

An Analysis of the Enabling Environment for SME Finance

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ABSTRACT

Despite the fact that small and medium enterprises (SMEs) play very crucial role in economic growth and job creation, limited or no access to formal credit still remains one of the major obstacles to their growth. Providing an easy access to external finance to this sector has been a major concern for many governments and international organizations. However, in recent years the experiences of emerging markets suggest that a paradigm change is taking place in SME finance. This thesis investigates six major emerging markets economies and determines the factors that creating the enabling environment for the banks to provide sustainable finance to SMEs. First we analyzed the growth of SME loan in Turkey, using World Bank Enterprise Surveys (WBES) data. Then run regression analysis using historical data on SME loan as dependent variable and some other macroeconomics and financial variables as explanatory variables. Then we carried out similar analysis using panel data from five other countries namely Argentina, Brazil, Chile, Mexico and Poland. Based on the theoretical and empirical analysis from these emerging countries we found that GDP growth and competition in the banking sector accelerate banks' finance to SMEs whereas high inflation and the extent of government borrowing affect SME finance negatively. This study benefits the governments and policymakers who are aiming to promote SME finance through financial institutions. Our analyses will help them to develop an economic and financial environment that enables banks to finance SMEs.

Keywords: SME finance, enabling environment, macroeconomics, banking sector, emerging markets.

ÖZ

KOBİ'ler ekonomik büyüme ve istihdam yaratmada çok önemli bir rol oynamalarına rağmen, krediye erişiminde yaşanan sıkıntılar bu işletmelerin büyümesinde en önemli engellerden birini teşkil etmeye devam etmektedir. Bu sektörün dış finansmana kolay erişebilmesini sağlamak birçok hükümet ve uluslararası kuruluşlar için önemli bir endişe kaynağı olmuştur. Ancak, son yıllarda gelişmekte olan piyasaların deneyimleri KOBİ finansmanında bir paradigma değişikliği gerçekleşmekte olduğunu göstermektedir. Bu tez altı gelişmekte olan piyasa ekonomisini inceleyerek ekonomilerde bankaların KOBİ'lere sürdürülebilir finansman sağlamasını etkileyen faktörleri belirlemiştir. İlk aşamada Dünya Bankası'nın Türkiye'de yapılan İşletme Anketleri'nden (WBES) elde edilen verileri kullanarak, Türkiye'deki KOBİ kredi büyümesi analiz edilmiştir. Bir sonraki aşamada ise, Türkiye bankacılık sektörünün verdiği toplam KOBİ kredilerin bağımlı değişken olarak alınmış ve bir dizi makroekonomik ve finansal değişkeni açıklayıcı değişken olarak kullanılmış ve regresyon analizi yapılmıştır. Daha sonra beş diğer gelişmekte olan piyasa ekonomilerinden elde edilen panel data ile benzer bir analiz gerçekleştirilmiştir. Bu araştırmadan elde edilen sonuçlar yüksek enflasyon ve kamu borçlanmasının KOBİ finansmanı olumsuz yönde etkilediği, ekonomik büyüme ve bankacılık sektöründeki rekabetin artmasının da KOBİ finansmanını olumlu yönde etkilediği bulunmuştur. Bu araştırma bulguları KOBİ finansmanı etkileyen makroekonomik faktörlere ışık tutmakla KOBİ finansmanını destekleyici etkin devlet politikalarının üretilmesine katkıda bulunabilecektir.

Anahtar Kelimeler: KOBİ finansmanı, kolaylaştırıcı faktörler, makroekonomi, bankacılık sektörü, kalkınan piyasalar.

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Chapter 1

INTRODUCTION

Numerous studies have explored the importance and potential role of small and medium sized enterprises (SMEs) for sustainable economic development (OECD, 2004; IFC, 2010; Jenkins, H., 2000). It is widely understood that SMEs play crucial role in poverty alleviation, job creation and economic growth. Lack of credit accessibility from financial institutions (FIs) remained a major barrier for SMEs' growth. Over the past three decades governments and donor organizations undertook many supporting programs in order to promote SME finance. However, the demand for credit from this sector is too large to be financed by special credit programs. Hence those efforts were not able to meet the huge financing gap. Moreover, government interventions distort the financial market efficiency which discourages banks to lend to small business.

The definition of SMEs varies according to countries, regions or organizations even banks define SMEs according to their own specification. However throughout this paper SME refers to all the businesses that have less than 100 full time employees and the size of loan to be less than \$1 million. Although small businesses mostly finance their investment and working capital through internal funds and informal sources, banks are their largest provider of external finance. In some developed and emerging countries SMEs have also access to the equity finance but only few firms are listed in such markets. Asset based finance such as leasing and factoring, and

trade credit such as supplier's credit and buyer's advance are also popular source of external finance for the SMEs.

Until recent years banks were reluctant to finance SMEs mainly due to their opaqueness. Although more than 98% of the private firms in developing countries are SMEs, only a little proportion of the banks' loan portfolio consists with SME loan, the lion share goes to the large businesses. This is because of the specific characteristics of SMEs that are incompatible with conventional banks' lending practices. For instances, the business is vulnerable to the owners' family matters, inadequate collateral, lack of standard accounting practice, heterogeneity in type of business etc. These factors cause the loan evaluation process difficult, lengthy and costly for the banks, especially when they have to deal with large number of applications but small amount of loan requests.

However, some recent surveys and publications of World Bank and IMF as well as other studies have consistently showed that there has been a swift development in SME finance provided by the banking sector especially in the emerging market countries. (IFC, 2013; Beck et. al., 2009; De la Torre et al., 2010; Jenkins, H., 2014). In other words banks' involvement to this sector has increased significantly. It is not a coincidence that in recent years a growing number of banks regardless to their size and ownerships are indulging business with SMEs especially in emerging economies. These banks are neither being forced nor motivated by government subsidy programs. Rather conducive macroeconomic environment and market discipline coupled with modern lending technology are attracting banks into this segment. In the emerging market economies banks are targeting SME sector as their potential business opportunities. Most large banks have dedicated departments and specialized

personnel to effectively deal with SME clientele. They are adapting new technology and implementing tailor made business strategy in order to penetrate this sector successfully. Therefore an investigation of the environment that allows the banks to penetrate the SME sector is crucial to understand factors that influence banks involvement with the SMEs.

Turkey is one of the major emerging countries where banks' finance to SMEs has grown very fast after mid 2000s. The WBES data, collected by interviewing firms, confirmed this shift of banks lending to SMEs in Turkey. The study of Jenkins (2014), interviewed 17 banks in Turkey, also provides supply side evidence of the swift increase in SME loan¹. Therefore we chose Turkey as our primary sample market for analyzing the factors that encourages Turkish banks to do business with SMEs.

In the course of the analysis I provided a short history of Turkish economics and financial crises, reforms and developments. Then I analyzed SME loan growth by comparing and relating it with the other macroeconomic factors. The historical data on SME loan and other macroeconomic variables such as inflation, economic growth, government borrowing, treasury interest rate and bank concentration were collected from secondary sources. Then regression analysis was carried out for Turkey based on these data. Regression analyses were done in two phases. First, the growth of SME credit was regressed directly with these explanatory variables based on the quarterly data from Turkey for which we had SME specific data. The second regression analysis was carried out on the panel data from five other countries where

¹ These 17 banks account for 92.3% of the total assets of the banking sector and 88.3% of the total credit given to the private sector.

private sector credit was used to approximate the SME credit since over 98% of the private businesses in these countries are fall into SME category. The panel data also consists of the similar variables that influence private credit for the selected countries namely Argentina, Brazil, Chile, Mexico and Poland. All these countries had gone through several financial and economical crises during 1980s and 1990s. They had gradually liberalized financial system also undertaken financial and regulatory reforms based on the experiences from those crises.

In the regression analyses GDP growth and inflation were used to represent the economic welfare and stability, five bank concentration ratios were used to quantify the banking sector competition and public sector borrowing was used to relate the impact of government budgetary spending and borrowing policy.

World Bank group and many other individual researchers have published a good number of research and policy papers regarding the SME sector. Most of these literatures emphasized on the importance of the SME finance for economic growth. Also there are a number of World Bank researches indicating the importance of the macroeconomic factors in SME finance. However, there is no quantitative analysis that examines how macroeconomic factors influence the growth of bank credit to SMEs. This study aimed to contribute to the literature by filling this important gap.

The rest of the thesis organized as follows: Chapter 2 describes the importance, barriers and various source of SME finance based on the existing literature on SME finance. Chapter 3 develops the conceptual framework for an environment that enables banks to finance SME sector. The impact of macroeconomics, financial markets and regulatory variables on the growth of SME credit is explained in this

chapter. Chapter 4 presents historical evidence from Turkey and other emerging countries. A background history of these countries' financial and economical crises and reforms are discussed in this chapter. Chapter 4 also presents numerical and graphical analysis of the historical data showing how the macroeconomics variable and regulatory policy factors affect the SME finance. Chapter 5 explains the data and methodology used for the regression analysis. A brief description of the explained and explanatory variables and the formulation of regression models are also explained in chapter 5. The regression results and a brief policy discussion are summarized in chapter 6, and chapter 7 concludes.

Chapter 2

LITERATURE REVIEW IN SME FINANCE

The importance of the SME sector for job creation and economic growth is beyond argument. Both theoretical and empirical evidence support the role and potential contribution of SMEs. They are often referred as the engine of growth in the modern economy. SMEs stimulate entrepreneurship skill, diversify economic activity, make significant contribution in trade and exports and most importantly generate new jobs. They are flexible and quickly adaptable to changing market demand and supply situation which help them to be innovative and use high technology (UNECE, 2003).

In developing economies overall, SMEs are comprising over 98% of total private businesses, contributing to over 65% of employment and generating over 50% of the gross domestic product (GDP). In the US, SMEs contribute about 50% of the nonfarm private GDP, create 75% of the net new jobs in the economy, makeup 97% of exporters and produce 29% of all export value. In the OECD countries they make up over 95 per cent of enterprises and account for 60 to 70 per cent of jobs. In 2009 in the EU countries, SMEs constituted 99.8% of all firms, employed 75 million people, represented 67.4% of total employment and created 58% of the value added. (Aktas, October 2010).

Despite the fact that SMEs play very important role in economic wellbeing of any countries, access to finance is still a major constraint for them. Over the last decade there have been some developments in financing SMEs. However, SME's access to formal financial institutions is still limited. A recent IFC report shows over 40 percent of SMEs have no access to a financial institution loan or overdraft facilities even though they are in need of one. The dollar amount of this financing gap is estimated to be \$3.2 to \$3.9 trillion globally among which \$2.1 to \$2.6 trillion is in the developing economies (IFC, 2013).

In their Enterprise Analysis paper, Kuntchev et. al., (2012) came up with a new approach of measuring credit constraint for the SMEs. Using the World Bank Enterprise Survey data they categorized the credit constraint status of the firms into four groups. These are:

Fully Credit Constrained (FCC) firms in this category have no external loans because their loan applications were rejected or they didn't bother to apply for the loan even though they needed.

Partially Credit Constrained (PCC) includes the firms that were either rejected for a loan or did not apply for a commercial loan due to prevailing terms and conditions other than having enough capital for the firm's needs. However, they have managed to some other kind of external finance that is why they are partially credit constraint.

