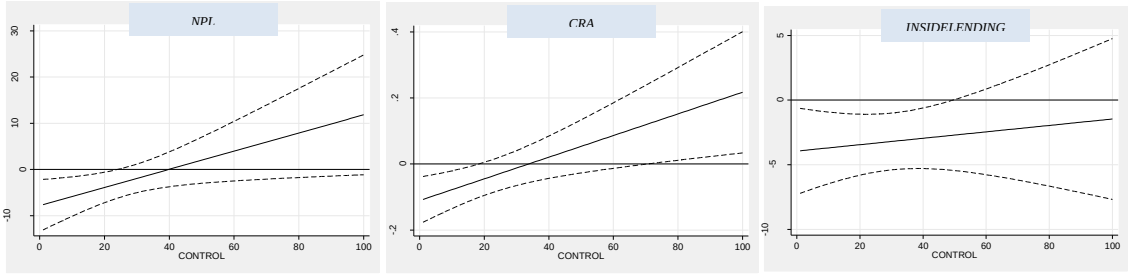


Figure 1 shows the impact of the presence of minority foreign ownership at different facets- A) Presence of minority foreign shareholders without significant voting rights; B) Presence of minority foreign shareholders with significant voting rights; C) Presence of foreign directors in the board, at various levels of control. The graphs highlight that among the measures of minority foreign ownership, banks that have foreign shareholders with direct or indirect voting rights of 5% have better loan and asset quality. Collectively, however, we find limits from gains derived from having minority foreign owners when the power of domestic controlling shareholder increases, after which, foreign presence moves in the same direction as control in terms of bank risk and performance. Differences are observed from the impact of the presence of minority foreign ownership on the level of insider lending. We find that banks with shareholders that have significant voting rights may reinforce tunneling, at approximately 50% of domestic shareholder control. This may imply that the domestic controlling shareholder may have struck a deal with the minority foreign shareholder

(propping), or that the voice of minority foreign shareholders may be weak as compared to a strong imposition from the one who has the control.

Table 8 highlights the results from using continuous variables to thoroughly investigate the effect of increased shares of minority foreign ownership on bank risk and performance. Our results reveal that it is the shares of foreign voting rights that matter in effecting differences in bank behavior. We find that increased shares of voting rights increases risk-adjusted returns, lowers the non-performing loan ratio, lowers the classified loans and risk asset ratio. These findings indicate the positive role of minority foreign ownership with significant voting rights in increasing bank performance and lowering risk. This role, however, as portrayed in Figure 2 and consistent with our findings using dummy variables, is constrained by the level of voting rights of the domestic controlling shareholder, inducing either a decrease in the positive impact or even an adverse effect, where either collusion may have materialized between the controlling shareholder and minority foreign shareholder.

FIGURE 2. Marginal Impact of the Shares of Voting Rights of Minority Foreign Shareholders on Different Risk and Performance Measures varying across different levels control by the domestic controlling shareholder in Domestic Banks in the Philippines, 2000-2007

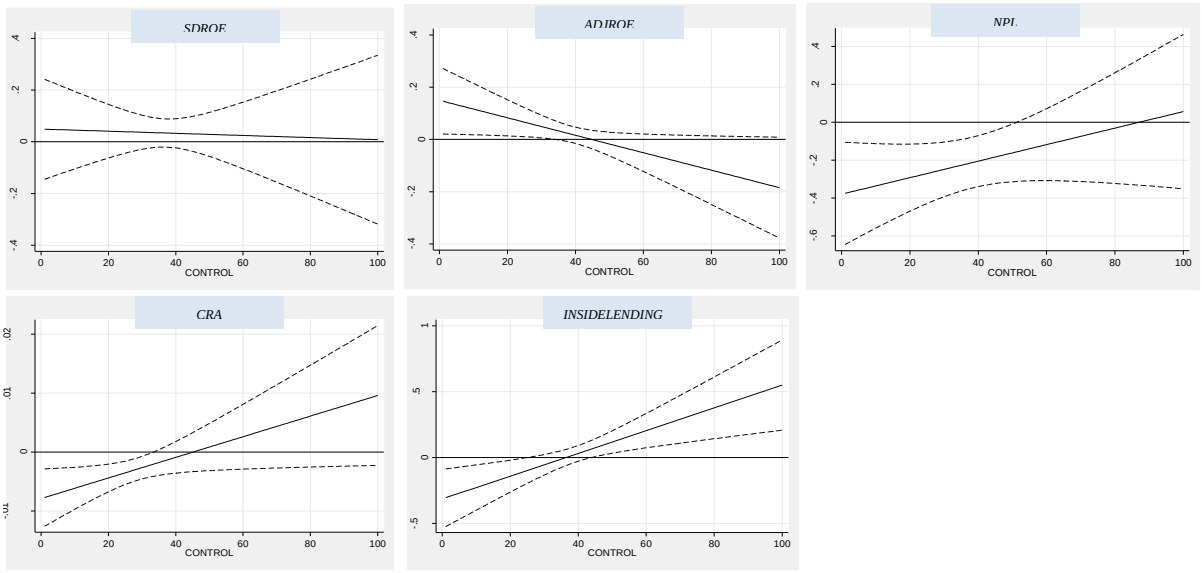


Table 8. The effect of foreign ownership, and foreign beneficial ownership or voting rights at different levels of control on risk and risk-adjusted returns in the Philippine domestic banks, 2000-2007 (Hypothesis 2: MODEL 2B)

$$Y_{i,t} = \beta_0 + \beta_1 \text{For Presence}_{i,t} + \beta_2 \text{Control}_{i,t} + \beta_3 (\text{For Presence}_{i,t} * \text{Control}_{i,t}) + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

$$Y_{i,t} = \beta_0 + \beta_1 \text{ForBenf}_{i,t} + \beta_2 \text{Control}_{i,t} + \beta_3 (\text{ForBenf}_{i,t} * \text{Control}_{i,t}) + \sum_{i=1}^{n} \omega_i Z_{i,t} + \varepsilon_{i,t}$$

	SDROE	*SDROE*	*ADJROE*	*ADJROE*	*NPL*	*NPL*	*CRA*	*CRA*	*INSIDELENDING*	*INSIDELENDING*
ForPresence	0.0308		0.00108		-0.135		**-0.00381****		-0.0649	
	(0.35)		(0.03)		(-1.09)		(-2.02)		(-0.96)	
ForeignBenf		0.0490		**0.150****		**-0.379*****		**-0.008*****		**-0.31*****
		(0.48)		(2.28)		(-2.70)		(-3.08)		(-2.75)
Control	**-0.066****	**-0.062*****	-0.00864	-0.00324	**-0.062****	-0.0088	**-0.0015*****	-0.0007	**0.088*****	**0.064*****
	(-2.48)	(-2.64)	(-0.51)	(-0.21)	(-2.41)	(-0.26)	(-3.22)	(-1.50)	(4.60)	(2.99)
*ForPresence*Control*	0.000391		-0.00019		**0.00616***		**0.0001*****		-0.00012	
	(0.22)		(-0.21)		(1.74)		(2.80)		(-0.07)	
*ForBenf*Control*		-0.000410		**-0.0033****		0.0044		**0.00018****		**0.0086*****
		(-0.16)		(-2.08)		(1.37)		(2.10)		(3.06)
Div	-6.208	-6.099	-1.576	-2.036*	0.315	2.261	0.0107	0.0559	6.270***	6.368***
	(-1.61)	(-1.61)	(-1.34)	(-1.68)	(0.10)	(0.68)	(0.19)	(0.87)	(3.32)	(3.11)
Equity	-104.6***	-106.8***	22.43***	16.94***	-61.13***	-40.61**	-0.951***	-0.722**	0.920	8.260
	(-5.44)	(-5.21)	(3.98)	(2.88)	(-3.51)	(-2.11)	(-3.26)	(-2.15)	(0.14)	(1.13)
Depo	-18.69**	-19.88**	6.789***	5.041**	-9.862*	-7.760	-0.191	-0.142	10.60***	15.74***
	(-2.54)	(-2.44)	(2.80)	(2.06)	(-1.66)	(-1.15)	(-1.26)	(-0.88)	(2.63)	(3.06)
Asset	-1.988***	-1.954***	0.217	-0.111	-1.014	0.681	-0.0351***	-0.0149	-0.0498	0.0991
	(-3.49)	(-3.58)	(1.18)	(-0.60)	(-1.53)	(0.76)	(-2.74)	(-1.18)	(-0.17)	(0.29)
Growth	-6.473***	-6.616***	2.107**	1.597*	-7.771**	-5.271*	-0.0388	-0.0158	0.300	0.409
	(-3.49)	(-3.26)	(2.28)	(1.78)	(-2.32)	(-1.92)	(-0.49)	(-0.21)	(0.33)	(0.39)
GDP	-0.403	-0.455	9.592***	9.083***	-39.70***	-39.07***	-0.137	-0.139	-7.115**	-6.259*
	(-0.07)	(-0.07)	(2.77)	(2.69)	(-6.48)	(-6.06)	(-1.34)	(-1.29)	(-2.06)	(-1.87)
Constant	96.13	97.29	-156.1***	-138.4***	661.8***	604.5***	3.460**	2.874*	100.6*	79.26
	(1.12)	(1.04)	(-2.94)	(-2.68)	(7.01)	(6.14)	(2.32)	(1.81)	(1.91)	(1.52)
R-squared	0.351	0.349	0.196	0.232	0.314	0.346	0.207	0.185	0.236	0.264
OBS	152	152	152	152	147	147	136	136	131	131
Conditional Marginal effects of increased shares of foreign ownership/voting rights										
Control=10%	0.03	0.045	-0.001	**0.12****	-0.07	**-0.34*****	-0.002	**-0.01*****	-0.07	**-0.23*****
Control=20%	0.04	0.041	-0.003	**0.08****	-0.01	**-0.29*****	-0.001	**-0.004*****	**-0.07***	**-0.14****
Control=30%	0.04	0.036	-0.005	**0.05****	0.05	**-0.25*****	-0.001	**-0.003*****	**-0.07***	-0.05

***,**, and* indicate significance at the 1%, 5%, 10% levels, respectively. Variable Definitions: *SDROE* is the standard deviation of the return on average equity; *ADJROE* is the risk-adjusted returns computed as the return on average equity over *SDROE*; *NPL* is the ratio of non-performing loans to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and other related interests to total loans; *ForPresence* is the share of total foreign ownership; *ForeignBenf* is the share of foreign beneficial ownership or voting rights ownership, with a lower limit of 5%; *Control* is the share of voting rights of the largest domestic beneficial owner/shareholder; *Div* is the lagged value of asset diversity; *Equity* is the ratio of total equity to total assets; *Depo* is the ratio of total deposits to total assets; *Asset* is the natural logarithm of total assets; *Growth* is the growth rate of total assets; *GDP* is the natural logarithm of the real gross domestic product per capita.

5. Robustness Checks[92]

Several robustness checks are performed to examine the relationship between minority foreign ownership, risk and overall performance for a sample of domestic banks in the Philippines. First, we investigate a subsample of listed banks. The results of our investigations are presented in Tables A1, A2, A3 and A4 for both of our models. We find that banks with foreign shareholders to have higher risk-adjusted returns, and even higher risk-adjusted returns for banks that have significant foreign voting rights. We do not find, however differences in terms of stock volatility or risk between banks with foreign presence and purely domestic-owned banks.

Second, we consider a nonlinear specification of our model. We introduce the variables *ForPresenceSq* and *ForeignBenfSq*, which are the squares of *ForPresence* and *ForeignBenf*. We do not find, however, evidence (See Table A5) that shows that the relationships between foreign ownership and bank performance and foreign voting rights and bank performance are nonlinear.

Third, we use a more restrictive definition of foreign voting rights taking into account only the largest significant foreign voting right, instead of total foreign voting rights. We thus introduce the continuous variable, *ForLargeBenf* and the dummy variable, *D_ForLargeBenf*, which takes the value 1 if the largest foreign beneficial owner of the bank holds at least 5% of direct and indirect voting rights, and zero, otherwise. Our findings are shown in Table A6. The results regarding the variables of interest remain unchanged.

6. Conclusion

In this chapter, we have assessed the role of minority foreign owners and foreign board directors, in the presence of controlling shareholders in an emerging economy where foreign ownership restrictions exist in domestic banks. To our knowledge, this is the first attempt to investigate a different nexus of the principal-agent relationship, one where the minority foreign shareholders act as the principal and the controlling shareholder as the agent. Since the agent possesses control, she may influence management decisions that are more aligned to her interests at the expense of other minority shareholders – several examples include insider lending that lead to deterioration of asset quality and excessive risk taking.

Studying a sample of 20 universal and commercial domestic banks in the Philippines, we find that banks where minority foreign shareholders are present have higher asset quality

[92] The regression results in this section are shown in Annex 2.

and lower case of insider lending compared with purely domestic owned banks. Unlike minority domestic owners, foreign minority owners are more likely to protest against expropriation from controlling shareholders. This is supported, particularly in an economy that relies on relationship-based exchanges where transaction costs are reduced by constraining an opportunistic market such as mutual trust. Moreover, we find that an increase in the voice of minority foreign owners – an increase in their voting rights lead to better bank performance in the form of higher risk-adjusted returns and lower non-performing loan ratio.

The impact, however, of the presence and degree of minority foreign ownership in domestic banks depends on the level of control exercised by the controlling shareholder. At high levels of control, minority foreign owners either collude with the controlling shareholder or are overpowered. In such cases, higher insider lending is observed. The propensity to tunnel is usually higher for groups of interconnected firms, particularly those that are organized in pyramids, which is characteristic of the structure of most large banks in the Philippines. On the whole, we find minority foreign owners to have a positive impact on domestic bank performance in the Philippines, particularly, at lower levels of control manifested by dominant domestic shareholders.

Annex

Annex 1: Description of the Foreign Presence, Control and Risk Variables

Variable	Variable name	Dummy or Continuous?	Description
FOREIGN PRESENCE	*D_ForPresence*	Dummy	Indicates the presence of foreign shareholders in a domestic bank. It assumes the value one if a domestic bank has foreign shareholder s, and zero, otherwise
	ForPresence	Continuous	Defines the degree of foreign presence in the domestic bank or the percentage share of total foreign shares in the bank
	D_ForeignBenf	Dummy	Indicates the presence of a foreign beneficial owner which holds at least 10% of voting rights
	ForeignBenf	Continuous	Indicates the percentage share of beneficial ownership held by foreign beneficial owners
	ForLargeBenf	Continuous	Indicate the percentage share of beneficial ownership held by a foreign owner with largest voting rights
	D_ForDir	Dummy	Indicates the presence of a foreign representation in the board. It assumes the value of one if a domestic bank has a foreign director and zero, otherwise
CONTROL	*Control*	Continuous	Defines the degree of control exerted by the largest domestic beneficial owner. It is computed as the percentage share of the largest direct and indirect voting rights of a Filipino owner/corporation.
RISK	*NPL*	Continuous	Refer to past due loan accounts whose principal and/or interest in unpaid for 30 days or more after due date
	CRA	Continuous	Classified loan and other risk assets to total assets
	SDROE	Continuous	Standard deviation of the return on average equity, computed as the rolling standard deviation of the return on average equity over period t-1, t, t+1 and t+2
	INSIDELENDING	Continuous	Measures insider lending activity and is defined as the ratio of loans to directors, officers, stockholders and related interests to total loans
	ADJROE	Continuous	Indicates the returns adjusted to its volatility. It is defined as the return on average equity over *SDROE*
	STOCK_VOL	Continuous	Measures stock return volatility, computed as the standard deviation of the annualized average weekly returns
	STOCK_RET	Continuous	Measures stock returns adjusted to volatility, computed as the ratio of annualized average weekly returns to its standard deviation

Annex 2: Regression Results of the Robustness Checks

Table A1. The effect of the presence of foreign shareholders, presence of foreign owners with significant voting rights and the presence of foreign directors in banks on risk and risk-adjusted returns of the listed Philippine domestic banks, 2000-2007 (Hypothesis 1: MODEL 1A)

	STOCK_VOL	*STOCK_VOL*	*STOCK_RET*	*STOCK_RET*	*NPL*	*NPL*	*CRA*	*CRA*	*INSIDELENDING*	*INSIDELENDING*
D_ForPresence	0.00219	0.00102	**0.0798****	**0.0838****	3.833	2.377	**0.115*****	0.0583	-1.250	-0.173
	(0.65)	(0.27)	(2.04)	(2.24)	(1.20)	(0.80)	(2.71)	(1.65)	(-1.32)	(-0.16)
D_ForeignBenf	0.000108		0.0103		**-8.10*****		**-0.0760****		**4.172*****	
	(0.08)		(0.32)		(-3.07)		(-2.54)		(5.60)	
D_ForDir		0.00239		-0.00340		-0.448		**0.083*****		0.0973
		(1.46)		(-0.12)		(-0.34)		(4.35)		(0.13)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.165	0.197	0.382	0.381	0.358	0.254	0.325	0.361	0.501	0.247
OBS	98	98	93	93	99	99	89	89	84	84

***,**, and* indicate significance at the 1%, 5%, 10% levels, respectively. Variable Definitions: *STOCK_VOL* is the stock return volatility; *STOCK_RET* is the stock return adjusted to volatility; *NPL* is the ratio of non-performing loans to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and other related interests to total loans; *D_ForPresence* is a dummy that indicates the value of 1 if bank *i* has foreign shareholders at time *t*, and 0, otherwise; *D_ForeignBenf* is a dummy that indicates the value of 1 if bank *i* has significant voting rights of at least 5% at time *t*, and 0, otherwise; *D_ForDir* is a dummy that indicates the value of 1 if bank *i* has foreign directors at time *t*, and 0, otherwise.

Table A2. The effect of foreign ownership, and foreign beneficial ownership or voting rights on risk and risk-adjusted returns of a sample of listed Philippine domestic banks, 2000-2007 (Hypothesis 1: MODEL 1B)

	STOCK_VOL	*STOCK_VOL*	*STOCK_RET*	*STOCK_RET*	*NPL*	*NPL*	*CRA*	*CRA*	*INSIDELENDING*	*INSIDELENDING*
ForPresence	**0.000178*****		-0.00199		**0.164***		**0.00233***		0.0427	
	(3.16)		(-1.56)		(1.91)		(1.92)		(1.45)	
ForeignBenf		0.0000569		-0.000356		**-0.35*****		**-0.00359*****		**0.147*****
		(1.14)		(-0.25)		(-3.84)		(-3.16)		(4.65)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.247	0.170	0.356	0.337	0.281	0.370	0.246	0.296	0.240	0.413
OBS	98	98	93	93	99	99	89	89	84	84

***,**, and* indicate significance at the 1%, 5%, 10% levels, respectively. Variable Definitions: *STOCK_VOL* is the stock return volatility; *STOCK_RET* is the stock return adjusted to volatility; *NPL* is the ratio of non-performing loans to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and other related interests to total loans; *ForPresence* is the share of total foreign ownership; *ForeignBenf* is the share of foreign beneficial ownership or voting rights ownership, with a lower limit of 5%.

Table A3. The effect of the presence of foreign shareholders, presence of foreign owners with significant voting rights and the presence of foreign directors in banks on risk and risk-adjusted returns at different levels of control of the listed Philippine domestic banks, 2000-2007 (Hypothesis 2: MODEL 2A)

	STOCK_VOL	*STOCK_VOL*	*STOCK_RET*	*STOCK_RET*	*NPL*	*NPL*	*CRA*	*CRA*	*INSIDELENDING*	*INSIDELENDING*
D_ForPresence	0.00213	0.00335	0.0762	0.0400	**-21.47****	-12.07	-0.241	-0.120	-3.238	-4.895
	(0.25)	(0.40)	(0.84)	(0.43)	(-2.58)	(-1.44)	(-1.24)	(-0.60)	(-1.14)	(-1.42)
D_ForBenf	-0.000916		-0.00300		-0.795		-0.0425		-2.249*	
	(-0.33)		(-0.06)		(-0.17)		(-0.72)		(-1.77)	
D_ForDir		0.00172		0.0481		-10.71**		0.0234		-0.0500
		(0.51)		(1.18)		(-2.58)		(0.46)		(-0.02)
Control	-0.0000132	0.0000544	0.000473	0.000651	**-0.566*****	**-0.563*****	-0.00796	-0.00494	-0.00958	-0.0208
	(-0.06)	(0.27)	(0.13)	(0.19)	(-2.78)	(-2.83)	(-1.61)	(-1.08)	(-0.12)	(-0.26)
D_ForPresence*Control	0.00000132	-0.0000945	0.000113	0.00199	**0.888*****	**0.462****	**0.0106****	0.00508	0.0293	0.138
	(0.01)	(-0.38)	(0.03)	(0.55)	(3.56)	(2.00)	(2.13)	(1.00)	(0.38)	(1.26)
D_ForBenf*Control	0.0000364		0.000469		**-0.277***		-0.00141		**0.202*****	
	(0.44)		(0.29)		(-1.75)		(-0.80)		(5.60)	
D_ForDir*Control		0.0000351		-0.00241		**0.391****		0.00209		-0.000639
		(0.25)		(-1.58)		(2.54)		(1.16)		(-0.01)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.167	0.199	0.382	0.390	0.483	0.363	0.392	0.392	0.642	0.261
OBS	98	98	93	93	99	99	89	89	84	84

***,**, and* indicate significance at the 1%, 5%, 10% levels, respectively. Variable Definitions: *STOCK_VOL* is the stock return volatility; *STOCK_RET* is the stock return adjusted to volatility; *NPL* is the ratio of non-performing loans to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and other related interests to total loans; *D_ForPresence* is a dummy that indicates the value of 1 if bank *i* has foreign shareholders at time *t*, and 0, otherwise; *D_ForeignBenf* is a dummy that indicates the value of 1 if bank *i* has significant voting rights of at least 5% at time *t*, and 0, otherwise; *D_ForDir* is a dummy that indicates the value of 1 if bank *i* has foreign directors at time *t*, and 0, otherwise; *Control* is the share of voting rights of the largest domestic beneficial owner/shareholder; *D_ForPresence*Control* is the interaction between *D_ForPresence* and *Control*; *D_ForBenf*Control* is the interaction between *D_ForBenf* and *Control*; *D_ForDir*Control* is the interaction between *D_ForDir* and *Control*.

