IMPACT OF INTERNAL AND EXTERNAL FACTORS ON SMALL AND MEDIUM SCALE ENTERPRISES’ ACCESS TO FINANCE IN GHANA

by

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ABSTRACT

The economy of Ghana has grown at an average GDP per capita of 5.5% in the last twenty years. The African Development Bank reports that private businesses contribute about 22% and 44% of Ghana’s real gross domestic product and gross national income, respectively. In spite of their contribution to economic growth, private businesses (dominantly comprising small and medium scale enterprises) face the challenges of access and cost to credit (especially from banks). Recent government policy documents like the Private Sector Development Strategy and Ghana Poverty Reduction Strategy have sought in one way or the other to mitigate the challenge of access and cost of credit faced by small and medium enterprises (SMEs). In another vein, increase in incomes following improving economic conditions, has resulted in an increase in the general demand for goods and services. Comprising a greater percentage of businesses in Ghana, SMEs are taking advantage of the growing domestic market to expand their scale of operations or output in order to meet the needs of the market while increasing profitability. To finance the expansion, most SMEs turn to banks for loans. This dissertation deals with SMEs’ access to finance by looking at the impact of monetary policy and money market variables, banking industry and bank-specific factors as well as SME-specific factors.

Chiefly, analysis in this research is underpinned by the credit channel of monetary transmission mechanism. Theory of financial intermediation, structure-conduct-performance (SCP) paradigm and the financial restraint model are also employed in the analyses.

Pertaining to the impact of monetary policy on cost of credit (lending rate), multiple regression, granger causality and vector error correction models are used to analyse monthly data of monetary policy and money market variables. The period of analysis spans 10 years.
(i.e. 2002 to 2011). This period covers 5 years before and after the official adoption of inflation targeting in Ghana. The results show that apart from inflation, all other explanatory variables are statistically significant at 1%. The past values of monetary policy rate and Treasury bill rate were found to be better predictors of changes in the base lending interest rate. Additionally, although crowding-out by the government cannot be denied, its severity may have been overdramatized in previous research. Furthermore, it was estimated that it takes about 3 months for the lending rate to fully adjust to shocks from explanatory variables.

Using concentration ratios and Herfindahl-Hirschman Index (HHI), banks were found to be moderately concentrated. The banking industry is one of monopolistic competition and banks are scale inefficient. Under the SCP paradigm, the results suggest that high lending interest rate may be as a result of collusion among the few large banks that dominate the industry. Suboptimal use of scale may stem from congested banking infrastructure in urban areas.

Primary data from 10 out of 27 licensed banks and 340 SMEs were collected using questionnaires. The data was primarily analysed using descriptive statistics such as percentage, mean, cross tabulation and mode while results were displayed using pie charts, bar graphs and scatter plots. Principally, analysis of the survey involving banks yielded the detailed definition of an ideal SME client and terms of loan agreement from the banker’s perspective. It was found that banks prefer the use of movable assets to immovable assets as collateral. Also, relationship banking does not help in procuring loans at lower interest rates although it speeds up the application process and lengthens the maturity period.

It is recommended that the government reduce its borrowing from the money market and use moral suasion to encourage banks to reduce interbank lending interest rates. Hellmann et al (1997)’s use of deposit rate control and protection of first-mover into current geographically excluded areas are also recommended as a means of encouraging deposit mobilization and outreach of financial services by banks.
CHAPTER 1

INTRODUCTION

1.1 Background

In our current economic paradigm, the significance of capital as a salient ingredient for business activity cannot be overemphasized. Irrespective of the school of thought, economists agree that the formation and distribution of capital either in an open or closed economy is quintessential for production. In a country like Ghana, where small and medium scale enterprises (hereafter SMEs) dominate the business landscape, their access to finance becomes imperative. Over the last twenty (20) years, Ghana’s economy has grown at an average of 5.5%. The significant and sustained economic growth can be traced to the implementation of potent economic reforms and growth strategies like the Structural Adjustment Programme proposed by the IMF in the 1980s, Ghana Poverty Reduction Strategy (GPRS) and Private Sector Development Strategy (PSDS) just to mention a few. (AfDB/OECD, 2005; Government of Ghana, 2009) The relatively stable political climate after 1992 has also created a conducive environment for business activity especially within the private sector.
Figure 1.1: Per capita GDP, GDP growth rate and GNI from 1962 – 2011 (in current US$)

Source: World Development Indicators, World Bank (2013)

Through the lenses of Fisher’s hypothesis, increasing economic growth coupled with macroeconomic stability (evidenced by decreasing inflation rate) has resulted in an increase in employment and by extension, income (See Figure 1.1 above). All things being equal, one’s purchasing power increases as real income increases. The availability of disposable income has led to an increase in aggregate demand for goods and services which has necessitated an increase in production and output. Within the last 30 years, the composition of Ghana’s GDP in terms of contribution has shifted from Agriculture to Services. Although the contribution by Industry is larger between 1993 and 2005, it has fallen short of being the largest contributor at any time. The underdevelopment of Industry is suggestive of Ghana’s continued reliance on raw material exports like Cocoa, inadequate infrastructure like uninterrupted power supply, road network, etc. to support industrial sector growth, competition from foreign goods, among others. In another vein, the ‘premature’ transition from Agriculture-dominated to Services-dominated composition of GDP could be ascribed to the influx of telecommunication companies and financial institutions (mainly commercial
banks) in Ghana. (See Figure 1.2) There are about 80,000 companies and 220,000 registered partnerships in Ghana. These private businesses employ about 90% of the workforce and contribute 22% and 44% to GDP and GNI respectively. (AfDB/OECD, 2005, p. 260, 2010) Private businesses (especially SMEs) participate in all three (3) sectors of the economy and thus can be said to play a critical role in fostering growth in Ghana.

Figure 1.2: Ghana: Composition of GDP by sector (1984 – 2011)

Source: World Development Indicators, World Bank (2013)

Against the backdrop of economic growth and subsequent need for increased output, SMEs are seeking to expand their scale of operations to match the increasing demand of goods and services. To do this, investment loans are required. Here, two questions arise; (1) how much money would SMEs need for the scale expansion? and (2) which source will be most appropriate? The question on the amount of money needed can best be answered by examining the definition of SMEs. Primarily, SMEs are differentiated from micro enterprises with respect to size. In Ghana, a business falls under the category of SME if it has a stated capital of US$ 20,000, excluding land, buildings and machinery (NBSSI, 2010). Taking into consideration that operating capital alone for many SMEs in Ghana fall between 50,000 and
100,000 Ghana Cedis\(^1\), it is fair to assume that, owing to its size, investment loans cannot be sourced from the informal financial system; mainly family and friends. Even formal sources such as supplier credit, and institutions such as; cooperatives, micro finance companies may fall short of providing such support to SMEs. SMEs are therefore left dependent on commercial bank\(^2\) loans as the main source of financing their scale expansion. Unfortunately, it is very difficult for SMEs to access finance (bank loans) from commercial banks. Surveys conducted by the Association of Ghana Industries (AGI) which has about 1500 members, mainly manufacturing firms, reveal that ‘Access to credit’ and ‘Cost of credit’ are always in the top three (3) challenges facing businesses in Ghana. (Association of Ghana Industries, 2010a, 2010b, 2011)

Globally, SMEs have undoubtedly contributed to the growth of their respective economies. (Abor & Quartey, 2010; Harvie & Lee, 2002; Johnson, 1982; Stiglitz, 1996) Although generally agreed upon as ‘engines of growth’, SMEs are faced with the problem of access to finance. (Claessens & Tzioumis, 2006; Ganbold, 2008)

This research investigates SMEs access to finance in Ghana from three perspectives; the impact of (1) monetary policy and macroeconomic factors, (2) bank-specific factors and (3) SME-specific factors i.e. creditworthiness of SMEs.

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\(^1\) Estimates are based on results from author’s pilot survey conducted in July and August, 2011

\(^2\) In another voice, Ferrari, Jaffrin, & Shrestha (2007, p. 28) put forward that according to international experience, banks are better fitted for attending to small businesses while microfinance institutions are most suitable for households owing to the size of transactions required by businesses and households.
1.2 Background of the three (3) factors

1.2.1 SME-specific factors

The characteristics of SMEs such as; type of industry, age of the firm, size of the firm in terms of capital and employees, etc. are known to affect their access to finance. (Okoh & Ping, 2000) Other features such as keeping proper accounting records (Tagoe, Nyarko, & Anuwa-Amarh, 2005), audited financial statements and being in possession of valuable collateral (Ackah & Vuvor, 2011) also impact on a firms’ access to credit especially from banks.

1.2.2 Bank-specific factors

Commercial Banks play the role of indirect intermediaries in the larger arena of the financial system where funds flow from fund suppliers to fund users as illustrated in Figure 1.3 below.

Figure 1.3: Flow of funds in a financial system

Source: Bank of Finland (2004)

According to Boyd (2010), commercial banks are the most important financial
intermediaries. In addition to playing a dominant role in developing economies, they may essentially be, ‘the only game in town’ (Boyd, 2010, p. 76). Basically commercial banks take in funds (liabilities) and provide funds (assets) to clients. In this sense, banks take on the risk of investors or fund-suppliers while dealing with clients – preferably, an ultimate borrower. Within their role of financial intermediation (taking, creating and allocating money) banks serve as conduits for monetary policy.

Operational decisions taken by a bank aids or restricts its lending to clients. Physical factors such as the location of banks, the number of brick and mortar infrastructure, and network infrastructure (like ATMs, branch networking) just to mention a few directly have an impact on client accessibility to financial services. Furthermore asset management of commercial banks such as; composition of operating assets (choice between loans and advances and government securities), lending to deposit ratio, affect access and cost of credit to clients. The market structure and level of competition in the banking industry are also known to influence availability and cost of credit.

There are twenty-seven (27) commercial banks currently operating in a total of 810 branches in Ghana. (PricewaterhouseCoopers, 2011) The Financial Sector Adjustment Programme (FINSAP) which was initiated in 1988 following economic reforms (Structural Adjustment Programme) in 1983 led to the liberalization of the banking system. Out of the twenty-seven operating in Ghana, nineteen (19) of them were granted licenses after 1989.

The liberalization of the banking industry and consequently, the increase in the number of banks operating in Ghana has improved access to financial services with respect in the light of the following reasons. First of all, the number of individuals with bank accounts has
increased. Many new banks did not require rigorous procedures from new customers, for example; formal referencing from an existing client of the bank, lengthy paperwork, and a minimum deposit of about 100 USD before an account could be opened. Secondly, banks branches began to spring up at places that were closer and thus convenient for most of the non-banked such as; traditional markets and university campuses. In addition to this, some banks hired temporary workers who went from door-to-door and stall-by-stall to mobilize savings while encouraging people to open accounts with them. In a nutshell, financial liberalization in Ghana facilitated the reach of financial services to the populace in addition to improving financial deepening. According to the International Financial Statistics of the International Monetary Fund (IMF), depositors with commercial banks per 1000 adults increased from 173 in 2005 to 323 in 2009. In terms of lending however, domestic credit to private sector grew from 12% to 15% from 2002 to 2011. (World Development Indicators, 2014)

1.2.3 Monetary policy and macroeconomic factors

Monetary policy is a framework within which money, its circulation, growth and allocation are controlled or managed. The ultimate goal of monetary policy is price stability in the long term. To achieve price stability and its expected impact on real variables such as employment and output, central bankers strive to achieve certain operational, intermediate and/or ultimate policy targets by using money supply (narrow or broad) or a short-term nominal interest rate. The monetary policy framework implemented at any time is defined by the principal targets used; for example, monetary targeting in the case of money supply and inflation targeting in the case where inflation rate is used. Having officially adopted inflation targeting in Ghana, the Bank of Ghana announces both the short-term nominal interest rate i.e. monetary policy rate and the inflation rate (which is derived from the Consumer Price Index – CPI)
In regulating money supply, central banks employ policy tools such as Open Market Operations (OMO) and reserve requirements. With respect to OMO, the government regulates money supply by buying or selling securities and bonds to decrease or increase supply respectively. On the other hand, primary (basic) and secondary (additional) reserve requirement – which is the portion of deposits banks are required to keep with the central bank – when increased reduces the amount of loanable funds available to banks and vice-versa. The act of constraining or otherwise of bank lending through reserve requirement is fundamental in examining the credit channel (here, bank lending) of the monetary transmission mechanism.

In addition to the influence monetary policy decisions have on bank lending and thus SME accessibility to finance, other macroeconomic variables and shocks such as government fiscal policy (especially budget deficit), changes in money demand variables (such as level of economic activity and deposit interest rate) and exposure to foreign exchange shocks owing to heavy reliance on export revenue affect the value of money, cost of credit and thus its accessibility.

Since, theoretically, lending to the government is considered a low risk investment when the government relies on the domestic credit market to finance its deficit budget; private players are crowded-out.\(^3\)

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\(^3\) The share of liquid funds to total deposits increased from 55% in 2007 to 74% in 2010. (Ghana Banking Survey, 2009, 2010, 2011, 2012)
Here, the Risk Premium – defined as the difference between lending rate and Treasury bill rate – increases. In another vein, as economic activity increases, more capital will be required to finance expansion of production and vice-versa. External shocks from energy resources such as crude oil, or sources of government revenue like gold prices and cocoa prices tend to affect prices (inflation), and real incomes thereby affecting money demand.


Source: World Development Indicators, World Bank (2013)
1.3 Problem Statement

The efficient implementation of monetary policy is evident in its smooth transmission downstream in which all stakeholders play a part. Thus a smooth transmission of monetary policy does not rest with activities of the central bank alone. The responsiveness of financial intermediaries (hereafter, commercial banks) in proportionally revising their interest rates to changes in policy rates coupled with their ability to distil base interest rates of excessive embedment of operational costs and management incompetence also plays a significant role. On the receiving end, private agents must be perceived as ultimate borrowers so as to mitigate unnecessary increments in risk premiums.

Although implementation of monetary policy is a shared responsibility, central bankers must be able to determine which policy instruments and tools to employ so as to attain desired targets. Furthermore, the degree of responsiveness of commercial banks and private agents must be competently computed and well understood.

In accordance with Ghana’s industrial policy which incorporates other development frameworks such as the Ghana Poverty Reduction Strategy (GPRS) and Private Sector Development Strategy (PSDS), the government is seeking to create a fertile ground for private businesses to flourish. In relation to financing, subsection 1.3.2 of the Industrial Policy acknowledges that ‘high cost of borrowing limits access to credit’. To achieve the ‘lower cost of credit to industry’ objective, the government is determined to lower budget deficit, reduce transaction costs of lending, remove secondary reserve requirements for banks and encourage bank competition. (Government of Ghana, 2009)
To do this, the government began by attempting to reduce inflation by ‘mopping up excess liquidity’ from the market. Treasury bill rate were raised, expected inflation rate and monetary policy were reduced, and the secondary reserve requirement for commercial banks was abolished. All these were executed under the assumption that commercial bank lending interest rates will decrease proportionally. In effect, the reduction in cost of credit was envisaged to facilitate business activity within the private sector which will in turn create employment and improve welfare.