Maybe Credit Constrained (MCC) firms in this group have had access to external finance and there is evidence of them having bank finance, they are classified under the possibility of maybe being credit constrained as it is impossible to ascertain

whether they were partially rationed on the terms and conditions of their external finance.

Non Credit Constrained (NCC) firms did not apply for working or investment capital in the previous fiscal year because they had enough capital for their needs.

The authors found significant negative relationship between firm size and credit constraint that is to say that smaller firms have higher probability of being credit constraint.

Finding a sustainable way to overcome or minimize SMEs' credit constraint has been a major concern for many government and international organizations. In order to provide easy finance to the SME sector, governments around the world have implemented various programs. Among them the most common are direct government interventions such as partial credit targeting, subsidized credit programs, and low interest policies. However, direct or indirect interventions of governments might create poor outcomes and market distortions even though well intended. Past experiences of such programs that aimed to disburse cheap credit to micro and small businesses have failed to provide sustainable finance for SMEs. Only limited number of firms received credit and for a short period of time. Moreover these programs created moral hazard as the borrowers viewed these loans as gifts rather than credits. Therefore they did not feel obligated to repay their loans.

Government intervention affects financial institution negatively by reducing financial intermediations. Forcing the lower interest rate, discourage savers which reduce the banks supply of credit. On the other hand banks will not be able to provide sustainable loan, if the interest rate does not cover for the additional riskiness.

In the face of complex competition, banks are now viewing the SME sector as a potential business opportunity. Last decade has been the era of globalization and competition. Many developing and emerging countries around the globe have liberalized their financial system which allowed the foreign banks and investor to enter the local market and compete with the local institutions. Many local banks have lost their corporate clients to their foreign competitors as they offer services that facilitate foreign trades and transactions. Moreover large corporations enjoy diverse source of finance both from national and international capital market. On the other hand SME sector is a vast market and they can be highly profitable if they are priced and managed properly. Furthermore the SME market is not saturated that is to say that banks will be competing in this segment as long as the huge gap of the demand and supply of the SME finance exist. Therefore, the market conditions are persuading the banks to innovate the method and strategies to penetrate the SME sector. For instances using covenants as an alternative to loan guarantees or using potential cash flow analysis instead of financial statement analysis.

Berger and Udell (2006) distinguished between hard (quantitative) and soft (qualitative) lending technologies. Banks prefer quantitative data for assessing and pricing loan, but for small opaque business such data are unavailable. Therefore they collect qualitative information about the business and its owner in order to examine their creditworthiness. In literature this is known as lending on the basis of relationship. Since relationship lending is not viable for the big and centralized banks specially the foreign ones, one would generally expect that small niche banks are the major provider of the SME lending. However, recent empirical research dispute this conventional wisdom and propose that large and foreign banks, relative to other institutions, can have a comparative advantage through alternative lending

technology instead of relationship lending such as asset based lending, factoring, leasing, fixed-asset lending and credit scoring (Beck et al., 2009; De la Torre, 2010; Jenkins., 2014).

Most large banks have now separate departments that deal only with SMEs. Because of their opaqueness, small business lending requires special attention and closer monitoring. Banks hire and engage managers and employees who are expert and familiar with SME finance and/or setting up special support units for high risk customers such as start-ups. Because they concentrate only SME sector, it allows them to process volumes of loan applications faster and effectively. They not only provide loans to the SMEs but also develop and cross-sell financial products better adapted to SME needs and offer other fee based services such as managing their accounts, facilitating payments and receivables, providing guarantees and advisory services.

In developed economies and also some emerging countries have a good network of private credit rating agencies they provide both negative and positive information about the firms and its owners on request. They rank the firms in numeric or alphabetic order indicating their credit worthiness using the statistical approach based on the hard information of the business under question.

Small Business Credit Scoring (SBCS) is one such lending technology that has a significant effect in increasing in the quantity of lending to relatively opaque risky borrowers. SBCS deals with the opacity problem by combining personal financial data about the owner of the business and the relatively limited information about the firm (Berger et al, 2009). A direct survey with the bank managers in Turkey

confirmed the broadly use of credit ratings in assessing the loans applications of medium and small firms (Jenkins, 2014).

In developing and least developed countries there are a large number of microfinance schemes targeting the self-employed and micro enterprises. Their primary target group are the micro scale, rural based, women entrepreneurs who are non customer to the conventional commercial banks. These schemes usually provide small amounts of working capital to the individuals or a group leader in group lending who guarantees for his or her group members. The crucial facts for the success of group lending are the formation of the group, training, credit management and information sharing among the group members. One of the world pioneers of such micro finance scheme is Prof. Muhammad Yunus. He along with his micro finance institution 'Grameen Bank' received the Nobel peace prize in 2006.

In 1976, Muhammad Yunus lent 27 USD to 42 poor women in the village of Jobra, Bangladesh so that they could repay their debt to local money lenders and buy raw materials for their handicraft products (Yunus, 1999). The women were then able to start their own little businesses. Thus they overcame from the poverty and successfully repaid the borrowed amount. Inspired by the experience of how much can be achieved with such a small amount of money, Prof. Yunus founded the Grameen Bank for the purpose of lending money (micro credits) to people who otherwise do not have access to capital. Grameen is the Bengali word for "village". The Grameen Bank grew and became a great success and enabled an enormous number of people to get out of poverty. The microfinance business model soon spread from Bangladesh to around the world (Yunus Centre Website <http://www.muhammadyunus.org/>).

There is no uniform acceptable definition of SMEs, it varies across countries otherwise a small enterprise of a developed economy would easily fit into the medium or even large category in an underdeveloped economy, if they categorized according to their asset size or annual turnover. Furthermore, banks have their own specification about the size of the small and medium firms. For instance, among banks in the Middle East and North Africa (MENA), the cut-off between small and medium firms ranges from 5 to 50 employees, and the cut-off between medium and large firms ranges from 15 to 100 employees.

The European Union defines SME as the category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro (Table 2.1). The definition of World Bank, to be categorized as a SME; it has to be fewer than 300 employees and less than \$15 million of balance sheet asset size or annual sale (Table 2.2). Since we are more concern about the SME finance in developing and emerging economies; we will refer SME as their loan size to be less than \$1 million and no more than 100 headcounts in terms of employees (Table 2.3), which are more generally accepted in recent years.

Table 2.1: European Union Definition of SMEs

| Size | Employees | Turnover | Asset |
|-------------------|-----------|---------------|---------------|
| Micro Enterprise | < 19 | ≤ €2 million | ≤ €2 million |
| Small Enterprise | < 50 | ≤ €10 million | ≤ €10 million |
| Medium Enterprise | < 250 | ≤ €50 million | ≤ €43 million |

Table 2.2: World Bank Definition of SMEs

| Size | Employees | Turnover | Asset |
|-------------------|-----------|----------------|----------------|
| Micro Enterprise | < 10 | ≤ \$100,000 | ≤ \$100,000 |
| Small Enterprise | < 50 | ≤ \$3 million | ≤ \$3 million |
| Medium Enterprise | < 300 | ≤ \$15 million | ≤ \$15 million |

Table 2.3: SMEs by loan size

| Size | Employees | Loan |
|-------------------|---------------|---------------|
| Micro Enterprise | ≤ 5 persons | < \$10,000 |
| Small Enterprise | ≤ 10 persons | < \$100,000 |
| Medium Enterprise | ≤ 100 persons | < \$1 million |

Source: IFC (2010), European Commission Recommendation 96/280/EC, Innovation for Poverty Action (IPA) website <http://www.poverty-action.org/sme/which> and Wikipedia.

Small business lending differs from that of corporations. Some features of the micro and small firms don't comply with the conventional commercial bank lending criteria that make it difficult for the bankers to evaluate their loan application such as:

Ownership most small businesses are sole or family owned where any personal or family dispute can ruin the business. Therefore, the life and performance of such businesses are unpredictable.

Asymmetric information all informal as well as many formal SMEs have no credit history and they do not follow standard accounting let alone certified financial statements. Therefore it is not possible to use only quantitative analyses. On the other hand qualitative analysis requires personal information about the business and its owner which is often lengthy and costly.

Heterogeneity small businesses are hugely diverse in their kind, capital, turnover and many other aspects, it's hard to compare them. Every business is exposed to some own specific risks which are difficult to assess for any outsider who does not have good knowledge about that business.

Collateral except manufacturing business, most other small or medium firms don't possess suitable collateral especially at their startup phase. Since SME sector perceived as higher risky, lending require adequate suitable collateral. Many small firms don't bother to apply for a bank loan because they think they don't have enough collateral to convince the banker.

Higher lending cost evaluating a SME loan application requires special attention and close monitoring which in turn require time and manpower. All these factors make the loan evaluation process costly moreover most requested loans are small in amount that makes it higher lending cost of per dollar lending.

Most small businesses largely depend on banks for external finance as they don't have the luxury of diverse source of funds such as bonds, stocks and other national and international financial institutions. However, a recent survey conducted by World Bank indicates that there is considerable heterogeneity across countries in the source of finance for SMEs. Major means of financing small and medium sized businesses are:

Internal funds are mainly the entrepreneur's personal savings and the retained earnings of the business. Internal funds are the largest single source of business finance, specially the small firms rely heavily on internal funds.

Informal source of funds are mainly the borrowings from friends, family, NGOs and other non institutional lender like land lord, goldsmiths local shopkeepers etc. Micro and small business entrepreneurs mostly rely on these source of funds for their initial investments to start the business. In some less developed countries these are the main source of the SME finance even though they are far more costly than banks. This indicates that they are willing and able to pay higher interest rate.

Banks and other financial institutions even though banks provide a low share of investment loan to SMEs, the dollar amount of that exposure are still outnumbered by any other source of finance. Because, a small portfolio (loan) of a large bank may

well exceed the combined portfolio of NGOs or other non institutional lending. Empirical research shows that financial and institutional development of a country are significantly correlated with external financing (Beck et al, 2008).

Equity stands as the last source of funds according to the pecking order which holds for the small business as well. The stock markets are the main source of equity capital where large and public corporations are concerned, but very few SMEs are listed to such markets. However in developed and some transitional economies many small firms also raised equity capital from the private equity investors, angel investors and venture capital funds. Equity finance provides the entrepreneurs for start-up or even seed capital, thus having access to such funds at that stage is a blessing for many entrepreneurs.

Asset-based finance firms with notable fixed asset usually get more priority for commercial loan. Banks are willing to lend small opaque business based on the value of their fixed asset (land, real estate, motor vehicle, equipment etc.) as the collateral. Leasing and factoring are two popular approaches to finance SMEs.

Supplier's credit and buyer's advance firms generate most of their working capital through trade credit from the suppliers, buyers and other stakeholders of the business.²Financial Institutions (FIs) ease the process by providing guarantees, LCs, advisory and other fee and non fee based services.

²Kuntchev et al (2012) analysis of Enterprise Survey confirmed that SMEs substantially finance their working capital and investments through trade credit and informal sources of finance.