Table A4. The effect of foreign ownership, and foreign beneficial ownership or voting rights at different levels of control on risk and risk-adjusted returns in the Philippine domestic banks, 2000-2007 (Hypothesis 2: MODEL 2B)

	STOCK_VOL	*STOCK_VOL*	*STOCK_RET*	*STOCK_RET*	*NPL*	*NPL*	*CRA*	*CRA*	*INSIDELENDING*	*INSIDELENDING*
ForPresence	0.000134		-0.00340		-0.207		-0.00198		**0.151***	
	(0.92)		(-1.19)		(-0.96)		(-0.69)		(1.98)	
ForeignBenf		-0.0000228		-0.000229		-0.209		-0.00349		**-0.232*****
		(-0.16)		(-0.07)		(-1.06)		(-1.40)		(-3.23)
Control	-0.0000138	-0.0000182	-0.000775	0.000340	-0.115	0.170	-0.00149	0.00142	**0.171*****	0.0107
	(-0.14)	(-0.37)	(-0.42)	(0.27)	(-1.03)	(1.49)	(-0.96)	(1.17)	(3.27)	(0.54)
*ForPresence*Control*	0.00000156		0.0000504		**0.0129***		**0.000148***		-0.00360	
	(0.38)		(0.55)		(1.91)		(1.82)		(-1.37)	
*ForeignBenf*Control*		0.00000245		-0.00000393		-0.00432		-0.00000298		**0.0110*****
		(0.57)		(-0.04)		(-0.66)		(-0.04)		(5.14)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.249	0.173	0.358	0.337	0.315	0.372	0.275	0.296	0.264	0.570
OBS	98	98	93	93	99	99	89	89	84	84

***,**, and* indicate significance at the 1%, 5%, 10% levels, respectively. Variable Definitions: *STOCK_VOL* is the stock return volatility; *STOCK_RET* is the stock return adjusted to volatility; *NPL* is the ratio of non-performing loans to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and other related interests to total loans; *ForPresence* is the share of total foreign ownership; *ForeignBenf* is the share of foreign beneficial ownership or voting rights ownership, with a lower limit of 5%; *ForPresence*Control* is the interaction between *ForPresence* and Control; *ForeignBenf*Control* is the interaction between *ForeignBenf* and *Control*.

Table A5. The effect of foreign ownership and foreign beneficial ownership or foreign voting rights on bank risk taking in Philippine domestic banks, over the 2000-2007 period

	SDROE		*ADJROE*		*NPL*		*CRA*		*INSIDELENDING*	
ForPresence	-0.277		-0.0231		0.0306		0.00128		-0.0780	
	(-1.65)		(-0.41)		(0.15)		(0.45)		(-0.76)	
ForPresenceSq	0.00991**		0.000577		0.001000		-0.00001		0.000507	
	(2.20)		(0.34)		(0.17)		(-0.10)		(0.20)	
ForeignBenf		0.00884		-0.0111		-0.115		0.000394		0.0211
		(0.09)		(-0.30)		(-0.74)		(0.21)		(0.39)
ForeignBenfSq		0.000625		0.00130		-0.00337		-0.0000597		-0.00027
		(0.22)		(1.02)		(-0.77)		(-1.22)		(-0.20)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.359	0.351	0.206	0.220	0.293	0.343	0.149	0.158	0.191	0.170
OBS	152	150	152	150	147	145	136	136	131	131

***,**, and* indicate significance at the 1%, 5%, 10% levels, respectively. Variable Definitions: *SDROE* is the standard deviation of the return on average equity; *ADJROE* is the risk-adjusted returns computed as the return on average equity over *SDROE*; *NPL* is the ratio of non-performing loans to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and other related interests to total loans; *ForPresence* is the share of total foreign ownership; *ForPresenceSq* is the square of *ForPresence; ForeignBenf* is the share of foreign beneficial ownership or voting rights ownership, with a lower limit of 5%.; *ForeignBenfSq* is the square of ForeignBenf.

Table A6. The effect of the presence of large foreign beneficial owners and large foreign voting rights on bank risk taking in Philippine domestic banks, over the 2000-2007 period

	SDROE		*ADJROE*		*NPL*		*CRA*		*INSIDELENDING*	
D_ForPresence	**-3.282***		-0.303		0.388		-0.0219		**-4.083*****	
	(-1.90)		(-0.69)		(0.23)		(-0.79)		(-3.66)	
D_ForLargeBenf	0.661		0.825		**-7.355*****		-0.0421		**2.142*****	
	(0.61)		(1.44)		(-3.25)		(-1.27)		(3.49)	
ForLargeBenf		-0.0480		0.0418		**-0.345*****		-0.00173		0.0398
		(-0.95)		(1.47)		(-3.41)		(-0.91)		(0.84)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.359	0.334	0.216	0.214	0.380	0.345	0.171	0.150	0.277	0.173
OBS	152	152	152	152	147	147	136	136	131	131

***,**, and* indicate significance at the 1%, 5%, 10% levels, respectively. Variable Definitions*: SDROE* is the standard deviation of the return on average equity; *ADJROE* is the risk-adjusted returns computed as the return on average equity over *SDROE*; *NPL* is the ratio of non-performing loans to total loans; *CRA* is the ratio of classified loans and other risk assets to total assets; *INSIDELENDING* is the ratio of loans to directors, officers, stockholders and other related interests to total loans; *D_ForPresence* is a dummy that indicates the value of 1 if bank *i* has foreign shareholders at time *t*, and 0, otherwise; *D_ForLargeBenf* is a dummy that indicates the value of 1 if the largest beneficial owner of bank *i* has significant voting rights of at least 5% at time *t*, and 0, otherwise; *ForLargeBenf* is a variable that measures the direct and indirect voting rights of the largest foreign beneficial owner.

CHAPTER 5 Ownership concentration, bank risk and institutions: Evidence from Less Developed Economies[93]

[93] This chapter refers to the working paper titled "Ownership concentration, bank risk and institutions: Evidence from Less Developed Economies," co-authored with Céline Meslier and Amine Tarazi.

1. Introduction

The issue of whether concentrated firm ownership structures increase or reduce performance has been extensively examined theoretically and empirically in the corporate finance literature. Shleifer and Vishny (1986) argue that a concentrated ownership structure enhances control as large investors have the incentives to monitor the managers, thereby reducing the conflict of interests between managers and shareholders. Concentrated ownership, however, raises new corporate governance problems because of the presence of private benefits of control. Particularly in countries with weak legal systems, there is strong evidence, which indicates that large investors often tunnel resources out of firms by expropriating minority shareholders (Johnson *et al*., 2000; Glaeser *et al*., 2001). Anecdotal evidence, however, also points out that the same large investors may prop up firms that have minority shareholders using their own private resources especially when there is a negative shock in the economy (Friedman *et al*., 2003).

Compared to the vast amount of research, which investigates the efficiency of concentrated ownership structure as a corporate governance mechanism in non-bank companies, ownership concentration has been relatively less studied in the context of the banking industry, particularly its implications on bank risk taking. The empirical findings of Saunders, Strock and Travlos (1990) show that owner controlled banks exhibit higher risk-taking behavior than banks controlled by managers with small shareholdings. Meanwhile, Shehzad *et al*. (2010) find that ownership concentration reduces bank riskiness at low levels of shareholder protection rights and supervisory control.

According to Aguilera and Jackson (2003), understanding corporate governance across economies using an agency theory approach is not sufficient because corporate governance may also be shaped by institutional embeddedness. Different types of investors, particularly organizations are generally governed by institutionally-defined rules. Agency theory often retains a thin view of how institutional environment may affect corporate governance (Lubatkin *et al*., 2001). Despite recent studies that look into the influence of shareholder rights, La Porta *et al*. (1999) argue that it does not capture the entire institutional complexity as it limits actors' financial behavior to the effects of the law. Corporate governance thus needs to be understood in the context of a wider range of institutional domains (Aoki, 2001).

An institutional approach of corporate governance, which addresses the embeddedness of firms and organizations, is recent and relatively scarce particularly in the banking literature. According to North (1990), institutions provide the rules of the "game", while firms and

organizations, which encompass banks, are the players bound by these rules (North, 1990). While more recent ownership-bank risk literature from Shehzad *et al*. (2010) and Laeven and Levine (2009) highlight the importance of the interaction between ownership structure, national bank regulations, supervisory control and shareholder protection rights in determining bank risk, our aim in this chapter is to stress the importance of institutions in the ownership concentration-bank risk relationship by examining banks in less developed economies where some specificities such as political and social heritage, restructuration and inadequate institutional and legal environment may foster excessive bank risk taking. We focus on the impact of two institutional factors - economic freedom and quality of external governance on bank risk taking and how they influence or motivate the risk-taking behavior of controlling shareholders. We closely examine whether better regulatory and institutional environments reduce the incentives of the largest shareholders in banks to extract private benefits of control that may induce excessive bank risk taking.

Particularly in less developed economies, governments often impose an array of restrictions, which hampers economic activity. From their conception, while these may be acceptable from a social standpoint, implementation of such restrictions often benefit societal elites impeding efficiency, increasing entrepreneurial activity costs and limiting competition. The effectiveness of countries with better quality of external governance and more economic freedom lies on their impact with regards to imposing inefficiencies from the extraction of private benefits - i.e. rule of law, regulatory quality, competition, financial freedom.

The efficacy of better institutions in fostering an environment, which does not encourage excessive bank risk taking, may depend on the percentage of ownership stakes held by the controlling shareholder or how concentrated ownership in the bank is. Under the same rationale as Burkart and Panunzi (2006), assuming that an improvement in the quality of external governance raises the costs attached to the extraction of private benefits of control, and thus, to taking high risk, lower ownership concentration allows the controlling shareholder to attach more importance to private benefit extraction because only a small fraction of these costs is borne by the controlling shareholder. Owning a larger block, the controlling shareholder finds private benefit extraction more inefficient, as she/he needs to internalize a larger fraction of the costs, thus, either reducing bank risk or leaving risk taking unchanged.

This study contributes to the corporate governance and bank risk literature mainly in two ways. First, we extend the growing banking literature that studies the impact of corporate governance on bank risk by using an institutional approach. We particularly investigate how

better quality of external governance and more economic freedom affect bank risk-taking behavior and the ownership concentration-bank risk relationship. Second, we examine how foreign ownership concentration vis-a-vis domestic ownership concentration affects bank risk taking in the context of less developed economies. To our knowledge, this is the first banking study that looks into this aspect.

Using a sample of 838 banks from 68 less developed countries, the key findings of our study are as follows. First, consistent with theory, our results show that greater ownership share by a controlling shareholder translates to more bank risk taking in less developed economies. This relationship holds even when controlling for institutional differences. Second, the relationship between asset risk and ownership concentration depends on the institutional environment where the bank is operating, particularly, the degree of economic freedom and the quality of external governance. When institutions are better governed, an increase in the ownership of the largest shareholder still leads to higher overall bank risk taking, but at a lower marginal effect compared to when institutions are poorly governed. In addition, a more adequate institutional environment makes loan monitoring by the largest shareholder more effective in lowering loan portfolio risk. Third, the impact of economic freedom and quality of external governance on asset risk depends on how concentrated ownership is in the bank. Our results indicate that when a controlling shareholder holds a substantially large stake in the bank, an increase in the degree of economic freedom and quality of external governance generally results in a better outcome, reducing bank risk taking. However, when ownership concentration is low, the controlling shareholder only bears a small fraction of the cost from the inefficiencies rooted from private benefit extraction, thus, making better institutions less effective in reducing bank risk. Lastly, we find that either an increase in domestic ownership concentration or foreign ownership concentration leads to higher bank risk, except loan portfolio risk. Our study provides evidence, which shows that increasing the stakes or degree of control of the largest foreign shareholder is more favorable to the bank in terms of having a healthier bank loan portfolio. The opposite, however, is found when the largest domestic shareholder increases its stake in the bank.

The remainder of this chapter is organized as follows. Section 2 discusses the data and variables used and the descriptive statistics of our sample. Section 3 presents the hypotheses tested, the method and models used, followed by a discussion of the results in Section 4. Section 5 investigates further issues and Section 6 shows a series of robustness checks. We draw the conclusions in the last section (section 7).

2. Data, Variables and Descriptive Statistics

2.1. Data collection and definition of sample

We take the annual data used in this paper from the *Bankscope* Fitch IBCA, which provides information on financial statements and ownership structure of financial institutions. We identify 1678 commercial and savings banks in 87 less developed economies, of which ownership and financial data are available over our 2004-2008 study period. We apply several sample selection criteria. First, we delete the banks for which information about total ownership shareholdings is less than 50%, which leaves us with 1006 banks. Second, we drop the countries where the remaining banks do not represent at least 50% of the banking system's total assets based on information for each country from *Bankscope* and delete banks with less than 3 consecutive years of time series observations, which leaves us with 838 banks in 68 countries.

2.2. Presentation of Variables

In this subsection, we present the dependent variables reflecting bank risk and our main explanatory variables- ownership concentration and institutional factors. We show in Table 1 the descriptive statistics and definitions of these variables, including other variables that we use throughout the paper.

Table 1. Definition of dependent and independent variables and descriptive statistics of our sample of banks in less developed economies over the period 2004-2008

Variable name	Description	Mean	Std Dev.	Min	Max	OBS	Sources
Dependent Variables							
SDROAA	The 3-year rolling window standard deviation of the ROAA (return on average assets)	0.93	1.06	0	10.56	3198	Bankscope and author's calculations
SDROAE	The 3-year rolling window standard deviation of the ROAE (return on average equity)	7.70	7.40	0	65.67	3138	Bankscope and author's calculations
NPL	The ratio of non performing loans to total loans	6.48	9.28	0	99.25	2136	Bankscope and author's calculations
Z	Z-score = (100 + ROAE)/SDROAE, where ROAE is the 3-year rolling window average return on average	34.47	37.97	2.44	304.35	3075	Bankscope and author's calculations
ZP	ZP-score = (ROAA+EQTA)/SDROAA, where ROAA is the 3-year rolling window average return on average assets, and EQTA is the 3-year rolling window average ratio of total equity to total assets	35.94	40.26	2.70	319.49	3033	Bankscope and author's calculations
ZP1	ZP1 = ROAA/SDROAA	5.34	6.08	-1.38	4.51	3138	Bankscope and author's calculations
ZP2	ZP2 = EQTA/SDROAASDROAA is the 3-year rolling window standard devation of the ROAE	29.96	33.77	2.72	281.7	3033	Bankscope and author's calculations
Bank Ownership Concentration Variables							
OWN1	Shares held by the largest shareholder (%)	68.53	28.30	3.89	100	3198	Bankscope and author's calculations
Bank level variables							
SIZE	Natural logarithm of total assets	14.10	1.86	9.46	21.08	3198	Bankscope and author's calculations
EQUITY	Ratio of equity to total assets (%)	12.15	8.92	0.30	99.18	3198	Bankscope and author's calculations
FUNDING	Ratio of total deposits to total assets (%)	72.64	19.34	0.00	96.74	3198	Bankscope and author's calculations
EFF	Ratio of total operating expenses to total operating income (%)	71.96	40.13	8.49	952.05	3198	Bankscope and author's calculations
LISTED	Dummy variable that takes the value 1 if the bank is listed in the stock market, and zero, otherwise.	0.33	0.47	0	1	3198	Bankscope and author's calculations
Country level variables							
LNGDP	Natural logarithm of the gross domestic product per capita	7.49	0.98	5.01	9.99	3198	Word Development Indicators
GDPGROWTH	Growth rate of the gross domestic product (%)	6.71	3.08	-3.46	34.5	3198	Word Development Indicators
FREEDOM	Overall economic freedom index, which ranges from 40-90	56.32	5.48	33.5	72.4	3198	Heritage Foundation
EXTGOV	Average of six governance indicators: voice and accountability, political stability and violence, government effectiveness, regulatory quality, rule of law and control for corruption, which ranges from -2.5 to 2.5	-0.38	0.41	-1.54	0.78	3198	Kaufmann *et al*. (2009)

2.3. Bank risk measures

We consider several measures of bank asset risk and default risk that are commonly used in the banking literature. We compute three standard measures of asset risk: SDROAA, SDROAE and NPL, where the first two are computed on the basis of 3-year rolling windows. SDROAA is defined as the standard deviation of the 3-year rolling window average return on assets (MROAA), and SDROAE is the standard deviation of the 3-year rolling window average return on equity (MROAE). NPL is the ratio of non performing loans to gross loans. Higher SDROAA, SDROAE and NPL indicate higher risk taking.

We also compute default risk measures. First we use the Z-score, Z, proposed by Boyd and Graham (1986) and subsequently used in the banking literature to measure bank probability of default (De Nicolo, 2000; Barry *et al*., 2011). Higher values of Z indicate lower probabilities of default. Z is defined as:

$$Z = \left(\frac{100 + \text{MROAE}}{\text{SDROAE}} \right) \qquad \text{Eq (1)}$$

Where MROAE and SDROAE are expressed in percentage. Second, we use the ZP score, ZP, as in Goyeau and Tarazi (1992) and Barry *et al*. (2011) and its two components: ZP1 and ZP2. ZP1 measures bank portfolio risk while ZP2 measures leverage risk. Lower values of ZP and its components imply higher probabilities of failure.

$$ZP = ZP1 + ZP2 = \frac{\text{MROAA}}{\text{SDROAA}} + \frac{\text{Average}(\text{TotalEquities} / \text{TotalAssets})}{\text{SDROAA}} \qquad \text{Eq (2)}$$

2.4.Ownership Concentration

To measure ownership concentration, OWN1, we use the percentage of shareholdings held by the largest bank owner. For robustness considerations, we also compute OWN3, defined as the percentage of shareholdings held by three largest bank owners as an alternative measure of ownership concentration. Table 2 shows the distribution of banks in 68 countries according to ownership concentration, OWN1.

Of every 10 banks in our sample, at least 7 have an owner with more than 50% of shareholding - a slightly higher figure when compared with Shehzad *et al*. (2010)'s study of ownership concentration, which includes developed economies. We also note that less than 1% of the banks in our sample have an owner holding less than 10% of the shares. Furthermore, 7% have one or more owners with more than 10% of the shares, but not more

than 25% of the shares and 20.41% of the banks have a shareholder with at least 25% of the shares of the bank but less than 50% of the shares.

Table 2. Distribution of ownership concentration of our sample 838 banks in 68 less developed countries

Country	Less than 10%	10-25%	25-50%	More than 50%	Total Banks
Albania	0,00	16,67	16,67	66,67	6
Algeria	0,00	0,00	0,00	100,00	3
Angola	0,00	0,00	0,00	100,00	4
Argentina	0,00	2,08	16,67	81,25	48
Armenia	0,00	0,00	16,67	83,33	6
Azerbaijan	0,00	0,00	0,00	100,00	7
Bangladesh	11,11	11,11	18,52	59,26	27
Belarus	0,00	0,00	30,00	70,00	10
Benin	0,00	0,00	50,00	50,00	2
Bolivia	0,00	33,33	33,33	33,33	3
Bosnia-Herzegovina	0,00	0,00	16,67	83,33	12
Botswana	0,00	0,00	0,00	100,00	5
Brazil	0,00	2,08	8,33	89,58	48
Bulgaria	0,00	0,00	9,52	90,48	21
Cameroon	0,00	0,00	25,00	75,00	4
China-People's Rep.	3,85	30,77	23,08	42,31	26
Colombia	0,00	0,00	14,29	85,71	7
Ecuador	0,00	0,00	28,57	71,43	7
Egypt	0,00	5,56	27,78	66,67	18
Ethiopia	0,00	33,33	0,00	66,67	3
Gabon	0,00	0,00	66,67	33,33	3
Georgia	0,00	0.00	71.43	28.57	7
Ghana	0,00	16,67	50,00	33,33	6
Honduras	0,00	0,00	0,00	100,00	4
India	0,00	50,00	40,00	10,00	10
Indonesia	0,00	0,00	19,05	80,95	42
Iran	0,00	0,00	0,00	100,00	24
Ivory Coast	0,00	0,00	0,00	100,00	4
Jamaica	0,00	0,00	0,00	100,00	5
Kazakhstan	0,00	7,14	50,00	42,86	14
Kenya	0,00	22,22	16,67	61,11	18
Lebanon	0,00	8,70	34,78	56,52	23
Lithuania	0,00	12,50	12,50	75,00	8
Macedonia	0,00	20,00	20,00	60,00	5
Madagascar	0,00	0,00	25,00	75,00	4
Malawi	0,00	50,00	50,00	0,00	2
Malaysia	0,00	0,00	5,56	94,44	18
Mali	0,00	0,00	33,33	66,67	3
Mexico	0,00	0,00	7,69	92,31	13
Moldova	10,00	30,00	0,00	60,00	10
Morocco	0,00	12,50	25,00	62,50	8
Mozambique	0,00	0,00	0,00	100,00	6
Namibia	0,00	0,00	0,00	100,00	4
Niger	0,00	0,00	50,00	50,00	2
Nigeria	0,00	0,00	16,67	83,33	6
Pakistan	0,00	0,00	47,37	52,63	19
Panama	0,00	0,00	0,00	100,00	10
Peru	0,00	0,00	0,00	100,00	7
Philippines	0,00	5,26	57,89	36,84	19
Romania	0,00	0,00	13,64	86,36	22
Russian Federation	0,00	18,18	19,32	62,50	88
Rwanda	0,00	0,00	0,00	100,00	3
Senegal	0,00	0,00	14,29	85,71	7
South Africa	0,00	0,00	13,33	86,67	15
Sri Lanka	0,00	40,00	0,00	60,00	5
Tanzania	0,00	0,00	10,00	90,00	10
Thailand	0,00	11,11	44,44	44,44	9
Tunisia	0,00	0,00	53,85	46,15	13
Turkey	0,00	0,00	16,00	84,00	25
Uganda	0,00	0,00	22,22	77,78	9
Ukraine	0,00	0,00	35,00	65,00	20
Uruguay	0,00	0,00	0,00	100,00	6
Uzbekistan	0,00	0,00	33,33	66,67	3
Venezuela	0,00	0,00	12,50	87,50	8
Vietnam	0,00	0,00	50,00	50,00	10
Yemen	0,00	33,33	0,00	66,67	3
Zambia	0,00	0,00	22,22	77,78	9
Zimbabwe	0,00	0,00	0,00	100,00	2

2.5. Institutional Factors

In this paper, we consider two indicators, which describe the institutional environment of countries – economic freedom, FREEDOM and quality of external governance, EXTGOV.

According to the Heritage Foundation[94], *a comprehensive way to define economic freedom should include all liberties and rights of production, distribution, or consumption of goods and services.* Thus in an economically free society, individuals may rightfully work, produce, consume and invest under a rule of law, where their freedom are both protected and respected by the state and that the allocation of resources for production and consumption is based on free and open competition. To measure FREEDOM, we use the yearly overall economic freedom index of each country, provided by the Heritage Foundation, which encompasses four broad categories or pillars of economic freedom: rule of law (property rights and freedom for corruption); limited government (fiscal freedom and government spending); regulatory efficiency (business freedom, labor freedom and monetary freedom); and open markets (trade freedom, investment freedom and financial freedom). In the context of our sample of less developed countries, FREEDOM ranges from 33.5 to72.4. Higher FREEDOM indicates that a country is more economically free.