Figure 1.6: Attractiveness of government securities.

![Inflation, Monetary policy rate, 91-day Treasury bill rate](image)

Source: Bank of Ghana (2012)

Contrary to expectations, lending rates have remained high and apparently irresponsible to changes in monetary policy rates. Interestingly, the banking industry’s share of liquid funds to total deposits has increased from 55% in 2007 to 74% in 2010. (Ghana Banking Survey, 2009, 2010, 2011) Liquid assets as a proportion of total operating assets have increased from 1.5 Billion Ghana Cedis in 2008 to 4.7 Billion Ghana Cedis in 2010. (PricewaterhouseCoopers, 2011) Impliedly, commercial banks have increased lending to the government (by buying Treasury bills) at the expense of lending to private industry.
1.4 Research Questions

SMEs’ need for bank credit in order to expand is well articulated in the news media and by bodies like that Association of Ghana Industries. Government has recognized their plight and responded with plans of fiscal discipline and favourable monetary policy decisions. In this light, the seemingly incommensurate response of commercial bank lending rate to revisions in the monetary policy rate and inflation rate raises a number of questions.

With reference to the interest rate channel of monetary transmission mechanism, the puzzle is (1) to what degree do changes in monetary policy targets and money market variables influence commercial bank base lending rates? and (2) how long does it take for lending rates to fully adjust to changes in the aforementioned explanatory variables?

Sources of bank borrowing, bank ownership (local or foreign), operating cost, risk perception of the borrower and alternative use of loanable funds inter alia are known to influence the levels at which banks fix their interest rates. The question of how bank-specific factors affect
lending interest rate (or, cost of credit) thus becomes imperative. Consequently, this research is faced with the question of the **extent to which bank-specific factors account for the cost and availability of finance to SMEs in Ghana?** Moreover, what impact do bank concentration, efficiency and competition have on high lending rates and accessibility of credit to SMEs?

SMEs are generally perceived as high risk investments for reasons spanning; the lack of a going-concern, risk of bankruptcy, poor managerial skills, high debt repayment default, inadequate accounting records, etc. Here, the question that arises is **which SME-specific factors explain their challenge to accessing credit from commercial banks?** Although previous research may have dealt with this question, this research goes on further to ask **how much money an average SME requires to lend from the average bank and at what interest rate?**

1.5 Research Objectives

The objectives of this research are tailored to address the three (3) major factors from which SME accessibility to finance will be investigated.

Again, taking a cue from the critical role of financial intermediaries in the relay of monetary policy (short-term nominal interest rate) via the credit channel of monetary transmission mechanism, this study attempts to (a) **compute the degree of responsiveness of commercial bank lending rates to changes in monetary policy variables as well as money market variables.** In addition, the study seeks to (b) **estimate how long it takes for lending rates to fully adjust to changes** in the aforementioned variables.
To test if there is an efficient pass-through of policy decisions through commercial banks, the research examines the impact of bank specific factors both at the firm and industry level on cost of credit and accessibility of financial services to SMEs in Ghana. Furthermore, the research attempts to establish how much money a typical commercial bank is willing to lend to an average or ideal SME client and at what interest rate. This is done to first-handily reveal the ingredients that form a commercial banker’s criteria for SME loan application screening in Ghana.

The third major factor which is the SME-specific factor balances the investigation into the accessibility of bank credit by dealing with issues representative of the demand side. In congruence with the aforementioned, the dissertation explores the creditworthiness of SMEs by analysing their profiles, corporate finance structure, financing preference, credit history, availability of collateral, among other things. In other words, to analyse SME-specific factors that affect their accessibility to bank credit. In addition to this, the amount of money an average SME requires to lend from an average bank and at what interest rate is estimated.

Figure 1.8: Analytical framework

Figure 1.8 summarises the general objective of analysing SMEs’ access to finance from the three factors discussed above.
1.6 Hypotheses

The research envisages the following outcomes;

1. (a) Among the monetary policy and money market variables, the lending rate is more responsive to changes in the monetary policy rate and Treasury bill rate at the 0.05 significance level.

   (b) The lending interest rate fully adjusts to changes in significant explanatory variables after 3 months.

2. (a) High cost of bank operations, dependence on the interbank market as source of borrowing and the attractiveness of government securities account for high base lending interest rates.

   (b) The top 3 banks own 50% of total industry assets.

   (c) Banks in Ghana are scale inefficient.

3. SME-specific factors such as type of industry, location, value of collateral and audited financial statements are statistically significant in SMEs’ accessibility to finance from commercial banks in Ghana.

1.7 Research Design and Methodology

The research method applied in the analysis is quantitative in nature. A fixed design approach is used because computations are carried out based on existing theory. Correlational studies are conducted in relation to analysing policy and money market factors while analysis of bank-specific and SME-specific factors are carried out using both correlational and descriptive statistical methods.

1.7.1 Data Collection

Both primary and secondary data are collected and used in this research. Primary data is collected through a survey. Separate questionnaires are prepared and administered to SMEs
and commercial banks in Ghana.

Both questionnaires are structured, five (5) pages long, and mostly comprise closed-ended. Questions are constructed using different formats like ‘yes or no’ questions and likert scale in order that the most appropriate responses are solicited for analysis. The questionnaire administered to SMEs constitutes three (3) main sections; ‘About the respondent’, ‘Corporate Finance’ and ‘Access to finance’. There are 31 questions in all. The questionnaires for banks constitute five (5) sections captioned; ‘About the respondent’, ‘Bank lending’, ‘Defining the Ideal SME client’, ‘Bank regulation and industry factors’ and ‘Relationship banking’.

The pilot phase of the survey was conducted in July and August 2011 and the main survey was executed in 2013. For SMEs, the survey targeted mainly members of the Association of Ghana Industries because most of them are registered businesses that have been in operation for at least three (3) years. The questionnaires were completed by company accountants, finance officers or senior management staff in the case of SMEs whereas for banks’ loan officers, staff of corporate banking division, operations division and relationship management completed the questionnaire. Stratified random sampling method was employed with respect to SMEs while simple random sampling was applied with respect to banks. Five hundred (500) questionnaires were distributed to SMEs and 29 where distributed to banks in Ghana. Out of the questionnaires that were received, data from three hundred and forty (340) SMEs and 10 (out of the 27) commercial banks were deemed valid and used in the analyses.

Two (2) datasets are compiled and used in this research. For computing the responsiveness of lending rates to monetary policy and money market variables, a time series dataset comprising monthly data spanning 10 years i.e. from 2002 to 2011 is used. This time period
is selected mainly because the present monetary regime – Inflation Targeting, was formally introduced in Ghana in 2002 following the enactment of the Bank of Ghana Law (Act 612) in 2002. The variables used are categorized into monetary policy variables (monetary policy rate, inflation rate and broad money supply), money market variables (exchange rate between the US Dollar and Ghana Cedis and 91-day Treasury bill rate) and deposit interest rate. Data on all variables were compiled from the Bank of Ghana online monetary time series database with the exception of inflation rate which was accessed from the Ghana Statistical Service. The other secondary data is an unbalanced panel dataset of unconsolidated commercial bank financial statements from 2002 to 2011 accessed from Bankscope online database. This data is used to analyse the impact of banking industry level factors on availability and affordability of credit to businesses.

Other secondary data on pertinent macroeconomic variables or cross country comparative analysis is presented in graphically using bar graphs and line plots. Data on such supportive elements were sourced from the Bank of Ghana Statistical Bulletin and working papers, Ghana Statistical Service, Ghana Banking Survey conducted by PricewaterhouseCoopers, International Financial Statistics, World Development Indicators and African Development Bank publications and online databases.

1.7.2 Data Analyses

The survey data collected from both SME and banks are mainly presented descriptively using frequencies and percentages in bar graphs, line plots, pie charts, and scatter plots. Cross tabulation is used to analyse responses bordering on profile of SMEs, their corporate finance structure and experience with credit financing. The perception of SMEs’ accessibility to finance is used as dependent variable on which SME-specific explanatory variables such as
age of the firm, type of industry, level of operating capital, location of headquarters, etc. are regressed. The results for the descriptive statistics are presented using the Pivot table function in Microsoft Excel while the regression model is run using Stata (version 12).

In order to test for the responsiveness or degree of change in lending rate following a unit change in monetary policy, money market variables, the multiple linear regression model is used. To ensure that the results are reliable, post estimation tests for heteroskedasticity, serial correlation, multicollinearity and normality are conducted on the residuals of the regression model. Unit root test (Augmented Dickey-Fuller) and cointegration test (Johansen method) are used to examine the stationary properties and long run relationship of the time series variables. The optimal lag length is selected using Akaike Information Criterion (AIC). Granger Causality is carried out to reveal the causal relationship between variables and a vector error correction model (VECM) is applied to estimate the time taken for lending rates to fully adjust (short-run) to changes in the explanatory variables.

Analysis on bank efficiency is executed using Data Envelopment Analysis Program (DEAP) version 2.1 written by Tim Coelli. In DEA, what falls short in the productivity of a particular DMU in comparison with the ultimate or best performing DMU is reported. The $k_3$, $k_{5\%}$ and Herfindahl-Hirschman Index (or HHI) are used to measure bank concentration while the Panzar-Rosse model is used to measure bank competition.
1.8 Organisation of the thesis

The dissertation comprises seven (7) chapters; introduction, literature review, four (4) empirical chapters, and a final chapter which is subdivided into summary of findings, contributions of the research, limitations and points for further studies and policy recommendations. Each of the three empirical chapters has a separate exposition on the methodology employed therein.

The first empirical chapter (Chapter 3) tackles the question of the degree to which changes in monetary policy and money market variables influence commercial bank lending rates and how long it takes for the lending rate to fully adjust to changes in the explanatory variables. The chapter also provides information about the history and practice of monetary policy and Ghana.
The second empirical chapter (Chapter 4) deals with the impact of bank concentration, competition, efficiency and outreach on availability and affordability of finance. While the second empirical chapter analyses the impact of banking industry factors on access to finance, the third empirical chapter although related to banks, bases its analyses on survey data from banks. Chapter 5 focuses on the impact of individual bank’s firm-level practice of lending to SMEs. In other words it deals with the impact of internal bank operation decisions and perception of SMEs’ profitability on availability of finance to SMEs.

Basically, the fourth empirical chapter (Chapter 6) treats the impact of SME-specific factors on their access to finance. The discussion is also extended to include perceptions of SMEs relating to the impact of monetary policy and money market variables as well bank-specific factors on the availability and affordability of credit.
Studies on business financing in general and SME financing (or challenge of access to finance faced by SMEs) in particularly are not new to academia. Arguably, current industrialized countries have relied on the contribution of SMEs in their development stages. (Abor & Quartey, 2010) The fact that SMEs are regarded as “engines of growth” in emerging and developing economies, attest to their salient role in economic development. Despite the apparent waning contribution to the development of developed countries, they are not excluded in current literature. (Ayyagari, Beck, & Demirguc-kunt, 2003; Ayyagari, Beck, & Demirguc-Kunt, 2007; Beck & Demirguc-Kunt, 2006; Kuntchev, Ramalho, Rodríguez-meza, & Yang, 2012)

This chapter reviews literature pertaining to the definition of SMEs and SME accessibility to finance, global and country-specific characteristics of SMEs, challenges of access to finance and theories on corporate finance. The chapter also presents fundamental economic theory linking monetary transmission and banking industry characteristics to SME access to finance.

2.1 Definition of SMEs

Notwithstanding the huge wealth of literature on SMEs and SME financing, there is still no globally accepted definition of SMEs. Literature however seems to agree on the use of the number of employees, stated capital or both as yardstick for classifying firms as SMEs. Beck, Demirguc-kunt, & Ayyagari (2003) present total net assets, sales and level of investment as criteria for defining SMEs. Admittedly, agreeing on the criteria alone does not remove the

\(^4\) See (Abor & Quartey, 2010, p. 218)
challenge of finding a globally acceptable definition for SMEs. The setting of upper and lower boundaries per criteria largely differs across economies. Even within a country, industry-specific characteristics brings impedes the construction of a uniformed definition. With respect to the use of employment as a criterion, the challenge rests on how many employees or level of stated capital is acceptable for categorizing a firm as small, medium or large. In the World Bank’s Enterprise Survey, the size of SMEs with respect to number of employees are; small (5 to 19 employees), medium (20 to 99) and large (100 or more). (The World Bank, 2013) In Ghana, most researchers apply the definition of SMEs coined by the National Board for Small Scale Industries (NBSSI) or the Ghana Statistical Service (GSS). NBSSI’s definition of SMEs considers both the number of employees and value of fixed assets. In their definition, an enterprise is small-scale if it has less than 10 employees with “plant and machinery (excluding land, buildings and vehicles) not exceeding 10 million Ghanaian cedis”. (Abor & Quartey, 2010, p. 221) The criterion of using the number of employees for defining SMEs (i.e. employees from 5 to 99) as used by the World Bank Enterprise Survey is adopted in this dissertation.

In most literature only registered SMEs are included in samples. (Ayyagari et al., 2003) This is done to create a distinction between SMEs operating within the formal and informal sectors of the economy. The informal sector in many economies remains largely undocumented. Although data on the informal sector is limited, they are estimated to significantly contribute to the provision of goods and services while serving as a means of livelihood for many. (Agyapong, 2010; Jeppesen, 2005) The use of only registered businesses in most studies thus poses a sample bias, owing to the estimated significant number of firms in the informal sector and their contribution to the economy\(^5\). Notwithstanding, the nature of some businesses in the

\(^5\)Ayyagari et al. (2007) estimate the size of the informal sector to support their analysis of the formally recognized manufacturing firms in a cross country analysis including 13 low-income countries, 24 middle income countries and 17 high-income countries.
informal sector such as short lifespan, ever-changing business activity, improper or lack of record keeping, just to mention a few, presents the researcher with the risk of collecting data that is; false, unconfirmable and thus misleading results. In any case, a higher ratio of registered businesses compared to unregistered businesses is indicative of economic maturity and the presence of effective institutions. This assumption falls within the general picture that in an economy where institutions are strong and effective, the hustle in the registration process (number of days for licenses, registration fees, etc.) and business environment (For example taxes and credit) is reduced thereby encouraging the registration of businesses. Interestingly, there is more work on SMEs in the manufacturing sector than there is on other industries. (Ayyagari et al., 2003) This study surveys registered firms to improve credibility of the data collected.