Chapter 3

CONCEPTUAL FRAMEWORK FOR AN ENABLING ENVIRONMENT IN SME FINANCE

Recent World Bank and IFC Survey studies consistently showed that there has been a swift transformation in bank involvement with SMEs started in the mid 2000s (Beck et al., 2008; De La Torre et al., 2010; Fuchs et al., 2011; Jenkins, 2014). De La Torre et al. (2010) mention about 93% of banks in Argentina, 100% banks in Chile, 88% banks in Colombia, and 100% of banks in Serbia have active SME clients. Jenkins (2014) interviewed 17 major banks in Turkey, of 17, 16 banks had separate SME department. The cross-country evidence shows that the most significant shift in SME finance happened to be in the emerging countries which have also been enjoying high economic growth and economic stability during the same periods. This indicates that the transformation in SME finance is not a coincidence rather it may be a result of improved economic wellbeing that highlights the importance of the enabling environment for SME finance.

Here, the term “enabling environment” encompasses *inter alia* the macroeconomic environment as well as legal, regulatory and administrative environment that are conducive for the bank’s involvement with SMEs. Without a conducive economic environment banking sector will not be able to provide sustainable finance to SMEs. An enabling environment paved way for providing commercially sustainable finance to SMEs through the competitive banking system.

3.1 Enabling Macroeconomic Environment

Economic growth, low inflation and stable exchange rate are generally of most concerned macroeconomic conditions for a business friendly environment. Economic growth increases the purchase ability of the citizens. With higher income they consume and demand more goods and services which stimulate firm's production growth and profitability. Increase in income level also increases savings through financial institutions which in turns increase the credit availability for the businesses.

During the economic growth, government experience low budget deficit which allows them to avoid inflationary way to finance the deficit such as issuing new money, debt financing and/or using central bank resources. It keeps the inflation rate low and steadies exchange rate. Low inflation and stable real exchange rate make it easier to predict the risk and profitability of the businesses. This helps the banks to assess and price the loan applications with better accuracy. Therefore banks have more incentive to provide medium and long term loans to SMEs.

3.2 Liberalized Financial System

Government interventions on the financial system such as financial repression distort the market economy and reduce the real rate of growth. The government repressed the financial system in a series of interventions and restrictive measures such as interest rate ceilings, targeted credit scheme, high reserve requirements, foreign exchange control and capital control. In some extreme level putting a limit to some financial instruments that individuals or financial institutions can hold namely foreign exchange deposits, investing on international bonds etc.

During 1970s and 1980s many developing and transition countries financial system were repressed in order to finance budget deficit and public debt cheaply. Interest rate on both deposit and loan were kept low to keep the cost of loan and borrowing low. Low return on deposit instrument discouraged savings on the other hand low interest rate created excess demand for credit. As a result Government had to allocate credit to public and priority sectors of the economy by the means of targeted credit programs. Capital control was implemented not only to protect national savings but also to limit capital outflows and macroeconomic instability (World Bank, 2005).

MacKinnon and Shaw (1973) first argued that growth in the financially repressed economy is constrained by savings. Therefore government should free interest rate and allow the market to determine the real interest rate. This will lead to increase in real return to savers which is the key to a higher level of investment. Thus ultimately leading to the economic growth.

Based on this hypothesis many governments in the developing countries liberalize their interest rates. Financial liberalization today comprises a broader set of measures. Other than interest rate liberalization, elimination of directed credits and high reserve requirements, it involves a wide set of additional measures including the easing of portfolio restrictions on banks, privatizations of banks, enhanced competition among banks, integration of domestic entities to international markets, as well as changes in the monetary policy environment.

However, financial liberalization may causes serious banking crisis especially abrupt freeing of interest rate may distress borrowing if interest rate on loan increased unexpectedly high in real term. The crisis of Latin American countries (Argentina,

Chile and Uruguay) and Turkey in early 80s are very well-known examples of this phenomenon. Macroeconomic stability is also a precondition in order to be able to successfully liberalize interest rate and regulatory measure.

3.3 Government Borrowing

In order to cover their budget deficit, governments in most developing countries borrow from the domestic financial markets. This reduces the amount of fund available to the private market because when government borrowing increases, it is taking away available funds that could otherwise be borrowed by the businesses. In literature it is known as crowding out effects of government borrowing.

Due to financial liberalization over the 1990s, there were some growth and deposits grew faster in many developing countries. However, bank credit to private sector grew much less than bank deposits. Access to credit did not expand as it was hoped after the financial reforms mainly because the government and central bank debt crowded out the private borrowers. The increase of loanable funds was largely absorbed by the public sector (World Bank, 2005).

Some welfare states raise tax level in order to fund social welfare programs leaving less income for individuals and businesses to save or reinvest. Further, when government funds certain activities such as health and education there is little scope for businesses and individuals to invest on those relevant sectors such as private hospital, health insurance, private school and universities etc.

Government borrowing also indirectly affects the private lending through the increase in interest rate. In order to borrow more, government usually raises the rate of return on treasury bills and bonds. Interest rate on Treasury bill is generally

perceived as the risk free return (R_f). According to Capital Asset Pricing Model (CAPM), interest rate on risky business (R) is equals to the risk free interest rate plus a risk premium for the associate riskiness of the business.³ *Ceteris paribus* an increase in risk free rate will cause the market interest rate to increase. As a result the private borrowers have to offer higher interest rate above the risk free rate to cover the associate riskiness and it hurts the small businesses more as they are perceived to be more risky for lending.

3.4 Sound and Competitive Banking System

Financial liberalization and competitive banking system stimulate financial intermediaries which facilitates both saving and investment activities. According to Fry (1988, p. 21) “Financial intermediaries raise real returns to savers and at the same time lower real costs to investors by accommodating liquidity preference, reducing risk through diversification, reaping economies of scale in lending, increasing operational efficiency, and lowering information costs to both savers and investors through specialization and division of labor.”

In less developed countries (LDCs) lack of competition and inefficient banking system increase borrowing cost and restrict financial access for many firms (Gormley, 2007). In the absence of competition banks may require excess collateral value, higher commission or even ask for bribery for the risky loans. Developed

³ The CAPM (Sharp, 1964; Lintner, 1965) suggests that the expected rate of return on a risky asset (i.e. stock) derived by adding a risk premium with risk free rate (i.e. treasury rate), and the risk premium varies in direct proportionate to beta in a competitive market.

$$R = R_f + (R_m - R_f)\beta$$

Where, R is the expected return of the stock R_f is the risk free rate and β is the beta coefficient.

Hence, The risk premium = $R - R_f = (R_m - R_f)\beta$

Therefore β measures the associate riskiness of the business or the industry.

countries such as U.S, Japan and European communities therefore argued that LDCs should ease the access of new and foreign banks.

Bank competition yields lower interest spread of loan and deposit that lead the supply and demand of loanable fund toward market equilibrium thus reduces the dead weight loss due to bank exercise of market power (Cetorelli and Peretto, 2012). In this era of globalization many developing countries have opened up their market for foreign banks. They increase competition and improve financial system by introducing innovative ideas and management techniques thanks to their highly skilled and experienced managers. However, Dell'Arricia and Marquez (2004) questions the role of foreign banks in providing SME loans and argued that due to the high cost of acquiring information about the local firms, foreign banks mostly lend to the large and profitable local projects which the author referred as 'cream-skimming'.

Many corporations move from the local banks to the foreign ones due to the ease of foreign transactions and expert advisory service in foreign trade. Thus Presence of foreign banks increases competition by taking away large corporate clients from the domestic banks forcing them to look for the alternatives such as SMEs. Berg and Fuchs (2013) mentioned that most banks lend to SMEs in Kenya and Rwanda partly because of the high competition for corporate clients due to the entry of foreign competitors in the domestic market.

3.5 Enabling Legal and Regulatory Environment

Legal and regulatory obstacles are nonfinancial barriers that affect the SMEs but these are often correlate financial constraint. For instance banks are reluctant to lend in a poor legal system where contract enforcement is difficult, costly, or property rights are very limited. Protection of property rights increases external financing of small firms more than of large firms (Beck et al., 2008). It is also argued that access to external financing is shaped by a country's legal and financial environment (La Porta et al, 1998; Rajan and Zingles, 1998).

The government set the legal and regulatory frameworks to raise tax revenues. In the literature it is referred as 'the rules of the game' in a society where the government, enterprises and civil society interact with each other. Maintaining these rules increase the cost of doing business and it creates incentive for informality when imposed irrationally (OECD, 2004). SMEs often lack the capacity of larger firms to negotiate through the complexities of regulatory and bureaucratic procedures.

In their 2nd OECD conference in Istanbul the ministers responsible for SMEs also indicated the importance of a friendly legal, regulatory and administrative environment for SME finance.

3.6 Eliminate or Reduce Corruption

Enterprise Surveys conducted by the World Bank shows that SMEs in the low and middle income countries frequently cited corruption as a major problem. In Countries with high corruption it is not unusual to bribe managers or loan officers to get the loan approved which makes the loan costly. This also encourages serious moral hazards where risky or fake loans may approve at the cost of good and viable

ones. SMEs are more likely to offer bribe since they have less resource and bargaining power to negotiate or simply because they may not comply with all regulations and documentations formalities (IFC, 2010).

The loan scandal of Sonali Bank and Hall Mark Group in Bangladesh is a recent real life example of this issue. Bangladesh Bank (Central Bank of Bangladesh) found massive corruption at Sonali Bank in 2010. From a certain period Tk 35.47 billion (about\$ 0.45 billion) loan scam in a branch of the Sonali Bank, where a little-known company named Hallmark had alone swindled Tk 25.00 billion (about \$ 0.32 bilion). Hallmark Group, has embezzled around Tk 14.92 billion (about \$0.1875 bilion) from Ruposhi Bangla Hotel branch of Sonali Bank by creating 804 letters of credit in a single day (The Financial Express, Dhaka, Thursday, October 31, 2013).

Chapter 4

EVIDENCE FROM TURKEY AND OTHER EMERGING MARKET COUNTRIES

4.1 Evidence from Turkey

Turkish economy has been transformed into an open and export oriented economy during the 1980s. Turkey has liberalized their financial system in two phases, first they liberalized the interest rate in early 1980s and then the full liberalization of the capital account came in August, 1989 (Ucer, 1998). Following the liberalization, foreign banks were allowed to operate in early 1980s and afterwards the number of foreign banks increased sharply. By 1989 the number of foreign banks increased to 21 which were only 4 in 1980. Turkey allowed the entry of these foreign banks in order to promote export policies, increase the efficiency and modernize the domestic banking system (Pehlivan and Kirkpatrick, 1992). However these reforms had been implemented in inflationary and unstable economic environment and the country has also gone through several financial and economic crises. High inflation, exchange rate depreciation and macroeconomic instability have been a regular phenomenon in Turkey throughout the 1980s and 1990s. During these periods, economic growth fluctuated between -5.5 to over 9 percent and experienced inflation as high as over 100 percent.