While no single accepted definition of governance exists, following Kaufmann *et al.* (1999), we define governance as the traditions and institutions by which authority in a country is exercised[95], encompassing the process by which governments are formed and monitored, the capacity and the ability of the governments to implement and formulate policies effectively, and the respect of people and state for the institutions. We measure the quality of external governance, EXTGOV using a combination of six governance indicators as developed by Kaufmann *et al*. (2009). We compute the yearly average of these six, which include voice and accountability, political instability and violence, government effectiveness, regulatory quality, rule of law and control for corruption. For robustness considerations, we alternatively define quality of external governance using each of the three components: government effectiveness, regulatory quality and control for corruption, which may be more relevant in defining the quality of external governance of banks. In our sample, EXTGOV ranges from -1.57 to 0.78.

[94]Defining Economic Freedom by Ambassador Terry Miller and Anthony Kim of the Heritage Foundation.
[95]In order to avoid confusion with corporate governance, we alternatively call it external governance, or governance that is external to the bank.

3. Hypotheses Tested, Models and Method

The agency problem between shareholders and management (Jensen and Meckling, 1976; Fama and Jensen, 1983) is consistently cited in bank governance studies as one of the reasons why banks do not achieve optimal performance. In the presence of asymmetric information, the principal-agent problem arises when shareholders are unable to monitor the management effectively, which could result in managerial discretion that induces sub-optimal performance, i.e. excessive risk taking. As long as the principal (shareholder) cannot penalize the management (agent), there is a tendency for managerial opportunism, which may result in lower bank value. In his seminal work, Diamond (1984) explains that given the presence of asymmetric information between the borrowers and lenders, banks exist because they have a net cost advantage relative to direct lending and borrowing in monitoring loan contracts. This *raison d'être*, however, also explains why banks themselves suffer from moral hazard and incentive problems.

The principal-agent problem between the shareholders and managers may be constrained, however, by a concentrated ownership, often characterized by the presence of a controlling shareholder. Unlike owners who hold a small proportion of a bank's shares, large owners have the incentive to monitor managers in order to align their interests with managerial decisions and strategies.

Banks, however, may face additional agency problems that may arise from the presence of private benefits of control. Large shareholders may either tunnel resources out or prop resources into firms. In the first case, large shareholders expropriate funds that rightfully belong to minority shareholders (Claessens *et al*., 2000; Johnson *et al*., 2000; Glaeser *et al*., 2001), especially in countries characterized with weak legal systems. This hypothesis, however, suggests an opposite effect of ownership concentration on bank risk taking. While increased concentration is likely to reduce risk due to an increase in the monitoring incentives of controlling shareholders, it may also translate to a surge in risk taking at the detriment of minority owners because of the presence of private benefits of control that may not be transferrable to other shareholders. For example, this may manifest through an increase in loans extended to affiliate and sister companies, cancelling out the monitoring advantage of owner-concentrated banks, which may lead to substantial problem loans and overall bank risk. Moreover, anecdotal evidence suggests that large shareholders may also prop out private resources into the firms that have minority shareholders, but only when there is a negative shock to the economy. In contrast to tunneling, minority shareholders do not protest when propping occurs so that no scandals arise and not much public information is available

(Friedman *et al*., 2003). Several studies based on firms suggest that the relationship between ownership concentration and risk may be nonlinear (Burkart *et al*. (1997)) under the rationale that when controlling shareholders increase further their stakes in the firm, expropriation may be too costly for them. This, however, may not be the case in less-developed economies, which are characterized by specificities stemming from historical heritage (political, social, and moral), rapidly evolving economic reality and restructuring process in progress that may foster excessive risk taking (Godlewski, 2007).

Accordingly, we hypothesize that:

Hypothesis 1*: An increase in the shares held by the largest shareholder may induce an increase in risk-taking behavior of banks in less-developed economies.*

We use the following econometric model to test Hypothesis 1:

Model 1

$$Y_{it} = \alpha_0 + \alpha_1 OWN1_{it} + \beta_1 X_1 + \mu \qquad \text{Eq (3)}$$

where Y is a measure of asset risk (SDROAA, SDROAE and NPL) and default risk (Z, ZP, ZP1 and ZP); α_0 is the constant, α_1 is the ownership concentration coefficient, β_1 is a vector of coefficients and μ is the error term; OWN1 is a measure of ownership concentration, defined as the fraction of shares held by the largest controlling shareholder. X_1 is a set of exogenous variables that include bank-specific variables and country-specific variables, comprising institutional factors.

On a behavioral perspective, risk-taking decisions are partly based on human subjective judgment, like the perception of risk (Godlewski, 2007; Crouhy *et al*., 2001). Less-developed economies are characterized by inadequate institutional or legal environment, which may bias the perception of risk by agents in the banking industry.

Despite the growing consensus that institutions matter, studies focusing on an institutional perspective of corporate governance, which addresses the embeddedness of firms and organizations (Aguilera and Jackson, 2003) is recent and relatively scarce. This

perspective allows deeper understanding of how institutional development affects the mechanisms of how corporate governance impact bank risk-taking behavior. Institutions provide the rules of the game and firms and organizations, which encompass banks, are the players bound by these rules (North, 1990). We focus on the impact of two institutional factors - economic freedom and quality of external governance on the effectiveness of a specific corporate governance mechanism – ownership concentration. More precisely, we examine whether better regulatory and institutional environments reduce incentives of controlling shareholders in banks to extract private benefits of control in the context of less developed economies.

Historically, particularly in less developed economies, governments impose an array of restrictions, which hampers economic activity. In the realm of the banking industry, this may take the form of banking and financial regulation that goes beyond the assurance of transparency in financial markets- i.e. promotion of disclosure of assets and ensuring integrity- that can impede efficiency, increasing entrepreneurial activity costs and limiting competition. For example, several countries are still not fully open in terms of foreign ownership of local banks.

In countries where economic freedom and quality of external governance is low, large shareholders may have stronger incentives to extract private benefits of control and thus, upsurge risk taking. On the other hand, more economically-free societies and countries equipped with better external governance may attribute higher inefficiency costs from private benefit extraction, which may reduce incentives of large shareholders to extract private benefits of control. Hence, incentive to expropriate is inversely related to the quality of external governance and the degree of economic freedom. The quality of institutions may also affect the monitoring incentives of the largest shareholders. When the degree of economic freedom or the quality of external governance is high, the monitoring incentives of the largest shareholder may be low, particularly if institutional development is assumed to substitute for monitoring. In this case, an increase in ownership concentration may not necessarily lead to a reduction in excessive bank risk taking.

The effectiveness of better institutional and legal environment in reducing bank risk may also depend on the level of ownership concentration. Under the same rationale as Burkart and Panunzi (2006) and La Porta *et al*. (2006)[96], we suppose that countries with better external governance mechanisms and which are more economically free to attribute higher

[96] They assume that better legal protection renders extraction technology less efficient.

inefficiency costs to private benefit extraction of the largest or the controlling shareholders. Deciding on the level of extraction that maximizes the joint payoff of the largest shareholders and managers, their resource allocation decisions take into account that they have to bear a fraction of the cost of inefficient extraction. Lower ownership concentration decreases the fraction of this cost that is borne by the large shareholder. The largest shareholder may therefore attach more importance to private benefit extraction. When banks are characterized by a more concentrated ownership structure, an improvement in the quality of institutions unambiguously alleviates the conflict of interests among shareholders. Owning a larger block, the controlling shareholder finds private benefit extraction very inefficient and costly as she/he needs to internalize a larger fraction of the deadweight loss. Therefore, the largest shareholder has less incentive to take excessive risk and hence, better institutions are likely to effectively reduce bank risk taking.

Thus, we hypothesize:

Hypothesis 2a*: Better quality of external governance and more economic freedom increases the costs of inefficiency from extracting private benefits of control; thus, in the presence of a better institutional environment, an increase in the stake of the largest shareholder reduces her/his incentives to take high risk.*

Hypothesis 2b*: With a more concentrated ownership structure, an improvement in the quality of institutions alleviate the conflict of interests among shareholders, reducing incentives to extract private benefits of control, thus lowering bank risk.*

We use the following econometric model to test Hypotheses 2a and 2b:

Model 2

$$Y_{it} = \alpha_0 + \alpha_1 OWN1_{it} + \delta_0 INSTITUTION_{ik} + \alpha_{11} OWN1_{it} * INSTITUTION_{ik} + X_2\beta_1 + \mu \qquad \text{Eq (4)}$$

where Y is a measure of asset risk (SDROAA, SDROAE and NPL) and default risk (Z, ZP, ZP1 and ZP); α_0 is the constant, β_1 is a vector of coefficients and μ is the error term; OWN1

is a measure of ownership concentration, defined as the fraction of shares held by the largest controlling shareholder. INSTITUTION is either economic freedom or external governance. OWN1*INSTITUTION measures the interaction between OWN1 and INSTITUTION. X_2 is a set of exogenous variables that include bank-specific variables and country-specific variables, comprising institutional factors.

Testing Hypothesis 2a, in order to measure the impact of ownership concentration on risk, we derive:

$$\left(\frac{\partial Y_{it}}{\partial OWN1_{it}}\right) = \alpha_1 + \alpha_{11} * INSTITUTION \qquad \text{Eq (4a)}$$

Meanwhile, to test the impact of institutional factors on risk, we derive the following:

$$\left(\frac{\partial Y_{it}}{\partial INSTITUTION}\right) = \alpha_1 + \alpha_{11} * OWN1_{it} \qquad \text{Eq (4b)}$$

In addition to INSTITUTION, we use the following control variables – SIZE, FUNDING, EQUITY, EFF, LNGDP, GDPGROWTH and LISTED.

SIZE, is the natural logarithm of bank assets. Consistently used in several banking studies (Barry *et al*., 2011; Iannotta *et al*., 2007), this variable captures the effects of bank size on risk. Larger banks are able to invest in more advanced technologies and generally, have better risk management and diversification strategies. In the presence, however, of a too-big-to-fail (TBTF) policy, larger banks may have incentives to take higher risk. The effect of size on risk is thus, ambiguous. FUNDING is the ratio of deposits to total assets. This variable captures how much of the bank's resources are funded by deposits. As in Iannotta *et al*. (2007), we expect a positive relationship between the deposit ratio and risk. EQUITY is the leverage ratio computed as the ratio of total equity to total assets. This variable serves as a proxy of managerial preference towards bank risk taking. Banks that hold a lower level of equity in their portfolio tend to be riskier. Better capitalized banks, however, are associated with lower risk, thus weaker probability of financial distress and default (Berger *et al*., 1995). EFF is the ratio of total operating expenses to total operating income. Following Barry *et al*. (2011) and Shehzad *et al*. (2010), this ratio is a proxy for managerial efficiency. This variable captures the efficiency of managers to transform bank inputs into bank outputs such as bank profits. We expect a positive relationship with risk. LNGDP is the natural logarithm of the gross domestic product per capita. This variable controls for the overall economic conditions of a country. GDPGROWTH on the other hand, is the growth rate of the gross domestic

product, which controls for fluctuations in the business cycle. LISTED is a dummy variable, which takes the value 1 if the bank is listed in a stock market and zero, otherwise.

We estimate a pooled OLS model[97], where estimators of variance are corrected for heteroskedasticity using White's estimator. The use of a fixed effects panel regression model, however, is not feasible since our measure of ownership concentration tends to be relatively stable over time, where 70% of the banks in our sample have OWN1 deviating by less than 10% over the period of study. To check the robustness of our results, we compute the average values of our variables and perform cross-section regressions on a subsample of banks with stable ownership[98] throughout the period of study, 2004-2008.

4. Empirical Results

4.1. Ownership concentration and bank risk

We present the results of the impact of ownership concentration on bank risk taking in Table 3. Our findings show that an increase in the shares held by the largest shareholder is positively and significantly associated with bank risk taking. This confirms our first hypothesis, which predicts the largest shareholder to extract private benefits of control when she increases further her stakes on the bank. This translates not only to an increase in the volatility of returns and the impaired loans, but also in the probability of bank default. We also note the economic significance[99] of our ownership concentration coefficients. A one standard deviation increase in ownership concentration or the shares held by the controlling shareholder increases SDROAA by 12.20% of its mean (from 0.9282 to 1.0414). The parallel rise on SDROAE and NPL, amounts, respectively, to 12.13% (from 7.70 to 8.63) and 8.41% of its mean (from 6.48 to 7.02). It is also worthy to stress the economic impact of ownership concentration on our insolvency risk measures. Indeed, a one standard deviation increase in shares held by the controlling shareholder is associated with a decrease in the Z-score and ZP by 7.48% of its mean (from 34.47 to 31.89) and by 11.04% of its mean (from 35.94 to 31.97), respectively. We also observe decreases in the ZP components when ownership concentration increases by one standard deviation: ZP1 decreases by 13.78% of its mean (5.34 to 4.60) and a drop in ZP2 by13.24% of its mean (from 29.96 to 25.99).

[97] Following the arguments of Shehzad *et al.* (2010), we do not consider endogeneity of ownership concentration to be a problem for our model. First, patterns of ownership in our sample are generally stable over time. Second, most corporate finance studies consider ownership concentration to be endogenous to firm value. However, our study does not include bank valuation as a dependent variable.

[98] We defined as STABLE, the banks whose ownership concentration does not deviate by 10%.

[99] The discussion of economic significance focuses on sub-model (II), where external governance is the institutional factor used.

Overall, these findings show that an increase in ownership concentration leads to an upsurge in banks' riskiness and deterioration of bank insolvency in our sample of less developed economies. This suggests that as largest shareholder increases the shares he/she holds in the bank, the incentive to take more risk is higher.

Table 3. The effect of ownership concentration on bank risk in less-developed economies, over the period 2004-2008. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Independent variables:* OWN1 is an indicator of ownership concentration defined as the ownership share of the largest shareholder. SIZE is the natural logarithm of total assets. FUNDING is the ratio of total equity to total assets. EFF is a measure of efficiency, which is the cost-income ratio. LNGDP is the natural logarithm of the gross domestic product. GDPGROWTH is the growth of the gross domestic product. LISTED is a dummy variable, which is equal to 1 if the bank is listed and zero, otherwise. FREEDOM is the overall score, measuring a country's degree of economic freedom, taking into account a country's rule of law, limited government, regulatory efficiency and open markets. EXTGOV is the yearly average of a country's external governance measured by Kaufmann *et al*. (2009)'s governance index.

	Bank Asset Risk Measures						Bank Default Risk Measures							
	SDROAA		**SDROAE**		**NPL**		**Z**		**ZP**		**ZP1**		**ZP2**	
	(I)	(II)	(I)	(II)	(I)	(II)	(I)	(II)	(I)	(II)	(I)	(II)	(I)	(II)
OWN1	**0.0040*****	**0.0040*****	**0.033*****	**0.033*****	0.011	**0.019****	**-0.098*****	**-0.091*****	**-0.14*****	**-0.14*****	**-0.027*****	**-0.026*****	**-0.14*****	**-0.14*****
	(6.38)	(6.29)	(6.97)	(6.81)	(1.40)	(2.43)	(-3.81)	(-3.53)	(-5.25)	(-5.07)	(-6.73)	(-6.44)	(-5.83)	(-5.67)
SIZE	-0.096***	-0.091***	-0.26**	-0.23**	-0.34***	-0.31***	1.53***	1.54***	2.31***	2.24***	0.43***	0.42***	1.76***	1.70***
	(-7.64)	(-7.37)	(-2.41)	(-2.20)	(-3.10)	(-3.03)	(3.27)	(3.32)	(4.54)	(4.42)	(5.82)	(5.64)	(4.05)	(3.94)
FUNDING	-0.010***	-0.010***	-0.061***	-0.062***	0.036***	0.032***	0.22***	0.22***	0.19***	0.19***	0.013**	0.012**	0.17***	0.17***
	(-6.70)	(-6.68)	(-5.89)	(-5.97)	(3.14)	(2.79)	(5.36)	(5.23)	(4.74)	(4.77)	(2.19)	(2.15)	(4.78)	(4.84)
EQUITY	0.011***	0.011***	-0.14***	-0.14***	-0.020	-0.034	0.45***	0.44***	0.59***	0.59***	-0.0076	-0.010	0.64***	0.64***
	(3.01)	(3.10)	(-6.52)	(-6.45)	(-0.53)	(-0.91)	(4.26)	(4.13)	(5.10)	(5.04)	(-0.63)	(-0.84)	(5.94)	(5.91)
EFF	0.0064***	0.0064***	0.032***	0.032***	0.033***	0.033***	-0.069***	-0.069***	-0.092***	-0.092***	-0.030***	-0.030***	-0.052***	-0.053***
	(6.01)	(6.00)	(3.83)	(3.80)	(4.78)	(4.77)	(-3.09)	(-3.09)	(-3.96)	(-3.95)	(-5.31)	(-5.33)	(-2.91)	(-2.91)
LNGDP	0.057***	0.051**	-0.20	-0.20	0.15	0.53**	1.39*	1.73**	0.44	0.53	-0.58***	-0.52***	1.21*	1.20*
	(2.70)	(2.53)	(-1.13)	(-1.09)	(0.58)	(2.13)	(1.96)	(2.31)	(0.55)	(0.65)	(-4.78)	(-4.20)	(1.85)	(1.74)
GDPGROWTH	0.0046	0.0076	0.015	0.030	-0.34***	-0.38***	-0.65***	-0.70***	-0.31	-0.36*	0.023	0.0066	-0.32*	-0.35**
	(0.93)	(1.54)	(0.37)	(0.71)	(-5.33)	(-6.03)	(-2.94)	(-3.22)	(-1.56)	(-1.81)	(0.72)	(0.20)	(-1.86)	(-2.03)
LISTED	-0.012	-0.016	-0.14	-0.15	-0.24	-0.16	-1.87	-1.82	-0.62	-0.56	-0.12	-0.10	-0.77	-0.73
	(-0.31)	(-0.43)	(-0.43)	(-0.48)	(-0.52)	(-0.36)	(-1.11)	(-1.08)	(-0.34)	(-0.30)	(-0.44)	(-0.36)	(-0.51)	(-0.49)
FREEDOM	**-0.012*****		**-0.072*****		-0.032		-0.0095		0.20		**0.050*****		0.17	
	(-3.62)		(-3.10)		(-0.87)		(-0.07)		(1.47)		(2.67)		(1.53)	
EXTGOV		**-0.078****		**-0.72***		**-3.04*****		-2.82		1.28		0.069		1.79
		(-1.97)		(-1.91)		(-5.10)		(-1.49)		(0.61)		(0.25)		(1.02)
Constant	2.36***	1.62***	18.4***	13.6***	8.98***	2.93	-2.06	-6.06	-13.7	-1.62	3.81**	6.60***	-18.3*	-7.09
	(6.87)	(5.98)	(7.35)	(6.21)	(2.76)	(1.08)	(-0.16)	(-0.62)	(-1.08)	(-0.16)	(2.01)	(4.19)	(-1.73)	(-0.83)
R-squared	0.20	0.20	0.061	0.060	0.051	0.064	0.022	0.023	0.030	0.030	0.088	0.087	0.034	0.034
Adj R-squared	0.20	0.19	0.058	0.057	0.047	0.060	0.019	0.020	0.027	0.027	0.086	0.084	0.031	0.031
OBS	3198	3198	3138	3138	2136	2136	3075	3075	3033	3033	3138	3138	3033	3033

For our control variables, we find that bank size measured by the natural logarithm of total assets, SIZE, has a negative and significant effect on our bank asset risk measures, SDROAA, SDROAE and NPL and a positive and significant effect on the Z-score, ZP and its components, ZP1 and ZP2. These findings suggest that larger banks take less risk and have lower probability of default. With the exception to SDROAA, we generally observe a negative and significant effect of EQUITY on bank risk taking as shown by its coefficients on dependent variables, which include, SDROAE, Z, ZP and ZP2 implying that better capitalized banks are less vulnerable (lower default probability). As expected, we find managerial efficiency, EFF, to be positive and significant in affecting risk-taking behavior on all our risk measures. At the country level, coefficients of our control variables, LNGDP and GDPGROWTH, appear to be significant for some measures of risk, but the sign is less clear-cut. While less developed countries with lower level of GDP take higher risk in the form of higher SDROAA and lower ZP1, we find a positive significant effect of the level of GDP on both the Z-score and ZP2, thus neutralizing any significant impact on ZP. This could be explained by differences in the degree of capitalization among the countries. Risk taking can be higher but if banks are better capitalized, an increase in the level of economic development may not affect bank solvency.

Controlling for institutional factors, EXTGOV and FREEDOM, we find that banks in countries with better institutional and regulatory environment, better governance and which are more economically free take less risk. Consistent with Godlewski (2007), we find that the inadequacy of institutional environment in a country foster bank risk taking. These findings, however, are only consistent with our bank asset risk measures. We do not find evidence of a significant link between better institutions and reduction of bank vulnerability[100].

4.2. Institutional factors affecting the impact of ownership concentration on bank risk

From the previous section, our primary result suggests that an increase in ownership concentration encourages bank risk taking because of the private benefits of additional control that may or may not be transferrable in banks in less developed economies. In this section, we tackle whether country differences in the institutional environment – economic freedom and the quality of external governance affect the relationship between ownership concentration and bank risk. We thus highlight the regression results of testing Hypothesis 2a.

[100] With the exception of the ZP1 measure when FREEDOM is considered as the institutional factor.

4.2.1 Economic Freedom: Prevalence of Open Markets, Rule of Law and Regulatory Efficiency and Fiscal Freedom

First, we discuss the influence of economic freedom on limiting controlling shareholders to increase bank risk because of the inefficiencies attributed to extracting private benefits of control. We present the results of our regression in Table 4.

To obtain the partial coefficient of OWN1, we derive Eq (4a). We report the partial coefficients on the lower part of Table 4. These coefficients are evaluated at the 25th and 75th percentile values of FREEDOM, respectively, indicating low and high degrees of economic freedom in our sample of banks in less developed economies. In terms of SDROAA, although we find a positive and significant effect of ownership concentration in countries where economic freedom is either low or high the coefficient (of OWN1) is lower in countries that are more economically free. In terms of economic significance, we find that a one standard deviation increase of the shares held by the largest shareholder increases SDROAA by 14.33% of its mean in the case of banks in countries where economic freedom is low and 9.76% of its mean for banks in countries that are more economically free. We also observe the same trend in terms of our SDROAE risk measure. The results, however, in terms of NPL or the share of non-performing loans to total loans differ across countries with different degrees of economic freedom. In countries where open markets are more prevalent, a one standard deviation increase in ownership concentration, OWN1, translates to lower loan portfolio risk by 6.82% of its mean. On the contrary, in countries that have less financial, fiscal and trade freedom, a one standard deviation increase in shares held by the controlling shareholder increases risk by 14.21% of its mean. This suggests that inefficiencies attributed to extraction of private benefits of additional control in countries that are more institutionally developed may be too high, discouraging controlling shareholders to expropriate minority shareholders, also given that transparency and competition is relatively higher in such countries. The partial coefficients of OWN1 on our bank default risk measures give less clear indications of the influence of economic freedom on risk. This is not surprising as we do not find evidence of lower bank stability (lower probability of default) attributed from both higher economic freedom and even better external governance as shown in Table 3.