2.1.1 General characteristics and contribution

In terms of their contribution to the economy, SMEs are known for their ability to create jobs in both developed and developing economies. (Abor & Quartey, 2010; Ayyagari et al., 2003) In his study, Mullineux (1996) opined that SMEs create more jobs in developed countries than larger companies and multinationals. (Mullineux, 1996) The 2011 annual review on access to finance by the International Finance Corporation (IFC) also observes that although SMEs employ fewer than 250 people, the jobs they create constitute nearly half of jobs in developing countries. (IFC, 2011) As job creators, SMEs receive attention from governments especially in developing countries as part of job creation and poverty alleviation\(^6\) strategies. In developed countries, they are considered significant in economic recovery from the recent global financial crises. (IFC, 2011, p. 9) Generally employment leads to income and thus improved standard of living. The operations of SMEs contribute to the level of competition in

\(^6\) See Cook and Nixon (2000)
a market. In some cases, products (goods and services) from SMEs are more affordable to lower income earners (poor). Furthermore, SME involvement in a market is mostly likely to result in the availability of a variety of products due to innovation or imitation.

In measuring the contribution of SMEs using a cross country sample, Beck et al. (2003) employ “the share of the SME sector, as defined by official sources, relative to GDP” (Ayyagari et al., 2003, p. 5) While the means of computation are not given, literature adjudge that “formal SMEs contribute up to 45 percent of employment and 33 percent of gross domestic product in developing countries” (IFC, 2011, p. 9) SMEs’ contribution to economic development is one of the motivations for conducting this research which is ultimately aimed at addressing challenges facing SME access to finance.

The relatively small size of SMEs makes them efficient to run. Management theory describes such businesses as easily adaptable or flexible. In line with Gerschenkron (1962)’s thinking, SMEs like start-up businesses exercise their flexibility in management, product lines, target market, etc. by learning from the ‘incumbent’ in order to ‘catch-up’. Additionally, the flexibility of SMEs affords them the advantage of relocating operations in response to prevailing market conditions.

2.1.2 General challenges

The general challenges that SMEs face can be broadly grouped under the internal and external factors. These are competent management (Ackah & Vuvor, 2011), cash flow management (Epstein & Heintz, 2006), inventory management (Agyei-Mensah, 2012), access (and cost) to credit (IFC, 2011) and contract enforcement (Bae & Goyal, 2003) just to mention a few.
In the table below, a SWOT analysis framework is used to present some internal and external challenges facing SMEs.

Table 2.1: SWOT analysis of some challenges facing SMEs

<table>
<thead>
<tr>
<th>Helpful</th>
<th>Harmful</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strength</strong></td>
<td><strong>Weakness</strong></td>
</tr>
<tr>
<td>Faster decision making</td>
<td>Poor financial record keeping</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Low level skilled employees</td>
</tr>
<tr>
<td>Less wastage</td>
<td>Low investment in research and development (R&amp;D)</td>
</tr>
<tr>
<td>Second-mover-advantage</td>
<td>High cost of operation</td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
<td><strong>Threats</strong></td>
</tr>
<tr>
<td>Lower taxes</td>
<td>Competition with cheaper foreign products</td>
</tr>
<tr>
<td>Shorter time-to-market</td>
<td>Unstable market demand</td>
</tr>
<tr>
<td>Personalized customer service</td>
<td>Perception as a high risk investment (high cost of credit)</td>
</tr>
<tr>
<td>Market adaptability</td>
<td>Reliable energy supply</td>
</tr>
</tbody>
</table>

SMEs are not left out of the opportunity brought on by globalization to extend their operations into foreign markets. Reuber & Fischer (1997) looked at SME specific factors relating to resources and behaviour and concluded that SMEs with “internationally experienced management teams” take greater steps towards internationalization. From this study, the key to internationalization stems from so-called strategic partnership with foreign entities. Contrary to intuition, firm size and number of years in operation appear useless in determining the degree of a firm’s internationalization. (Reuber & Fischer, 1997, p. 820)

Access to finance as a constraint for SMEs has been dealt with by many studies. (Beck & Demirguc-Kunt, 2006; Karlan & Morduch, 2009; Kuntchev et al., 2012; Peachey & Roe, 2004) While there seem to be a consensus about the correlation between the size of the firm (i.e. small, medium, large) and its accessibility to finance, Beck & Demirguc-Kunt (2006)
show using cross country data that firm size does not really matter in relation to other challenges such as; barriers to entry and exit, enforcement of contracts and property rights. Conversely, Kuntchev, Ramalho, Rodríguez-meza, & Yang (2012) find that smaller firms (SMEs) are “more likely to be credit constrained (either partially or fully) than large firms.”

2.2 Access and Accessibility

Karlan & Morduch (2009) admits that when it comes to financial access “it is not just availability that matters. Fees, costs, and documentation requirements also serve to limit financial access”.

In this research the word ‘access’ is used to mean “get at”, “reach” or “gain access to”. By this, the meaning of ‘access’ as a verb is preferred to its meaning as a noun. Often times, ‘accessibility’ which here refers to the ability, quality or attribute of gaining access is employed to primarily describe the state of borrowers with respect to finding, understanding, obtaining and reaching available and affordable credit.

From a survey of online dictionaries regarding the meaning of access and accessibility, the following words and phrases were compiled. (See Appendix 1) Chiefly among the compiled meanings were:

i. “Easily obtained”

ii. “Capable of being reached”

iii. “Used”

iv. “Understood”

v. “Approachable”

These key words and phrases used to define access and accessibility by the 10 online dictionaries surveyed inform that in addition to being able to approach, reach, enter and see,
the meaning of access and accessibility also include being able to attain, obtain, understand and use. In applying these definitions to the needs of a borrower (SMEs), access to finance can be said to have been attained when a borrower is able to approach, reach, understand, obtain and use a financial service (here, bank credit). Access to finance to finance therefore begins with the physical contact via a bank branch (brick and mortar, etc.), bank staff, online service or other and ends with the usability of the credit obtained by the borrower. Operationally, this definition postulates that for access to finance to ensue or in other words, for finance to be said be accessible, credit must be ‘available’ and ‘affordable’. **Availability** in this context thus goes beyond simply having loanable funds available to capture the so-called geographical ‘reach’ of financial services. **Affordability** also within this research’s framework of analysis extends a little further from borrowing at desirable (or cheaper) lending interest rates to include usability of loans by borrowers.

The study of accessibility is not the preserve of finance alone. In other fields such as psychology, information technology and city planning, just to mention a few, access is studied with respect to memory (Isen, Shalker, Clark, & L., 1978), attitude (Fazio, 1995), oral communication (Herr, Kardes, & Kim, 1991), information (Lawrence & Giles, 1999), land use (Hensen, 1959), urban studies (Burns, 1980; Moseley, 1979), and medical services (Gillespie & Marten, 1978; Higgs & White, 1997; Jones & Bentham, 1997; Rahman, Mosley, Ahmed, & Akhter, 2008; Spence, 1994).

In banking and finance literature, Evanoff (1988) studied bank branching and service accessibility. A series of working papers have been written using cross country data from the so-called “Enterprise Surveys” collected by the World Bank. A few of those papers include Beck & Demirguc-Kunt (2006), Claessens & Tzioumis (2006), Demirgüç-Kunt, Beck, & Honohan (2007). Besides the World Bank other organisations, institutions and even governments sponsor and guide research into SMEs access to finance. Two examples are;
Peachey & Roe (2004) and Falkena et al., (2002) for the World Savings Bank Institute and South African government respectively. In terms of geographical coverage, this dissertation deals with Ghana, mainly the Greater-Accra region. Information gathered by use of questionnaire in the survey reflects activities in other parts of the country since most respondents are in touch with other branches or offices elsewhere in the country.

Interestingly, most of the studies relating to access to finance by SMEs have used SME specific variables (size, age, ownership, exporter, type of industry) and supply side variables like interest rates and bank concentration in the construction of models. In addition, institutional factors and macroeconomic variables namely property rights, law, GDP per capita, and percentage of credit to private sector have been employed. Whereas this dissertation does not depart from the use of the above-mentioned variables, it attempts to tie in empirical results from both demand and supply side factors pertaining to their impact on SME financing in Ghana.

Until now, literature has broadly covered Ghana in cross country analysis – where existent. This research therefore contributes to the body of knowledge by focusing on Ghana’s case in its analysis. Furthermore, although the impact of changes in variables have been captured in the time series and panel models used in literature, the focus has never been on investigating the impact of various monetary regimes on SMEs’ access to finance let alone via the monetary transmission mechanism. Again, whereas data on SMEs is at best collected through surveys, data on banks in previous studies are secondary in nature. In this research, responses are solicited from both SMEs and commercial banks using questionnaires. Beyond academia, this research is positioned to contribute to financial access literature with the policy maker in mind.

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7 The use of country level data as opposed to cross country data stems from the argument that country level data (or micro studies) is instrumental in eliminating impacts brought about by differences in financial intermediation setups across countries. See, Karlan & Morduch (2009, p. 12)
2.2.1 SMEs’ access to finance

In developing countries, 2.7 billion people lack access to formal financial services and approximately 400 million businesses are unable to access credit needed to grow. (IFC, 2011) The estimated figure of “unbanked” or “under-banked” adults in the world is around 2 to 3 billion. (Karlan & Morduch, 2009, p. 8) With reference to the basic form of banking service which is bank accounts, a fewer than 20% people in Sub-Saharan Africa as a whole possess accounts. (Demirguc-Kunt, et al., 2008; as cited in Karlan & Morduch, 2009) In other parts of the world the number of households that have accounts with financial institutions are 80% in Western Europe and North America, 60% to 80% in Central Asia and Eastern Europe, between 20% and 60% in Latin America, and around 40% to 60% in Asia. (Karlan & Morduch, 2009)

With the development of financial infrastructure (market and institutions) owing to financial liberalisation which began in the 1980s and recently, the licensing of commercial banks in Ghana, minimum balance requirements have been abolished by many banks. In addition to this, the huge paperwork that accompanied the setting up of accounts has been significantly reduced, thus reducing the cost of opening and maintaining accounts. Whether or not the noticeable improvement in deposit mobilization following financial liberalization in Ghana has contributed to ease of bank credit is latently discussed. In other words, has the improvement in deposit mobilization stemming from financial liberalization watered down inaccessibility of bank credit to private businesses?

There are many items that pose as challenges to a firm’s access to finance. These challenges do not come about as a result of the nature or characteristic of the borrower alone. Other factors regarding the financial sector itself as well as modus operandi of the lender influence the degree of ease with which finance can be accessed (or available at an affordable price).
On the demand side, firms have been denied access to credit on the basis of not possessing adequate collateral for the loan amount needed. The issue of collateral goes beyond its availability to include its value and liquidity. (IFC, 2011, p. 12) Recently, collateral registries are being opened in many developing countries to aid in the documentation and use of collaterals in financial transactions between borrowers and lenders. By using collateral registries, SMEs or firms in general have the opportunity to make their assets (including inventory) recognizable to financial institutions as formally acceptable collateral. The formal nature of collateral registries significantly reduces the problem of property rights that plague transfer of property during settlements in most developing countries (Peachey & Roe, 2004, p. 24) since enforcement becomes easier. The World Bank Group through the International Finance Corporation and other World Bank agencies are enabling countries to create the requisite institutional and legal frameworks based on which collateral registries will be established and operated with the hope of increasing availability and reducing the cost of credit. (IFC, 2013) In Ghana the collateral registry came to be through the passing of the Borrowers and Lenders Act, 2008 [Act 773]. Since then, Ghana has been in the Secured Transaction Regime which involves dealing with “both movable and immovable property”. To ensure its universal accessibility, “all universal banks, savings and loans companies, rural banks, finance houses, leasing companies, licensed microfinance and money lenders companies, secured creditors” as well as law firms, consultants and the general public can access the registry electronically. (Bank of Ghana, 2013a) It is envisaged that the Secured Transaction Regime which accepts both movable and immovable collateral will facilitate SMEs’ access to credit (especially bank loans). There is however a lack of empirical data pertaining to preference of movable or immovable assets required as collateral by banks following the practice of the Secured Transaction Regime in developing countries like Ghana.
Closely related to the challenge of collateral is the default history of the prospective borrower. In literature the risk perception of the borrower by the lender is known to influence loan pricing decisions. (Tagoe et al., 2005) In essence, a perceived risky borrower is charged a ‘risk premium’ – which is an additional return added to what may have been obtained from a risk-free investment. To wit, the default risk of the borrower (essentially, based on the lender’s perception) influences the interest rate at which a loan agreement will be contracted. Coupled with the influence of default risk on loan pricing are other transaction costs such as screening and monitoring⁸. There are also latent problem of asymmetric information which leads to adverse selection and moral hazard problems. To arrest the problems posed by asymmetric information in addition to dealing with the issue of collateral and default risk, relationship banking has been adopted. (Boot, 2000) In investigating the role of collateral and personal guarantees in relationship lending in the Japanese SME loan market, the findings of Ono & Uesugi (2009) suggest that “collateral is complementary to relationship lending…[while] personal guarantees only weakly complement relationship lending”. (Ono & Uesugi, 2009, p. 956) Impliedly, the practice of relationship lending does not do away with the necessity for collateral but rather requires the availability of the collateral to foster monitoring and mitigate reckless behaviour (free-rider problem) on the part of the borrower. Although relationship banking may be effective in facilitating access to finance by private business in Ghana, evidence on the usefulness of relationship banking in easing access to bank credit in the context of developing countries (and SMEs operating therein) is not catered for by present literature.

Another requirement that makes firms creditworthy is good financial record keeping. These records namely balance sheet, profit and loss account and cash flow statement inform the investor, financier or lender about the profitability of the business, whether or not it has a

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⁸ For discussions on how screening and monitoring affect lending see (Mayer, 1990; Thakor, 1995, 1996)
going-concern as well as its cash flow management. (Epstein & Heintz, 2006) Generally, formal financial records kept by companies are referred to as financial statements. Knowledge about the profitability of the business is necessary information for a lender because the risk of default stemming from bankruptcy is mitigated, all things being equal. In another vein, profitability over time also informs the lender that the borrower does have a going-concern (i.e. the company is able to stay in business for the foreseeable future). Moreover, examining the financial statements affords the lender an opportunity to read into cash and asset management of a firm for liquidity and overall management performance. On one hand, poor management practices may lead to stock piles of inventory which will result in a company being cash handicapped. On the other hand, poor financial management will reflect in the size of a firm’s debt-to-equity ratio (or leverage). Intuitively, a firm that has already borrowed heavily and thus has claims on its assets will fail to present itself as an ideal borrower. Demonstrating that there is a going-concern is particularly necessary for SMEs because of the widespread (or broad-based) perception that they windup too easily and have a relatively shorter business lifespan. Usually, financial statements are presented by borrowers to lenders either audited or unaudited.

While lenders need to be assured that their investment is not going down the drain by examining the track record of the borrower, future returns on the investment or proof thereof is an essential component of the lending process.\(^9\) Such information is provided in loan application documents submitted by borrowers to lenders. Banks on the other hand through their experience in dealing with clients are able to ascertain which investment is worthwhile (i.e. likely to rake in desirable returns).

Conventionally, larger firms are reported to have easier access to finance compared to smaller firms (including SMEs). (Pfeffer, 1967, p. 98) This is as a result of a number of reasons.