Table 4.1: GDP growth and inflation in Turkey before and after the crisis of 2001.

| Period | 1980-1985 | 1986-1990 | 1991-1995 | 1996-2001 | 2002-2012 |
|------------|-----------|-----------|-----------|-----------|-----------|
| GDP growth | 3.65 | 5.67 | 3.32 | 2.50 | 5.5 |
| Inflation | 48.81 | 54.46 | 76.70 | 75.50 | 12 |

Turkey experienced a severe financial crisis during 2000-2001. Before the crisis Turkey had a fragile banking system. Banking sector acted as the government agent financing mainly government debt instruments. Interest rate on treasury bills and bonds were averaged 30% above the inflation rate on average during the 1990s (Figure 4.1). This high yielding encouraged banks to borrow from abroad and invest in the treasury securities. Both the capital and money markets heavily depended on short term capital inflow. In 2000 more than half of the interest earnings of private banks consisted of government securities where as almost two third of their liabilities were denominated in foreign currency (Akyüz and Boratav, 2003). Consequently the banking sector was exposed to foreign exchange rate risk and vulnerable to sudden capital reversals. The Asian and Russian crises of 1997-1998 also affected negatively. The capital inflow went down suddenly and economic growth sharply decreased from 7.5% in 1997 to 2.5% in 1998.

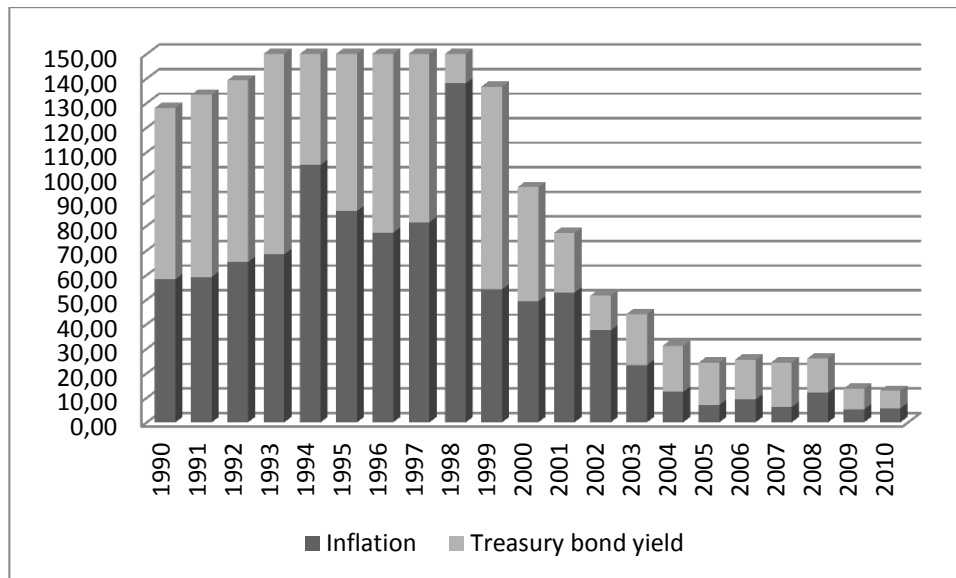


Figure 4.1: Treasury bill rate above the inflation rate in Turkey
 Source: World Bank Development indicator and OECD main economic indicator, Turkey, 2013.

Furthermore, in August 1999 a devastating earthquake hit the industrial heartland of Turkey which caused a great havoc to the economy. In that year economy contracted by 3.4 %. The budget deficit was 12% of GDP and the government borrowing went up to 40% of GDP (Koen Brinke, 2013). The situation further worsened in November 2000, when the interbank rate jumped to 873% as the interbank credit market dried up. Turkish Central Bank (CBRT) stopped providing the emergency line of credit as it had lost almost 25% of the foreign exchange reserves. In early 2001, the political dispute between the president and the prime minister over the fighting against the corruption in the banking sector did not help either (Özatay and Sak, 2002). In February 2001 Turkish lira depreciate about one third of its value against the dollar. Private Banks made hefty losses due to un-hedge foreign currency position. The Savings and Deposit Insurance Fund (SDIF) had to rescue 18 banks and the total banking sector asset decreased by 12% in real value during the crisis.

The Istanbul Stock Exchange had fallen by 14% and the economy shrunk by 5.7 percent (BRSA, 2010).

The crisis had shaken up the Turkish Banking system and its fragility was deeply realized by the policymakers. In 2000, Turkey established an independent banking authority “Banking Regulation and Supervision Agency (BRSA)”. The main objectives of BRSA were to ensure the confidence and stability in financial markets, provide effective operating of loan system and, to safeguard the rights and interests of depositors (BRSA, 2010). Immediately after the crisis BRSA took policy initiatives and restructuring program in order to strength regulatory and supervisory framework. Various amendments in banking laws were made according to the international best practice and EU directives.



Figure 4.2: BRSA integration to international standards
Source: BRSA (2011)

Along with the reforms in the banking sector, the new government elected in 2002 led by Prime Minister Erdogan, took initiatives to improve the business environment. For instances, the new law in foreign direct investment policy which reduces the bureaucracy for foreign company, large profit tax cut and privatized state enterprises. State banks and banks under SDIF control were privatized, merged with or transfer to another bank (Koen Brinke, 2013). All these favored to retrieve investors faith both home and abroad resulting significant capital inflow. The economy recovered from the crisis and started to grow steadily. From 2002 to 2007 Turkey succeeded about 7% growth rate on average. In 2004, both the inflation and unemployment rate came down to single digits. Finally macroeconomic stability achieved along with a stable political regime which helped the country's private sector to develop, hence the SME sector began to flourish too.

In 2005, when the inflation rate in Turkey came down to 7% from about 75% in 2001; Turkish banks started to establish SME banking department to target SMEs as their mainstream business client. Bank lending to SMEs kept increasing and it continued until the global financial crisis in 2008. Again the economy recovered from the crisis in 2010 and the growth of SME lending hit the highest peak at 42.7%. During the global financial crisis, it was the micro and small firms who suffered the most. Bank lending to small businesses shrunk relatively more than the medium and large businesses. This also provides evidence that small businesses are more vulnerable to the economic crisis than the large firms. Graph 4.2 also shows the growth of SME loans provided by the banking sector moves in line with GDP growth in Turkey.

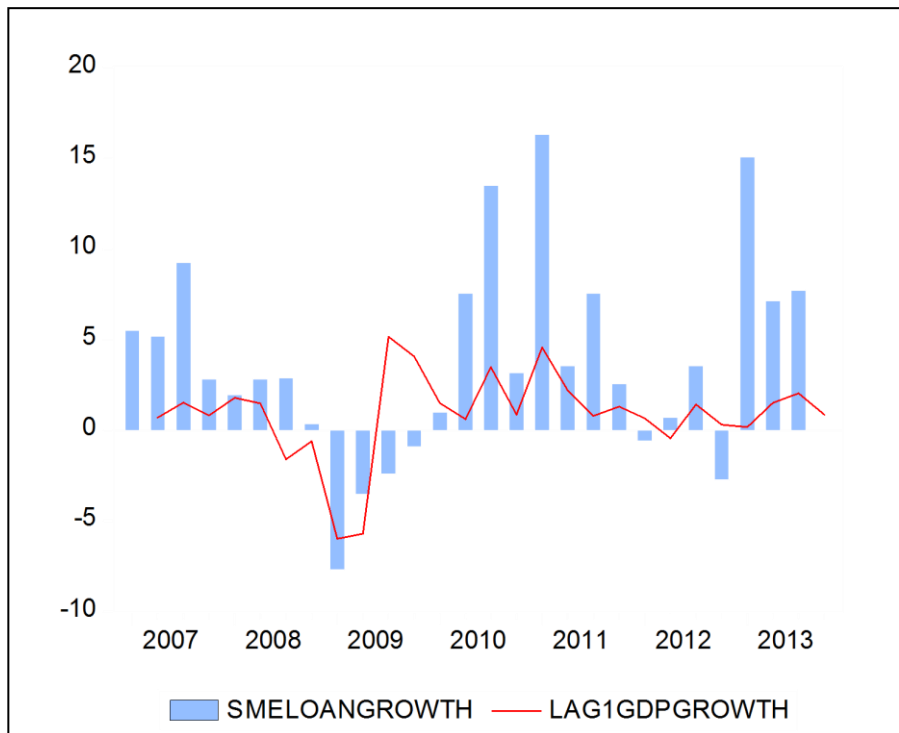


Figure 4.3: SME loan growth and GDP growth in Turkey (quarterly data)

Using the World Bank Enterprise Surveys (WBES) data across different round of surveys in Turkey since 2002, we can see that banks financing to SMEs both working capital and fixed assets have significantly increased in Turkey. The percentage of working capital financed by the private commercial banks increased to 15.4% in 2008 which was just about 2% in 2002 and financing in fixed assets has increased even more, from less than 4 % in 2002 to over 32% in 2010. Figure 4.1 shows how the SME finance by the private commercial banks (state and foreign banks are not included) has increased from 2002 to 2010. The first graph presents the proportion of the fixed assets financed by the commercial banks and the other one represents for the working capital financed by the commercial banks.

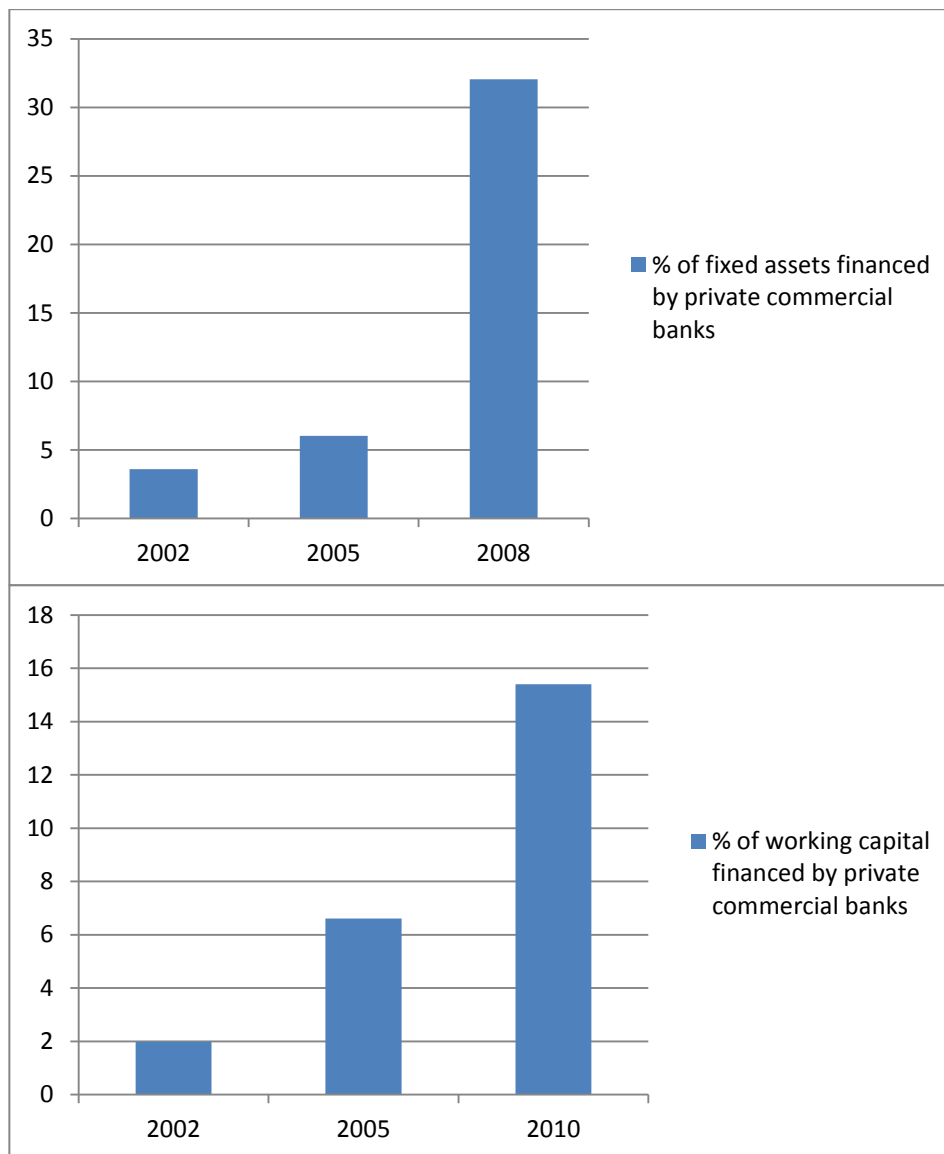


Figure 4.4: SME Financed by the Private Commercial Banks in Turkey
 Source: World Bank Enterprise Surveys, raw data, (2002, 2005, 2008, 2010), Turkey.