Table 4. The effect of ownership concentration on risk in less developed economies and the role of economic freedom as an institutional factor in the relationship over the period 2004-2008. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Independent variables:* OWN1 is an indicator of ownership concentration defined as the ownership share of the largest shareholder. SIZE is the natural logarithm of total assets. FUNDING is the ratio of total equity to total assets. EFF is a measure of efficiency, which is the cost-income ratio. LNGDP is the natural logarithm of the gross domestic product. GDPGROWTH is the growth of the gross domestic product. LISTED is a dummy variable, which is equal to 1 if the bank is listed and zero, otherwise. FREEDOM is the overall score, measuring a country's degree of economic freedom, taking into account a country's rule of law, limited government, regulatory efficiency and open markets. OWN1*FREEDOM is the interaction between OWN1 and FREEDOM.

	Bank Asset Risk Measures			Bank Default Risk Measures			
	SDROAA	SDROAE	NPL	Z	ZP	ZP1	ZP2
OWN1	**0.015****	**0.095****	**0.35*****	-0.11	-0.078	**-0.11*****	-0.10
	(2.46)	(2.19)	(5.18)	(-0.43)	(-0.27)	(-2.88)	(-0.41)
SIZE	-0.096***	-0.26**	-0.36***	1.53***	2.31***	0.43***	1.76***
	(-7.65)	(-2.42)	(-3.29)	(3.27)	(4.54)	(5.83)	(4.05)
FUNDING	-0.010***	-0.061***	0.038***	0.22***	0.19***	0.013**	0.17***
	(-6.72)	(-5.91)	(3.27)	(5.38)	(4.74)	(2.21)	(4.79)
EQUITY	0.011***	-0.14***	-0.022	0.45***	0.59***	-0.0065	0.64***
	(2.97)	(-6.55)	(-0.59)	(4.27)	(5.08)	(-0.53)	(5.93)
EFF	0.0064***	0.032***	0.032***	-0.069***	-0.092***	-0.030***	-0.052***
	(6.00)	(3.81)	(4.74)	(-3.10)	(-3.98)	(-5.31)	(-2.93)
LNGDP	0.059***	-0.19	0.24	1.39*	0.45	-0.59***	1.22*
	(2.80)	(-1.07)	(0.93)	(1.95)	(0.57)	(-4.87)	(1.83)
GDPGROWTH	0.0042	0.014	-0.35***	-0.65***	-0.31	0.026	-0.32*
	(0.86)	(0.33)	(-5.55)	(-2.94)	(-1.57)	(0.79)	(-1.86)
LISTED	-0.013	-0.14	-0.24	-1.87	-0.62	-0.12	-0.77
	(-0.34)	(-0.43)	(-0.52)	(-1.11)	(-0.34)	(-0.42)	(-0.51)
FREEDOM	0.0029	0.0090	**0.40*****	-0.023	0.28	-0.052	0.21
	(0.35)	(0.16)	(5.13)	(-0.06)	(0.67)	(-0.97)	(0.57)
OWN1*FREEDOM	**-0.00020***	-0.0011	**-0.0060*****	0.00019	-0.0012	0.0014**	-0.00063
	(-1.82)	(-1.45)	(-5.23)	(0.04)	(-0.23)	(2.16)	(-0.14)
Constant	1.53***	13.8***	-15.2***	-1.28	-18.6	9.53***	-20.9
	(2.89)	(3.66)	(-2.97)	(-0.05)	(-0.69)	(2.72)	(-0.88)
R-squared	0.20	0.061	0.060	0.022	0.030	0.090	0.034
Adj R-squared	0.20	0.058	0.056	0.019	0.027	0.087	0.031
OBS	3198	3138	2136	3075	3033	3138	3033
Partial Coefficients							
OWN1							
LOWFreedom	**0.0047*****	**0.0367*****	**0.0321*****	**-0.0984*****	**-0.1399*****	**-0.0322*****	**-0.1347*****
	(6.41)	(6.67)	(3.26)	(-3.07)	(-4.22)	(-6.81)	(-4.77)
HIGHFreedom	**0.0032*****	0.0282***	**-0.0154***	**-0.0969*****	**-0.1491*****	**-0.0215*****	**-0.1397*****
	(4.06)	(5.05)	(-1.94)	(-3.28)	(-4.33)	(-4.50)	(-4.61)
FREEDOM							
LOWOwn1	**-0.0069***	-0.0444	**0.1225*****	-0.0142	0.2259	0.0155	0.1840
	(-1.78)	(-1.60)	(3.19)	(-0.08)	(1.09)	(0.59)	(1.01)
HIGHOwn1	**-0.0171*****	**-0.1003*****	**-0.1935*****	-0.0045	0.1652	0.0859	0.1516
	(-3.66)	(-3.11)	(-3.48)	(-0.03)	(1.02)	(3.78)	(1.18)

4.2.2 External Governance: Quality of Governments

In this subsection, we tackle the effect of another institutional variable- EXTGOV, which measures the quality of governance in countries. External governance encompasses voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. Along with economic freedom, we study whether the quality of external governance is effective in curbing bank risk-taking behavior when ownership concentration increases. We present our regression results in Table 5.

When external governance is high, our findings indicate more favorable effects on our bank asset risk measures of an increase in the shares held by the largest shareholders. This is consistent with the results in the previous subsection, which examines the impact of economic freedom on the ownership concentration-bank risk relationship. A one standard deviation increase in ownership concentration, OWN 1 leads to an increase in SDROAE by 13.71% of its mean (from 7.70 to 8.76) when external governance is low (EXTGOV evaluated at 25th percentile value) compared to an increase in SDROAE by 10.14% of its mean (from 7.70 to 8.48) when external governance is high (EXTGOV evaluated at 75th percentile value). Moreover, in terms of the non-performing loan ratio, NPL, we find that in countries where quality of external governance is low, a one standard deviation increase in ownership concentration translates to higher NPL by 15.44% of its mean (from 6.48 to 7.48). Consistent with our presumption, we do not find any significant effect of an increase in ownership concentration on bank loan portfolio risk in countries with better external governance.

4.3. Ownership Concentration affecting the impact of the quality of institutions on banks

We also examine how the level of ownership concentration impacts the relationship between institutional quality and bank risk taking. We thus test Hypothesis 2b and to obtain the partial coefficients of our INSTITUTION variables – FREEDOM and EXTGOV, we derive Eq (4b). The results are shown in the bottom part of Tables 4 and 5.

Table 5. The effect of ownership concentration on risk in less developed economies and the role of external governance as an institutional factor in the relationship over the period 2004-2008. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Independent variables:* OWN1 is an indicator of ownership concentration defined as the ownership share of the largest shareholder. SIZE is the natural logarithm of total assets. FUNDING is the ratio of total equity to total assets. EFF is a measure of efficiency, which is the cost-income ratio. LNGDP is the natural logarithm of the gross domestic product. GDPGROWTH is the growth of the gross domestic product. LISTED is a dummy variable, which is equal to 1 if the bank is listed and zero, otherwise. EXTGOV is the yearly average of a country's external governance measured by Kaufmann *et al.* (2009)'s governance index. OWN1*EXTGOV is the interaction between OWN1 and EXTGOV.

	Bank Asset Risk Measures			Bank Default Risk Measures			
	SDROAA	SDROAE	NPL	Z	ZP	ZP1	ZP2
OWN1	**0.0040*****	**0.026*****	-0.0084	**-0.070****	**-0.19*****	**-0.020*****	**-0.19*****
	(4.37)	(4.01)	(-0.97)	(-2.03)	(-4.04)	(-3.16)	(-4.48)
SIZE	-0.091***	-0.23**	-0.32***	1.54***	2.24***	0.42***	1.70***
	(-7.37)	(-2.20)	(-3.09)	(3.32)	(4.42)	(5.63)	(3.93)
FUNDING	-0.010***	-0.061***	0.034***	0.21***	0.20***	0.012**	0.18***
	(-6.69)	(-5.91)	(2.97)	(5.14)	(4.79)	(2.04)	(4.87)
EQUITY	0.011***	-0.14***	-0.035	0.44***	0.59***	-0.010	0.64***
	(3.10)	(-6.48)	(-0.93)	(4.15)	(5.02)	(-0.83)	(5.87)
EFF	0.0064***	0.032***	0.033***	-0.068***	-0.093***	-0.030***	-0.054***
	(5.99)	(3.79)	(4.78)	(-3.09)	(-3.99)	(-5.33)	(-2.99)
LNGDP	0.051**	-0.19	0.56**	1.71**	0.59	-0.53***	1.27*
	(2.52)	(-1.05)	(2.25)	(2.28)	(0.72)	(-4.27)	(1.82)
GDPGROWTH	0.0076	0.025	-0.40***	-0.68***	-0.39*	0.011	-0.38**
	(1.54)	(0.58)	(-6.36)	(-3.14)	(-1.95)	(0.34)	(-2.23)
LISTED	-0.016	-0.19	-0.28	-1.71	-0.79	-0.064	-0.98
	(-0.42)	(-0.59)	(-0.63)	(-1.01)	(-0.43)	(-0.23)	(-0.65)
EXTGOV	-0.080	0.47	1.19	-6.37	8.63	-1.05	**9.69***
	(-0.81)	(0.63)	(0.75)	(-1.28)	(1.36)	(-1.21)	(1.74)
OWN1*EXTGOV	0.000023	-0.016	**-0.058*****	0.047	-0.098	0.015	-0.11
	(0.02)	(-1.48)	(-2.79)	(0.76)	(-1.29)	(1.49)	(-1.62)
Constant	1.62***	14.2***	4.89*	-7.58	1.54	6.12***	-3.68
	(5.84)	(6.46)	(1.83)	(-0.79)	(0.15)	(3.86)	(-0.42)
R-squared	0.20	0.060	0.069	0.023	0.031	0.087	0.035
Adj R-squared	0.19	0.057	0.064	0.020	0.027	0.085	0.032
OBS	3198	3138	2136	3075	3033	3138	3033
Partial Coeffients:							
OWN1							
LOWExtgov	**0.0040*** **	**0.0373*** **	**0.0349*** **	**-0.1032** **	**-0.1175*** **	**-0.0304** **	**-0.1100*** **
	(5.73)	(6.39)	(2.94)	(-3.13)	(-3.59)	(-6.35)	(4.09)
HIGHExtgov	**0.0040*** **	**0.0276*** **	-0.003	**-0.0742** **	**-0.1777*** **	**-0.02132*** **	**-0.1750*** **
	(4.84)	(4.70)	(-0.38)	(-2.43)	(-4.36)	(-3.88)	(-4.81)
EXTGOV							
LOWOwn1	**-0.0786***	-0.2996	**-1.4530***	**-4.0898***	3.9367	-0.3231	**4.62***
	(-1.72)	(-0.80)	(-1.84)	(-1.65)	(1.26)	(-0.75)	(1.68)
HIGHOwn1	-0.0775	**-1.1075** **	**-4.5124*** **	-1.6735	-1.1087	0.4371	-0.8211
	(-1.34)	(-2.07)	(-5.48)	(-0.67)	(-0.43)	(1.35)	(-0.40)

Our findings suggest that overall, when ownership concentration is high, a more economically free society, which sanctions extraction of private benefits in terms of higher inefficiencies, better disciplines a controlling shareholder since she/he owns a substantial fraction of the bank and has to internalize higher portion of the costs of inefficiency, thus lowering bank risk taking. When ownership concentration is low, the impact of economic freedom on SDROAA is negative and significant but its economic significance is much lower

compared with banks where ownership is more concentrated. Indeed, a one standard deviation increase in FREEDOM translates to lower risk by 21.04% of its mean (from 0.9282 to 0.7329) when ownership concentration is low and by 52.14% of its mean (from 0.9282 to 0.4442) when ownership concentration is high. When the controlling shareholder holds a relatively low stake in the bank, more economically free countries do not have an advantage in terms of lower SDROAE over countries with low level of economic freedom. Moreover, banks that are more characterized with a concentrated ownership structure, or more precisely when the controlling shareholder holds a very significant stake in the bank (in our sample, over 90%), an increase in fiscal, financial and trade freedom lowers bank risk taking. A one standard deviation increase in FREEDOM drops bank risk by 36.87% of its mean (from 7.70 to 4.86). Meanwhile, we find that an increase in economic freedom encourages extraction of private benefits through a higher NPL, thus increasing bank risk taking, when the controlling shareholder holds a relatively low stake of the bank. This further suggests that expropriation may be very high when ownership concentration is at medium level. Consistent with Hypothesis 2b, the controlling shareholder attaches more importance to the extraction of private benefits, increasing bank non-performing loans. Moreover, given that a bank has a more concentrated ownership structure, an increase in economic freedom translates to lower NPL. In terms of economic significance, when ownership concentration is low, a one standard deviation increase in FREEDOM, leads to an increase in loan portfolio risk by 54.21% of its mean (from 6.48 to 9.99). Meanwhile, a corresponding one standard deviation increase in FREEDOM given that ownership concentration is high reduces loan portfolio risk effectively by 85.63% of its mean (from 6.48 to 0.93).

In terms of the impact of ownership concentration on the relationship between quality of external governance, EXTGOV, and risk, overall, we find the same results in terms of the partial effects on SDROAE and NPL of an increase in economic freedom. The non-significance of the EXTGOV coefficient when ownership concentration is high on SDROAA, may be a result of the aggregation of the different institutional domains that may or may not lead to a reduction in bank risk taking. We show in the robustness section (section 6) how several components of EXTGOV, which include regulatory quality, control for corruption and government effectiveness affect the ownership concentration-bank risk relationship. We highlight that better external governance is only effective in lowering SDROAE when ownership concentration is high. Moreover, we find a substantial difference in terms of the partial effects of EXTGOV on NPL across banks with different ownership concentration profiles. Although we find that better quality of external governance translates to lower loan

portfolio risk regardless of the level of ownership concentration, the partial coefficient estimates reveal that loan portfolio risk is substantially lower when ownership concentration is high. Regarding the Z-score, Z, an increase in external governance when ownership concentration is low leaves banks more vulnerable, while the contrary is found when ZP2 is used as a measure of a bank's probability of default.

5. Further Investigation

5.1. Foreign Ownership Concentration vs Domestic Ownership Concentration

Ownership structure, which encompasses concentration, may also influence risk-taking behavior through the differences in the identity and resource endowments of the owners, which may determine their relative power and incentive to monitor managers (Douma *et al*., 2006). Douma *et al*. (2006) and Dharwadkar *et al*. (2000) show different impacts on bank performance of different ownership identity-ownership magnitude combinations (See Annex 1). The impact of having *dispersed-outside shareholders* on performance is proposed to be moderate because their ability to monitor effectively may be limited by coordination costs, information asymmetry problems and in a specific scenario, limited knowledge of the local bank's culture and language differences, when the outsider is a foreign owner. On the other hand, superior performance outcome is expected from *concentrated-outside shareholders*. These shareholders are able to maximize more efficiently the benefits of monitoring, aligning incentives with the managers (Shleifer and Vishny, 1986; Dharwadkar *et al*., 2000; Douma *et al*., 2006, Allen and Phillips, 2000). *Dispersed-inside shareholders* are depicted to convey inferior performance because of their potential inability to undertake an effective monitoring and having relatively distorted incentive structures (Claessens et *al*., 2000). Finally, *concentrated-inside shareholders* are proposed to have moderate performance. Although concentrated shareholders have the incentive and power to monitor the managers effectively, being an insider provides them the largest opportunity to expropriate minority shareholders (Bebchuk *et al*., 2000; Claessens *et al*., 2000).

The resource-based theory purports that the competitive advantage of a firm is based on both its tangible and intangible resources. One of the significant contributions of the theory is its power in explaining differences in firm performance that cannot be attributed to industry-specific conditions (Peteraf, 1993). Considerable resource heterogeneity may exist among various shareholder categories. In the context of less-developed economies, resource differences are pronounced between domestic and foreign owners (Douma *et al*., 2006) and thus, their organizational capabilities and resource constraints may impact performance

differently. Foreign shareholders may be characterized as strategic shareholders, who pursue their strategic interests, which include expanding to new markets and low-cost production facilities. Being foreign, they may also have the advantage relative to domestic shareholders, particularly in the case of less-developed economies, in providing access to superior governance practices and up-to-date information technology. On the other hand, domestic-concentrated shareholders may also perform well locally because they have better knowledge of the domestic market. However, in less-developed economies, most domestic controlling shareholders are affiliated to complex conglomerates, which may have vested interests from their bank-affiliates (i.e. tunneling of funds).

In addition to distinguishing the effects of domestic from foreign ownership concentration on bank risk, we also test whether better institutional environment result in lower incentives to extract private benefits, and thus reduce risk taking. We test both Hypotheses 1 and 2, replacing OWN1 with OWN1FOR and OWN1DOM, alternatively. We define OWN1FOR, our measure of foreign ownership concentration, as the percentage of ownership share held by the largest foreign shareholder. OWN1DOM, on the other hand, which measures domestic ownership concentration, is defined as the percentage of ownership share held by the largest domestic shareholder.

We use the following econometric model to test Hypotheses 1 and 2a.

Foreign Ownership Concentration

$$Y_{it} = \alpha_0 + \alpha_1 OWN1FOR_{it} + X_1\beta_1 + \mu \quad \text{Eq (5a)}$$

$$Y_{it} = \alpha_0 + \alpha_1 OWN1FOR_{it} + \delta_0 INSTITUTION_{ik} + \alpha_{11} OWN1FOR_{it} * INSTITUTION_{ik} + X_2\beta_1 + \mu \quad \text{Eq (5a')}$$

Domestic Ownership Concentration

$$Y_{it} = \alpha_0 + \alpha_1 OWN1DOM_{it} + \alpha_2 FOR_{it} + X_1\beta_1 + \mu \quad \text{Eq (5b)}$$

$$Y_{it} = \alpha_0 + \alpha_1 OWN1DOM_{it} + \delta_0 INSTITUTION_{ik} + \alpha_{11} OWN1DOM_{it} * INSTITUTION_{ik} + \alpha_2 FOR_{it} + X_2\beta_1 + \mu \quad \text{Eq (5b')}$$

where Y is a measure of asset risk (SDROAA, SDROAE and NPL) and default risk (Z, ZP, ZP1 and ZP); α_0 is the constant, α_1 and α_2 are ownership coefficients, β_1 is a vector of coefficients and μ is the error term; OWN1FOR is a measure of foreign ownership concentration, defined as the fraction of shares held by the largest foreign shareholder; OWN1DOM is a measure of domestic ownership concentration, defined as the fraction of

shares held by the largest domestic shareholder. INSTITUTION is either economic freedom or external governance. OWN1FOR*INSTITUTION measures the interaction between OWN1FOR and INSTITUTION, while OWN1DOM*INSTITUTION measures the interaction between OWN1DOM and INSTITUTION. X_1 and X_2 are a set of exogenous variables that include bank-specific variables and country-specific variables, where the former includes INSTITUTION. INSTITUTION may be economic freedom, FREEDOM or quality of external governance, EXTGOV.

We report the regression results of Eqs (5a) and (5a') in Tables 6a and 6a' and Eqs (5b) and (5b') in Tables 6b and 6b'. The findings show that regardless of the profile types of the largest shareholders, we note that an increase in domestic and foreign ownership concentration, OWN1FOR or OWN1DOM, leads to increases in the SDROAA, SDROAE and all our default risk measures – Z, ZP, ZP1 and ZP2. We stress, however, the notable difference of the effect of an increase in shares held by the largest foreign shareholder, and shares held by the largest domestic shareholder on loan portfolio risk, NPL. We find OWN1FOR to be negative and significant in affecting NPL. The contrary is found, however, in the case of OWN1DOM. An increase in the shares held by the largest domestic shareholder leads to higher NPL, inducing higher bank risk. This could be explained by the presence of large domestic shareholders in less developed economies, which are affiliated with conglomerates or are controlling shareholders of a conglomerate that have vested interests of tunneling funds towards its affiliate and sister companies, and from other businesses where they receive favors.

Table 6a. The effect of foreign ownership concentration on risk in less developed economies and the role of economic freedom as an institutional factor in the relationship over the period 2004-2008. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Independent variables:* OWN1FOR is an indicator of foreign ownership concentration defined as the ownership share of the largest foreign shareholder. SIZE is the natural logarithm of total assets. FUNDING is the ratio of total equity to total assets. EFF is a measure of efficiency, which is the cost-income ratio. LNGDP is the natural logarithm of the gross domestic product. GDPGROWTH is the growth of the gross domestic product. LISTED is a dummy variable, which is equal to 1 if the bank is listed and zero, otherwise. FREEDOM is the overall score, measuring a country's degree of economic freedom, taking into account a country's rule of law, limited government, regulatory efficiency and open markets. OWN1FOR*FREEDOM is the interaction between OWN1FOR and FREEDOM.