\(^9\) See (Appiah, 2011)
Owing to the number and value of assets, large firms are able to present appropriate collaterals where demanded. They are generally perceived to have going concerns and competent management. For lenders, lending large sums of money to large firms reduces monitoring costs since there are relatively a few clients to deal with. (Rashid, 2011) Put together, the aforementioned reasons partially explain why during credit rationing under the credit channel, banks lend more to large firms than smaller firms. (Hubbard, 2008)

Demographic information about the owners or managers of SMEs such as gender and nationality are known to affect a firm’s access to finance. Read (1998) did not find a significant difference between the sources and loan amounts used for pre and post start up financing by male and female owners of SMEs. The study however find that while female business owners borrowed frequently from banks, their loan amounts were smaller than their male counterparts. (Read, 1998, p. 182) With respect to relationships with bank staff, female owners rated bank staff as unfriendly although they considered their advice useful. Although male business owners faced a similar challenge with bank staff, they did not take their advices seriously owing to their relatively strong experience in business management. (Read, 1998, p. 184) Against the backdrop that Ghana is largely a patriarchal society, differences in access to finance by male and female business owners and managers is worth investigating.

On the supply side, the proximity of bank infrastructure as well as financial services influences access to finance. According to Peachey & Roe (2004, p. 4) “the percentage rate of access in poorer developing countries is about equal to the percentage rate of exclusion in richer advanced industrial economies”. Suggestively, problems relating to access are different within the context of developed and developing countries. It is not uncommon to find banks clustered in national or economic capitals and generally, areas with good infrastructural development. The case is perhaps severe in developing countries where even within the big cities, bank branches are dotted around target populace like industrial complexes, institutions
of higher education learning and affluent residential areas. Places like local or traditional markets as well as where SMEs abound hardly have bank branches in reach. Locations outside city centres are largely left for rural and community banks. In some countries, however, banks are nowhere to be found in rural, semi-urban and even, urban areas. (Hellmann, Murdock, & Stiglitz, 1996) Peachey & Roe (2004, p. 8) refer to the areas without banking services as a result of the selective situating of bank branches as “geographical exclusion”.

Interestingly, there is no proof that physically extending financial services or ensuring physical proximity of banks improves financial services especially in relation to cost reduction. (Peachey & Roe, 2004, p. 62) This is because elements needed to drive down cost such as economies of scale, good infrastructure (such as roads, reliable power supply, etc.) and competition from other banks may be non-existent thus driving up operation cost and by extending cost of financial services borne by clients. In line with the influence of geographical location on availability and cost of finance presented by Peachey & Roe (2004), this dissertation proceeds to contribute empirical evidence regarding SMEs in Ghana (a developing country) context.

Availability of alternative investment opportunities is another reason on the supply side that affects lending to SMEs. The availability of lower risk investments like government securities (especially short term securities such as Treasury bills) results in banks allocating more of their operating assets to liquid assets (like securities) instead of loans. (Ackah & Vuvor, 2011, p. 12; Appiah, 2011, p. 21; Uzeru, 2012, p. 9) The aforementioned literature does not however deal with the impact of monetary policy variables and more pertinently impact of changes in Treasury bill rates (proxy for government borrowing) on cost of credit by the private sector with reference to 10 years of Ghana’s inflation targeting regime.
2.3 Business financing: theory and practice

Financing options available to businesses vary depending on the size of the firm, the type of industry it is engaged in, the stage of growth of the business, just to mention a few. In addition to these, are choices of finance ranging from internal sources like cash flow and inventory management to the broader range of external financing comprising; bank lending, venture capital funding, public sale of shares and the like. Generally, the sources of finance used by businesses come under two broad categories which are debt and equity.

In terms of sources of capital available to businesses (especially in the United States), Marks et al. (2009) enumerate “bootstrapping sources and techniques, individual investor, angel investor, commercial bank, asset based lender, commercial finance, leasing company, private equity (non-buyout), venture capital fund, mezzanine fund, buyout fund, strategic or industry investor, merchant bank, micro-cap public companies, community development and government agencies, lines of credit, receivables and inventory, factoring and royalty financing”. (Marks et al., 2009, p. 70-71) Although the aforementioned list is considerably tall, the underdevelopment of credit markets in developing countries puts some of these financing options out of the reach of firms. Nonetheless, options such as individual investor, venture capital fund, line of credit, commercial bank, and government agencies are available in many developing countries. Needless to say, the availability of sources of finance in a country does not necessarily guarantee their affordability.

Constraints in accessing finance posed by the financial system, among other things, require that business owners and finance seekers have adequate knowledge regarding the most suited options within their reach. While equity financing generally shows an interest a partner (individual, group or corporate body) has in controlling or managerial interest in the firm, lenders in debt financing usually are not interested in becoming a part of the business entity. (Marks et al., 2009, pp. 204–205) There are advantages and disadvantages with respect to
both paths. For example, debt financing may be more preferable at the start of a business in order to allow the owners enough time to shape the business into what they had envisioned with little interferences. On the other hand, taking on debt during the start-up stage may lead to the closure of the business in the event where unforeseen circumstances culminate in the default on loan repayment. Business management literature decomposes equity financing further down into; common stock and preferred stock. (de Bettignies, 2008) With regards to debt financing are two classifications of loans namely secured and unsecured loans. (Marks et al., 2009)

Most businesses are established to make profits. While access to certain sources of finance remains a problem, the impact of financing decisions on the bottom-line cannot be overlooked. The different sources of finance come with varied costs. Computation of the impact of costs associated with sources of finance on the financial position of the business is imperative for financial management of a firm. According to Higgins, a firm’s cost of capital is defined by the minimum rate of return on existing assets; where minimum rate of return refers to the combination of opportunity costs of alternative investments forgone by investors. (Higgins, 2009, p. 305) Theories on cost of capital are based on “capitalization of income method of valuation, which states that the value of any business assets is equal to the sum of its discounted cash flows”. (Pfeffer, 1967, p. 98) In other words, firms (including SMEs) incur a cost with respect to accessing a type of capital; the cost of which is an estimated return rate favourable to the investor or lender. Given the existence of a number of avenues of raising capital being debt and equity (bonds, current stock, and preferred stock)\textsuperscript{10}, financial structures of firms usually comprise of a combination of the aforementioned options. An integral part of the practice of financial management is arriving at an optimum capital structure where the average cost of capital is at its minimum. Doing this requires both

\textsuperscript{10}(Higgins, 2009, pp. 155–167)
technical competence in analysis and an observation of good judgement. (Pfeffer, 1967, p. 107) In practice, the weighted average cost of capital (WACC) serves as a tool for constructing and monitoring the capital structure of firms. Higgins defines WACC as “the cost of the individual sources of capital, weighted by their importance in the firm’s capital structure”\(^{11}\). (Higgins, 2009, p. 307)

2.3.1 Impact of SME specific factors on access to finance

Corporate finance literature identifies a relationship between the size of a firm, its growth rate, and the cost of capital. Here, (1) the financing needs of firms differ in relation to their size. For instance, as a small firm grows its debt financing needs which were hitherto supplied by friends or family will now be sourced from microfinance institutions or even commercial banks. (2) The pace of expansion in operations and duration of returns on investments also inform financing decisions. During periods of high growth, debt (or external) financing will be required since retained earnings becomes insufficient in powering that growth. It is worthy of note that both debt and equity financing come with costs. Generally, internally generated funds are cheaper than externally generated funds in the case of both debt and equity. In the case of debt, while sources like supplier credit and loans from family and friends may come with no or very low interest rates, loans from microfinance institutions and commercial banks usually come with interest rates (often high interest rates in developing countries). The situation is no different from equity where “internally generated equity capital costs less than external equity because of flotation costs and differential tax rates on dividend versus capital gains income”. (Pfeffer, 1967, p. 121) Although SME financing options as well as firm-level factors that affect their access to finance are known, corporate finance literature is limited in terms of providing primary data on SME financing preference (debt or equity) in different

\[ K_W = \frac{(1-t)K_D + KE}{D+E} \] (Higgins, 2009, p. 307)
stages of the business life cycle (start-up, growth, maturity and decline) in developing countries. Following the absence of such knowledge, it can only be assumed that in Ghana’s rapid growing economy SMEs are more likely to use debt financing sources in their quest to expand and benefit from the growing market.

2.4 Theories of capital allocation and constraints

The Mundell-Fleming model, irrespective of its critiques stands as a fundamental tool for theoretically analysing how shocks affect savings, investment, money supply and money demand. The model is suitable as foundation for discussing savings and investment behaviour by household, companies and the government since this research seeks to track the impact of monetary policy and commercial bank lending on firm (SME) borrowing behaviour i.e. accessibility in an open economy.

The model was independently constructed by Marcus Fleming and Robert Mundell in the early 1960s. According to Boughton (2003), the model comprises of Fleming’s equations and Mundell’s policy analysis. Overall, the Mundell-Fleming model, which is also referred to as IS-LM in literature is an extension of “the open-economy Keynesian model of macroeconomic policy to incorporate systematically the role of capital flows”. (Boughton, 2003, p. 1) The IS-LM model describes the dynamics of economics in the short run. The most important assumption required for this model to work is that prices (and in particular wages) are fixed or predetermined in the short run. The model has two schedules that reflect the equilibrium in two markets: goods and money. In other words, one schedule represents the market in which the supply of goods is equal to the demand of goods, and the other schedule represents the market in which the supply of money is equal to the demand of money.

In a closed economy, total supply of goods equals Output (Y) and total demand is what the agents do with the output i.e. either they consume (C), invest (I) or the government
consumes it (G). (Rigobon, n.d.) Thus, $Y = C + I + G$ where, Total Output / Income equal Consumption, Investment and Government Expenditure.

Theoretically, economic agents do not expend all their output (income) in order to create wealth. Hence, after consumption has been deducted from income, the remaining income becomes savings.

In reality, there are factors that affect savings and investment behaviour. For instance, with an increase in one’s income, all things being equal, savings is expected to increase and where marginal propensity to consume (for each additional unit of disposable income) increases savings decreases. Other factors that can affect savings behaviour are taxes, government spending and interest rates. Investment on the other hand, thrives on interest rates – the cost of capital. In other words, how much return for which an investor is willingness to ‘lend’ wealth, based on the assumption that withholding it will be of less value.

On the monetary side, there is an assumption regarding the use of two assets: currency and government bonds. Money is assumed not to earn interest while the government bonds carry the market interest rate ($i$). The central bank is considered the only source for the supply of currency. Finally, “consumers solve a portfolio problem and allocate part of their wealth (which is proportional to income: $Y$) as currency and the rest is saved in bonds. As a theoretical reaction, when interest rate increases the demand for money decreases. This is because it becomes more expensive to borrow money and conversely, more profitable to save money. An increase in output, however, will result in an increase in the demand for money. For example, as the economy grows and markets develop there arises to need to increase production to meet the needs of the market. Against the backdrop of the production function, more capital is needed to finance that growth or expected increased output. SMEs in Ghana find themselves at the stage where, as a result of the growing economy, operations by
reinvested profit have become insufficient and thus significant capital injections (loans from banks) are required for expansion.

Again, the Mundell-Fleming model is related to monetary policy in that it aids in illustrating the link between money supply and output. Government’s control over money supply through interest rates in both the money and credit market affect credit availability and cost of borrowing because of the influence of monetary policy decision on both government securities and bank lending rates. Ramirez (2004) builds up on Bernanke and Blinder’s credit channel model in the open economy. The paper shows that the credit channel of monetary policy is effective in an open economy and more important for small open economies. While the conclusion of Ramirez (2004) emphasizes the “importance of the credit channel for small open economies” as a channel of monetary transmission mechanism (Ramirez, 2004, p. 369), empirical evidence in literature is scarce. There remains a lacuna in literature relative to evidence of the viability of the credit channel of monetary policy in small open economies like Ghana.

2.4.1 New Keynesian model of credit allocation

The new Keynesian model consists of households that supply labour, purchase goods for consumption, and hold money and bonds and firms that hire labour and produce and sell differentiated products in monopolistically competitive goods markets. Each firm sets the price of the goods it produces, but not all firms rest their price in each period. Households and firms behave optimally; households maximize the expected present value of utility, and firms maximize profits. There is also a central bank that controls the nominal rate of interest. The central bank, in contrast to households and firms, is not assumed to behave optimally. (Walsh, 2003, p. 232)
2.4.2 Credit allocation

Clower (1967) notes that “goods buy money and money buy goods, but goods don’t buy goods. And because goods don’t buy goods, a medium of exchange that serves to aid the process of transacting has value.” Impliedly, money (or capital) is generally important and particularly quintessential to facilitating economic activity. Consequently, the creation and distribution (including ‘storage’ and allocation) of money influences economic activity. As overall managers of the economy, governments oversee the creation and regulation of capital in an economy. Fiscal and monetary policies undertaken by governments thus directly affect allocation of capital and thus the level of economic activity. Traditional economic thinking like the Ricardian regime shows a link between fiscal and monetary policy. (Sargent, 1982) Conventionally, governments strive to construct balanced budgets while monetary policy freely determines the requisite nominal monetary stock or interest rate. (Walsh, 2003) Monetary and fiscal actions are linked through the government’s budget constraint. Under Ricardian regimes, changes in the money stock or its growth rate will require some other variables in the budget constraint – taxes, expenditures, or borrowing – to adjust. (Walsh, 2003, p. 194) In order to meet its financial obligations, governments raise revenue. Among other things, such revenue can be raised through taxes, borrowing from the private sector or printing money (currency). (Walsh, 2003, p. 137) Against this backdrop, government’s ‘excessive’ borrowing from the private sector in the domestic market could be an indication of its inability to raise funds from taxes or efficiently mobilize tax revenue to meet its obligations.

As far as credit allocation is concerned, there are varying views as to the degree of government involvement (or intervention) in credit markets. During the high growth periods of East Asian economies which have come to be known as the ‘Asian Miracle’, the so-called developmental states guided the hand of financial institutions in providing finance to certain
sectors of the economy. For example, South Korea used “directed credit programmes” in the 1960s and 70s to provide affordable finance to specific economic sectors and type of industries. (Demetriades & Luintel, 2001, p. 461) Such intervention by the government may not be universally applicable owing to differences in institutional arrangements amongst other factors that may have been unique to South Korea during that period. Beside the impact of country-specific factors, empirical studies on the success of financial liberalization have shown mixed results. (Hellmann et al., 1996) Perhaps credit allocation will be value-enhancing in Ghana if government adopts “direct credit programmes” where affordable credit is directed to designated sectors of the economy in line with development goals. In support of this interventionist approach, it can be argued that such a program is preferable to a situation where the government crowds-out private agents from the domestic loan market.

When it comes to lending techniques, Cull et al, 2009 (as cited in Karlan & Morduch, 2009, p. 9) find that over 60% of banks surveyed lent using so-called “individual methods” like “standard bilateral loan contracts”. The results on microfinance show that 75% of a sample comprising 346 top companies used “group-lending” techniques similar to the Grameen Bank model.