In order to expand on the SME market Turkish banks relaxed collateral requirements from this sector. In 2008 WBES, the proportion of total SME loans that required collateral was only 67.7% in Turkey which is much lower than both regional and world average at about 89% and 88% respectively. The average value of collateral required for the small and medium loans (measured as the percentage of the loan amount) has reduced from 105% in 2005 to 77% in 2008. Again this is much better comparing to the upper middle income country average of over 90% in the same year

and is the lowest value of collateral needed within the Eastern Europe and Central Africa region (WBES country report Turkey, 2011).

Another factor that is highly correlated to the recent SME lending growth in Turkish market is the decrease in government debt. Prior to the mid 2000s Turkish banks were highly concentrated on financing public debt and large corporations. Afterwards when the government borrowing started decreasing, banks' lending to SME sector increased. Figure 4.5 illustrates this reverse relationship of the SME loan and government borrowing.

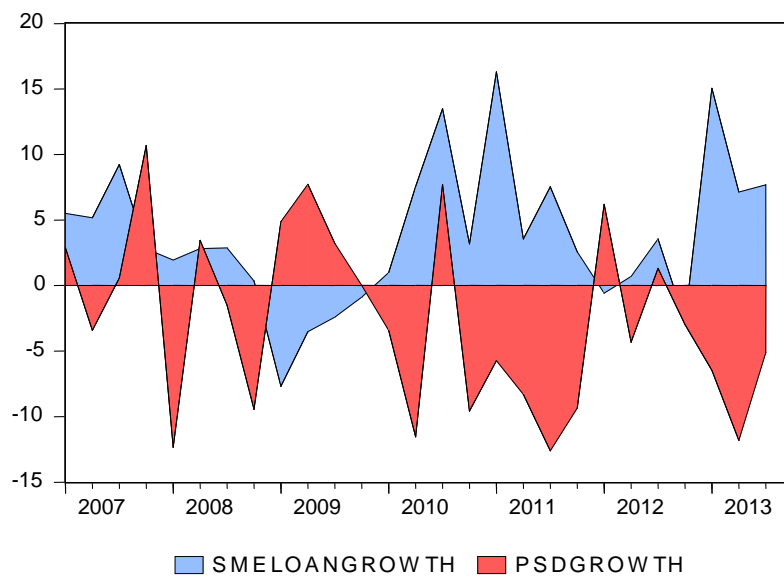


Figure 4.5: Growths of SME loan and Public Sector Debt (PSD) in Turkey.

4.2 Evidence from Other Emerging Countries

Similar to Turkey some Latin American countries have also undergone several financial and economic crises. For instance Argentina and Brazil have experienced 7 crises each, Mexico had 5 and Chile had 3 crises since 1970. Latin America had a crisis roughly every two years until 1998 (Vegh and Vuletin, 2013). During this period they have quite often faced hyper inflation and after 2000-2001 Crises they have finally achieved macroeconomic stability in terms of steady GDP growth and low inflation.

The study of De la Torre et al., (2010) found that many banks in Latin American region particularly in Argentina and Chile have had strategic reforms in order to broadly and systematically penetrate the SME market. In the year 2006, 37% of the total private sector loans were SME loans in Argentina and it was 14% in Chile. In the same year in Colombia, 25% of the total commercial loan portfolio was exposed to SME sector. Private domestic banks are the most exposed to the segment, with 56% exposure in Argentina and 16% in Chile. Figure 4.6 represents the percentage of large banks in four emerging countries who are actively involved with SME sector.

The authors also mentioned about the factors that motivate banks to involve with SME sector. Lately banks are facing intense competition from both local and international capital markets thinning the corporate sector margins. Also the profit margin of government lending has shrunk significantly that hardly cover the cost of funds. Other factors that drive bank to focus on SMEs are their relation with large corporations that helps them to reach SMEs with which the large corporation works, such as suppliers and outsourcers to large corporations. Furthermore, banks can

cross-sell different package of products or fee based services with a little customization to match the firm or sector specific needs (Table 4.2). Bank can then offer similar product across different sectors of SMEs.

Table 4.2: Type of Bank products and Revenue generated by each type in Developing Countries

| Bank Products | Number of products offered (average) | Revenue by product type (% of revenue) |
|------------------------|--------------------------------------|--|
| Deposit products | 10.6 | 38.5 |
| Credit products | 18.7 | 29.1 |
| Transactional products | 16.9 | 32.3 |

Note: The percentages for the breakdown of revenue do not add up to 100 because these (percentages) are the averages across banks.

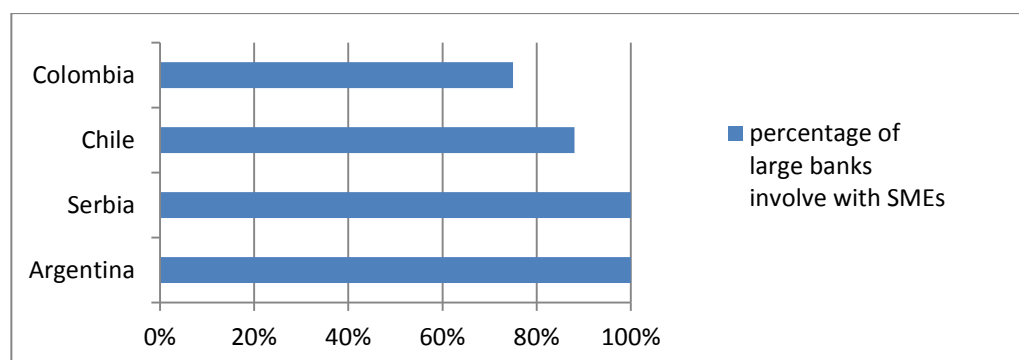


Figure 4.6: Banks involvement with SMEs in four emerging economies.

Source: Information for the Figure 4.6 and Table 4.2 were collected from interviews conducted by the International Finance Corporation (IFC). Based on De la Torre et al.,(2010), p 2284 & 2286.

Beck et al., (2009) surveyed 91 banks in 45 countries in order to gather information on bank financing to SMEs around the world. The survey questionnaires were mainly based on three areas. Such that 1) banks' perceptions of SME segments, 2) banks' business models regarding lending technologies and organizational structures in order to serve SMEs, and 3) the extent, type, and pricing of bank financing to SMEs. By analyzing the bankers' responses from all three areas, the authors summarized their findings as: First, the share of loans to SMEs (percentage of SME loan applications approved) does not differ significantly among developed and developing countries. However, banks in developing countries charge higher fees and interest rates by 0.7%. Second, the use of hard information and credit scoring is positively correlated with the percentage of SME loans approved. They found that different types of bank using different lending technology to serve SMEs. Therefore their evidence does not support the conventional wisdom that the SME finance is based on relationship lending. Third, the differences in the extent, type and pricing of SME loans across countries are driven by the differences in the economic, institutional, and legal environment.

Another study of Beck et al., (2008) suggests strong impact of financial and institutional development, and economic stability (inflation) on the use of external finance that is mainly explained by bank finance. They found that firms in countries with better financial intermediary use more external finance. Further, firms in countries with better property right protection use more bank and equity finance. Regarding economic stability, they found high inflation has negative effect on the use of bank and supplier credit.

Table 4.3: Use of Bank Finance (measured as percentage of external finance) Across Emerging Countries.

| Country | External Finance (% of total investment) | Bank Finance (% of total investment) | Bank finance as a % of External finance |
|------------|---|---|--|
| Argentina | 43.45 | 29.99 | 69% |
| Brazil | 51.8 | 23.06 | 45% |
| Chile | 57.34 | 41.34 | 72% |
| Colombia | 55.22 | 29.18 | 53% |
| Costa Rica | 37.92 | 21.13 | 56% |
| Uruguay | 54.04 | 39.79 | 74% |
| Estonia | 60.14 | 20.81 | 35% |
| Hungary | 35.86 | 13.99 | 39% |
| Turkey | 43.98 | 20.41 | 46% |

Source: based on Beck et al., (2008) p 471.

Table 4.3 presents the ratios of bank finance to the external finance in some Latin American and European emerging markets. The figures are the firms' average proportion of investment finance for each country. External finance accounts for bank, equity, lease, supplier credit, development bank and informal finance. Bank finance includes financing from domestic private and foreign banks but not the development and public sector bank finance.

Chapter 5

DATA AND METHODOLOGY

5.1 Data

In my analysis, I have used and analyzed the raw data obtained from the World Bank Enterprise Surveys (WBES). The WBES is an ongoing World Bank project that collects firm level data through surveys. These surveys examine firms' experiences and their perceptions of the environment in which they operate. The WBES currently covered over 130,000 firms in 125 countries using standard questionnaires and methodology. The survey first started in 2002, however the standard method have been implemented from 2005. This method use 3 different modules of standardized questionnaires according to the firms category such as manufacturing, service and core businesses. Same method is applied for all the countries under surveys which allows for both single country analysis and cross-country comparison over the time. WBES data has been extensively used by many organizations and academic researchers from all over the world. The World Bank group publishes hundreds of research and policy papers based on these data.

The data for the selected variables used in the regression analysis are obtained from secondary sources that are published online mainly by the World Bank (WB), International Monetary Foundation (IMF), International Financial Corporation (IFC), Federal Reserve Bank (FED) and Organization for Economic Co-operation and Development (OECD) database and the Central Bank's websites of the relevant countries.

The historical data on SME loan provided by the Turkish banking sector is available from 2007 onwards. The data are available quarterly that gives 6 years of quarterly data to run the regression analysis. As the dependent variable data are quarterly, the independent variables are also expressed quarterly.

5.2 Methodology

As it is explained within the conceptual framework in chapter 3, the macroeconomic environment plays a crucial role in determining the extent of banks' involvement with SMEs. Therefore, my analysis is based on the hypothesis that the growth of SME finance provided by the banking sector is led by the macroeconomic stability, economic growth, and competitive banking sector and discouraged by the extent of government borrowings. I choose mainly the emerging market countries to base my analysis where the SME finance provided by the banking sector has been growing considerably. The six emerging market countries that I chose to conduct my analysis are Turkey, Argentina, Brazil, Chile, Mexico and Poland. Nevertheless only Turkey had historical data on banking sector credit to SMEs. Therefore I developed two separate models for my analysis. One for Turkey (Model 1) where I used SME credit growth in Turkey as the dependent variable and conducted a simple regression analysis to test my hypothesis. And the other one (model 2) for the rest of the 5

emerging market countries under consideration. In this model I used private sector credit growth as a proxy to SME credit growth and conducted panel regression analysis.