	Bank Asset Risk Measures						Bank Default Risk Measures							
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	SDROAA		**SDROAE**		**NPL**		**Z**		**ZP**		**ZP1**		**ZP2**	
OWN1FOR	**0.0034*****	**0.018*****	**0.023*****	0.048	**-0.024****	**0.33*****	**-0.10*****	-0.32	-0.10***	-0.063	**-0.011*****	-0.0032	**-0.097*****	-0.066
	(5.07)	(3.37)	(4.33)	(1.09)	(-2.32)	(3.69)	(-3.78)	(-1.01)	(-3.64)	(-0.22)	(-2.71)	(-0.09)	(-4.05)	(-0.29)
SIZE	-0.097***	-0.095***	-0.12	-0.11	-0.46***	-0.46***	0.52	0.50	2.16***	2.16***	0.74***	0.74***	1.46**	1.46**
	(-4.93)	(-4.81)	(-0.73)	(-0.71)	(-2.73)	(-2.84)	(0.85)	(0.80)	(2.99)	(2.99)	(6.60)	(6.58)	(2.42)	(2.42)
FUNDING	-0.012***	-0.012***	-0.077***	-0.077***	0.041***	0.045***	0.23***	0.23***	0.18***	0.18***	0.015**	0.015**	0.16***	0.16***
	(-5.48)	(-5.48)	(-4.98)	(-4.98)	(2.58)	(2.83)	(4.74)	(4.74)	(4.11)	(4.11)	(2.23)	(2.22)	(4.20)	(4.20)
EQUITY	0.0059	0.0056	-0.17***	-0.17***	0.024	0.0095	0.51***	0.52***	0.67***	0.67***	0.029*	0.029*	0.66***	0.66***
	(1.18)	(1.13)	(-5.89)	(-5.89)	(0.31)	(0.12)	(3.37)	(3.38)	(3.96)	(3.95)	(1.77)	(1.77)	(4.17)	(4.16)
EFF	0.0060***	0.0060***	0.031***	0.032***	0.032***	0.031***	-0.11***	-0.11***	-0.13***	-0.13***	-0.025***	-0.025***	-0.086***	-0.086***
	(5.47)	(5.47)	(3.11)	(3.11)	(3.16)	(3.20)	(-3.98)	(-3.97)	(-4.18)	(-4.17)	(-4.62)	(-4.61)	(-4.06)	(-4.05)
LNGDP	0.023	0.022	-0.64***	-0.64***	0.44	0.50	4.50***	4.51***	1.93*	1.93*	-0.80***	-0.80***	2.56***	2.55***
	(0.76)	(0.72)	(-2.67)	(-2.67)	(1.24)	(1.41)	(4.35)	(4.35)	(1.80)	(1.80)	(-5.05)	(-5.06)	(2.73)	(2.73)
GDPGROWTH	0.0060	0.0071	-0.076	-0.074	-0.41***	-0.39***	-0.62**	-0.64**	-0.091	-0.087	0.058	0.058	-0.14	-0.13
	(0.94)	(1.11)	(-1.32)	(-1.28)	(-4.61)	(-4.37)	(-2.25)	(-2.30)	(-0.33)	(-0.31)	(1.38)	(1.39)	(-0.55)	(-0.54)
LISTED	0.034	0.034	-0.84**	-0.84**	-1.11	-1.01	0.95	0.93	1.33	1.33	-0.29	-0.29	0.62	0.62
	(0.63)	(0.62)	(-2.02)	(-2.02)	(-1.49)	(-1.37)	(0.44)	(0.44)	(0.54)	(0.55)	(-0.78)	(-0.78)	(0.31)	(0.31)
FREEDOM	**-0.013*****	0.0042	-0.038	-0.0088	-0.11*	0.27***	-0.082	-0.33	0.25	0.30	0.064***	0.072	0.14	0.17
	(-3.10)	(0.57)	(-1.30)	(-0.15)	(-1.76)	(3.21)	(-0.49)	(-0.73)	(1.55)	(0.71)	(2.89)	(1.37)	(1.00)	(0.51)
OWN1FOR*FREEDOM		**-0.00026*****		-0.00045		**-0.0063*****		0.0038		-0.00067		-0.00013		-0.00054
		(-2.77)		(-0.58)		(-4.16)		(0.70)		(-0.13)		(-0.20)		(-0.13)
Constant	2.96***	1.99***	21.2***	19.5***	14.8***	-7.45	-7.38	6.85	-30.5*	-33.1	-2.08	-2.58	-25.6**	-27.6
	(6.51)	(3.42)	(6.26)	(4.43)	(2.91)	(-1.16)	(-0.47)	(0.24)	(-1.94)	(-1.17)	(-0.93)	(-0.70)	(-1.98)	(-1.22)
R-square	0.23	0.24	0.085	0.086	0.063	0.080	0.047	0.047	0.049	0.049	0.11	0.11	0.046	0.046
Adj R-square	0.23	0.23	0.081	0.080	0.056	0.072	0.042	0.042	0.044	0.043	0.11	0.11	0.041	0.041
OBS	1860	1860	1814	1814	1183	1183	1783	1783	1765	1765	1818	1818	1765	1765
Partial Coeff: OWN1FOR														
@P25Freedom		**0.0043*****		**0.0241*****		-0.0007		**-0.1163*****		**-0.0982*****		**-0.0101****		**-0.0947*****
		(5.67)		(4.22)		(-0.05)		(-3.17)		(-3.15)		(-2.42)		(-3.61)
@P75Freedom		**0.0024*****		**0.0207*****		**-0.0501*****		**-0.0870*****		**-0.1033*****		**-0.0112****		**-0.0989*****
		(3.12)		(3.29)		(-5.16)		(-2.79)		(-2.84)		(-2.18)		(-3.19)
FREEDOM														
@P25Own1For		-0.006		-0.0173		**0.1922*****		-0.2581		0.2840		**0.0697***		0.1608
		(-0.10)		(-0.36)		(2.68)		(-0.72)		(0.86)		(1.67)		(0.60)
@P75Own1For		**-0.0209*****		-0.0525		**-0.0391*****		0.0393		0.2314		**0.0594****		0.1178
		(-4.19)		(-1.41)		(-3.35)		(0.22)		(1.24)		(2.24)		(0.76)

Table 6a'. **The effect of foreign ownership concentration on risk in less developed economies and the role of external governance as an institutional factor in the relationship over the period 2004-2008.** ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Independent variables:* OWN1FOR is an indicator of foreign ownership concentration defined as the ownership share of the largest foreign shareholder. SIZE is the natural logarithm of total assets. FUNDING is the ratio of total equity to total assets. EFF is a measure of efficiency, which is the cost-income ratio. LNGDP is the natural logarithm of the gross domestic product. GDPGROWTH is the growth of the gross domestic product. LISTED is a dummy variable, which is equal to 1 if the bank is listed and zero, otherwise. EXTGOV is the yearly average of a country's external governance measured by Kaufmann *et al*. (2009)'s governance index. OWN1FOR*EXTGOV is the interaction between OWN1FOR and EXTGOV.

	Bank Asset Risk Measures						Bank Default Risk Measures							
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	SDROAA		**SDROAE**		**NPL**		**Z**		**ZP**		**ZP1**		**ZP2**	
OWN1FOR	**0.0033*****	**0.0030*****	**0.023*****	**0.020*****	**-0.018****	**-0.024*****	**-0.10*****	**-0.089*****	**-0.10*****	**-0.10*****	**-0.0091****	**-0.0069**	**-0.099*****	**-0.11*****
	(4.93)	(3.70)	(4.41)	(2.91)	(-2.01)	(-3.05)	(-3.71)	(-2.66)	(-3.73)	(-2.68)	(-2.30)	(-1.17)	(-4.21)	(-3.40)
SIZE	-0.090***	-0.090***	-0.096	-0.10	-0.43***	-0.45***	0.57	0.59	2.02***	2.01***	0.70***	0.70***	1.39**	1.37**
	(-4.75)	(-4.76)	(-0.62)	(-0.65)	(-2.81)	(-2.89)	(0.95)	(0.98)	(2.84)	(2.85)	(6.27)	(6.33)	(2.34)	(2.31)
FUNDING	-0.012***	-0.012***	-0.078***	-0.078***	0.036**	0.037**	0.23***	0.23***	0.19***	0.19***	0.014**	0.014**	0.17***	0.17***
	(-5.50)	(-5.48)	(-5.09)	(-5.07)	(2.33)	(2.39)	(4.73)	(4.69)	(4.25)	(4.25)	(2.17)	(2.13)	(4.34)	(4.36)
EQUITY	0.0067	0.0066	-0.17***	-0.17***	0.0026	-0.0024	0.52***	0.52***	0.66***	0.66***	0.023	0.024	0.66***	0.65***
	(1.36)	(1.33)	(-5.95)	(-5.91)	(0.03)	(-0.03)	(3.36)	(3.39)	(3.91)	(3.90)	(1.40)	(1.45)	(4.17)	(4.13)
EFF	0.0060***	0.0060***	0.031***	0.031***	0.031***	0.031***	-0.11***	-0.11***	-0.13***	-0.13***	-0.026***	-0.026***	-0.086***	-0.086***
	(5.45)	(5.44)	(3.09)	(3.09)	(3.12)	(3.13)	(-4.00)	(-4.00)	(-4.12)	(-4.12)	(-4.67)	(-4.67)	(-4.01)	(-4.01)
LNGDP	0.017	0.019	-0.59**	-0.58**	0.76**	0.81**	4.50***	4.43***	1.88*	1.89*	-0.71***	-0.72***	2.40**	2.47**
	(0.59)	(0.64)	(-2.36)	(-2.22)	(2.16)	(2.21)	(4.13)	(4.04)	(1.69)	(1.69)	(-4.39)	(-4.44)	(2.43)	(2.49)
GDPGROWTH	0.0079	0.0078	-0.074	-0.075	-0.42***	-0.43***	-0.61**	-0.61**	-0.12	-0.12	0.045	0.046	-0.14	-0.15
	(1.22)	(1.20)	(-1.28)	(-1.29)	(-4.66)	(-4.81)	(-2.24)	(-2.23)	(-0.42)	(-0.42)	(1.07)	(1.08)	(-0.58)	(-0.60)
LISTED	0.022	0.019	-0.86**	-0.89**	-1.01	-1.03	0.87	0.99	1.51	1.49	-0.21	-0.19	0.67	0.56
	(0.40)	(0.34)	(-2.07)	(-2.14)	(-1.44)	(-1.49)	(0.41)	(0.46)	(0.62)	(0.61)	(-0.56)	(-0.50)	(0.34)	(0.28)
EXTGOV	**-0.11****	-0.046	**-0.87***	-0.28	**-3.44*****	**-2.52***	-1.04	-3.44	3.62	3.99	0.053	-0.33	2.88	5.07
	(-2.45)	(-0.59)	(-1.70)	(-0.37)	(-3.91)	(-1.70)	(-0.45)	(-0.80)	(1.54)	(0.76)	(0.16)	(-0.40)	(1.46)	(1.16)
OWN1FOR*EXTGOV		-0.00093		-0.0092		-0.016		0.037		-0.0057		0.0060		-0.034
		(-0.84)		(-0.75)		(-0.78)		(0.67)		(-0.09)		(0.58)		(-0.63)
Constant	2.14***	2.15***	18.2***	18.4***	4.80	5.12	-13.0	-13.8	-12.7	-12.5	1.57	1.46	-15.0	-14.3
	(5.92)	(5.94)	(6.38)	(6.44)	(1.21)	(1.32)	(-1.14)	(-1.21)	(-1.03)	(-1.02)	(0.79)	(0.74)	(-1.46)	(-1.39)
R-squared	0.23	0.23	0.087	0.087	0.076	0.077	0.047	0.047	0.049	0.049	0.11	0.11	0.047	0.047
Adj R-squared	0.23	0.23	0.082	0.082	0.069	0.069	0.042	0.042	0.044	0.043	0.10	0.10	0.042	0.042
OBS	1860	1860	1814	1814	1183	1183	1783	1783	1765	1765	1818	1818	1765	1765
Partial Coeff: OWN1FOR														
@P25Extgov		**0.0035*****		**0.0255*****		-0.0139		**-0.1118*****		**-0.1005*****		**-0.0105****		**-0.0912*****
		(4.98)		(4.19)		(-1.08)		(-3.58)		(-3.39)		(-2.43)		(-3.58)
@P75Extgov		**0.0031*****		**0.0207****		**-0.0230*****		**-0.0917*****		**-0.1036*****		-0.0074		**-0.1096*****
		(4.00)		(3.27)		(-3.05)		(-2.90)		(-2.90)		(-1.41)		(-3.59)
EXTGOV														
@P25Own1For		-0.0633		-0.4507		**-2.7306****		-2.7347		3.8797		-0.2199		4.4241
		(-1.04)		(-0.77)		(-2.14)		(-0.79)		(0.93)		(-0.33)		(1.27)
@P75Own1For		**-0.1366****		-1.1778		**-4.0979*****		0.2159		3.4307		0.2564		1.7088
		(-2.25)		(-1.53)		(-3.39)		(0.07)		(1.19)		(0.64)		(0.72)

In terms of the effect of our institutional factors, FREEDOM and EXTGOV on the foreign ownership concentration-risk relationship, the marginal impact of OWN1FOR on SDROAA, SDROAE is positive and significant, while its marginal impact on the Z, ZP, ZP1 and ZP2 is negative and significant regardless of the level of economic freedom in the country. It is, however, noteworthy that the marginal effect of an increase in foreign ownership concentration on SDROAA, and SDROAE is lower in countries that are more economically free. The impact of economic freedom on OWN1FOR and our measures of default risk are however, less clear, which may be attributed from the non-significance of FREEDOM in affecting the default risk measures. We show particular interest in our result regarding the non-performing loan ratio, NPL. When economic freedom is low, an increase in the shares held by the largest foreign shareholder is not significant in altering bank risk. We expect this result as foreign shareholders may be restricted in terms of the activities and strategies they want to pursue and in terms of the shares they may invest in local banks, as is the case of economies where economic freedom is low, and where markets are relatively closed. On the other hand, when a country is more economically free – i.e. financially free, an increase in foreign ownership concentration effectively lowers NPL. We observe the same pattern of results when the quality of external governance is taken into account as a measure of institutional environment. An increase in foreign ownership concentration only translates to a reduction in the NPL when the country has better external governance.

Unlike our results regarding the effect of institutional factors on the OWN1FOR-risk relationship, we only find very modest advantages of better external governance and better economic freedom on the OWN1DOM-asset risk relationship in less developed economies. Even when institutional environment is better, we do not find the same degree of risk reduction, in terms of NPL, with an increase in domestic ownership concentration. This finding raises doubt on the effectiveness of institutional factors in disciplining large domestic shareholders.

Table 6b. The effect of domestic ownership concentration on risk in less developed economies and the role of economic freedom as an institutional factor in the relationship over the period 2004-2008. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Independent variables:* OWN1DOM is an indicator of domestic ownership concentration defined as the ownership share of the largest domestic shareholder. SIZE is the natural logarithm of total assets. FOR is the share of total foreign ownership. FUNDING is the ratio of total equity to total assets. EFF is a measure of efficiency, which is the cost-income ratio. LNGDP is the natural logarithm of the gross domestic product. GDPGROWTH is the growth of the gross domestic product. LISTED is a dummy variable, which is equal to 1 if the bank is listed and zero, otherwise. FREEDOM is the overall score, measuring a country's degree of economic freedom, taking into account a country's rule of law, limited government, regulatory efficiency and open markets. OWN1DOM*FREEDOM is the interaction between OWN1DOM and FREEDOM.

	Bank Asset Risk Measures						Bank Default Risk Measures							
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	SDROAA		**SDROAE**		**NPL**		**Z**		**ZP**		**ZP1**		**ZP2**	
OWN1DOM	**0.0033*****	0.0079	**0.026*****	0.062	**0.026*****	**0.098***	**-0.072****	0.082	**-0.092*****	0.25	**-0.027*****	**-0.100*****	**-0.090*****	0.058
	(3.95)	(1.06)	(4.26)	(1.29)	(2.99)	(1.65)	(-2.07)	(0.31)	(-2.59)	(0.88)	(-5.39)	(-2.96)	(-3.07)	(0.26)
FOR	0.0024***	0.0023***	0.014**	0.013**	-0.00059	-0.0030	-0.057	-0.060*	-0.062*	-0.070*	-0.020***	-0.018***	-0.052	-0.055*
	(2.92)	(2.74)	(2.28)	(2.14)	(-0.07)	(-0.36)	(-1.61)	(-1.71)	(-1.65)	(-1.86)	(-3.44)	(-3.09)	(-1.62)	(-1.70)
SIZE	-0.083***	-0.083***	-0.30**	-0.30**	-0.52***	-0.51***	1.56***	1.57***	2.03***	2.06***	0.40***	0.39***	1.61***	1.63***
	(-5.54)	(-5.50)	(-2.44)	(-2.41)	(-3.99)	(-3.98)	(2.89)	(2.92)	(3.40)	(3.45)	(4.57)	(4.52)	(3.14)	(3.17)
FUNDING	-0.0099***	-0.0099***	-0.055***	-0.055***	0.054***	0.053***	0.26***	0.26***	0.25***	0.25***	0.017**	0.018**	0.23***	0.23***
	(-5.26)	(-5.26)	(-4.36)	(-4.37)	(3.87)	(3.84)	(4.80)	(4.80)	(4.91)	(4.88)	(2.39)	(2.44)	(5.03)	(5.03)
EQUITY	0.017***	0.017***	-0.13***	-0.13***	-0.023	-0.024	0.43***	0.43***	0.54***	0.54***	-0.0071	-0.0065	0.62***	0.61***
	(3.42)	(3.41)	(-4.58)	(-4.60)	(-0.68)	(-0.69)	(3.31)	(3.28)	(4.13)	(4.07)	(-0.44)	(-0.41)	(5.30)	(5.27)
EFF	0.0063***	0.0063***	0.026***	0.025***	0.032***	0.032***	-0.028	-0.029	-0.059**	-0.060**	-0.027***	-0.027***	-0.025	-0.026
	(4.93)	(4.92)	(2.75)	(2.74)	(4.63)	(4.62)	(-0.96)	(-0.99)	(-2.11)	(-2.18)	(-4.07)	(-4.08)	(-1.05)	(-1.08)
LNGDP	0.079***	0.080***	-0.058	-0.055	0.31	0.31	1.15	1.16	0.51	0.54	-0.55***	-0.56***	1.22	1.23
	(3.31)	(3.34)	(-0.30)	(-0.28)	(1.05)	(1.06)	(1.28)	(1.29)	(0.51)	(0.54)	(-3.65)	(-3.71)	(1.48)	(1.49)
GDPGROWTH	0.0071	0.0063	0.11**	0.11*	-0.42***	-0.43***	-0.91**	-0.94**	-0.38	-0.44	0.018	0.031	-0.36	-0.38
	(1.06)	(0.91)	(1.99)	(1.85)	(-4.59)	(-4.63)	(-2.56)	(-2.56)	(-1.21)	(-1.37)	(0.36)	(0.61)	(-1.32)	(-1.39)
LISTED	-0.0055	-0.0077	0.097	0.079	-0.24	-0.27	-2.97	-3.05	-0.43	-0.60	-0.090	-0.059	-0.53	-0.61
	(-0.13)	(-0.17)	(0.26)	(0.22)	(-0.43)	(-0.49)	(-1.47)	(-1.50)	(-0.20)	(-0.28)	(-0.28)	(-0.18)	(-0.30)	(-0.34)
FREEDOM	**-0.010****	-0.0059	**-0.072****	-0.038	**0.12*****	**0.19*****	-0.057	0.088	**0.33***	**0.65***	**0.078*****	0.0099	**0.27***	0.41
	(-2.19)	(-0.86)	(-2.23)	(-0.74)	(2.83)	(3.13)	(-0.31)	(0.34)	(1.70)	(1.84)	(3.09)	(0.24)	(1.69)	(1.41)
OWN1DOM*FREEDOM		-0.000083		-0.00065		-0.0013		-0.0028		-0.0062		0.0013**		-0.0027
		(-0.62)		(-0.76)		(-1.23)		(-0.60)		(-1.22)		(2.15)		(-0.67)
Constant	1.85***	1.62***	17.6***	15.8***	0.95	-2.59	-2.11	-9.91	-25.7	-42.9*	2.01	5.77*	-29.9**	-37.4*
	(4.17)	(3.37)	(5.54)	(4.22)	(0.24)	(-0.62)	(-0.13)	(-0.51)	(-1.56)	(-1.86)	(0.85)	(1.92)	(-2.19)	(-1.93)
R-squared	0.20	0.20	0.043	0.043	0.080	0.081	0.017	0.018	0.020	0.020	0.075	0.076	0.022	0.022
Adj R-squared	0.20	0.20	0.039	0.038	0.075	0.075	0.013	0.013	0.015	0.015	0.071	0.072	0.017	0.017
OBS	2278	2278	2229	2229	1614	1614	2180	2180	2156	2156	2238	2238	2156	2156
Partial Coeff:														
OWN1DOM														
@P25Freedom		**0.0035*****		**0.0282****		**0.0298*****		**-0.0641***		**-0.0749***		**-0.0310*****		**-0.0830*****
		(3.93)		(4.06)		(3.19)		(-1.68)		(-1.93)		(-5.88)		(-2.66)
@P75Freedom		**0.0030*****		**0.0239*****		**0.0205****		**-0.0828****		**-0.1164*****		**-0.0222*****		**-0.1010*****
		(2.93)		(3.61)		(2.10)		(-2.22)		(-2.94)		(-3.82)		(-3.00)
FREEDOM														
@P25Own1Dom		-0.0075		-0.0514		**0.1632*****		0.0309		**0.5220***		0.0369		0.3571
		(-1.48)		(-1.30)		(3.43)		(0.16)		(1.93)		(1.14)		(1.57)
@P75Own1Dom		**-0.0125***		**-0.0896****		0.0850		-0.1306		0.1657		**0.1154*****		0.2030
		(-1.80)		(-2.14)		(1.44)		(-0.53)		(0.77)		(3.82)		(1.20)

Table 6b'. The effect of domestic ownership concentration on risk in less developed economies and the role of external governance as an institutional factor in the relationship over the period 2004-2008. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Independent variables:* OWN1DOM is an indicator of domestic ownership concentration defined as the ownership share of the largest domestic shareholder. FOR is the share of total foreign ownership. SIZE is the natural logarithm of total assets. FUNDING is the ratio of total equity to total assets. EFF is a measure of efficiency, which is the cost-income ratio. LNGDP is the natural logarithm of the gross domestic product. GDPGROWTH is the growth of the gross domestic product. LISTED is a dummy variable, which is equal to 1 if the bank is listed and zero, otherwise. EXTGOV is the yearly average of a country's external governance measured by Kaufmann *et al*. (2009)'s governance index. OWN1DOM*EXTGOV is the interaction between OWN1DOM and EXTGOV.