2.5 Linking banking to credit issues

Over the years, economists have linked financial market development to growth of economic activity. In 1969, Goldsmith stringed together existing analyses of the mechanisms and links between markets and financial development to come up with “financial repression” (characterised by credit rationing, imposition of interest caps, etc.) According to Demetriades & Luintel (2001, p. 460) a host of developing countries (including South Korea) in the 1960s and 1970s exercised financial repression in order to “secure low cost finance for industries that were deemed important for economic growth”. During financial repression or
what is seen as ‘interventionist policies’, “high reserve requirements”, “interest rate ceilings” and “direct credit programmes” were imposed. (Demetriades & Luintel, 2001, p. 461) There is also “financial deepening” which describes a higher propensity to save owing to, for example, an increase in deposit interest rates). Financial deepening is said to be effective in poverty reduction. [See, Greenwood-Jovanovich (1990)]. In 1973, McKinnon and Shaw extended Goldsmith’s ideas by giving attention to savings and the impact of interest rate caps on returns on savings and investment. The works of McKinnon and Shaw led to the birth of financial liberalization. (Karlan & Morduch, 2009, p. 10)

In the 1980s when financial liberalization embedded in the Structural Adjustment Programme was recommended by the IMF and World Bank for developing countries, interest rate caps were removed, state-owned banks were privatized and generally, government intervention in allocation of credit (or loanable funds) were frowned upon. The practical effectiveness of the financial liberalization has been brought to question owing to the presence of “unofficial credit markets”¹² and “imperfect information in financial markets”¹³. In the case of the latter, Stiglitz (1994) observed that increased interest rates which follow shortly after liberalization bring about credit market problems of adverse selection and moral hazard. In another tale, such value-enhancing effects as financial deepening may not be realized if the government extracts rents being created during financial liberalization. (Hellmann et al., 1996) With regards to the challenges financial liberalization brings to credit markets, interest rate restrictions during financial repression can arguably be applauded for maintaining stability and sanity in the banking industry. (Demetriades & Luintel, 2001, p. 461)

Moving a step further from financial repression and liberalization is the concept of “financial restraint”, proposed by Hellmann, Murdock, & Stiglitz (1997). In this approach, “government

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¹² See Taylor (1983)
¹³ See Stiglitz (1994)
creates rent opportunities, but leaves it to private agents”. (Hellmann et al., 1996) In undertaking policies such as reducing the deposit interest rate below the market equilibrium, the government makes deposit mobilization lucrative for financial institutions. For instance, when the government sets deposit interest rates below the equilibrium with lending interest rate remaining unchanged, the interest rate spread increases hence an incentive for deposit mobilization by banks. “Deposit rate control” is only one of the constituents of financial restraint. The other, “limitations on the amount of competition in the financial sector” primarily pertains to ensuring that rents for first-movers in deposit mobilization are protected for a reasonable amount of time. Generally, “financial restraint is a set of policies designed to improve the efficiency of financial markets”. Operationally, it “embodies a set of financial policies designed to create rent opportunities that induce agents in the financial sector to engage in beneficial activities that are underprovided in a competitive market”. (Hellmann et al., 1996, p. 223) Simply put, the government provides incentives (by way of rent opportunities) that attract private agents to step in (or invest) in order to earn rewards and thereby establishing an advantageous situation for the general good of all. It is worthy of note that financial restraint differs from traditional interventionist approach where the government creates the rents for itself. Financial restraint also differs from financial repression with regards to the fact that while primarily, deposit interest rates are the focus in financial restraint; both deposit and lending interest rates are kept down during financial repression. Furthermore, the government uses the rent it extracts from the private sector for financing its budget deficits. (Hellmann et al., 1996, p. 225) Whereas the transfer of rent from the government to private agents which consequently incentivizes banks to deepen deposit mobilization as well as expand outreach is clear under the financial restraint regime, there appears to be a gap regarding the condition under which the financial restraint model aids in ensuring allocation of funds to private businesses in an economy. In a nutshell, under what
condition is the financial restraint model useful (or applicable) in resolving access to credit issues plaguing private businesses?

Poor savings culture is not uncommon in many developing countries including Ghana. Contestably, financial development takes off with financial deepening. Besides unnecessary exposure to external shocks as a result of borrowing from the international market, it is better for a financial system to mobilize funds locally (including households) because it fosters financial development and leads to expansion of financial outreach. The ability of the financial restraint model to keep the government at bay while private agents pursue financing deepening and strengthening of financial institutions for the long term makes it a more desirable policy option in comparison to financial repression or financial liberalisation – in their natural forms. (Hellmann et al., 1997)

2.5.1 Banking in developing countries

Microfinance companies have been instrumental in reaching the poor and unbanked with financial services around the world. Micro enterprises in developing countries have benefited from micro credit and other pertinent financing schemes rolled out by microfinance companies. A typical example is the Grameen bank model spearheaded by 2006 Noble Laureate Professor Muhammad Yunus in Bangladesh.

Notwithstanding the additional reach provided by microfinance companies to people who may have remained unbanked if left to larger financial institutions, there still remain a significant number of adults without basic financial services. In this regard, Karlan & Morduch (2009, p. 8) observe that “the rapid expansion of microfinance has been stunning but still leaves substantial gaps”. Furthermore, Honohan (2008) using data on microfinance institutions from 160 countries found no support that financial access granted by microfinance institutions have the potential of reducing poverty.
In their separate works, McKinnon (1973) and Shaw (1973) arrived at similar conclusions regarding financial development in developing countries. Shaw ascribed the underdevelopment of financial systems to the weakness of institutions and shallow financial intermediation while McKinnon highlighted “self-intermediation” (Hellmann et al., 1996). In their paper, Hellmann et al. (1997) enumerate moral hazard, deposit mobilization and asset substitution as factors that contribute to financial market inefficiencies in developing countries. Deposit mobilization is undoubtedly fundamental to financial intermediation because all things being equal, the loanable funds increase thus making credit available – although it may not be affordable. Unfortunately, deposit mobilization is a challenge in many developing countries including Ghana.

Following financial liberalization, banking infrastructure and services have increased and there has been a conscious effort on the part of governments to encourage rural and community banking. Notwithstanding, the range of financial products and services offered by rural branches of banks does not match up to that of the urban and sometimes semi-urban areas. For example, access to ATMs, credit and debit cards, and a host of peripheral banking services such as payment of utility bills are very limited or simply non-existent in rural areas. (Basu, 2006, p. 13) On the demand side, the prevalence of the so-called ‘cash economy’, where transactions are more interpersonal and outside of the banking system, does not augur well for deposit mobilization and financial deepening. In another tale, poor households may genuinely not have the means (i.e. disposal income) to open and maintain savings accounts with formal financial institutions like banks. With such poor households, savings opportunities in the informal sector like; ‘susu’ in Ghana is most preferred. (See, Quartey & Blankson, 2008) Furthermore, the age old tradition of storing value in real estate and precious minerals (like gold) even poses a stiffer challenge to financial deepening. In relation to lending, banks operating in developing countries are often content with reducing high
transaction costs as a result of dealing with many borrowers seeking small loan amounts. The lack of credit information on borrowers increases uncertainty and computation of default risk which leads to higher charges of interest rates. In many instances, collateral is required by banks to offset such risks. However, many SMEs as well as households are able to present movable collateral (such as inventory) contrary to immovable collateral like building, plant or land, demanded by banks. (Basu, 2006)

Models used in investigating the role of banks in providing credit in developing countries assume perfect competition in the banking system. Fry (1995) indicates that banking industries in developing countries are most likely to be dominated by a few large banks which consequently lead to collusion. Again, assuming perfect competition in a banking industry of a developing may not hold water owing to the existence of asymmetric information in the credit market, as shown by Stiglitz (1994). The problem of high cost of intermediation (here, high lending interest rates) has been ascribed to inefficiency regarding bank operations in developing countries. (Beck & Demirguc-Kunt, 2006, p. 2941) In addition to the aforementioned industry-level or systemic factors are factors pertaining to institutions and regulations such as credit information sharing (Beck & Demirguc-Kunt, 2006), property rights/law. In assessing the credit channel of transmission of monetary policy, banking industry-level analysis cannot be overlooked especially in view of the postulation by literature that inefficiency regarding bank operations translates into high lending interest rates.

2.6 Summary

This section presents a summary of the key points identified in the literature survey bordering on research questions and objectives raised in Section 1.4 and 1.5 of this dissertation. (See Figure 2.1)
The key points arising from the literature survey regarding the impact of SME access to finance in Ghana are subdivided into; internal (mainly demand side) factors and external (mainly supply side) factors. Under the SME-specific factors the literature survey identifies preference for debt or equity financing options at initial and growth stage of SMEs in the developing countries context as gap yet to be filled in literature. Against the backdrop of “geographical exclusion” as postulated by Peachey & Roe (2004), it is necessary that evidence regarding the influence of location (or physical proximity and ease of accessing a banking infrastructure) is assessed. Influence of other factors such as; gender of the owner, age of the firm, size of operating capital, type of industry, etc.in determining an SMEs’ access to bank credit are noted.

On the supply side, it is found that empirical evidence of the credit (bank lending) channel of monetary transmission mechanism in developing countries is not catered for (although theoretical evidence exists). Furthermore the transmission of monetary policy using the credit channel in an inflation targeting regime is lacking in literature. Although it is widely agreeable that ‘excessive’ government borrowing from the domestic money market may lead to crowding-out of private businesses, primary evidence supporting such a claim is not widely published in literature.

With respect to financial development, the financial restraint model is eloquent in explaining the transfer of rents created by the government to private agents as a means of incentivising private agents (banks) to *inter alia* intensify deposit mobilization. In terms of financial intermediation, the condition under which increasing operating assets of banks can be channelled to private businesses appears to be unspecified by the model. Consequently, a situation could arise where following the an increase in bank’s operating assets as a result of successful transition into the financial restraint regime, attractiveness of returns on government securities will pose as a stiff competition to private businesses (especially SMEs).
seeking bank credit. It is also found that as conduits for monetary policy, inefficiency in banking operations as well as industry factors such as the level of competition and concentration affect the cost of credit (represented by the market lending rate). Regarding the use of collateral to secure bank credit, evidence bordering on the preferred type of asset (movable or immovable) in a Secured Transaction Regime in developing countries is limited in literature. Finally, it is observed that although relationship banking has been instrumental in easing access to finance to businesses during periods of high economic growth in Japan and Germany, evidence of its usefulness in easing access to credit in developing countries such as Ghana remains unnoticeable.

The literature survey identifies the above-mentioned points which are dealt with in the succeeding empirical chapters.

Figure 2.1: Summary of points identified in literature

![Diagram showing SME access to finance, Internal (Demand-side), External (Supply-side), SME-specific factors, Banking industry factors, Government/ Central Bank.]

- Internal (Demand-side):
  - Preference for debt or equity financing at initial and growth stage
  - Impact of location on access to bank credit
  - Access to credit by gender of borrower

- External (Supply-side):
  - Condition under which financial restraint model eases access to credit by private businesses
  - Inefficiency, market power and high lending rates
  - Evidence of type of asset preferred under STR
  - Usefulness of relationship banking in easing access to finance

- SME-specific factors:
  - Condition under which financial restraint model eases access to credit by private businesses
  - Inefficiency, market power and high lending rates
  - Evidence of type of asset preferred under STR
  - Usefulness of relationship banking in easing access to finance

- Banking industry factors:
  - Credit channel of MTM (Empirical evidence from a developing country)
  - Monetary transmission under inflation targeting regime
  - Impact of government borrowing on loanable funds to SMEs
CHAPTER 3

IMPACT OF MONETARY POLICY ON COMMERCIAL BANK LENDING IN GHANA

3.1 Introduction

It goes without saying that the impact of monetary policy on real variables such as aggregate output and employment may not ensue in the absence of financial intermediaries. The role of financial intermediaries (especially commercial banks) as conduits for the effective implementation of monetary policy cannot be overemphasized. (Boyd, 2010, p. 84) However, the sheer presence of commercial banks does not guarantee a smooth transmission of monetary policy between policy authorities and economic agents, whose activities significantly contribute to overall output and employment creation. In 2002, the central bank of Ghana inter alia informally introduced inflation targeting as the desired monetary policy framework to achieve price stability. Since then, the inflation rate has declined from about 31% in January 2002 to 8.72% in December 2011.

Figure 3.1: Average Annual Inflation Rate (2002-2011)

Source: Bank of Ghana (2013)
While the single-digit inflation figures are admirable, stakeholders in the corporate environment continue to lament over high lending interest rates from commercial banks. Base market lending interest rates remain high (above 25%) even after several downward revisions of the central bank’s short-term nominal interest rate – the monetary policy rate and public calls for closely related downward revisions (or responsiveness) of commercial bank lending rates to the monetary policy rate.

Figure 3.2: Monetary Policy Rate and Commercial Bank Lending Rate (2002-2011)


The puzzles brought hereon are; (1) to which monetary policy instrument(s) are commercial bank lending rates most responsive and at what degree? And (2), how long does it take for bank lending rates to respond to or adjust to policy changes?

Interestingly, there is a growing body of work on the impact of monetary policy on the real economy in Ghana. While some have dealt with its history and potential success (Abradu-otoo, Amoah, & Bawumia, 2003; Addison, 2001; Amoah & Mumuni, 2008), others have dealt with its impact on employment and poverty reduction (Epstein & Heintz, 2006). Although relatively more have been written about the impact of monetary policy on bank lending, the reference has been on money supply (Kinful, 2005), loanable funds (Amidu &
This research differentiates itself by examining the responsiveness of commercial bank lending rate in the transmission of the traditional Keynesian interest rate channel. Also, this research examines the aforementioned impact data spanning five years before and after the formal adoption of inflation targeting in Ghana (2002-2011).

Production is a value-enhancing component of any economic structure. Cobb-Douglas’ production function holds that capital is core ingredient of the production. Allocation and availability of capital coupled with price stability is fundamental to fostering macroeconomic growth through increase in business activity. For normal business activity, SMEs tend to rely on reimbursed capital but for expansion of capacity or operations, larger investment capital is required. Given that Ghana’s average economic growth rate of 7% in the last three years, larger investments are needed by SMEs in order to keep up with growing market demand. Based on the assumption that micro finance companies are incapable of financing the scale expansion to be undertaken by SMEs, the source of financing significantly rests on commercial banks. However, lending – if even available – is contracted at ‘uneasy’ lending interest rates.

Figure 3.3: Monthly Interest Rate Spread (2002-2011)

Source: Bank of Ghana (2012)
Successive governments of Ghana since 2000, boast of having created an enabling environment for sound economic growth by ensuring political and macroeconomic stability. A key indicator of this has been reducing inflation to a single digit. Following the Bank of Ghana Act 2002, monetary policy in Ghana changed from monetary targeting to inflation targeting. (See Amoah & Mumuni, 2008) The Monetary Policy Committee of the Bank of Ghana has succeeded to a large extent at both communicating and meeting targets of monetary policy rates (or prime rate)

Generally, this chapter seeks to investigate the impact (i.e. strength of relationship and duration) of monetary policy instruments; the Base rate, Inflation rate and 91-day Treasury bill rate put forward by the Bank of Ghana on commercial bank’s Lending rate via the credit channel of monetary transmission. More specifically, this chapter seeks to answer the following questions; (1) how strong is the link between monetary policy rates and commercial bank lending rate? And (2) how long does it take for banks to revise their rates upward or downwards in relation to changes in the Central Bank’s policy rates?