5.3 Regression Models

Model 1

In the first model I related the growth of SME bank credit with GDP growth, inflation, government borrowing and the competition in the banking sector. This is a growth model where both dependent and explanatory variables are measured as % change, therefore a simple linear regression model and Ordinary Least Square (OLS) method could be applied to run the regression analysis.

The first model is applied for Turkish market as historical data on SME loans are only available for Turkey. All the data are given quarterly and the growths are calculated as the percentage change from the previous quarter. The equation of the model is:

SME bank credit

$$= f(\text{GDP growth}, \text{Inflation}, \text{Public Debt}, \text{Bank Competition})$$

$$\text{SME bank credit growth} = \alpha + \beta_1 \text{GDP growth rate} + \beta_2 \text{Inflation rate} + \beta_3 \text{Public Debt}(\% \text{change}) + \beta_4 \text{Bank Concentration}(\% \text{change}) + \epsilon$$

In this model the coefficient, α is the intercept of the regression line which represents the constant growth of SME bank credit regardless the effect of independent variables. $\beta_1, \beta_2, \beta_3,$ and β_4 are the correspondent coefficients of the independent variables which are GDP growth, inflation, government borrowing and

bank competition respectively. They represent the proportional effects that the corresponding variables have on the growth of the dependent variable. A positive sign of these correspondent coefficients would be indicating the positive effect on the growth of SME loan and vice versa. We expect that GDP growth is positively related to SME bank credit growth whereas inflation, public sector debt and bank concentration is related negatively. Lastly ϵ is the error term of the model. Error term accounts for the effect of other factors that cannot be explained by the model.

Model 2

In order to confirm whether the hypothesis is consistent with other emerging countries, I have also carried out a cross-country regression analysis using panel data from five other emerging market countries with similar income level namely, Argentina, Brazil, Chile, Mexico and Poland. Most of these countries experienced similar economic and financial crises in the 1980s and 1990s. They also underwent similar kind of economic and financial reforms and achieved economic stability and growth in recent years. The regression equation of the second model is:

$$\begin{aligned}
 & \textit{Private Credit} = f(\textit{GDPgrowth}, \textit{Inflation}, \textit{Public Debt}, \textit{Bank Competition}) \\
 & \textit{Private Credit}(\%change) = \alpha + \beta_1 \textit{GDPgrowth rate} + \beta_2 \textit{Inflation rate} + \\
 & \beta_3 \textit{Public Debt}(\%change) + \beta_4 \textit{Bank Concentration}(\%change) + \epsilon
 \end{aligned}$$

In this model instead of SME credit, the growth of private sector credit is used as the dependent variable. Because of the lack of historical data on SME bank credit, direct regression on SME credit growth is not possible for the five emerging market countries that are used in this study. Considering that SMEs make up over 98% of total private businesses of these countries, we expect that private sector credit growth

will be a good estimate of the SME credit growth. Therefore, instead of SME credit growth I used private credit growth as a proxy.

In model 1 the data was limited to 2007 onwards therefore I used the quarterly data. While in Model 2 for the panel regression, I used annual data and expanded the period back to 2000. The growth rate of all the variables were computed by taking the percentage change from the previous year.

5.4 Description of the Variables

This section describes the explanatory variables and explains their relationship with the dependent variable. The rationales of selecting these particular variables are also discussed.

SME Loan Growth: The objective of the regression analysis is to find out whether the macroeconomic factors affect the SME credit growth. Therefore SME credit growth is the dependent variable of the main regression equation. The total amount of SME bank credit provided by the Turkish banking sector is published monthly by the Banking Regulation and Supervision Agency of Turkey (<http://www.bddk.org.tr>). The monthly credit amounts are converted into quarterly data taking the three months' average within each quarter. Then the nominal values are converted into real values by using the CPI = 2003. Then the growth rates are calculated as the percentage change of SME loan from the previous quarter.

Private Sector Credit: In the second equation, the growth of Private Sector Credit (PSC) is used as the dependent variable to substitute the SME credit growth. PSC is the domestic credit to private sector provided by the FIs. It includes loans, debt securities, lease financing, trade credits and other accounts receivables that claim for

repayment. The figures are expressed as the percentage of GDP than the growths are calculated by taking the percentage change from the previous year.

GDP Growth: is broadly used as an approximation for the economic growth.. During economic growth many new businesses while the existing ones expands. In this process they require external finance either for working capital or new investment. On the other hand the increase in disposable income increases domestic savings through financial institutions (FIs). Thus economic growth increases both the demand and supply of loanable funds. Therefore we expect a significant positive relation with GDP growth and SME credit growth. GDP is measured as value added terms that is the value of the gross output produced less the value of intermediate goods and services used in production. The growth is calculated as the Real value of GDP per quarter adjusted for the inflation. The yearly GDP growths for the emerging countries are directly extracted from the World Bank Development Indicators database.

Inflation: is frequently referred in the literature as the indicator of macroeconomic instability. Inflation is an important factor in banks' lending decision. High inflation reduces the real interest income, banks may even experience a negative income. On the other hand, inflation may raise nominal interest rates too high. Firms may not borrow or they may default. Furthermore, inflation causes a lot of uncertainty and instability in the economy and discourages bank in lending the private sector. Therefore we would expect a negative impact of inflation on the growth of SME credit. Inflation is computed as the quarterly change of the consumer price index (CPI) where 2003 is the base year. For the countries other than Turkey, the inflation rates are measured yearly using 2005 base year price.

Government Borrowing: For the first regression model (model 1) the Turkish government domestic borrowing is used for this analysis. The nominal amount is deflated by the CPI_{2003} then the percentage change from the previous quarter is taken to find the quarterly growth (real). For the second model it is measured yearly at the last day of the fiscal year and expressed as the percentage of GDP in real terms. An increase in government borrowing is expected to increase crowding out of the loanable funds for the private sector. Therefore we generally expect a negative correlation between government borrowing and private sector credit growth. However, for some countries the assumption may not hold true. In some emerging economies both public borrowing and private credit may grow together, especially in the period when there is large capital inflow or adequate supply of loanable fund by the domestic market.

Bank Competition: Studies have shown that lack of competition in the banking sector causes higher price for the financial products, less efficiency and lower access to credit, especially to the small businesses (Martinez Peria, M. S., 2010). There are several techniques to measure the competition, among them market structure approach such as market concentration (CR_n) and Herfindahl Index (HHI) are commonly used in practice. Market concentration accounts for the share of assets held by the top 3 to 5 banks over the total banking sector asset. This approach is used to analyze competition based on the assumption called ‘Structure-Conduct-Performance (SCP)’. SCP assumes that Structure (concentration) influence conduct (behavior, pricing, market power) and conduct influences performance (greater efficiency, less profit, more competition). In other words lower concentration leads to more competitive behavior and less market power which in turn lead to less profit and greater efficiency (Kocabay, 2009). Scholars also argued that concentration may

not indicate the competition and even highly concentrated market can remain competitive. They suggest non structural metrics to measure the degree of competition such as Panzar and Rosse H-statistic, and the Lerner index. H-statistic infers whether the market is competitive by observing the elasticity of revenue to cost of the financial products. H-statistic ranges between 0 and 1 where the extremes are, 0 indicating monopoly and 1 indicating perfect competition. The Lerner index measures the market power directly observing the price markup over marginal cost. Higher values indicate greater market power thus lower degree of competition and vice versa (Martinez Peria, M. S., 2010).

In this research the bank competition is measured as the ratio of total assets of five largest banks to the total banking sector. In other words the five bank concentration (CR_5) is used as the indicator of bank competition. Theoretically we expect that the decrease in concentration (increase competition) will be correlated with the increase in SME credit growth. In Turkey bank concentration data is available only at yearly basis. Therefore for the first model, it has been transformed into quarterly data by taking the moving average between consecutive years.⁴

⁴ Calculating moving average: first the yearly data are converted into half yearly by taking the midpoints between the years then converted them into quarterly by taking the midpoints between the half year periods.

Chapter 6

FINDINGS AND POLICY RECOMMENDATION

6.1 Findings from Turkey

The regression results based on the data from Turkey strongly support the theoretical expectations. The findings suggest that the growth of SME finance largely depends on macroeconomic stability and a conducive environment. Table 6.1 presents the summary result of the regression analysis of Turkey. Analyzing the regression result we can see that GDP growth and Inflation have significant effect on SME loan growth. As expected GDP growth affects SME loan growth positively whereas inflation affects it negatively. Assuming other factors remain unchanged, GDP growth contributes almost 1% of quarterly growth of SME loan. On the contrary it shrinks by similar unit due to the inflationary effect alone. Government borrowing is also statistically significant and the coefficient is negative which is consistent with theoretical expectation. The coefficient 0.32 implies that if the growth of government borrowing decreases by 1%, SME loan growth will increase by 0.32% each quarter. Bank concentration (CR_5) has negative impact on SME loan growth in other words we can say that bank competition has a positive effect as less concentration means higher level of competition. However the coefficient of CR_5 is not statistically significant in other words, we do not have enough evidence to support that bank concentration is highly associated with SME credit growth. Nevertheless this does not necessarily mean that bank competition has no effect on SME loan growth, rather it extensively improves the robustness of the model. The coefficient came out as

insignificant may be because the concentration ratio does not fully capture the competition. Therefore a more representative measure of competition such as nonstructural approach that considers entry and exit barrier, ease of foreign banks' entry, and other competitive market behavior, might increase the level of significance. Due to complexity and the data limitation this type of approach of measuring competition is beyond the scope of this study.

The baseline equation of the regression analysis is:

$$SME\ credit\ growth = \alpha + \beta_1 GDP\ growth\ rate + \beta_2 Inflation\ rate + \beta_3 Public\ Debt(\%change) + \beta_4 Bank\ Concentration(\%change) + \epsilon$$

Table 6.1: Regression results of Turkish data (Dependent variable SME loan growth)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---------------------|-------------|------------|-------------|--------|
| GDP | 0.934022** | 0.336467 | 2.775972 | 0.0110 |
| INFLATION | -0.975095* | 0.538069 | -1.812212 | 0.0836 |
| GOVDEBT | -0.320126** | 0.119950 | -2.668824 | 0.0140 |
| BANKCR ₅ | -0.178258 | 0.173003 | -1.030370 | 0.3140 |
| C | 3.616225** | 1.361371 | 2.656311 | 0.0144 |

$R^2 = 0.40$, $Adjusted\ R^2 = 0.30$; $F - statistic = 3.67(Prob = 0.01)$; $Durbin - Watson\ stat = 1.5$; $Total\ observation\ periods = 22$.

Note: All variables' data are expressed as the % change (growth) from the previous quarter. *coefficient is significant at $\alpha = 10\%$, **coefficient is significant at $\alpha = 5\%$. ***coefficient is significant at $\alpha = 1\%$. These notions are valid for all variables and test statistic throughout the thesis, unless stated otherwise.