	Bank Asset Risk Measures						Bank Default Risk Measures							
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	SDROAA		**SDROAE**		**NPL**		**Z**		**ZP**		**ZP1**		**ZP2**	
OWN1DOM	**0.0033*****	**0.0033*****	**0.027*****	**0.022*****	**0.037*****	**0.019***	-0.056	-0.054	**-0.090****	**-0.18*****	**-0.028*****	**-0.021*****	**-0.091*****	**-0.15*****
	(3.87)	(2.65)	(4.13)	(2.69)	(4.04)	(1.91)	(-1.60)	(-1.23)	(-2.41)	(-3.37)	(-5.34)	(-3.03)	(-2.93)	(-3.44)
FOR	0.0022***	0.0022***	0.013**	0.012*	0.014*	0.0088	-0.039	-0.038	-0.056	-0.079**	-0.019***	-0.018***	-0.050	-0.066*
	(2.65)	(2.63)	(2.08)	(1.88)	(1.72)	(1.08)	(-1.06)	(-1.00)	(-1.46)	(-2.04)	(-3.28)	(-2.98)	(-1.52)	(-1.95)
SIZE	-0.082***	-0.082***	-0.29**	-0.29**	-0.50***	-0.49***	1.62***	1.62***	1.99***	2.06***	0.39***	0.38***	1.57***	1.62***
	(-5.42)	(-5.39)	(-2.35)	(-2.31)	(-3.98)	(-3.95)	(3.03)	(3.02)	(3.32)	(3.43)	(4.44)	(4.39)	(3.05)	(3.15)
FUNDING	-0.0098***	-0.0098***	-0.055***	-0.055***	0.041***	0.041***	0.24***	0.24***	0.25***	0.25***	0.017**	0.017**	0.23***	0.23***
	(-5.08)	(-5.09)	(-4.29)	(-4.28)	(3.02)	(3.03)	(4.34)	(4.33)	(4.85)	(4.88)	(2.40)	(2.34)	(5.05)	(5.07)
EQUITY	0.017***	0.017***	-0.13***	-0.13***	-0.052	-0.052	0.39***	0.39***	0.53***	0.53***	-0.0090	-0.0089	0.61***	0.61***
	(3.47)	(3.47)	(-4.48)	(-4.50)	(-1.47)	(-1.44)	(2.93)	(2.93)	(3.98)	(3.92)	(-0.56)	(-0.55)	(5.21)	(5.14)
EFF	0.0063***	0.0063***	0.026***	0.026***	0.032***	0.032***	-0.029	-0.029	-0.059**	-0.062**	-0.027***	-0.027***	-0.025	-0.027
	(4.93)	(4.93)	(2.73)	(2.72)	(4.55)	(4.58)	(-0.98)	(-0.97)	(-2.12)	(-2.24)	(-4.10)	(-4.11)	(-1.06)	(-1.16)
LNGDP	0.071***	0.071***	-0.10	-0.10	0.79***	0.75***	1.70*	1.70*	0.76	0.75	-0.50***	-0.51***	1.35	1.34
	(3.09)	(3.09)	(-0.52)	(-0.52)	(2.84)	(2.72)	(1.81)	(1.81)	(0.74)	(0.73)	(-3.29)	(-3.30)	(1.57)	(1.56)
GDPGROWTH	0.012*	0.012*	0.14**	0.14**	-0.51***	-0.53***	-0.96***	-0.96***	-0.52*	-0.63**	-0.013	-0.0057	-0.47*	-0.54**
	(1.76)	(1.74)	(2.55)	(2.45)	(-5.72)	(-5.89)	(-2.91)	(-2.83)	(-1.75)	(-2.06)	(-0.28)	(-0.12)	(-1.80)	(-2.07)
LISTED	-0.0098	-0.0095	0.082	0.060	-0.021	-0.10	-2.59	-2.58	-0.31	-0.72	-0.072	-0.041	-0.49	-0.80
	(-0.22)	(-0.22)	(0.22)	(0.16)	(-0.04)	(-0.19)	(-1.29)	(-1.27)	(-0.15)	(-0.34)	(-0.22)	(-0.13)	(-0.28)	(-0.45)
EXTGOV	-0.027	-0.032	-0.37	0.16	**-2.78*****	-0.79	**-6.32*****	**-6.59***	1.07	10.8**	0.41	-0.32	1.79	**8.72****
	(-0.47)	(-0.39)	(-0.86)	(0.25)	(-3.84)	(-0.67)	(-2.58)	(-1.73)	(0.36)	(2.01)	(1.12)	(-0.47)	(0.74)	(1.99)
OWN1DOM*EXTGOV		0.000099		-0.0097		**-0.035***		0.0049		**-0.18****		0.013		**-0.13****
		(0.06)		(-0.86)		(-1.92)		(0.08)		(-2.27)		(1.45)		(-2.11)
Constant	1.29***	1.29***	13.4***	13.7***	3.74	5.17	-11.7	-11.8	-7.21	-1.80	6.60***	6.22***	-13.6	-9.69
	(4.05)	(3.96)	(5.16)	(5.26)	(1.21)	(1.62)	(-0.97)	(-0.96)	(-0.61)	(-0.15)	(3.45)	(3.23)	(-1.35)	(-0.96)
R-square	0.20	0.20	0.041	0.041	0.087	0.090	0.021	0.021	0.018	0.022	0.072	0.073	0.021	0.023
Adj R-square	0.20	0.20	0.037	0.037	0.081	0.083	0.016	0.016	0.014	0.017	0.068	0.068	0.016	0.018
OBS	2278	2278	2229	2229	1614	1614	2180	2180	2156	2156	2238	2238	2156	2156
Partial Coeff: OWN1DOM														
@P25ExtGov		0.0032***		0.0287***		0.0451***		-0.0571		-0.0514		-0.0304**		-0.0633*
		(3.72)		(4.04)		(3.86)		(-1.44)		(-1.24)		(-5.54)		(-1.93)
@P75ExtGov		0.0033***		0.0234***		0.0242***		-0.0544		-0.1481***		-0.0233***		-0.1328***
		(3.10)		(3.29)		(2.84)		(-1.42)		(-3.33)		(-3.89)		(-3.48)
EXTGOV														
@P25Own1Dom		-0.0304		-0.0326		-1.4962*		-6.4871**		7.2253*		-0.0461		6.1690*
		(-0.50)		(-0.07)		(-1.64)		(-2.24)		(1.75)		(-0.09)		(1.80)
@P75Own1Dom		-0.0245		-0.6021		-3.6236*		-6.2031*		-2.9563		0.7396*		-1.1086
		(-0.29)		(-1.07)		(-4.03)		(-1.96)		(-0.90)		(1.86)		(-0.43)

6. Robustness Checks[101]

To check the robustness of our results, we conduct several sensitivity analyses.

First, since 70% of our sample has a standard deviation of ownership concentration that is less than 10%, we conduct cross-section regressions considering the average values of our independent variables and compute our dependent variables, notably standard deviations over the period of study, 2004-2008. We thus introduce our new dependent variables, M_SDROAA M_SDROAE M_NPL M_Z M_ZP M_ZP1 and M_ZP2 and independent variables – M_SIZE, M_FUNDING, M_EQUITY, M_EFF, M_LNGDP, M_GDPGROWTH, M_LISTED, M_FREEDOM and M_EXTGOV. We report the results of our regressions using average values of both dependent and independent variables in Table A1. We also estimate our regression equations using a subsample of banks with stable ownership i.e. with as standard deviation of ownership concentration over the period of study less than 10%. We present the results of these regressions in Table A2. The results are highly consistent with our previous findings regarding the negative impact of ownership concentration on bank risk taking and the impact of institutional factors on this relationship.

Second, we use an alternative definition of ownership concentration, OWN3, defined as the shares held by the largest three shareholders in the bank. Moreover, we also define OWN3FOR, which measures foreign ownership concentration as the total shares held by the three largest foreign shareholders and OWN3DOM, which serves as a proxy for domestic ownership concentration as the total shares held by the three largest domestic shareholders in the bank. This leads to similar results when using the variables OWN1, OWN1FOR and OWN1DOM (See Tables A3, A4 and A5).

Third, we use an alternative definition of EXTGOV, utilizing three of its components separately, regulatory quality, REGQ; control for corruption, CONTROLC and government effectiveness. Our findings using these alternative measures of the quality of external governance lead to similar and even stronger results supporting our hypotheses (See Tables A6a, A6b and A6c).

Lastly, we consider a nonlinear specification of our model in order to the test if the relationship between OWN1 and bank risk is nonlinear. Our results, however, do not find evidence that point out to a nonlinear relationship between ownership concentration and bank risk.

[101] The regression results in this section are shown in Annex 2.

7. Conclusion

Much of the theoretical and empirical research on the impact of ownership on risk and valuation has been conducted in the corporate finance literature. There is, however, considerably lack of attention on the effect of standard governance mechanisms such as ownership concentration in the context of the banking industries in less developed economies. This chapter conducts the first empirical assessment of an institutional approach to understanding the relationship between corporate governance and bank risk taking in the context of less developed economies. Theory also highlights that the same change in institutional development has different effects on bank risk taking depending on the level of ownership concentration.

Examining 838 banks in 68 countries, we find ownership concentration to be positive and significant in affecting bank risk taking. This finding tends to support Claessens *et al*. (2000) and Dharwadkar *et al*. (2000) who argue that higher ownership concentration may increase *principal-principal incongruence*, where controlling shareholders extract private benefits of control at the expense of minority owners. The presence of better institutions – better quality of external governance and more economic freedom, however, mitigates the negative impact of ownership concentration, notably in reducing bank loan portfolio risk. Our results also indicate that the link between the institutional variables and asset risk depends on the ownership shares held by the controlling shareholder. When ownership concentration is high, costs are too big for the largest shareholder to extract private benefits of control when governments provide better quality of external governance- i.e. better regulatory quality, and institutions become more open and receptive to competition. On the other hand, when the controlling shareholder holds a lower stake in the bank, he only bears a small fraction of the cost from the inefficiencies attributed to extraction of private benefits of control, thus, making better institutions less effective in reducing bank risk.

Annex

Annex 1. Bank ownership-performance relationship in emerging economies viewed from agency theory.

CONCENTRATED	II **Moderate** Performance	III **Superior** Performance
DISPERSED	I **Inferior** Performance	IV **Moderate** Performance
	INSIDE	OUTSIDE

Annex 2: Regression Results of Robustness Checks

Table A1. The effect of ownership concentration on risk in less developed economies and the role of economic freedom and external governance as institutional factors in the relationship over the 2004-2008 period, using average values (WHOLE SAMPLE). ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* M_SDROAA is a measure of global risk defined as the standard deviation of return on average assets over the period of study. M_SDROAE is defined as the standard deviation of return on average equity over the period of study. M_NPL is average the ratio of problem loans to total net loans over the period of study. M_Z is the Z-score over the period of study. M_ZP is the ZP score over the period of study. M_ZP1 is a measure of bank portfolio risk and M_ZP2 is the measure of leverage risk. *Main variables of interest:* M_OWN1 is an indicator of ownership concentration defined as the average ownership share of the largest shareholder. M_FREEDOM is the overall score, measuring a country's degree of economic freedom, taking into account a country's rule of law, limited government, regulatory efficiency and open markets, on average over the period of study. M_OWN1*M_FREEDOM is the interaction between M_OWN1 and M_FREEDOM. M_EXTGOV is the average of a country's external governance measured by Kaufmann *et al.* (2009)'s governance indices over the period of study. M_OWN1*M_EXTGOV is the interaction between M_OWN1 and M_EXTGOV.Control variables: M_SIZE, M_FUNDING, M_EFF, M_LNGDP, M_GDPGROWTH, M_LISTED.

	M_SDROAA		**M_SDROAE**		**M_NPL**		**M_Z**		**M_ZP**		**M_ZP1**		**M_ZP2**	
M_OWN1	**0.0044**	**0.074****	**0.045*****	0.15	0.017	**0.60*****	**-0.012****	-0.056	**-0.096*****	-0.39	-0.015*****	**-0.10****	-0.081****	-0.28
	(1.41)	(1.97)	(3.64)	(1.19)	(1.15)	(3.59)	(-2.28)	(-1.04)	(-2.58)	(-1.08)	(-3.26)	(-2.05)	(-2.37)	(-0.87)
M_FREEDOM	-0.029	0.064	-0.098	0.043	-0.15*	**0.60*****	-0.016	-0.074	-0.069	-0.46	0.022	-0.097	-0.091	-0.36
	(-1.34)	(1.51)	(-1.31)	(0.25)	(-1.72)	(3.74)	(-0.55)	(-1.02)	(-0.40)	(-0.94)	(0.90)	(-1.30)	(-0.57)	(-0.83)
M_OWN1*M_FREEDOM		**-0.0012***		-0.0019		**-0.010*****		0.00078		0.0052		**0.0016***		0.0036
		(-1.86)		(-0.85)		(-3.69)		(0.83)		(0.85)		(1.79)		(0.66)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.21	0.21	0.16	0.16	0.073	0.094	0.11	0.10	0.034	0.033	0.14	0.14	0.034	0.033
OBS	838	838	827	827	674	674	838	838	838	838	838	838	838	838
Partial Coeff: M_OWN1														
@P25M_Freedom		**0.0080****		**0.0506*****		**0.0492****		**-0.0145****		**-0.1106****		**-0.0198*****		**-0.0908****
		(2.19)		(3.46)		(2.33)		(-2.25)		(-2.32)		(-3.42)		(-2.07)
@P75M_Freedom		0.0001		**0.0386*****		**-0.0207***		**-0.0095***		**-0.0776****		**-0.0097***		**-0.0679****
		(0.01)		(2.78)		(-1.74)		(-1.65)		(-2.35)		(-1.94)		(-2.30)
Partial Coeff:M_FREEDOM														
@P25Own1		0.0035		-0.0486		**0.1065***		-0.0364		-0.2051		-0.0199		-0.1852
		(0.19)		(-0.57)		(1.66)		(-1.02)		(-0.87)		(-0.54)		(-0.89)
@P75Own1		**-0.0552***		-0.1378		**-0.3710****		0.0003		0.0399		**0.0553***		-0.0154
		(-1.78)		(-1.46)		(-2.82)		(0.01)		(0.19)		(2.00)		(-0.08)

	M_SDROAA		**M_SDROAE**		**M_NPL**		**M_Z**		**M_ZP**		**M_ZP1**		**M_ZP2**	
M_OWN1	**0.0051***	0.0032	**0.049*****	**0.040****	0.024	-0.017	**-0.011****	-0.0023	**-0.100*****	**-0.098****	**-0.015*****	-0.0096	-0.085****	**-0.089****
	(1.71)	(1.10)	(3.89)	(2.36)	(1.60)	(-1.19)	(-2.01)	(-0.38)	(-2.73)	(-2.41)	(-3.20)	(-1.36)	(-2.53)	(-2.47)
M_EXTGOV	-0.48****	-0.17	**-2.04****	-0.66	-3.33*****	3.00	-0.49	**-1.91****	0.73	0.50	0.19	-0.72	0.54	1.22
	(-2.41)	(-0.40)	(-2.16)	(-0.30)	(-2.78)	(1.35)	(-1.17)	(-2.22)	(0.35)	(0.08)	(0.51)	(-0.66)	(0.30)	(0.23)
M_OWN1*M_EXTGOV		-0.0041		-0.019		**-0.086*****		**0.019***		0.0031		0.012		-0.0091
		(-0.58)		(-0.63)		(-2.59)		(1.74)		(0.04)		(0.99)		(-0.14)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.21	0.21	0.17	0.17	0.083	0.091	0.11	0.11	0.034	0.033	0.14	0.14	0.034	0.033
OBS	838	838	827	827	674	674	838	838	838	838	838	838	838	838
Partial Coeff: M_OWN1														
@P25M_ExtGov		0.0061		**0.0533****		**0.0443****		-0.0156		**-0.101****		**-0.0181*****		**-0.0824****
		(1.46)		(3.48)		(2.18)		(-2.28)		(-2.20)		(-3.10)		(-1.98)
@P75M_ExtGov		0.0036		**0.0420*****		-0.0091		-0.0041		**-0.099*****		**-0.0107***		**-0.0878*****
		(1.37)		(2.74)		(-0.70)		(-0.71)		(-2.63)		(-1.72)		(-2.65)
Partial coeff: M_EXTGOV														
@P25Own1		**-0.3668****		-1.5522		-1.0991		**-0.9918****		0.6489		-0.1335		0.7823
		(-2.41)		(-1.47)		(-0.97)		(-2.10)		(0.21)		(-0.24)		(0.30)
@P75Own1		**-0.5609***		**-2.4226***		**-5.0805*****		-0.0964		0.7956		0.4396		0.3560
		(-1.78)		(-1.95)		(-3.19)		(-0.19)		(0.32)		(1.19)		(0.16)

Table A2. The effect of ownership concentration on risk in less developed economies and the role of economic freedom and external governance as institutional factors in the relationship over the 2004-2008 period, using average values (SUBSAMPLE: STABLE BANKS). ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* M_SDROAA is a measure of global risk defined as the standard deviation of return on average assets over the period of study. M_SDROAE is defined as the standard deviation of return on average equity over the period of study. M_NPL is average the ratio of problem loans to total net loans over the period of study. M_Z is the Z-score over the period of study. M_ZP is the ZP score over the period of study. M_ZP1 is a measure of bank portfolio risk and M_ZP2 is the measure of leverage risk. *Main Variables of Interest:* M_OWN1 is an indicator of ownership concentration defined as the average ownership share of the largest shareholder. M_FREEDOM is the overall score, measuring a country's degree of economic freedom, taking into account a country's rule of law, limited government, regulatory efficiency and open markets, on average over the period of study. M_OWN1*M_FREEDOM is the interaction between M_OWN1 and M_FREEDOM. M_EXTGOV is the average of a country's external governance measured by Kaufmann *et al* (2009)'s governance indices over the period of study. M_OWN1*M_EXTGOV is the interaction between M_OWN1 and M_EXTGOV. Control variables: M_SIZE, M_FUNDING, M_EFF, M__LNGDP, MGDPGROWTH, M_LISTED.

	M_SDROAA		M_SDROAE		M_NPL		M_Z		M_ZP		M_ZP1		M_ZP2	
M_OWN1	**0.0069****	0.059	**0.052*****	0.10	0.020	**0.62*****	**-0.017*****	-0.054	**-0.11*****	-0.29	**-0.020*****	-0.091	**-0.089****	-0.19
	(2.08)	(1.63)	(4.08)	(0.82)	(1.21)	(3.38)	(-2.73)	(-0.87)	(-2.71)	(-0.69)	(-3.83)	(-1.52)	(-2.42)	(-0.52)
M_FREEDOM	-0.038	0.035	-0.13	-0.054	**-0.18***	**0.63*****	-0.020	-0.071	-0.12	-0.37	0.016	-0.084	-0.14	-0.29
	(-1.42)	(0.87)	(-1.51)	(-0.31)	(-1.66)	(3.49)	(-0.53)	(-0.77)	(-0.54)	(-0.61)	(0.51)	(-0.88)	(-0.67)	(-0.53)
M_OWN1*M_FREEDOM		-0.00094		-0.00092		**-0.011*****		0.00065		0.0032		0.0013		0.0019
		(-1.45)		(-0.41)		(-3.46)		(0.60)		(0.45)		(1.21)		(0.30)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.23	0.24	0.19	0.19	0.083	0.11	0.097	0.096	0.024	0.023	0.13	0.13	0.022	0.020
OBS		599	591	591	471	471	599	599	599	599	599	599	599	599
Partial Coeff: M_OWN1														
@P25M_Freedom		**0.0095****		**0.0548*****		**0.0509****		**-0.0191*****		**-0.1183****		**-0.0237*****		**-0.0945****
		(2.50)		(3.64)		(2.23)		(-2.59)		(-2.26)		(-3.61)		(-1.98)
@P75M_Freedom		0.0037		**0.0492*****		-0.0205		**-0.0148***		**-0.0971****		**-0.0152*****		**-0.0819****
		(0.95)		(3.55)		(-1.55)		(-2.07)		(-2.58)		(-2.57)		(-2.46)
Partial Coeff: M_FREEDOM														
@P25Own1		-0.0085		-0.0965		**0.1623***		-0.0410		-0.2222		-0.0249		-0.1973
		(-0.40)		(-1.00)		(1.94)		(-0.80)		(-0.68)		(-0.48)		(-0.68)
@P75Own1		-0.0580		-0.1451		**-0.435*****		-0.0067		-0.0549		0.0425		-0.0974
		(-1.60)		(-1.40)		(-2.62)		(-0.15)		(-0.21)		(1.29)		(-0.40)

	M_SDROAA		M_SDROAE		M_NPL		M_Z		M_ZP		M_ZP1		M_ZP2	
M_OWN1	**0.0072****	0.0048	**0.054*****	**0.048****	0.026	**-0.033****	**-0.016****	-0.0036	-0.11*****	**-0.11****	**-0.020*****	-0.013	**-0.091****	**-0.094****
	(2.31)	(1.54)	(4.16)	(2.51)	(1.56)	(-2.15)	(-2.39)	(-0.47)	(-2.80)	(-2.22)	(-3.70)	(-1.58)	(-2.54)	(-2.23)
M_EXTGOV	-0.47****	-0.089	-1.95**	-0.90	**-3.59*****	5.53****	-0.76	**-2.70****	-0.74	-1.29	0.026	-0.99	-0.77	-0.29
	(-2.02)	(-0.19)	(-1.77)	(-0.35)	(-2.89)	(2.40)	(-1.46)	(-2.45)	(-0.29)	(-0.16)	(0.06)	(-0.71)	(-0.35)	(-0.04)
M_OWN1*M_EXTGOV		-0.0049		-0.013		**-0.12*****		**0.025****		0.0070		0.013		-0.0061
		(-0.66)		(-0.41)		(-3.29)		(2.00)		(0.08)		(0.88)		(-0.08)
Constant	2.20**	2.37**	21.1*****	21.5*****	-4.85	-0.45	10.4****	9.51****	8.48	8.24	8.11*****	7.66*****	0.37	0.58
	(1.95)	(1.89)	(3.07)	(3.12)	(-0.88)	(-0.09)	(2.34)	(2.14)	(0.41)	(0.42)	(3.15)	(3.09)	(0.02)	(0.03)
Adj R-squared	0.23	0.23	0.19	0.19	0.096	0.12	0.10	0.10	0.024	0.022	0.13	0.13	0.021	0.020
OBS	599	599	591	591	471	471	599	599	599	599	599	599	599	599
Partial Coeff: M_OWN1														
@P25M_ExtGov		**0.0083***		0.058*****		**0.0532****		**-0.021*****		**-0.1123****		**-0.0229*****		**-0.0894***
		(1.90)		(3.59)		(2.39)		(-2.76)		(-2.20)		(-3.43)		(-1.94)
@P75M_ExtGov		**0.0053***		0.0495*****		-0.0199		-0.0063		**-0.1080****		**-0.0149****		**-0.0931****
		(1.95)		(2.96)		(-1.46)		(-0.89)		(-2.52)		(-2.03)		(-2.48)
M_EXTGOV														
@P25Own1		-0.3171		-1.5260		0.3523		**-1.5461****		-0.9643		-0.3860		-0.5783
		(-1.67)		(-1.12)		(0.31)		(-2.36)		(-0.23)		(-0.51)		(-0.16)
@P75Own1		-0.5747		-2.2371		**-6.2757*****		-0.2403		-0.5975		0.3023		-0.8999
		(-1.61)		(-1.59)		(3.45)		(-0.41)		(-0.21)		(0.71)		(-0.35)

Table A3. The effect of ownership concentration on risk in less developed economies and the role of economic freedom and external governance as institutional factors in the relationship over the 2004-2008 period. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Main variables of interest:* OWN3 is an indicator of ownership concentration defined as the ownership share of the largest three shareholders. FREEDOM is the overall score, measuring a country's degree of economic freedom, taking into account a country's rule of law, limited government, regulatory efficiency and open markets. OWN3*FREEDOM is the interaction between OWN3 and FREEDOM. EXTGOV is the yearly average of a country's external governance measured by Kaufmann *et al*. (2009)'s governance index. OWN3*EXTGOV is the interaction between OWN3 and EXTGOV. Control variables: SIZE, FUNDING, EFF, LNGDP, GDPGROWTH, LISTED.