Section 1 introduces the chapter and presents the background information on issues dealt with in the chapter. The second section of this chapter introduces the theory and practice of monetary assuming the New Keynesian view. Credit Channel of monetary policy transmission and inflation targeting are also presented in the light of current discourse. Subsequent section deal with monetary policy in Ghana – changes in policy regimes, influences and characteristics of the current inflation targeting regime. The third and fourth sections deal with methodology and data analysis i.e. description of data, definition of variables, model specification and results. Policy recommendations are churned out through a discussion of the results in section five.
3.2 Background

3.2.1 Monetary Policy

Monetary policy comprises the “institutional arrangements under which monetary policy decisions are made and executed”. (McNees, 1987, p.3 as cited in Fry, 2000) Monetary policy thus covers the legislation, policy decisions, as well as financial institutions through which the stability and regulation of money and its equivalent are managed. Owing to its macroeconomic implications, monetary policy frameworks are directly supervised by political authority. (Fry, 2000) In recent times the independence of the central bank has caught the attention of academia. See (Alpanda & Honig, 2011)

3.2.2 Monetary Transmission Mechanism

According to Ireland (2010) monetary transmission mechanism outlines how a change in policy with regards to nominal money stock or the short-term nominal interest rate affects real economic variables. (Ireland, 2010, p. 216) In Poole (1970) view, the economy’s response to random shocks significantly hinges on whether the central bank operates by setting the nominal quantity of base money and then allowing the market to determine the short-term nominal interest rate or by setting the short-term nominal interest rate and then supplying whatever quantity of nominal base money is demanded at that interest rate. (Ireland, 2010, p. 217)

New classical economists attribute the link between the money supply and output to imperfect information. They assume that only unexpected changes in the money supply would change output. New Keynesian economists assume that changes in money supply alters real interest rate which then influences consumer spending, investment spending, and net exports. (Hubbard, 2008) This research bases its analysis on the new Keynesian view that
money supply affects aggregate demand and output through interest rates\(^{14}\). For example, with lower interest rates on government securities, banks have the incentive to allocate more funds to buying securities rather than lending to household and firms. This in turn reduces the availability of funds for expansion or additional inventory taking by firms. In that sense, monetary policy reduces the supply of bank loans which in turn reduces investment and then output.

Monetary Policy (hereafter, MP) is known to affect the real economy through channels of Monetary Transmission Mechanism - Money and Credit, Asset Prices, Bank Rates and Exchange Rates.

Figure 3.4: Monetary Transmission Mechanism

\[\text{Source: European Central Bank (2012)}\]

\(^{14}\) Against the background of New Keynesian Model for Monetary Analysis, nominal quantity of money is endogenously determined by the Central Bank to achieve the desired nominal interest rate. Nominal interest rate is thus used as an instrument for implementing monetary policy. See (Walsh, 2003, p. 231)
The money channel is founded on the premise that “borrowers are indifferent to how or from whom they raise funds and regard alternative sources of funds as close substitutes”. (Hubbard, 2008) In this view, the effect of changes in the money supply on interest rates rises from the public’s portfolio decisions about allocating wealth between money and non-money assets. The money channel analyses the effects of monetary policy on economic activity but ignores the importance of financial intermediaries in reducing information cost of borrowing and lending. (Hubbard, 2008, p. 643) The alternative for the ‘money view’ which concentrates on demand in credit is the ‘credit view’ which examines the availability of credit through its supply channels. The credit view is further divided into the bank lending channel and the broad credit channel.

3.2.2.1 Credit channel of Monetary Transmission

Again, this chapter seeks to measure the relationship between monetary policy instruments – the monetary policy rate and inflation on lending interest rates and credit conditions of SMEs in Ghana. The aforementioned trajectory is suggestive of a supply channel analysis consistent with the credit view channels of bank lending and balance sheet channel.

Box 1: Types of credit channel

Briefly, the bank lending channel argues that borrowers (in this research, SMEs in Ghana) are dependent on banks for external financing (Morris & Sellon, 1995, p. 59) and there is no substitute from other sources. The bank lending channel also holds that the central bank is in a position to constrain bank lending (traditionally by using reserve requirements). A bank’s ability or willingness to lend thus directly affects borrower’s access to finance. Unlike the money channel, the bank lending and balance sheet channels acknowledge differences among borrowers in the financial system. In the bank lending channel, transactions costs of bank and non-bank financing, particularly those costs related to information, are higher for households.
and small and medium-sized firms than for large, well-known firms. (Hubbard, 2008, p. 648)

The Balance Sheet Channel describes effects of monetary policy on the value of firms’ assets and liabilities and on the liquidity of balance sheets position. (Hubbard, 2008, p. 646)

Broadly the credit channel is based on the premise that banks play a pivotal role in the transmission of monetary policy. Consequently, banks willingness and ability to intermediate directly affects the level of credit, and thus economic activity. Against this backdrop, the concentration of banks or dominance of the banking sector by a few large banks is likely to deepen the crisis of lending if they are unable or unwilling to lend. Currently in Ghana the top five out of 27 universal-status banks hold 46% of total industry assets, 47% of industry deposits and 40% of industry loans and advances. (PricewaterhouseCoopers, 2012, pp. 31–33) Clearly, an agreement between the top five or ten banks to act in one direction or the other will have industry wide implications; especially with respect to lending interest rates which is a variable in monetary transmission.

Credit market imperfections such as ‘imperfect information’ or ‘costly enforcement of contracts’ bring about a ‘wedge’\(^\text{15}\) between the cost of funds raised externally and the opportunity costs of internal funds. In other words, imperfect information in the credit market, for example, about lenders overestimation of borrowers default risk is translated into higher lending interest rates which in turn drive up the dilemma on the part of borrowers (firms) as to whether to seek external financing (loan) or fall on internal sources. Bernanke & Gertler (1995) refer to the increased cost of borrowing from an external source as the ‘external finance premium’ which according to them reflects the deadweight costs associated with the principal-agent problem that typically exists between lenders and borrowers.

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\(^{15}\) Walsh (2010, p. 507) summarily ascribes the wedge to “agency costs associated with information asymmetries and the inability of lenders to monitor borrowers costlessly”.
3.2.2.2 Bank Lending Channel

The bank lending channel emphasizes the special nature of bank credit and the role of banks in the economy’s financial structure. As a result, policy actions that affect the reserve positions of banks will generate adjustments in interest rates and in the components of the banking sector’s balance sheet. Thus, in the event where there is an increase in reserve requirements and banks cannot offset the decrease in liquidity by raising funds in selling securities, etc. bank lending will contract. On the demand side, bank lending is considered to be special in the sense that bank borrowers do not have close substitutes for obtaining funds. As a result, variation in the availability of bank lending may have an independent impact on aggregate spending. Building blocks of the bank lending channel therefore, is the lack of close substitutes for deposit liabilities on the liability side of the banking sector’s balance sheet and the lack of close substitutes for bank credit on the part of borrowers. (Walsh, 2010, p. 504) According to Bernanke & Gertler (1995) because of financial deregulation and innovation, the importance of the traditional bank lending channel has most likely diminished over time. While we believe this channel is still empirically relevant, obtaining sharp measurements of its potency is a challenging task. In any case, however, this framework may still be of value for interpreting historical data, for assessing the impact of institutional changes on the transmission of monetary policy and for comparing monetary transmission mechanisms across countries. (Bernanke & Gertler, 1995, p. 42)

3.2.2.3 Balance Sheet Channel

The balance sheet channel deals with the impact of credit market conditions (during contractionary or expansionary monetary policy) on the net worth of firms (borrowers) and thus their ability to access external finance. The balance sheet channel is also referred to as the “Broad Credit Channel” by Walsh (2010, p. 507) because it goes beyond the scope of the
bank lending channel to analyse the essential role a borrower’s net worth plays in estimating its financial position. The **borrower’s net worth** is defined operationally by Bernanke & Gertler (1995) as “the sum of her liquid assets and marketable collateral”. This research adopts their definition owing to its universality as applied to both small and large firms. All things being equal the broad channel postulates that a healthy net worth should cause the external finance premium to reduce.

Again, credit market imperfections affect the costs of internal and external financing. Traditionally, borrowers need collateral to improve their credibility in order to access affordable loans. An economic event that negatively affects the value of a firm’s net worth will reduce the efficacy of its collateral and thus its ability to access external finance (or loans). This is because the external finance premium will be higher as a result of the decrease in the value of the guarantee for the repayment of the loan - collateral. In another vein, as a result of the decrease in a firm’s net worth the value of internal sources of financing like sale of assets will be weakened. The gap created in the availability of financing options also forces the firm to seek external finance, sometimes at any costs. Walsh (2010) describes this ‘crave’ for external financing as the financial accelerator effect that arises from (1) contractionary monetary policy that produces an economic slowdown that reduces firms cash flow and profits and (2) adjustment (loss of value) of asset prices to contractionary monetary policy.
3.2.3 Inflation Targeting

Under an inflation targeting framework, the central bank commits to a publicly announced numerical range for inflation, subordinates other intermediate targets and institutionalizes its commitments through a set of mechanisms that emphasize transparency and accountability for outcomes (Gemayel, Jahan, & Peter, 2011, p. 5) It is worthy of note that some central banks prefer to announce point targets instead of target bands or a “numerical range”. Notwithstanding, inflation targeting is more generally, as described by Bernanke et al (1999),

Box 2: History of inflation targeting

According to Hammond (2012) many central banks adopted inflation targeting as a pragmatic response to the failure of other monetary policy regimes, rather than in response to new economic thinking. Historically, the nominal anchor (i.e. a nominal variable used in monetary policy to achieve price stability in the long run) has changed over time. Before the collapse of the Bretton Woods system of fixed exchange rates in the 1870s, central banks used the gold standard or pegging the currency to another strong. This period was succeeded by monetarism in the 1980s which saw many central banks attempting to control prices by controlling the supply of money in the economy. This depended on a stable relationship nominal expenditure and the quantity of money; known as the Quantity Theory of Money. By calculating the money supply based on its relationship to macroeconomic variables to target a specific rate of inflation, the central bank had little discretion in using its judgement in assessing the supply of money. In practice, successful monetary targeters actively took account of the variability in the money supply and economic relationships. Notwithstanding, monetary targeting failed in many countries as the demand for money function became unstable typically as a result of deregulation plus financial innovation; new types of money-like assets together with disintermediation from banking system. The failure of money targeting in the mid-1980s and the collapse of fixed exchange rate pegs in the early 1990s was followed by the emergence of inflation targeting with floating exchange rates as the new monetary policy framework of choice. (Hammond, 2012, p. 5)

16 The public announcement is mostly referred to as an explicit target which according to Bernanke and Mishkin (1997) is “a targeted rate of inflation publicly announced by the government or the central bank (or both), indicating that the monetary authority will be obliged to attain and keep the stated inflation rate over some time horizon” (Rossi, 2009, p. 94)
a monetary policy framework whose centrepiece is some numerical definition of price stability, as measured by a price index. (Rossi, 2009, p. 92)

Inflation targeting was introduced in New Zealand in 1990. It spread very quickly to an increasing number of countries: Canada 1991, the UK 1992, Sweden, Finland and Australia 1993. The Czech Republic was the first transition economy to introduce inflation targeting, and Brazil was the first developing country to introduce full-fledged inflation targeting. Israel and Chile have gradually developed into inflation targeters. (Svensson, 2001) In Sub-Saharan Africa, South Africa (in 2000) and Ghana (in 2007) are the only countries formally practicing inflation targeting. (Amoah & Mumuni, 2008; Hammond, 2012)

Inflation targeting frameworks include five main elements:

i. An explicit central bank mandate to pursue price stability as the primary objective of monetary policy and a high degree of operational autonomy;

ii. An explicit quantitative target for inflation;

iii. An information inclusive strategy in which many variables, not just monetary aggregates and the exchange rate, are used to inform policy decisions;

iv. Central bank accountability for performance in achieving the inflation objective, mainly through high-transparency requirements for policy strategy and implementation; and

v. A policy approach based on a forward-looking assessment of inflation pressures, taking into account wide array of information. (Bernanke and Mishkin, 1997; Mishkin, 2004; Heenan, Peter and Roger, 2006 as cited in Gemayel et al., 2011, p. 5)
Although intuitive at this point, the adoption of inflation targeting must succeed the following preconditions: (a) Institutional independence, (b) a well-developed technical infrastructure, (c) resilient economic structure and (d) a healthy financial system. (Gemayel et al., 2011, p. 32)

a. Institutional independence mainly has to do with the central bank’s independence both on paper and in practice. Where on paper refers to a law enacted by the law making arm of government, granting autonomy to the central bank and giving it a mandate to undertake certain objectives such as price stability or single-digit inflation. In practice thus refers to operational independence i.e. being able to act void of fiscal and political pressures by a government in power.

b. Secondly, the central bank staff must possess the requisite skill in research and policy making to ensure that computations and models used to determine monetary policy rates as well as forecast inflation rivals best practice. It goes without saying, that such competencies are imperative to command trust and reliable of policy decisions on interest rates and inflation.

c. In addition to the independence and competence of the central bank, the economy ought to be resilient to external shocks pertaining to exchange rates, commodity prices, and international trade just to mention a few. In this case, economies which will be prune to shocks will be those that are heavily dependent on single commodities for export, economies where significant amount of input of domestic production is imported, and the like.

d. Furthermore in order for the policy decisions to be efficiently transmitted, agents of financial intermediation – the banking system and capital markets – must be developed. In many developing economies, the banking system seems to develop faster than the capital market system. This perhaps accounts for the central bank’s reliance on the banking sector for transmission of monetary policy. However, an
underdeveloped banking system is most likely to be sluggish (slow and inelastic) in its response to monetary policy decisions made by the central bank. Mishra, Montiel, & Spilimbergo (2010) also note that given the weak institutional frameworks, reduced role of securities markets, imperfect competition in the banking sector and the resulting high cost of bank lending to private firms, the traditional channels (interest rate, bank lending, and asset price) are impaired in low-income countries (LICs).

Challenges of the inflation targeting regime are, but not limited to, the central bank’s ability to control inflation, uncertainty about the transmission mechanism, future shocks on the economy and transparency. Although expected inflation rate is used as the target in the inflation targeting regime, inflation itself is not solely determined by the activities of the central bank. Other factors besides money supply, such as; exchange rate shocks, asset prices, government expenditure or price levels of production inputs are likely to reflect in the Consumer Price Index and thus inflation.

Another challenge in the implementation of inflation targeting especially in Ghana is the responsiveness of commercial banks to monetary policy decisions. With the lapses in transmission of monetary policy, there is bound to be a disjoint in achieving output target notwithstanding the attainment of price stability in the long run. Svensson (1998) acknowledges that there is an asymmetry between the inflation and output target since the inflation target is subject to choice while the output target is not.