Robustness

Regarding the robustness of the model we run and analyze several test statistics. First we look at the F-statistic of 3.67 which is statistically significant at $\alpha = 0.05$. The coefficient of determinant R^2 is 0.40 (adjusted $R^2 = 0.30$) meaning that 40% of the change in the dependent variable can be explained by the model. According to the Durbin-Watson significance table, Durbin-Watson stat of 1.5 lies just on the upper limit (dU). This confirms that there is no serial correlation in the model. Correlation analysis allows us to check for the multi colinearity problem within the independent variables. It is apparent in Table 6.2 that there is no significant association within the independent variables in other words there is no co-linearity in this model. Further, residual tests are carried out using EViews software, from the test results it is confirmed that the residuals are normally distributed, homoscedastic, and have no serial correlations (Appendix A). Therefore we can assume that the model fitted well for this regression analysis and the results are robust.

Table 6.2: Pearson Correlation Matrix

| | SMEloangrowth | GDPgrowth | Inflation | GovDebtgrowth | BankCR ₅ |
|---------------------|-------------------|-------------------|-------------------|-------------------|---------------------|
| SMEloangrowth | 1 | | | | |
| GDPgrowth | .382** (0.049) | 1 | | | |
| Inflation | -0.256 (0.198) | -0.101 (0.615) | 1 | | |
| GovDebt | -0.258 (0.194) | 0.275 (0.165) | -0.193 (0.334) | 1 | |
| BankCR ₅ | -0.108 (0.594) | -0.016 (0.937) | -0.045 (0.824) | -0.124 (0.537) | 1 |

** Correlation is significant at the 0.05 level (2-tailed).

6.2 Findings from Other Emerging Countries

As mentioned earlier, SME specific data are not available for the panel countries. Instead, Private Sector Credit is used as the dependent variable for the panel regression model. The regression analyses are carried out in two phases, first without any lag effect and second we account for the time lag effect of GDP growth and inflation for 1 period. The results summary are presented in two tables and discussed respectively.

First we look at Table 6.3a where we find that GDP growth is significant at 94% confidence level and the coefficient is positive. The coefficients of other explained variables have negative signs as we expect, although they are not statistically significant. However, the model is well fitted with highly significant F-statistic. The low degree of determination (R^2) of 22% is consistent with the number of insignificant explained variables. A high R-squared with no or few significant independent variables would associate with multicollinearity problem in the model. The Durbin-Watson test statistic of 1.42 falls between the dL(lower limit=1.314) and dU(upper limit=1.568) which is the inconclusive zone regarding the presence of serial correlation in the model. This means that Durbin-Watson test is unable to detect multicollinearity for this particular model.

The equation for the regression presented in table 6.3a is:

$$\begin{aligned} \text{Private Credit}(\% \text{change}) = & \alpha + \beta_1 \text{GDP growth rate} + \beta_2 \text{Inflation rate} + \\ & \beta_3 \text{Public Debt}(\% \text{change}) + \beta_4 \text{Bank Concentration}(\% \text{change}) + \epsilon \end{aligned}$$

Table 6.3a: Regression Summary for Panel Data

| Variable | Coefficient | Std. Error | t-Statistic | Prob. Value |
|------------|-------------|------------|-------------|-------------|
| GDPGROWTH | 0.890386 | 0.467403 | 1.904963 | 0.0616* |
| INFLATION | -0.38809 | 0.345183 | -1.12429 | 0.2654 |
| PUBLICDEBT | -0.02951 | 0.060999 | -0.48375 | 0.6303 |
| BANKCR5 | -0.21492 | 0.171171 | -1.25558 | 0.2141 |
| C | 2.600378 | 2.525961 | 1.029461 | 0.3074 |

$R^2 = 0.22$; Adjusted $R^2 = 0.17$; F-statistic = 4.24(prob=0.004***); Durbin-Watson stat = 1.42; Total panel observations = 65

In the second phase we have taken into consideration the time lag effect of the GDP growth and inflation. These two variables are major macroeconomic indicators hence the main regressors of the model. There are five emerging economies in the panel and some of them are quite large that the effect of inflation and GDP growth on the dependent variable does not realize in the same period. Therefore I have adjusted one year lag period for these two variables which improves the results and robustness of the model. Table 6.3b summarizes the results of the modified regression analysis.

After controlling for the lag effect we find that except Bank Concentration all other variables' coefficients become significant at least 95% confidence level. The directions (signs) of the coefficients regarding how they correlate with the independent variables are consistent with our expectations based on the theoretical analysis. Comparing this model with the Turkish model, we find very similar outcomes. One noticeable outcome from the both model is that GDP growth and Inflation affect the dependent variable almost same proportion. In the first model (Turkey) the coefficients of GDP growth and inflation were 0.93 and -0.97

respectively and these are 0.77 and -0.77 in this modified panel regression model. Similar to the baseline model the coefficient of bank concentration (β_4) is not statistically significant. However the bivariate correlation between the percentage change in bank concentration and private credit is -.250 which is significant at 5% significant level (table 6.4). The drawbacks of bank concentration in representing the banking sector competition are already explained in the analysis of the first model which is also true for this model. The growth of public sector debt is significant at the highest precision and affects the growth of private credit negatively. This outcome is consistent with the crowding out effect of the government borrowing. The equation for the modified regression presented in table 6.3b is:

$$Private\ Credit(\%change) = \alpha + \beta_1 GDPgrowth(t - 1) + \beta_2 Inflation(t - 1) + \beta_3 Public\ Debt(\%change) + \beta_4 Bank\ Concentration(\%change) + \epsilon$$

Table 6.3b: Regression Summary for Panel Data (with lag effect)

| Variable | Coefficient | Std. Error | t-Statistic | Prob.Value |
|---------------|-------------|------------|-------------|------------|
| GDPGROWTH(-1) | 0.777837 | 0.368341 | 2.111729 | 0.0393** |
| INFLATION(-1) | -0.77667 | 0.309566 | -2.5089 | 0.0151** |
| PUBLICDEBT | -0.12401 | 0.044759 | -2.77055 | 0.0076*** |
| BANKCR5 | -0.13722 | 0.166992 | -0.82174 | 0.4148 |
| C | 5.626065 | 2.709342 | 2.076543 | 0.0425** |

$R^2=0.35$; Adjusted $R^2=0.30$; F-statistic = 7.28(prob=0.00008***); Durbin-Watson stat = 1.67; Total panel observations (after adjustment) = 60.

Robustness of Panel Regression

The robustness of the model after lag adjustment has improved significantly. The R^2 of this model indicates that 35% of the change in the private credit growth can be explained by the change in the dependent variables. The F-statistic of 7.28 is significant at the highest precision. Most importantly the Durbin-Watson test statistic of 1.67 is now fall in the acceptance zone where we cannot reject the null hypotheses meaning that there is no serial correlation in the model.

Table 6.4 shows the Bivariate correlations along with their degree of significance and signs within the variables. Here we can see that all the dependent variables are significantly associated with the independent variable. Within the independent variables, public debt significantly correlated with the GDP growth and inflation. The growth or increase in public sector debt affects inflation positively meaning that it caused higher inflation. At the same time it affects GDP growth negatively meaning that increase in public debt slowed down the GDP growth. Therefore we can say that increase in government borrowing affect SME loans' growth negatively through three channels. First it affects directly through crowding out, second raising inflation level and third slowing GDP growth which in turns shrink the growth of SME loans.

Table 6.4: Pearson Correlation Matrix

| | PrivateCredit | GDPgrowth | Inflation | PublicDebt | BankCR |
|---------------|---------------------|---------------------|--------------------|------------------|--------|
| PrivateCredit | 1 | | | | |
| GDPgrowth | .394*** (0.001) | 1 | | | |
| Inflation | -.254** (0.041) | -0.13 0.303 | 1 | | |
| PublicDebt | -.365*** (0.003) | -.643*** (0.000) | .445*** (0.000) | 1 | |
| BankCR | -.250** (0.045) | -0.188 (0.133) | 0.206* (0.099) | 0.189 (0.131) | 1 |

***Correlation is significant at the 0.01 level (2-tailed).

** Correlation is significant at the 0.05 level (2-tailed).

*Correlation is significant at the 0.10 level (2-tailed).

6.3 Policy Discussion

The empirical results from Turkish market provide firsthand evidence that the macroeconomic environment (economic growth and stability, extent of government borrowing, and competitiveness of the banking sector) is one of the major determinants of the growth of SME loans. The cross-country panel regression analysis on Argentina, Brazil, Chile, Mexico and Poland also provide similar evidence with respect to the growth of private sector credit. Therefore we can say that the governments can promote the growth of SME loans by a favorable macroeconomic environment. In order to achieve this, governments must control the public sector debt. By reducing budget deficit government can avoid heavy domestic borrowing and inflationary ways of financing budget deficit. Thus by reducing the public sector expenditure and the budget deficit governments can control inflation as well as the crowding out effect of the domestic borrowing which are major obstacles for the SME loans' growth. Our finding is also consistent with the hypothesis that the competitive behavior of the banks leads to increase in credit quantity to SMEs. Therefore Governments should also take the initiatives to increase the level of

competition in the banking sector. Finally, GDP growth is desirable for every economy but it should come along with the growth of private sector and most importantly the SME sector. Without the improvement of these sectors no economy can achieve sustainable growth.

Chapter 7

CONCLUSION

The main objective of this study is to analyze the enabling environment that encourages banks involvement with SMEs in the emerging market countries. Enabling environment refers to the macroeconomic and institutional factors that are conducive for the growth of SME finance provided by the banking sector. Such as economic growth and stability, financial market efficiency, government borrowing and spending policies, and legal and regulatory environment. The analyses were based on both theoretical and empirical evidence. We developed a conceptual framework explaining how these factors could influence SME finance. Then the regression analyses were carried out to quantify the extent of these influences on SME loan growth. The regression analyses help us to determine the major factors that affect the growth of SME finance and their degree and direction of association with SME finance.

The theoretical hypothesis that banks' lending to SMEs is lead by the economic growth and stability, financial market efficiency and competitiveness, and discouraged by government borrowing, is backed by the empirical analyses. In this research, the regression results on Turkey and five other emerging market countries provide consistent evidence to support the hypothesis. Importantly both the direct and proxy regression models give similar outcomes indicating consistency across countries.

This analysis help us better understand the state of economic and financial environment that enables sustainable finance to SMEs by the banking sector. Governments and policy makers can promote SME finance without having to provide subsidy programs by controlling these economic and financial variables as mentioned in the policy discussion section of the previous chapter.

However, my analysis is limited to only six emerging market countries, most of all having similar macroeconomics characteristics and income level. Furthermore, the quantitative analyses were carried out based on the secondary data published online databases. The available periods for historical data used in the regression analyses were limited for some variables. More specifically data on SME credit was available only for Turkey and only for a short period of time. For other countries this data was not available at all. Furthermore, more observation periods and more accurate measure of financial market competitiveness would have allowed us to predict the relationship between banks' SME lending and macroeconomic factors with better accuracy. However, this study might be of interest for the researcher and policymaker working for the promotion of sustainable SME finance through the banking sector. Therefore this study opens up a new scope of future research in the field of SME finance by the banking sector.