	SDROAA		SDROAE		NPL		Z		ZP		ZP1		ZP2	
OWN3	**0.0044*****	0.010	**0.029*****	0.096	0.0064	**0.31*****	**-0.072****	0.20	**-0.13*****	0.23	**-0.022*****	**-0.100***	**-0.12*****	0.15
	(5.31)	(1.28)	(4.55)	(1.59)	(0.63)	(4.07)	(-2.18)	(0.60)	(-3.40)	(0.58)	(-4.07)	(-1.85)	(-3.72)	(0.43)
FREEDOM	**-0.010*****	-0.00099	**-0.059*****	0.048	-0.027	0.45***	-0.050	0.38	0.14	0.71	0.040**	-0.082	0.11	0.54
	(-3.23)	(-0.08)	(-2.59)	(0.49)	(-0.73)	(4.07)	(-0.38)	(0.69)	(1.05)	(1.05)	(2.12)	(-0.95)	(1.04)	(0.90)
OWN3*FREEDOM		-0.00011		-0.0012		-0.0055***		-0.0049		-0.0064		0.0014		-0.0049
		(-0.74)		(-1.10)		(-4.14)		(-0.82)		(-0.89)		(1.46)		(-0.76)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.19	0.19	0.050	0.050	0.046	0.050	0.016	0.016	0.022	0.022	0.077	0.077	0.024	0.024
OBS	3198	3198	3138	3138	2136	2136	3075	3075	3033	3033	3138	3138	3033	3033
Partial Coeff: OWN3														
@P25Freedom		**0.0047****		**0.0328*****		**0.0236****		-0.0560		**-0.1047****		**-0.0269*****		**-0.1046*****
		(5.12)		(4.74)		(1.99)		(-1.44)		(-2.46)		(-4.13)		(-2.79)
@P75Freedom		**0.0039*****		**0.0234*****		**-0.0201***		**-0.0944****		**-0.1545*****		**-0.0162****		**-0.1428****
		(3.58)		(2.75)		(-1.85)		(-2.24)		(-3.07)		(-2.42)		(-3.19)
FREEDOM														
@P25Own3		**-0.0092*****		**-0.0445***		0.0496		0.0094		0.2181		0.0230		0.1755
		(-2.66)		(-1.73)		(1.40)		(0.06)		(1.26)		(1.02)		(1.15)
@P75Own3		**-0.0118*****		**-0.0736*****		**-0.1001****		-0.1093		0.0626		**0.0563****		0.0553
		(-3.03)		(-2.73)		(-2.26)		(-0.76)		(0.44)		(2.66)		(0.48)

	SDROAA		SDROAE		NPL		Z		ZP		ZP1		ZP2	
OWN3	**0.0044*****	**0.0054*****	**0.029*****	**0.021****	0.014	-0.019	**-0.064***	**-0.084***	**-0.12*****	**-0.23*****	**-0.022*****	**-0.015***	**-0.12*****	**-0.23*****
	(5.29)	(4.05)	(4.52)	(2.06)	(1.37)	(-1.44)	(-1.91)	(-1.67)	(-3.28)	(-3.26)	(-3.90)	(-1.65)	(-3.62)	(-3.53)
EXTGOV	-0.057	-0.25	-0.50	1.03	**-2.86*****	2.97	**-3.54***	0.36	0.30	**20.9****	-0.11	-1.32	0.81	**21.4****
	(-1.43)	(-1.49)	(-1.35)	(0.79)	(-4.88)	(1.06)	(-1.86)	(0.05)	(0.14)	(1.99)	(-0.40)	(-0.94)	(0.47)	(2.28)
OWN3*EXTGOV		0.0022		-0.017		**-0.067****		-0.044		**-0.23****		0.014		**-0.23****
		(1.13)		(-1.14)		(-2.12)		(-0.51)		(-2.06)		(0.90)		(-2.33)
Constant	1.43***	1.35***	12.7***	13.4***	3.00	5.70**	-4.90	-3.16	2.22	11.4	7.23***	6.68***	-3.24	5.96
	(5.23)	(4.73)	(5.61)	(5.75)	(1.06)	(2.04)	(-0.48)	(-0.30)	(0.21)	(1.00)	(4.42)	(3.88)	(-0.36)	(0.60)
Adj R-squared	0.19	0.19	0.049	0.049	0.058	0.060	0.017	0.017	0.022	0.023	0.076	0.076	0.024	0.026
OBS	3198	3198	3138	3138	2136	2136	3075	3075	3033	3033	3138	3138	3033	3033
Partial Coeff: OWN3														
@P25Extgov		**0.0039*****		**0.0335*****		**0.0305***		-0.0530		**-0.0694***		**-0.0249*****		**-0.0660***
		(4.46)		(4.81)		(1.92)		(-1.31)		(-1.70)		(-3.81)		(-1.92)
@P75Extgov		**0.0052*****		**0.0230****		-0.0128		**-0.0801***		**-0.212*****		**-0.0166****		**-0.2088*****
		(4.35)		(2.49)		(-1.14)		(-1.80)		(-3.38)		(-2.08)		(-3.65)
EXTGOV														
@P25Own3		**-0.0829***		-0.2898		**-1.8945***		-2.9920		3.2112		-0.2780		3.7845
		(-1.97)		(-0.78)		(-2.56)		(-1.37)		(1.19)		(-0.78)		(1.59)
@P75Own3		-0.0307		-0.7053		**-3.6999*****		**-4.0560***		-2.4444		0.0513		-1.9569
		(-0.62)		(-1.56)		(-5.25)		(-1.87)		(-1.07)		(0.16)		(-1.06)

Table A4. The effect of foreign ownership concentration on risk in less developed economies and the role of economic freedom and external governance as institutional factors in the relationship over the 2004-2008 period. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Main variables of interest:* OWN3FOR is an indicator of foreign ownership concentration defined as the ownership share of the largest three foreign shareholders. FREEDOM is the overall score, measuring a country's degree of economic freedom, taking into account a country's rule of law, limited government, regulatory efficiency and open markets. OWN3FOR*FREEDOM is the interaction between OWN3FOR and FREEDOM. EXTGOV is the yearly average of a country's external governance measured by Kaufmann *et al*. (2009)'s governance index. OWN3FOR*EXTGOV is the interaction between OWN3FOR and EXTGOV. Control variables: SIZE, FUNDING, EFF, LNGDP, GDPGROWTH, LISTED.

	SDROAA		SDROAE		NPL		Z		ZP		ZP1		ZP2	
OWN3FOR	**0.0032*****	**0.014*****	**0.017*****	0.034	**-0.030*****	**0.35*****	**-0.087*****	-0.38	**-0.082*****	0.077	**-0.0090****	0.00032	**-0.079*****	0.077
	(4.57)	(2.60)	(3.11)	(0.73)	(-2.95)	(4.01)	(-2.94)	(-1.12)	(-2.81)	(0.25)	(-2.18)	(0.01)	(-3.09)	(0.31)
FREEDOM	**-0.013*****	0.00100	-0.034	-0.013	-0.100	**0.35*****	-0.089	-0.45	0.24	0.44	**0.063*****	0.074	0.12	0.32
	(-3.13)	(0.13)	(-1.17)	(-0.20)	(-1.56)	(3.70)	(-0.54)	(-0.91)	(1.47)	(0.94)	(2.85)	(1.24)	(0.91)	(0.84)
OWN3FOR*FREEDOM		-0.00019**		-0.00029		-0.0067***		0.0051		-0.0028		-0.00016		-0.0027
		(-2.04)		(-0.36)		(-4.53)		(0.88)		(-0.51)		(-0.23)		(-0.62)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.23	0.23	0.076	0.076	0.059	0.077	0.039	0.039	0.041	0.041	0.11	0.10	0.038	0.038
OBS	1860	1860	1814	1814	1183	1183	1783	1783	1765	1765	1818	1818	1765	1765
Partial Coeff: OWN3FOR														
@P25Freedom		**0.0039***		**0.0181*****		-0.0074		**-0.1042*****		**-0.0730****		**-0.0084***		**-0.0695*****
		(4.87)		(3.04)		(-0.59)		(-2.63)		(-2.25)		(-1.94)		(-2.57)
@P75Freedom		**0.0024****		**0.0158****		**-0.0605*****		**-0.0645***		**-0.0948****		**-0.0097***		**-0.0906*****
		(3.01)		(2.33)		(-5.83)		(-1.94)		(-2.35)		(-1.73)		(-2.63)
FREEDOM														
@P25Own3For		-0.0038		-0.0207		**0.2219*****		-0.3248		0.3725		0.0704		0.2507
		(-0.64)		(-0.42)		(2.99)		(-0.90)		(1.07)		(1.60)		(0.90)
@P75Own3For		**-0.0182****		-0.0425		**-0.3128*****		0.0538		0.1627		**0.052****		0.0473
		(-3.75)		(-1.19)		(-3.40)		(0.29)		(0.88)		(2.27)		(0.31)

	SDROAA		SDROAE		NPL		Z		ZP		ZP1		ZP2	
OWN3FOR	**0.0031*****	**0.0028*****	**0.018*****	**0.014***	**-0.025*****	**-0.033*****	**-0.087*****	**-0.068***	**-0.083*****	**-0.093****	**-0.0071***	-0.0056	**-0.081*****	**-0.10*****
	(4.33)	(3.26)	(3.20)	(1.84)	(-2.77)	(-3.90)	(-2.87)	(-1.88)	(-2.87)	(-2.19)	(-1.72)	(-0.87)	(-3.24)	(-2.81)
EXTGOV	**-0.10****	-0.061	-0.79	-0.067	**-3.32*****	-2.08	-1.28	-4.76	3.32	5.11	0.025	-0.25	2.58	6.12
	(-2.34)	(-0.71)	(-1.54)	(-0.08)	(-3.77)	(-1.40)	(-0.55)	(-1.08)	(1.41)	(0.86)	(0.08)	(-0.27)	(1.30)	(1.25)
OWN3FOR*EXTGOV		-0.00059		-0.011		-0.020		0.051		-0.026		0.0040		-0.052
		(-0.50)		(-0.83)		(-1.03)		(0.90)		(-0.36)		(0.36)		(-0.88)
Constant	2.11***	2.13***	18.3***	18.6***	5.60	6.08	-13.0	-14.4	-12.9	-12.2	1.53	1.43	-15.2	-13.8
	(5.75)	(5.74)	(6.35)	(6.42)	(1.43)	(1.58)	(-1.12)	(-1.24)	(-1.04)	(-0.98)	(0.77)	(0.73)	(-1.47)	(-1.33)
Adj R-squared	0.22	0.22	0.077	0.077	0.072	0.072	0.039	0.039	0.041	0.041	0.10	0.10	0.039	0.038
OBS	1860	1860	1814	1814	1183	1183	1783	1783	1765	1765	1818	1818	1765	1765
Partial Coeff: OWN3FOR														
@P25Extgov		**0.0032*****		**0.0201*****		**-0.0200***		**-0.0984*****		**-0.0771****		**-0.0080***		**-0.0694*****
		(4.36)		(3.25)		(-1.66)		(-2.93)		(-2.47)		(-1.77)		(-2.61)
@P75Extgov		**0.0029*****		**0.0145****		**-0.0312*****		**-0.0711****		**-0.0911****		-0.0059		**-0.0975*****
		(3.51)		(2.09)		(-3.94)		(-2.08)		(-2.34)		(-1.04)		(-2.94)
EXTGOV														
@P25Own3For		-0.0757		-0.3294		**-2.4678****		-3.4884		4.4528		-0.1478		4.8185
		(-1.22)		(-0.54)		(-2.05)		(-1.06)		(1.03)		(-0.22)		(1.35)
@P75Own3For		**-0.1191****		-1.1097		**-4.0841*****		0.2967		2.5131		0.1487		0.9482
		(-2.00)		(-1.49)		(-3.54)		(0.10)		(0.89)		(0.38)		(0.40)

Table A5. The effect of domestic ownership concentration on risk in developed economies and the role of economic freedom and external governance as institutional factors in the relationship over the 2004-2008 period. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Main Variables of Interest:* OWN3DOM is an indicator of domestic ownership concentration defined as the ownership share of the largest three domestic shareholders. FREEDOM is the overall score, measuring a country's degree of economic freedom, taking into account a country's rule of law, limited government, regulatory efficiency and open markets. OWN3DOM*FREEDOM is the interaction between OWN3DOM and FREEDOM. EXTGOV is the yearly average of a country's external governance measured by Kaufmann *et al*. (2009)'s governance index. OWN3DOM*EXTGOV is the interaction between OWN3DOM and EXTGOV. Control variables: SIZE, FUNDING, EFF, LNGDP, GDPGROWTH, LISTED, FOR.

	SDROAA		**SDROAE**		**NPL**		**Z**		**ZP**		**ZP1**		**ZP2**	
OWN3DOM	**0.0018***	0.0088	**0.014***	0.077	**0.028*****	0.040	-0.023	0.047	-0.0049	0.16	**-0.019*****	**-0.091****	-0.011	-0.045
	(1.96)	(1.22)	(1.95)	(1.56)	(2.67)	(0.69)	(-0.62)	(0.19)	(-0.13)	(0.56)	(-3.31)	(-2.54)	(-0.36)	(-0.21)
FREEDOM	**-0.0096****	-0.0019	**-0.067****	0.0035	0.12*****	**0.14****	-0.077	-0.00017	0.29	0.47	0.075*****	-0.0040	0.24	0.20
	(-2.06)	(-0.24)	(-2.08)	(0.06)	(2.84)	(2.11)	(-0.42)	(-0.00)	(1.52)	(1.27)	(2.96)	(-0.09)	(1.49)	(0.69)
OWN3DOM*FREEDOM		-0.00013		-0.0012		-0.00023		-0.0013		-0.0029		0.0013****		0.00063
		(-0.97)		(-1.31)		(-0.22)		(-0.28)		(-0.58)		(2.02)		(0.16)
Constant	1.79*****	1.37*****	17.0*****	13.3*****	0.64	-0.091	-0.60	-4.64	-24.0	-33.4	2.60	6.87****	-28.3****	-26.3
	(4.02)	(2.65)	(5.37)	(3.25)	(0.16)	(-0.02)	(-0.04)	(-0.23)	(-1.46)	(-1.44)	(1.09)	(2.25)	(-2.07)	(-1.39)
Adj R-squared	0.19	0.19	0.032	0.032	0.074	0.073	0.011	0.011	0.012	0.012	0.063	0.064	0.013	0.013
OBS	2278	2278	2229	2229	1614	1614	2180	2180	2156	2156	2238	2238	2156	2156
Partial coeff : OWN3DOM		**0.0021****		**0.0166****		**0.0283*****		-0.0198		0.0018		**-0.0220*****		-0.0126
@P25Freedom		(2.20)		(2.18)		(2.63)		(-0.52)		(0.05)		(-3.73)		(-0.40)
		0.0012		0.0089		**0.0267****		-0.0283		-0.0180		**-0.0132****		-0.0084
@P75Freedom		(1.08)		(1.12)		(2.33)		(-0.69)		(-0.42)		(-2.01)		(-0.24)
Partial coeff : FREEDOM														
@P25Own3Dom		-0.0064		-0.0371		**0.1287*****		-0.0444		0.3679		0.0419		0.2260
		(-1.29)		(-0.96)		(2.95)		(-0.24)		(1.54)		(1.42)		(1.15)
@P75Own3Dom		**-0.0140***		**-0.1067****		**0.1146***		-0.1202		0.1920		**0.1204*****		0.2630
		(-1.90)		(-2.37)		(1.78)		(-0.44)		(0.76)		(3.44)		(1.32)

	SDROAA		**SDROAE**		**NPL**		**Z**		**ZP**		**ZP1**		**ZP2**	
OWN3DOM	**0.0017***	0.0015	**0.014***	0.0080	**0.041*****	**0.027****	-0.00089	-0.0077	0.00040	-0.088	**-0.019*****	-0.012	-0.0096	-0.071
	(1.79)	(1.08)	(1.82)	(0.82)	(3.74)	(2.40)	(-0.02)	(-0.16)	(0.01)	(-1.54)	(-3.25)	(-1.53)	(-0.29)	(-1.48)
EXTGOV	-0.0061	0.016	-0.20	0.47	**-2.84*****	-1.20	**-7.02*****	-6.21	-0.082	**10.2***	0.29	-0.54	0.74	**7.93***
	(-0.10)	(0.16)	(-0.45)	(0.58)	(-3.86)	(-0.91)	(-2.83)	(-1.49)	(-0.03)	(1.76)	(0.79)	(-0.73)	(0.30)	(1.73)
OWN3DOM*EXTGOV		-0.00034		-0.010		-0.025		-0.013		**-0.16****		0.013		**-0.11***
		(-0.21)		(-0.90)		(-1.34)		(-0.20)		(-2.08)		(1.31)		(-1.91)
Constant	1.27*****	1.29*****	13.3*****	13.7*****	3.19	4.36	-12.4	-12.0	-8.71	-2.73	6.91*****	6.44*****	-14.8	-10.6
	(4.00)	(3.92)	(5.07)	(5.18)	(1.02)	(1.34)	(-1.03)	(-0.95)	(-0.73)	(-0.22)	(3.56)	(3.26)	(-1.44)	(-1.01)
Adj R-squared	0.19	0.19	0.030	0.030	0.081	0.082	0.015	0.014	0.011	0.013	0.060	0.060	0.012	0.013
OBS	2278	2278	2229	2229	1614	1614	2180	2180	2156	2156	2238	2238	2156	2156
Partial Coeff : OWN3DOM														
@P25Extgov		**0.0017***		**0.0154****		**0.0456*****		0.0013		0.0272		-0.0211***		0.0095
		(1.84)		(1.98)		(3.55)		(0.03)		(0.66)		(-3.42)		(0.28)
@P75Extgov		0.0015		0.0097		**0.0309*****		-0.0057		-0.0607		-0.0141**		-0.0523
		(1.30)		(1.13)		(3.06)		(-0.14)		(-1.25)		(-2.10)		(-1.26)
Partial Coeff : EXTGOV														
@P25Own3Dom		0.0038		0.1042		**-2.038****		**-6.6545****		4.589		-0.0888		3.9926
		(0.06)		(0.21)		(-2.35)		(2.46)		(1.23)		(-0.19)		(1.30)
@P75Own3Dom		-0.0165		-0.5162		**-3.549*****		**-7.4110****		-5.0187		0.6913		-2.6929
		(-0.18)		(-0.85)		(-3.64)		(-2.13)		(-1.34)		(1.45)		(-0.91)

Table A6. The effect of ownership concentration on risk in less developed economies and the role of regulatory quality as an institutional factor in the relationship over the 2004-2008 period. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Independent variables:* OWN1 is an indicator of ownership concentration defined as the ownership share of the largest shareholder. REGQUALITY is a country-specific variable, which measures quality of regulation.OWN1*REGQUALITY is the interaction between OWN1 and REGQUALITY. CONTROLCORR is a country-specific variable, which measures a country's ability to control corruption.OWN1*CONTROLCORR is the interaction between OWN1 and CONTROLCORR. Control variables: SIZE, FUNDING, EFF, LNGDP, GDPGROWTH, LISTED.