Empirical research also point out the challenges for successful implementation of inflation targeting in emerging and developing countries. Alpanda & Honig (2011) found that central bank independence is not a prerequisite for successful implementation of inflation targeting. Their study also found evidence that one channel through which inflation targeting lowers
inflation more in countries with low central bank independence is the reduction of budget deficits.

Inflation targeting in some LICs come about as IMF conditionality. According to Epstein (2007), the IMF, adoption of inflation targeting is recommended to LICs to ensure that the inflation rates are reduced to single-digits. This is because rising inflation owing to inflow of capital coupled with a reduction in net international reserves of an economy will render that economy unable to repay its loans under the NDA-NIR approach. To be able to do this, inflation targeting requires a further tightening of monetary conditions for countries undergoing IMF programs. This tightening results in slow employment growth and poverty reduction in LICs.

3.2.4 Monetary policy in Ghana

Changes in monetary management in Ghana have been in tandem with changes in the political-economy as well as global and local financial innovations. The current monetary and financial reforms trace their origin to the launch of the Economic Recovery Programme (ERP) in 1983. The choice and definition of instruments and targets for monetary management have been changed over time to reflect the growth of the financial (banking) system as well as improvement in macroeconomic indicators. Despite the changes in the choice of instruments and targets, the focus of monetary policy in Ghana has remained on price stability. (Abradu-otoo et al., 2003; Addison, 2001)

3.2.4.1 Pre-Inflation Targeting

At the beginning of the reforms in the early 1980s, direct control was applied. The central bank determined the money supply growth for the year based on economic growth and inflation objectives; determine the credit growth and then monitor compliance. The main
instruments of monetary management during this period of direct controls until 1987 were in the form of ceilings on commercial bank credit to the private sector and regulation of interest rates. Reserve requirements were also imposed. The level of reserve requirements climbed up to about 27% in 1990 before being ‘progressively lowered’ to 5% in 1993. (Addison, 2001) As a result of recent financial sector reforms, a secondary reserve of 20% has been removed to increase liquidity of banks which in turn leaves the reserve requirement to about 9%.

By 1992, interest rates and credit had been decontrolled and institutional arrangements to facilitate the system of indirect monetary management were put in place. The framework for conducting monetary policy then became the IMF’s financial programming technique. The framework used high powered money as the operational target whilst broad money served as the intermediate target. The key assumptions under this framework were a stable velocity of money and multiplier (i.e. the existence of stable relationship between the intermediate target and the ultimate target (inflation) on the one hand, as well as between the operational and the intermediate target). (Amoah & Mumuni, 2008, p. 13)

3.2.4.2 Inflation Targeting in Ghana

Inflation targeting was informally instituted in Ghana by the passing of the Bank of Ghana Law (Act 612), section 27 in 2002. This led to the formation of the Monetary Policy Committee (MPC) by the Bank of Ghana charged with the mandate of formulating and implementing policy in the areas of money, banking and credit. In line with the price stability goal of the former monetary policy regimes, the MPC was to maintain stable prices conducive for balanced and stable economic growth as well as promoting and preserving monetary stability. (Bank of Ghana, 2013b) May 2007 is when Ghana (through the Bank of Ghana) officially adopted formal inflation targeting. (Gemayel et al., 2011, p. 9; Hammond, 2012, p. 25)
Currently the MPC comprises of seven (7) members – the Governor, the two Deputy Governors, the Director of the Bank’s Research Department, The Director of Banking Services of the Bank of Ghana and two external members appointed directly by the Ministry of Finance. The MPC meets bi-monthly beginning from February. To ensure accountability and transparency, the MPC disseminates policy actions and decisions through press releases and sometimes public lectures. (Bank of Ghana, 2013)

3.2.4.3 Impact of inflation targeting in Ghana

It is evident that whereas the Bank of Ghana is taking steps to achieve its medium term and intermediate goal of inflation reduction to 5% with an allowance of ±1%, external pressures such as global food and fuel price shocks pose as a challenge. Moreover, internal pressures as end-of-year price hikes of consumption goods, seasonal surges brought about by elections and the occasional depreciation of the Ghana Cedi to the US dollar pose as major hurdles as well. (Alichi et al., 2009; Gemayel et al., 2011, p. 10) The challenges encountered by the Bank of Ghana in reducing inflation are noted by Alichi et al. (2009) as not uncommon in the inflation-reduction phase of IT. They add that these challenges do not imply that the policy framework is unworkable, but that they do reinforce the argument for flexible implementation of IT.

Amoah & Mumuni (2008) reviewed the process of transition from monetary aggregate targeting to inflation targeting in Ghana and concluded that there is support for the current framework both on institutional and technical grounds and that the practical aspects of implementation of inflation targeting in Ghana remain similar to those of other inflation targeting countries. They suggest that financial liberalization and the increase use of information technology in the banking system deepened the financial system with an extension of the supply of financial instruments. Thus the links between the intermediate
target (monetary aggregate) and the final target (inflation) became less predictable and reliable\textsuperscript{17}. They found that there is significant reduction in the volatility of inflation as well as real GDP.

Concretely, the implementation of IT in Ghana can be described as one with a ‘flexible’ approach referred to by L. Svensson (1998, p. 13) as ‘inflation-forecast targeting’. Also in relation to rigidity of the policy targets, Alichi et al (2009) noted that in responding to shocks, the Bank of Ghana, like many other monetary authorities, has sought to reduce the variability of output and interest rates, rather than try to hit pre-announced annual inflation targets at all cost.

Amidu & Wolfe (2008) analysed a panel data of monetary policy and bank lending variables from 1998 to 2004 and found that Ghanaian banks’ lending behaviours are affected significantly by the country’s economic activities and changes in money supply. They also found that the central bank’s prime rate and inflation rate negatively affect bank lending, although the results for inflation was statistically insignificant.

3.3 Methodology

3.3.1 Data Description

The variables used for the analyses fall under three categories: monetary policy instruments (\textit{monetary policy rate, money supply and inflation rate}), money market rates or alternatives to lending (\textit{91-day Treasury bill rate and exchange rate}) and a proxy for money demand (\textit{deposit interest rate}). Data on all variables were compiled from the Bank of Ghana monetary time series online database and comprises monthly data from 2002 to 2011. Again data from

\textsuperscript{17} Having to migrate to inflation targeting because monetary aggregates targeting was becoming insufficient reflects the words of the former Governor of the Bank of Canada, “we did not abandon monetary aggregates, they abandoned us” (Hammond, 2012, p. 5)
this 10 year period is used in order to capture 5 years before and after the official adoption of inflation targeting in Ghana. It is noteworthy that prior to becoming an official inflation targeter in 2007, inflation targeting was formally introduced in 2002.

Table 3.1: Description of variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Label</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lending rate</td>
<td>LR</td>
<td>Base lending interest rate</td>
</tr>
<tr>
<td>Monetary Policy rate</td>
<td>MPR</td>
<td>Policy rate set by Bank of Ghana’s MPC</td>
</tr>
<tr>
<td>Money supply</td>
<td>M2</td>
<td>M2 plus foreign exchange deposits</td>
</tr>
<tr>
<td>Inflation</td>
<td>INF</td>
<td>CPI inflation (2002=100)</td>
</tr>
<tr>
<td>Treasury bill rate</td>
<td>TBR</td>
<td>91-day Treasury bill rate</td>
</tr>
<tr>
<td>Exchange rate</td>
<td>EXR</td>
<td>Interbank GHc/USD exchange rate</td>
</tr>
<tr>
<td>Deposit rate</td>
<td>DEPINT</td>
<td>Interest rate on savings and time deposits</td>
</tr>
</tbody>
</table>

Monetary Policy Rate (MPR)

The monetary policy rate\(^{18}\) set by the Bank of Ghana’s monetary policy committee (MPC), inter alia, serves as the base above which interbank market rates and subsequently the average base market lending rate are negotiated and computed respectively. Policy changes that affect the MPR affects cost of borrowing by banks from the interbank market and from other sources such as large companies. Including MPR in the model is essential on two fronts. First, it is the short term nominal interest rate which sets off the monetary transmission mechanism. Secondly, its impact on the interbank lending market cannot be under toned because in practice, shallow deposit mobilization from households may have left banks reliant on short-term borrowing where lending interest rates are a mark-up of the MPR.

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\(^{18}\) Presumably, the Bank of Ghana sets the short-term nominal interest rate and then supplies whatever quantity of nominal base money is demanded at that interest rate; in line with Poole’s analysis. Poole (1970; as cited in Ireland, 2005)
**Inflation Rate**

Having adopted the inflation targeting framework, the importance of inflation figures to monetary policy in Ghana cannot be overemphasized. In order to achieve the overall goal of price stability, meeting inflation targets have somewhat become a litmus test for central bank commitment and the government’s fiscal discipline in relation to spending. The inflation figures used are computed from the Consumer Price Index (CPI). GDP deflator is not used here because it may capture only prices of locally produced products. CPI on the other hand takes into account prices of both local and foreign produced products (goods and services). The central bank also uses CPI-inflation reported by the Ghana Statistical Service in its official documents. As one of three reasons that explain the demand for money in an economy, the use of inflation in this analysis then partially accounts for choice of bank deposits\(^{19}\) and lending by individuals and firms.

**Money Supply**

Money supply is defined as broad money (M2) plus foreign currency deposits hence, M2+. Following the liberalization of Ghana’s economy and reforms in the financial market, trade and consequently the use of hard currency have increased. For instance Ghana relies on cocoa export revenues to finance a significant part of its debt obligations. The presence of M2+ in the model is meant to capture reaction of bank lending rates to the quantity of money.

**Treasury bill rate**

Generally, the central bank increases or decreases the monetary base by selling or buying respectively through open market operations (OMO). The 91-day Treasury bill is perhaps the most patronized in the money market in Ghana. Commercial banks and other financial

\(^{19}\) Partially because in terms of deposits other factors such as whether or not the deposit interest rate is above the inflation rate is more compelling since rationally, a negative real return on savings is less desired.
institutions place bids during weekly auctions organized by BoG. The Treasury bill rate is an indication of the preferred interest rate at which citizens through financial intermediaries are prepared to lend to the government. Within the period of analysis, the Treasury bill rate on the average is at least 3% above the inflation rate. Taking into account the relatively high cost of borrowing from the interbank market and additional costs in screening and monitoring clients, purchasing Treasury bills reduces the risk and stress of lending by commercial banks to SMEs. In this regard, buying treasury bills have become an alternative use of commercial bank’s liquid operating assets.

**Exchange rate**

The data for exchange rate used in this research is the interbank exchange rate between the United States Dollar and the Ghana Cedi. As banks are allowed to take foreign currency deposits, a fraction of its operating assets which could have been held in local currency (especially loanable funds) may be held in foreign currency. Understandably, the depreciation of the Ghana Cedi against major currencies in the world encourages preservation of money assets in foreign currency. However, funds available for lending will be affected. The exchange rate here – representing how profitable holding a foreign currency is – postures as an alternative investment opportunity. In other words the exchange rate becomes a competitor for funds that could have been used in lending. The inclusion of the exchange rate in the model is envisaged to capture the impact of external shocks to affordability of credit in Ghana.

**Deposit interest rate**

Plainly the deposit interest rate is indicative of a couple of things. First, the control of deposit interest rate by the government is suggestive of financial repression posited by Hellmann,
Murdock, & Stiglitz (1996). Deposit interest rate that is above equilibrium and/or inflation rate takes away the incentive for banks for undertake deposit mobilization and vice—versa. Needless to say, improved deposit mobilization (financial deepening) increases the amount of loanable funds for banks. Basically, the deposit interest rate represents the cost of bank borrowing mainly households. Data on deposit interest rate is interest rate on savings and time deposits recorded by the Bank of Ghana.

3.4 Data Analysis

3.4.1 Correlation
Generally, the pairwise correlation results indicate strong positive correlation between \( LR \) (dependent variable) and the explanatory variables. With respect to monetary policy instruments, \( MPR \) and \( INF \) show a strong positive correlation while \( M2 \) shows a moderate negative correlation with \( LR \) – the dependent variable. \( INF \) also shows strong positive correlation with \( MPR \) and negative moderate correlation with \( M2 \). In terms of money market variables, \( TBR \) shows a strong positive correlation while \( EXR \) shows a weak negative correlation with \( LR \). As expected, \( TBR \) and \( EXR \) show a very strong positive correlation with \( INF \) and \( M2 \) respectively. The relationship \( TBR \) and \( INF \) is suggestive of steps by the government to keep the Treasury bill rate above the inflation rate in order to maintain the attractiveness of government securities by guaranteeing the store of value. The strong positive correlation of (0.93) between \( M2 \) and \( EXR \) presumably reflects the embedment of foreign exchange deposits in the current definition of broad money supply (M2+) by the Bank of Ghana.
Table 3.2: Pairwise correlation results

<table>
<thead>
<tr>
<th></th>
<th>lnLR</th>
<th>lnMPR</th>
<th>lnM2</th>
<th>lnINF</th>
<th>lnTBR</th>
<th>lnEXR</th>
<th>lnDEPINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnLR</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnMPR</td>
<td>0.8709</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnM2</td>
<td>-0.4838</td>
<td>-0.7328</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnINF</td>
<td>0.5775</td>
<td>0.7856</td>
<td>-0.5314</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnTBR</td>
<td>0.8034</td>
<td>0.8951</td>
<td>-0.4426</td>
<td>0.7942</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnEXR</td>
<td>-0.1595</td>
<td>-0.4784</td>
<td>0.9322</td>
<td>-0.3745</td>
<td>-0.1700</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>lnDEPINT</td>
<td>0.8279</td>
<td>0.7430</td>
<td>-0.2933</td>
<td>0.6100</td>
<td>0.8415</td>
<td>-0.0135</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

3.4.2 Unit Root Test

The stationary properties of all variables were examined using the Augmented Dickey-Fuller (ADF) test. The results have been compiled in Table 3.3 below. The unit root test results reveal that all variables are stationary after first differencing I(1)\(^{20}\). All t-statistics reported a significance level of less than 0.05 under I(1)\(^{21}\).