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APPENDICES

Appendix A: Regression Results for Turkey

Regression results

Dependent Variable: SMELOAN

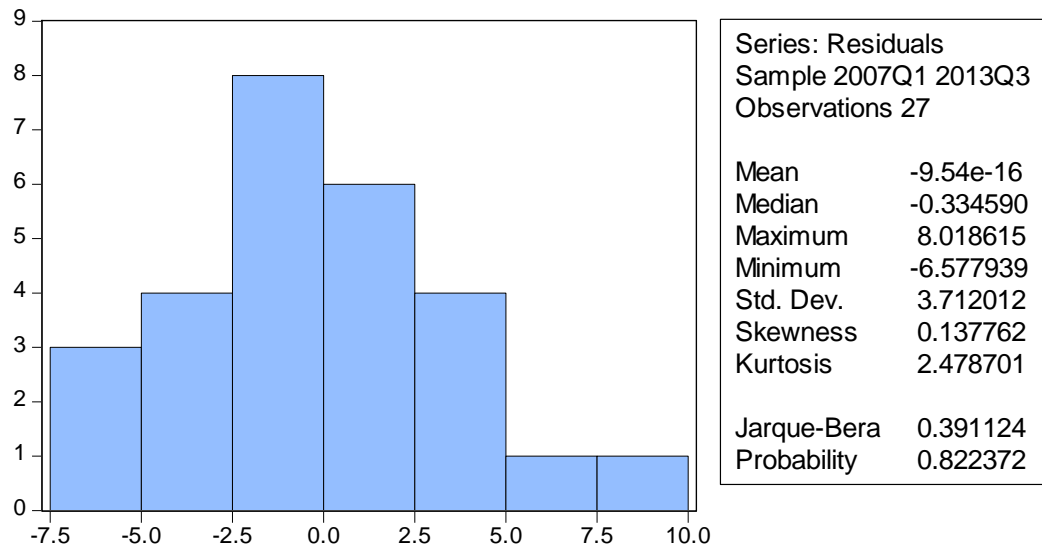
Method: Least Squares

Sample (adjusted): 2007Q1 2013Q3

Included observations: 27 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| GDPGROWTH | 0.934022 | 0.336467 | 2.775972 | 0.0110 |
| INFLATION | -0.975095 | 0.538069 | -1.812212 | 0.0836 |
| PUBLICDEBT | -0.320126 | 0.119950 | -2.668824 | 0.0140 |
| BANKCR5 | -0.178258 | 0.173003 | -1.030370 | 0.3140 |
| C | 3.616225 | 1.361371 | 2.656311 | 0.0144 |
| R-squared | 0.400278 | Mean dependent var | | 3.420000 |
| Adjusted R-squared | 0.291237 | S.D. dependent var | | 4.793296 |
| S.E. of regression | 4.035382 | Akaike info criterion | | 5.793655 |
| Sum squared resid | 358.2548 | Schwarz criterion | | 6.033625 |
| Log likelihood | -73.21434 | Hannan-Quinn criter. | | 5.865011 |
| F-statistic | 3.670911 | Durbin-Watson stat | | 1.503324 |
| Prob(F-statistic) | 0.019503 | | | |

Histogram: Jarque-Bera Normality Test



Null hypothesis: Residuals are normally distributed

Alternative: Residuals are not normally distributed.

* We cannot reject the null hypothesis therefore the series are normally distributed.

Serial Correlation LM Test: Breusch-Godfrey

| | | | |
|---------------|----------|---------------------|--------|
| F-statistic | 0.717366 | Prob. F(2,20) | 0.5002 |
| Obs*R-squared | 1.807242 | Prob. Chi-Square(2) | 0.4051 |

Test Equation:
 Dependent Variable: RESID
 Method: Least Squares
 Date: 04/19/14 Time: 16:53
 Sample: 2007Q1 2013Q3
 Included observations: 27
 Presample missing value lagged residuals set to zero.

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|-------------|-------------|------------|-------------|--------|
| GDP GROWTH | -0.072120 | 0.351240 | -0.205329 | 0.8394 |
| INFLATION | 0.129868 | 0.557542 | 0.232929 | 0.8182 |
| PUBLIC DEBT | 0.089685 | 0.143009 | 0.627131 | 0.5377 |
| BANK-CR5 | 0.016578 | 0.175823 | 0.094286 | 0.9258 |
| C | 0.022444 | 1.384250 | 0.016214 | 0.9872 |
| RESID(-1) | 0.227056 | 0.241115 | 0.941693 | 0.3576 |
| RESID(-2) | 0.166723 | 0.240328 | 0.693731 | 0.4958 |

| | | | |
|--------------------|-----------|-----------------------|-----------|
| R-squared | 0.066935 | Mean dependent var | -9.54E-16 |
| Adjusted R-squared | -0.212985 | S.D. dependent var | 3.712012 |
| S.E. of regression | 4.088246 | Akaike info criterion | 5.872523 |
| Sum squared resid | 334.2750 | Schwarz criterion | 6.208481 |
| Log likelihood | -72.27906 | Hannan-Quinn criter. | 5.972421 |
| F-statistic | 0.239122 | Durbin-Watson stat | 1.703666 |
| Prob(F-statistic) | 0.958212 | | |

Null hypothesis: Residuals are not serially correlated

Alternative: Residuals are serially correlated.

* We cannot reject the null hypothesis therefore the series are not serially correlated.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

| | | | |
|---------------------|----------|---------------------|--------|
| F-statistic | 1.329715 | Prob. F(4,22) | 0.2902 |
| Obs*R-squared | 5.256779 | Prob. Chi-Square(4) | 0.2620 |
| Scaled explained SS | 2.580406 | Prob. Chi-Square(4) | 0.6303 |

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 04/19/14 Time: 16:58

Sample: 2007Q1 2013Q3

Included observations: 27

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|-------------|-------------|------------|-------------|--------|
| C | 18.12828 | 5.411415 | 3.350008 | 0.0029 |
| GDP GROWTH | 0.055152 | 1.337447 | 0.041236 | 0.9675 |
| INFLATION | -1.649512 | 2.138810 | -0.771229 | 0.4488 |
| PUBLIC DEBT | 0.902303 | 0.476799 | 1.892418 | 0.0717 |
| BANK-CR5 | 0.107880 | 0.687685 | 0.156874 | 0.8768 |

| | | | |
|--------------------|-----------|-----------------------|----------|
| R-squared | 0.194696 | Mean dependent var | 13.26870 |
| Adjusted R-squared | 0.048277 | S.D. dependent var | 16.44234 |
| S.E. of regression | 16.04054 | Akaike info criterion | 8.553692 |
| Sum squared resid | 5660.577 | Schwarz criterion | 8.793662 |
| Log likelihood | -110.4748 | Hannan-Quinn criter. | 8.625047 |
| F-statistic | 1.329715 | Durbin-Watson stat | 2.196710 |
| Prob(F-statistic) | 0.290215 | | |

Null hypothesis: Residuals are not heteroscedastic

Alternative: Residuals are heteroscedastic.

* We cannot reject the null hypothesis therefore the series are not heteroscedastic or the series are homoscedastic.

Appendix B: Regression Results for Panel Data

Regression results without lag

Dependent Variable: PRIVATECREDIT
Method: Panel Least Squares
Date: 04/20/14 Time: 22:16
Sample: 2000 2012
Periods included: 13
Cross-sections included: 5
Total panel (balanced) observations: 65

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| GDPGROWTH | 0.890386 | 0.467403 | 1.904963 | 0.0616 |
| INFLATION | -0.388086 | 0.345183 | -1.124289 | 0.2654 |
| PUBLICDEBT | -0.029508 | 0.060999 | -0.483753 | 0.6303 |
| BANKCR5 | -0.214919 | 0.171171 | -1.255581 | 0.2141 |
| C | 2.600378 | 2.525961 | 1.029461 | 0.3074 |
| R-squared | 0.220457 | Mean dependent var | | 3.393846 |
| Adjusted R-squared | 0.168487 | S.D. dependent var | | 10.61293 |
| S.E. of regression | 9.677649 | Akaike info criterion | | 7.451319 |
| Sum squared resid | 5619.413 | Schwarz criterion | | 7.618579 |
| Log likelihood | -237.1679 | Hannan-Quinn criter. | | 7.517314 |
| F-statistic | 4.242041 | Durbin-Watson stat | | 1.418221 |
| Prob(F-statistic) | 0.004333 | | | |

Regression results with lag model

Dependent Variable: PRIVATECREDIT

Method: Panel Least Squares

Date: 04/20/14 Time: 22:17

Sample (adjusted): 2001 2012

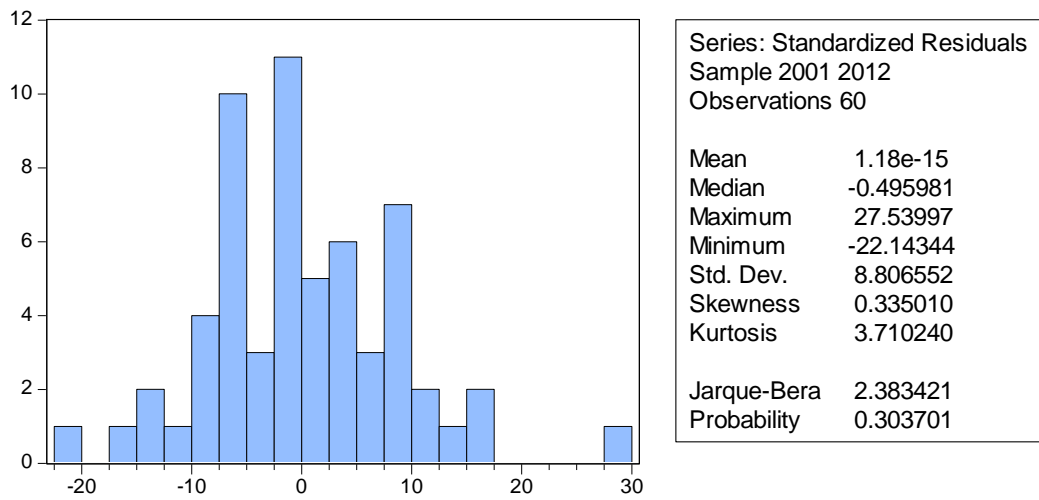
Periods included: 12

Cross-sections included: 5

Total panel (balanced) observations: 60

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| GDPGROWTH(-1) | 0.777837 | 0.368341 | 2.111729 | 0.0393 |
| INFLATION(-1) | -0.776669 | 0.309566 | -2.508897 | 0.0151 |
| PUBLICDEBT | -0.124007 | 0.044759 | -2.770551 | 0.0076 |
| BANKCR5 | -0.137224 | 0.166992 | -0.821743 | 0.4148 |
| C | 5.626065 | 2.709342 | 2.076543 | 0.0425 |
| R-squared | 0.346236 | Mean dependent var | | 3.753167 |
| Adjusted R-squared | 0.298690 | S.D. dependent var | | 10.89170 |
| S.E. of regression | 9.121170 | Akaike info criterion | | 7.338729 |
| Sum squared resid | 4575.766 | Schwarz criterion | | 7.513257 |
| Log likelihood | -215.1619 | Hannan-Quinn criter. | | 7.406996 |
| F-statistic | 7.282068 | Durbin-Watson stat | | 1.668289 |
| Prob(F-statistic) | 0.000088 | | | |

Histogram: Jarque-Bera Normality Test for Panel data



Null hypothesis: Residuals are normally distributed

Alternative: Residuals are not normally distributed.

* We cannot reject the null hypothesis therefore the panel data series are normally distributed