	SDROAA		SDROAE		NPL		Z		ZP		ZP1		ZP2	
OWN1	0.0041***	0.0035***	0.033***	0.028***	0.014*	-0.0044	-0.097***	-0.093***	-0.14***	-0.15***	-0.027***	-0.021***	-0.14***	-0.15***
	(6.49)	(5.12)	(7.08)	(5.61)	(1.73)	(-0.64)	(-3.78)	(-3.34)	(-5.24)	(-4.69)	(-6.56)	(-4.67)	(-5.87)	(-5.14)
REGQUALITY	-0.18***	0.0064	-1.24***	0.60	-1.87***	3.36***	-0.35	-1.63	2.67	5.46	0.14	-1.51**	3.11**	6.00
	(-4.57)	(0.07)	(-4.17)	(0.93)	(-3.45)	(2.91)	(-0.22)	(-0.38)	(1.64)	(1.06)	(0.63)	(-2.18)	(2.35)	(1.34)
OWN1*REGQUALITY		-0.0024*		-0.025***		-0.072***		0.017		-0.037		0.022***		-0.039
		(-1.93)		(-2.73)		(-4.17)		(0.32)		(-0.60)		(2.68)		(-0.73)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.20	0.20	0.061	0.063	0.053	0.062	0.019	0.019	0.028	0.027	0.084	0.086	0.032	0.032
OBS	3198	3198	3138	3138	2136	2136	3075	3075	3033	3033	3138	3138	3033	3033
Partial coefficient: OWN1														
@P25RegQuality		0.0047***		0.0395***		0.0286***		-0.1016***		-0.1358***		-0.0319***		-0.1301***
		(6.48)		(7.18)		(2.84)		(-3.40)		(-4.51)		(-7.05)		(-5.31)
@P75RegQuality		0.0033***		0.0259***		-0.0087		-0.0920***		-0.1563***		-0.0196***		-0.1509***
		(4.64)		(5.05)		(-1.25)		(-3.12)		(-4.43)		(-4.10)		(-4.86)
REGQUALITY														
@P25OWN1		-0.1113**		-0.5903*		0.0657		-0.8076		3.6830		-0.4439		4.1584*
		(-2.53)		(-1.87)		(0.12)		(-0.37)		(1.47)		(-1.32)		(1.91)
@P75OWN1		-0.2337***		-1.8352***		-3.743***		0.0660		1.7782		0.6683**		2.1802
		(-4.29)		(-4.35)		(-4.53)		(0.03)		(0.87)		(2.51)		(1.38)

	SDROAA		SDROAE		NPL		Z		ZP		ZP1		ZP2	
OWN1	**0.0038*** **	**0.0038*** **	**0.032*** **	**0.024*** **	**0.014*** *	**-0.020*** *	**-0.086*** **	-0.028	**-0.14*** **	**-0.16*** **	**-0.026*** **	**-0.014*** **	**-0.13*** **	**-0.16*** **
	(6.01)	(3.57)	(6.62)	(3.14)	(1.74)	(-1.96)	(-3.37)	(-0.76)	(-4.94)	(-3.43)	(-6.37)	(-1.97)	(-5.59)	(-3.89)
CONTROLCORR	0.0015	0.00094	-0.18	0.88	**-1.26*** **	**2.90*** **	**-4.54*** *	**-12.4*** **	-0.42	2.97	-0.079	**-1.73*** *	0.51	4.43
	(0.04)	(0.01)	(-0.51)	(1.14)	(-2.58)	(2.81)	(-2.47)	(-2.68)	(-0.20)	(0.54)	(-0.28)	(-2.07)	(0.31)	(0.93)
OWN1*CONTROLCORR		0.0000080		-0.014		**-0.058*** **		**0.10***		-0.046		**0.022*** *		-0.053
		(0.01)		(-1.34)		(-4.15)		(1.74)		(-0.67)		(2.27)		(-0.93)
	(6.26)	(6.00)	(6.48)	(6.64)	(1.77)	(2.57)	(-0.93)	(-1.43)	(-0.38)	(-0.18)	(4.07)	(3.43)	(-1.01)	(-0.72)
Adj R-squared	0.19	0.19	0.056	0.056	0.049	0.054	0.021	0.022	0.027	0.027	0.084	0.086	0.030	0.030
OBS	3198	3198	3138	3138	2136	2136	3075	3075	3033	3033	3138	3138	3033	3033
Partial coefficient: OWN1														
@P25ControlCorr		**0.0038*** **		**0.0350*** **		**0.0284*** **		**-0.1109*** **		**-0.1278*** **		**-0.0312*** **		**-0.1218*** *
		(5.69)		(6.54)		(3.09)		(-3.45)		(-3.96)		(-6.76)		(4.68)
@P75ControlCorr		**0.0038*** **		**0.0267*** **		-0.0085		**-0.0484***		**-0.1553*** **		**-0.0180*** **		**-0.1537*** **
		(4.42)		(4.34)		(-1.00)		(-1.67)		(-4.10)		(-3.27)		(-4.58)
CONTROLCORR														
@P25OWN1		0.0013		0.1947		0.2786		**-7.3331*** *		0.8001		-0.6524		1.9115
		(0.03)		(0.51)		(0.50)		(-3.24)		(0.29)		(-1.57)		(0.79)
@P75OWN1		0017		-0.5198		**-2.746*** **		-1.9819		-1.5337		0.4702		-0.7964
		(0.03)		(-1.07)		(-4.18)		(-0.79)		(-0.57)		(1.44)		(-0.40)

Table A6 (continued). The effect of ownership concentration on risk in less developed economies and the role of government effectiveness as an institutional factor in the relationship over the 2004-2008 period. ***, ** and * indicate levels of significance at 10%, 5% and 1%, respectively. T-statistics are corrected for heteroskedasticity following White's methodology. Definition of variables: *Dependent variables:* SDROAA is a measure of global risk defined as the standard deviation of return on average assets. SDROAE is defined as the standard deviation of return on average equity. NPL is the ratio of problem loans to total net loans. Z is the Z-score. ZP is the ZP score. ZP1 is a measure of bank portfolio risk and ZP2 is the measure of leverage risk. *Independent variables:* OWN1 is an indicator of ownership concentration defined as the ownership share of the largest shareholder. GOVEFF is a country-specific variable, which measures a country's government effiiency.OWN1*GOVEFF is the interaction between OWN1 and GOVEFF. Control variables: SIZE, FUNDING, EFF, LNGDP, GDPGROWTH, LISTED, FOR.

	SDROAA		**SDROAE**		**NPL**		**Z**		**ZP**		**ZP1**		**ZP2**	
OWN1	**0.0039*****	**0.0037*****	**0.033*****	**0.029*****	**0.015****	0.0012	**-0.10*****	**-0.089*****	**-0.15*****	**-0.18*****	**-0.027*****	**-0.023*****	**-0.14*****	**-0.17*****
	(6.26)	(4.95)	(7.00)	(5.52)	(1.97)	(0.19)	(-3.96)	(-3.05)	(-5.46)	(-4.80)	(-6.56)	(-4.46)	(-6.09)	(-5.35)
GOVEFF	**-0.094****	-0.020	**-1.22*****	-0.013	**-2.92*****	1.11	1.99	-1.58	**6.81*****	**14.6****	0.37	-0.66	**6.86*****	**15.3*****
	(-2.30)	(-0.20)	(-3.40)	(-0.02)	(-4.42)	(0.61)	(0.98)	(-0.31)	(3.18)	(2.33)	(1.27)	(-0.72)	(3.80)	(2.83)
OWN1*GOVEFF		-0.00096		-0.016		**-0.053****		0.046		-0.100		0.013		**-0.11***
		(-0.75)		(-1.61)		(-2.38)		(0.73)		(-1.35)		(1.29)		(-1.74)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.19	0.19	0.060	0.060	0.058	0.062	0.019	0.019	0.031	0.032	0.085	0.085	0.036	0.038
OBS	3198	3198	3138	3138	2136	2136	3075	3075	3033	3033	3138	3138	3033	3033
OWN1														
@P25GovEff		**0.0042*** **		**0.0366*** **		**0.0263** **		**-0.1115*** **		**-0.1279*** **		**-0.0300*** **		**-0.1193*** **
		(6.21)		(6.88)		(2.36)		(-3.66)		(-4.38)		(-6.60)		(-4.95)
@P75GovEff		**0.0037*** **		**0.029*** **		0.0014		**-0.0890*** **		**-0.1769*** **		**-0.0233*** **		**-0.1728** **
		(4.98)		(5.55)		(0.23)		(-3.07)		(-4.81)		(-4.50)		(-5.37)
GOVEFF														
@P25OWN1		-0.0666		**-0.7643** **		-1.2949		0.6266		**9.7901*** **		-0.0182		**10.088*** **
		(-1.35)		(-2.01)		(1.36)		(0.24)		(3.08)		(-0.04)		(3.65)
@P75OWN1		**-0.1149** **		**-1.5505*** **		**-4.074*** **		2.9695		**4.6717***		**0.6572** **		**4.4947** **
		(-2.13)		(-3.33)		(-4.99)		(1.15)		(1.83)		(2.07)		(2.15)

GENERAL CONCLUSION

The aim of this dissertation was to contribute to the banking literature by examining issues that have not received much attention from researchers that concerns emerging and less developed economies, particularly in the fields of small and medium enterprise financing and bank governance mechanisms. This thesis consists of two parts. Part 1 explores bank SME financing in the Philippines where banks are mandated by law to provide financing to the SME sector. Examining two types of banks, the universal and commercial banks (UKBs) and thrift banks, which are the biggest loan providers to SMEs, Chapter 1 mainly provides a descriptive overview of the state of SME financing in the country. In this chapter, we identify which banks comply more or comply less to the mandated credit program (in other words, provide more or less financing to SMEs as a percentage of their loan portfolio). It also empirically investigates the factors that determine small and medium firm financing, notably bank ownership, size, affiliation, location, macroeconomic factors, and bank performance. Using newly gathered survey data of 72 UKBs and thrift banks in the Philippines, Chapter 2 answers mainly the questions: Why are some banks more or less constrained to lend to SMEs? How do banks perceive the SME sector? It also further explores which lending technologies are linked to higher levels of bank financing, distinctively to small and medium businesses. Chapter 3 meanwhile looks into the income portfolio of UKBs and the effect of a shift towards non-interest activities on profitability.

Part 2 looks into the effects of different bank governance mechanisms on bank risk and performance in emerging and less developed economies. In Chapter 4, we investigate the effects of minority foreign ownership and foreign representation in the board in domestic banks in the Philippines, an emerging economy where foreign ownership restrictions exist. We also examine how an increase in foreign direct and indirect voting rights affect bank performance at varying levels of control manifested by a domestic controlling shareholder. Chapter 5 meanwhile looks into the efficacy of ownership concentration as a bank governance mechanism in emerging and less developed economies using an institutional approach. We specifically investigate whether the ownership concentration-bank risk relationship differs according to the institutional environment where the bank is located.

The summary of the findings of each chapter along with their policy implications are as follows.

The purpose of Chapter 1 was mainly to provide a descriptive overview of the state of bank SME financing in the Philippines. Beginning 2008, banks and other financial institutions are mandated by law to allot 8% and 2%, respectively of their loan portfolio to small and medium enterprises. From a policy perspective, it is important to study bank SME financing because of the following reasons: 1) lack of access to external finance constrains SMEs from growing and expanding their operations and mandated credit programs that aim to increase access to SME finance, if implemented correctly, may lead to SME development that is vital for inclusive growth; 2) banks are the largest external finance providers to both small and medium businesses and; 3) a mandatory credit program directed to banks may inadvertently lead to bank inefficiency by constraining banks to choose the portfolio of loans and assets that will give them the highest risk-adjusted returns.

In order to identify which banks lend less from those that lend more to the SMEs, we classify banks according to their level of compliance to the mandated credit program, separately for small and medium enterprises. We define four categories of banks: those that "under" comply, "just" comply, "over" comply and "super" comply with the law. Our classification shows that UKBs and foreign banks struggle to provide bank finance to micro and small firms. Their financing exposures, in general, are concentrated around the legal limit. Thrift banks and domestic banks, however, have high small firm financing exposures. Moreover, we stress that UKBs in general, do not find any difficulty in complying with the mandated credit program to medium businesses. This may be indicative of the difference in the degrees of informational opacity between micro and small firms and medium firms. As shown in Chapter 2, several arms-length lending technologies, such as financial statement lending and fixed-asset lending makes it easier for these bigger commercial banks to address the opacity problem of medium firms.

The amendment of the *Magna Carta* for SMEs, which effectively increased the legal limit of 6% to 8% in 2008, lowered the number of UKBs and foreign banks that complies with the law. This may indicate that it takes time for these banks to increase their small firm financing exposures. However, this also raises the question of whether the amendment was effective in increasing the number of small business loans and borrowers. The presence of alternative ways to

comply with the *Magna Carta* for SMEs such as the purchase of government securities to the Small Business Corporation makes it difficult to evaluate whether increases in compliance ratios after the amendment were in the form of actual direct loans to the small firms. However, from the perspective of small businesses, without tight enforcement of the *Magna Carta* for SMEs and without stipulating that the increase in the required financing has to be in the form of direct lending, such amendment may not increase small firm access to bank finance. More binding laws, however, may be costly especially for banks whose primary banking activity is to provide financial services that generate non-interest income. Higher default and operating costs are likely to become deadweight losses that have to be borne by banks (lower profits), depositors (lower interest rates), and borrowers (in the form of higher lending rates). Moreover, Medalla and Ravalo (1999) suggest that a market-based system of compliance may be more beneficial for both banks and small businesses. Financial institutions that exceed the minimum compliance ratio should be able to market their excess to institutions that fall short on the compliance requirement. This is an improvement because it minimizes the repercussions of forcing banks to take credit risk in markets where they have little expertise.

We also investigate in Chapter 1 the effects of size, ownership, macroeconomic factors, and bank performance as determinants of small and medium firm financing. Our findings provide evidence in support of the "*foreign-owned bank barrier hypothesis"* and *"small bank advantage hypothesis"*, which states that foreign banks are disadvantaged in lending to SMEs, and smaller banks are in a better position to lend to small businesses. Our results also show that small firm financing is cyclical, but only for those banks that have high loan exposures to small businesses, which are the thrift banks. Examining how performance may affect bank financing to small firms, our findings indicate that regardless of whether the bank is commercial or thrift, well-managed banks have lower levels of micro and small firm financing, while poorly-run banks tend to have higher small business loan exposures. These results question the viability and sustainability of small bank business lending. Particularly for the thrift banks, which have higher shares of small business loans in their loan portfolio compared with UKBs, this may indicate that thrift banks are not operating the micro and small business lending in a fully efficient manner, which may be caused by poor management practices. It is thus important for policymakers to focus not only in promoting access to bank finance but they must ensure that bank financing to SMEs is stable and sustainable especially for the thrift banks.

The second chapter builds upon the findings from the first chapter and answers three questions: first, how do banks perceive the SME sector? Second, what constrains banks from lending to SMEs? And third, do commercial and thrift banks use different lending technologies differently across small firms and medium firms? To answer the first question, we first provide a description of the practices, behavior and perceptions of banks toward the SME market using a newly gathered survey data that we collected from the UKBs and thrift banks in the Philippines in 2011. Consistent with survey studies of de la Torre et al. (2010) and Beck et al. (2008) that rely on cross-country data of mostly large banks, we find that both UKBs and thrift banks perceive the SME segment to be financially viable. Profitability and relationship with existing clients are the two main reasons why banks lend to SMEs. Moreover, our findings from the survey indicate that the SME bank financing portfolio is focused on short-term loans and overdrafts. Only one-third of the banks in our sample extend long-term loans. This may reflect the aversion of banks to provide long term financing to SMEs as they are less able to put up long-lived assets as collateral, compared with large enterprises. Given funding uncertainties, banks are less likely to commit beyond short-term contracts. This, however, constrains SMEs who need long term loans to expand and grow their operations.

But if the SME segment is profitable, why do some banks lend less, while others lend more to SMEs? In Chapter 1, we were able to identify which banks lend less to SMEs and the factors that affect both bank small and medium firm financing. In Chapter 2, we answer this question by mapping out bank responses using "hard" evidence collected via bank questionnaires from the survey, which ask banks about the obstacles they encountered from lending to SMEs, to the actual level of bank financing exposure to small firms using bank compliance ratios to the *Magna Carta* for micro and small enterprises. Aside from regulation and collateral requirements cited by most banks as why they may be constrained from lending to SMEs, we find that one of the primary obstacles banks that lend less to small businesses encountered is the presence of underdeveloped lending technologies aside from bank-specific factors and SME-specific factors, which could be attributed from high technology costs, absence of centralized credit bureaus and lack of credible SME information. These further corroborates with answers of banks that have low small business loan exposures when asked about how the government could increase the appeal of SMEs. Aside from the increase in guarantees, they cited the establishment of centralized credit bureaus and better regulation in terms of clearer enforceability and central bank

mandate along with an increase in tax incentives. On the other hand, from the point of view of banks that lend more to SMEs, they cited that regulatory aspect can be improved by speeding up issuance of business permits and documentary requirements. Moreover, we find that banks that lend less to SMEs dominated by the universal and commercial banks/larger banks set different loan application criteria between SMEs and large firms. Stricter standards are imposed on SMEs, in terms of higher interest rates, lower loan-collateral ratio and lengthier loan processing time.

Chapter 2 also empirically investigates the presence of a new paradigm of SME finance as proposed by Berger and Udell (2006), which challenges the conventional view that relationship lending, which primarily relies on "soft" information, is the sole lending technology that suits small firm financing. Berger and Udell (2006) and Beck et al. (2011) argue that several arms-length lending technologies such as asset-based lending, small business credit scoring, factoring, financial statement lending and fixed-asset lending are also suited in lending to the opaque small business borrowers. Performing the multinomial logit regression model in order to examine whether the usage of several arms-length lending technologies increase the likelihood of having high bank SME financing exposures compared with low financing exposures, we find evidence that provide support to a new paradigm of SME finance as proposed by Berger and Udell (2006). Because small and medium firms have different levels of informational opacity, we find that some lending technologies may be more compatible with lending to medium firms compared with micro and small businesses. More precisely, our results show that the usage of small business credit scoring increases the likelihood that banks will have high small firm financing exposure than low level of small business financing. Financial statement lending and asset-based lending, on the other hand are shown to be more compatible with high levels of exposure to medium business lending. As Berger and Udell (2006) argue, when firms increase their size, they tend to have higher quality financial statements that yield increasing advantage in "hard" or arms-length lending technologies. In addition, medium firms are more able to put up collateral than micro and small firms. We also find that banks of different types use different lending technologies across small and medium firms. Credit scoring is found to be most compatible with high levels of small firm financing for UKBs. What makes it attractive as a lending technology is that it could be applied to very opaque small businesses. Since much of the information that are used in credit scores are not only based on "hard" information about the SME but also information about its owner, large banks may find it easier to lend to small firms especially when

they have banking relationships with existing clients that are owners of small businesses. Although we find a link between relationship lending and high levels of small firm financing for thrift banks, our results which further provide support to a new paradigm of finance as proposed by Berger and Udell (2006) show that thrift banks' usage of other lending technologies such as factoring also increases the likelihood for these banks to have high small firm financing exposure. We stress the role of factoring as a lending technology in financing the working capital needs of small businesses. As Klapper (2006) argues, factoring may be a substitute for collateralized lending especially in countries with weak commercial laws and enforcement like the Philippines.

Overall, our findings in Chapter 2 highlight the need for improving contractual, information and other infrastructures that are needed to support inclusive financial systems with good outreach. Especially in emerging economies and less developed economies, improving information infrastructures is key for both financial depth and access. Indeed, as mentioned earlier, one of the main obstacles encountered by banks that lend less to small firms is the presence of underdeveloped lending technology, which aside from high technology costs is caused by lack of credible SME information. Our results thus call for the establishment of centralized credit bureaus that are needed for specific financing tools and lending technologies such as credit scoring and factoring that are particularly suited to both small and medium enterprises. One of the possible drawbacks, however, is that aside from giving lenders the confidence to expand their customer base, better credit information enables them to screen out some high-risk borrowers who might have received credit in a low-information environment. Hence, improvement in access may not be uniform. On balance, though, the indications are that the number of winners outnumbers the number of losers when there's better credit information.

The aim of the Chapter 3 was to examine the issue of revenue diversification in the context of an emerging economy. Our findings show that diversification, particularly a shift towards non-interest income, is beneficial for universal and commercial banks (UKBs) in the Philippines. This is consistent with Sanya and Wolfe (2011) who first study the income diversification-performance relationship in emerging economies. Having a unique dataset that contains detailed information on non-interest income, we are able to analyze further what component of non-interest income drives the positive relationship between a shift towards non-interest income and risk-adjusted profitability. Compared with developed economies such as the

U.S., UKBs in the Philippines have different non-interest income structure. Higher non-interest income of an average UKB in the Philippines stems from a relatively stronger involvement in trading activities than an average U.S. bank. Not surprisingly, we find trading income growth to be less correlated with net interest income growth compared with fee-based income growth, reflecting the dependence of fee-based income from those generated from the traditional intermediation activities of the bank. We find that banks derive greater benefits from diversification if they increase their involvement with trading activities, particularly government securities. Our findings also show that factors such as size and ownership matter in income diversification-performance relationship. Smaller banks and foreign banks derive larger gains from a shift towards non-interest income.

We further extend the study of Sanya and Wolfe (2011) on emerging economies by tackling a specific regulatory aspect that is akin to these economies - the presence of mandated credit program to SMEs. We empirically examine whether the income diversification – profitability/risk relationship depends on bank exposure to SMEs. To implement this, we use bank compliance ratios to the *Magna Carta* for SMEs in 2005 to define the level of bank SME exposure. We thus construct two subsamples of banks: 1) banks that "under" comply or are "just" complying with the law; and 2) banks that comply, more than what is required of them by the law. Our results highlight that increased diversification proves to be beneficial, through increased profitability, but only to banks that lend less to SMEs. Assuming that these banks have little expertise in lending to SMEs, this finding implies that increased risk-adjusted profitability from shifting away from intermediation activities further reduces their incentives to increase direct lending to SMEs and thus, they are more likely to comply with the law through alternative means. The presence of the alternative means of compliance may have lessened the allocative inefficiency caused by the program, but defeats the purpose of encouraging bank financing to SMEs. Increasing the required lending to small businesses may not lead to increased direct lending to small firms for this group of banks.

On the whole, our findings highlight that the development of nontraditional intermediation activities in banking have different implications in terms of profitability and risk in the case of an emerging economy. Specifically, bank ownership (foreign/domestic) and the engagement in SME funding as well as the presence of specific regulations to promote small scale lending matter. Moreover, our results also provide support to the development of a market-

based system of compliance as proposed by Medalla and Ravalo (1999), which may be more beneficial for both banks and small businesses.

The purpose of Chapter 4 was to assess the impact of minority foreign owners and foreign directors on board on bank risk and performance in the presence of domestic controlling shareholders in an emerging economy where foreign ownership restrictions in domestic banks exist. We investigate a different nexus of the principal-agent relationship- one where the minority foreign shareholders act as the principal and the controlling shareholder as agent. Our results show that banks where minority foreign shareholders are present have higher asset quality and lower case of insider lending compared with purely domestic-owned banks. This finding provides support to the *global advantage* argument, which purports that foreign investors may improve bank corporate governance practices particularly for those that come from countries with excellent corporate governance. We also find that when a minority foreign owner possesses significant direct and indirect voting rights, a further increase in his/her voice is beneficial to the bank in the form of higher risk-adjusted returns and lower non-performing loan ratio. This implies that they are able to elicit sufficient monitoring to protect their investments.

We also study how the level of control manifested by the domestic controlling shareholder affect the minority foreign ownership-bank risk/performance relationship. We thus question the level of active monitoring that is undertaken by banks' minority foreign investors and their ability to against self-interest behavior of managers and controlling shareholders. Our results show that the gains from minority foreign ownership decreases when the exercise of control by the largest domestic shareholder increases. More precisely, our findings indicate that when the level of control manifested by the domestic controlling shareholder increases, the positive effect on risk-adjusted returns decreases and in addition, we observe an increase in insider lending. On the whole, we find that domestic banks benefit from the presence of minority foreign owners in the Philippines, particularly, at lower levels of control manifested by dominant domestic shareholders.

The objective of Chapter 5 was to conduct an empirical assessment of the relation between ownership concentration and risk using an institutional approach in 68 less developed economies. Our findings show that an increase in the stakes held by the largest owner increases

bank risk, consistent with Claessens *et al*. (2000) who argue that higher ownership concentration increases the power of controlling shareholders to expropriate minority owners. The presence of better institutions in terms of better quality of external governance and more economic freedom, however, mitigates the negative impact of ownership concentration on bank asset risk, particularly in reducing bank loan portfolio risk. We also highlight that the relation between the institutional variables and asset risk depends on the ownership shares held by the largest shareholder. When ownership concentration is high, costs are too big for the largest shareholder to extract private benefits of control when governments provide better quality of external governance. On the other hand, when the largest shareholder holds a lower stake in the bank, he/she only bears a small fraction of the cost from the inefficiencies attributed from private benefit extraction, thus, making improvement in institutional quality less effective in reducing bank risk.

On the whole, we find that institutions matter in the ownership concentration-risk relationship in less developed economies. Policies do not need to be specifically addressed to the needs of the financial sector but must be designed to improve the general business environment. While building better institutions is typically a long-term endeavor, we stress a vital role of the government as it is the provider of some key organizations that support good institutions, such as efficient, speedy and fair courts (World Bank, 2008). Meanwhile, the effectiveness of an improvement in the quality of institutions to reduce bank asset risk depends critically on the level of ownership concentration.

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