Table 3.3: Unit root test results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Z(t) score</th>
<th>p-value</th>
<th>Variable</th>
<th>Z(t) score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnLR</td>
<td>-2.592</td>
<td>0.0946</td>
<td>DlnLR</td>
<td>-12.754</td>
<td>0.0000</td>
</tr>
<tr>
<td>lnMPR</td>
<td>-2.039</td>
<td>0.2697</td>
<td>DlnMPR</td>
<td>-12.095</td>
<td>0.0000</td>
</tr>
<tr>
<td>lnINF</td>
<td>-3.181</td>
<td>0.0211</td>
<td>DlnINF</td>
<td>-12.908</td>
<td>0.0000</td>
</tr>
<tr>
<td>lnM2</td>
<td>-0.962</td>
<td>0.7668</td>
<td>DlnM2</td>
<td>-13.716</td>
<td>0.0000</td>
</tr>
<tr>
<td>lnTBR</td>
<td>-2.685</td>
<td>0.0766</td>
<td>DlnTBR</td>
<td>-11.683</td>
<td>0.0000</td>
</tr>
<tr>
<td>lnEXR</td>
<td>-0.855</td>
<td>0.8024</td>
<td>DlnEXR</td>
<td>-11.587</td>
<td>0.0000</td>
</tr>
<tr>
<td>lnDEPINT</td>
<td>-3.621</td>
<td>0.0054</td>
<td>DlnDEPINT</td>
<td>-12.304</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

\(^{20}\) \textit{lnINF} \text{ and } \textit{lnDEPINT} \text{ are stationary in log form with a } p\text{-values of } 0.021 \text{ and } 0.005 \text{ respectively} \n
\(^{21}\) See Appendix 2.1 and 2.2 for line plots of variables in log and log-difference
3.4.3 Cointegration Test

The cointegration test is conducted prior to running the regression model in order to avoid the problem of spurious regression. Moreover, results from the cointegration test are instrumental in choosing to apply a vector autoregressive model (VAR) or a vector error correction model (VECM). VAR is applied when variables are originally stationary and are not-cointegrated. Conversely, VECM is applied when variables are originally non-stationary and cointegrated.

This is done by conducting a Dickey-Fuller test on the least squares residuals.

\[ \Delta \hat{e}_t = y \hat{e}_{t-1} + v_t \]  

The null hypothesis of no cointegration is rejected at the 0.05 significance level. Additionally, the Johansen cointegration test is run to determine the cointegration rank. The results show that there is at least one (1) cointegrated equation. Prior to estimating the cointegration rank, the optimal lag is investigated and three (3) lags are selected by three selection order criteria: Likelihood ratio (LR), Akaike information criterion (AIC), and final prediction error (FPE). The Schwarz’s Bayesian information criterion (SBIC) and Hannan-Quinn criterion (HQIC) selected lag 1. AIC’s lag three (3) is used because it is the smallest value. (See Appendix 4.1)

3.4.4 Model specification and results

3.4.4.1 Multiple Regression Model

The multiple regression model is employed here to inform about the degree of responsiveness of changes in the dependent variable (lending rate) as a result of a unit change in an explanatory variable, all others held constant. In its functionary form, the multiple regression model is expressed as;

\[ y_t = \beta_o + \beta_1 x_{t1} + \beta_2 x_{t2} + \cdots + \beta_k x_{tk} + \epsilon_t \]  

(3.2)
Three models are run in this regression analysis part. In the first, monetary policy variables are regressed on the lending rate. In the second and third models, money market variables and money demand variables (deposit interest rate) are added respectively. Equation (3.3) below, presents the functional form of the model in which all variables are used. The null hypothesis is all coefficients of explanatory variables are equal to zero; meaning that a unit change in – for instance, inflation has no impact on changes in lending rate (i.e. the dependent variable). Representatively, \( H_0: \beta_1 = 0 \) against the alternative, \( H_a: \beta_1 \neq 0 \). The hypotheses for the other explanatory variables are constructed by substituting \( (\beta_1) \) with their respective coefficients.

\[
\Delta \ln LR_t = \beta_0 + \beta_1 \Delta \ln MPR_{t1} + \beta_2 \Delta \ln M2_{t2} + \beta_3 \Delta \ln INF_{t3} + \beta_4 \Delta \ln TBR_{t4} + \\
+ \beta_5 \Delta \ln EXR_{t5} + \beta_6 \Delta \ln DEPINT_{t6} + \epsilon_t
\]  

(3.3)

Table 3.4: Multiple Regression results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>DlnMPR</td>
<td>.3731119***</td>
<td>.3599328***</td>
<td>.2941425***</td>
</tr>
<tr>
<td>DlnM2</td>
<td>-.0414076</td>
<td>-.2078852***</td>
<td>-.1618079***</td>
</tr>
<tr>
<td>DlnINF</td>
<td>.026407</td>
<td>.0518107**</td>
<td>.0411604*</td>
</tr>
<tr>
<td>DlnTBR</td>
<td>-.1004586***</td>
<td>-.1427966***</td>
<td></td>
</tr>
<tr>
<td>DlnEXR</td>
<td>.6959445***</td>
<td></td>
<td>.5421796***</td>
</tr>
<tr>
<td>DlnDEPINT</td>
<td></td>
<td></td>
<td>.1683341***</td>
</tr>
<tr>
<td>Adjusted ( R^2 )</td>
<td>0.3743</td>
<td>0.4782</td>
<td>0.6347</td>
</tr>
<tr>
<td>Number of observations</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
</tbody>
</table>

Note: ***, **, * represent significance levels of 1%, 5% and 10% respectively

The results from the three models used in the multiple regression report an overall goodness fit of 0.000. The adjusted r-squared of 0.37, 0.48 and 0.63 inform that 37%, 48% and 63% of the variations in the dependent variable (lending rate) can be explained by changes in the explanatory variables. Interestingly, the adjusted r-squared which is meant to penalize (or decrease) for unnecessary variables added to the model is seen to be increasing. Adjusted r-
squared of 63% hence suggests that a few more variables may be needed to adequately explain changes in the lending interest rate. Notwithstanding, the monetary policy rate is statistically significant at 1% in all three models. Besides inflation which is significant at 5%, the coefficient of all other variables in Model 2 can be trusted with 99% confidence. In Model 3, coefficients of monetary policy rate, money supply, Treasury bill rate, exchange rate and deposit interest rate register a 0.01 significance level while the coefficient of inflation rate is at the 0.1 significance level. Again the coefficients in Model 3\textsuperscript{22} show that within the period, the lending rate has been more responsive to changes in the USD/GHc exchange rate (0.54) and monetary policy rate (0.29).

To ensure reliability of the results, post estimation tests were conducted on the residuals from the regression models. Of more concern was to be certain that the standard errors, which are used in calculating the t-statistics and p-values, are not over- or understated. This is because wrongly estimated standard errors will mislead the results on significance levels of the coefficients. By running the regression with log-transformed variables, there was expectation that the results will be homoscedastic. The results from the Breusch-Pagan test show that the residuals are homoscedastic. Furthermore, there is no exact collinearity between the explanatory variables since the mean variance inflation factors for all three models are less than 4. The Breusch-Godfrey test for serial correlation initially revealed autocorrelation between the error terms. This was addressed by running a Prais-Winsten regression to fix the autocorrelation problem.

\textsuperscript{22} The coefficients of only Model 3 are referred to here because they hold a better explanatory power than the other two models due to a higher adjusted $R^2$
Table 3.5: Summary of post estimation test on multiple regression analyses

<table>
<thead>
<tr>
<th></th>
<th>Heteroskedasticity (Breusch-Pagan test)</th>
<th>Serial correlation (Durbin Watson - d test)</th>
<th>Multicollinearity (Mean variance inflation factor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>1.79 (0.1810)</td>
<td>2.154850</td>
<td>1.49</td>
</tr>
<tr>
<td>Model 2</td>
<td>1.32 (0.2507)</td>
<td>2.175612</td>
<td>2.62</td>
</tr>
<tr>
<td>Model 3</td>
<td>2.86 (0.0911)</td>
<td>2.124307</td>
<td>2.48</td>
</tr>
</tbody>
</table>

3.4.4.2 Granger Causality

A limitation of the multiple regression model is that the results cannot be interpreted as variable X causing Y. Granger causality on the other hand is capable of measuring the direction of causation between two variables. Simply put, a variable (X) is said to granger-cause another variable (say, Y) if past values of X explain Y. In its general form, granger causality is given as:

\[ Y_t = \alpha + \phi_1 Y_{t-1} + \beta_1 X_{t-1} + e_t \]  
(3.4)

It is worthy of note that granger causality is only applicable to time series variables. Furthermore, the variables used must be stationary or differenced to be stationary if unit root is present. Additionally, when variables are cointegrated, an error correction term must be included in the model (Koop, 2005, p. 187,192) Since all variables listed in Table 1 are non-stationary (in levels) and cointegrated, a difference is taken and the following general form of the model is applied:

\[ \Delta Y_t = \alpha + \lambda e_{t-1} + \beta_1 \Delta Y_{t-1} + \cdots + \beta_p \Delta Y_{t-p} + \gamma_1 \Delta X_{t-1} + \cdots + \gamma_q \Delta X_{t-q} + \epsilon_t \]  
(3.5)
Note that unlike Equation 3.4, an error term ($\lambda e_{t-1}$) has been included and difference of variables denoted by ($\Delta$) are used\(^2\). The null hypothesis is expressed as $H_0: \gamma_1 = \cdots = \gamma_q = 0$, meaning that X does not granger cause Y if all coefficients of X are equal to zero. In other words, changes in Y cannot be explained by past values of X.

All variables in Table 3.1 were used in the equation. Granger causation was reported in only 3 cases. Lending rate is granger caused by Treasury bill rate at 5% significance level, monetary policy rate granger causes Treasury bill rate at the significance level of 0.10 and monetary policy rate is granger caused by Treasury bill rate at 10% significance level.

The results between lending rate and Treasury bill rate show that past values of the latter (TBR) is able to explain changes in the former (LR) with at a confidence of 95%. Government borrowing from the money market is typified by the Treasury bill rate. TBR granger causing LR is suggestive of bank’s investment decisions pertaining to operating assets i.e. a preference for allocating funds into treasuries as compared to firms. Suggestively, the attractiveness of lower-risk-but-assured-return Treasury bills affects bank lending rates – an expression of their preference to lend to firms. In another vein, heavy government borrowing from the money market leads to crowding-out effect which in turn creates a scarcity of funds. With relatively little money to lend to firms and many borrowers, the lending interest rate is forced up by market forces and therefore the granger causality between TBR and LR. The results again show that TBR granger causes MPR. The TBR is fixed at a weekly auction where prices are agreed upon by market players and the government. Contestably, the monetary policy committee (MPC) pick up a sense of the basic interest rate at which the market is ready to lend to a borrower and thereupon, in addition to other considerations, fix the monetary policy rate which is the base rate at which the central bank is

\(^2\)The error correction variable is acquired by saving the residuals after "running an ordinary least square regression of $Y$ on $X". (Koop, 2005, p. 204)
prepared to lend. In this case, the granger causality result hold true as the past values of TBR is able to predict changes in MPR. The other side of the bidirectional causation where MPR granger causes TBR can be ascribed to interaction between market forces.

To further investigate the explanation of crowding-out of private sector offered for the granger causality test between TBR and LR, Figure 3.5 comprising the ratio of loans and securities to banks’ total earning assets is constructed. The figure shows that loans (i.e. mortgage loans, retail loans, corporate and commercial loans and other loans), on the average, make up a larger portion of banks’ earning assets in comparison to government securities. Whereas the gap between banks’ allocation of earning assets with respect to loans and securities widened between 2005 and 2008, the portion of loans is reducing while that of securities is increasing after 2009. The candidate posits that while crowding-out by the government cannot be denied, this investigation mitigates the overdramatized impact of government borrowing (through securities) on access to finance by the private sector. (See, Biekpe, 2011, p. 85; Bucks & Mathisen, 2005, p. 21)

Figure 3.5: Average proportion of loans and securities to total earning assets of 11 banks

Source: Data from Fitch Solutions (2013)
3.4.4.3 Vector Error Correction Model (VECM)

Here, the VECM is employed to meet the research objective of calculating the level and time at which the lending rate returns to equilibrium or adjusts to shocks from monetary policy variables. This is done by interpreting the error correction term provided after the estimation.

It has been mentioned earlier that monetary policy is transmitted via financial intermediaries to the real economy. As the dominant financial intermediary in developing countries including Ghana, commercial banks serve as the conduit for monetary policy. Access to affordable credit therefore begins with the responsiveness of lending rates to policy rates. With this in mind, the impact of monetary policy on access (affordability) to finance will be incomplete without estimating how long it takes for lending rates to fully adjust to shocks from monetary policy.

Granger causality test involves two variables represented (for example) in Equation 3.5 as X and Y. For the ease of computing bi-directional causality as well as short run disequilibrium, a system of equations instead of single equation is required. In the system of equations all variables take turns as dependent variables. With reference to monetary policy variables, the model can be written as:

\[
\begin{align*}
\Delta Y_t &= \alpha_1 + \lambda_1 e_{t-1} + \beta_{11} \Delta Y_{t-1} + \cdots + \beta_{1p} \Delta Y_{t-p} + \gamma_{11} \Delta X_{t-1} + \cdots + \gamma_{1p} \Delta X_{t-p} \\
& \quad + \delta_{11} \Delta Z_{t-1} + \cdots + \delta_{1p} \Delta X_{t-p} + \varepsilon_{1t} \\
\Delta X_t &= \alpha_2 + \lambda_2 e_{t-1} + \beta_{21} \Delta Y_{t-1} + \cdots + \beta_{2p} \Delta Y_{t-p} + \gamma_{21} \Delta X_{t-1} + \cdots + \gamma_{2p} \Delta X_{t-p} \\
& \quad + \delta_{21} \Delta Z_{t-1} + \cdots + \delta_{2p} \Delta X_{t-p} + \varepsilon_{2t} \\
\Delta Z_t &= \alpha_3 + \lambda_3 e_{t-1} + \beta_{31} \Delta Y_{t-1} + \cdots + \beta_{3p} \Delta Y_{t-p} + \gamma_{31} \Delta X_{t-1} + \cdots + \gamma_{3p} \Delta X_{t-p} \\
& \quad + \delta_{31} \Delta Z_{t-1} + \cdots + \delta_{3p} \Delta X_{t-p} + \varepsilon_{3t}
\end{align*}
\]  

(3.6)

Again, when variables are stationary after first difference and cointegrated, the short run error-correction model (ECM) can be applied. (Hill, Griffiths, & Lim, 2011, p. 494; Koop,
Since the variables are stationary after differencing, the equation is estimated using ordinary least squares (OLS). Again, the optimal lag length of 3 is reported by three selection order criteria namely LR, FPE and AIC. Johansen test for cointegration confirms that there is at least one (1) cointegration equation. (See Appendix 4.2)

The statistic of interest in the vector error correction model applied here is the error correction term of lending rate. The error correction term is reported with a coefficient of \(-0.418\) and a p-value less than 0.05. As interpretation goes, shocks to the model as a result of changes in monetary policy rate, money supply and inflation are corrected 42% in the short run. In other words, **42% of disequilibrium (in relation to the lending rate) is corrected in a month.** To ensure reliability of the results, post estimation tests pertaining to autocorrelation, stability and normality are conducted. In the Lagrange-multiplier test, the null hypothesis of no autocorrelation is accepted at all lags indicating that there is no serial correlation. Normality is examined using Jarque-Bera test and the null hypothesis of normal distribution is accepted in the case of two variables. Using Eigenvalue stability condition, the moduli after imposing the 3 unit moduli are less than one. (See Appendix 4.4a and 4.4b) This means that the number of cointegrating equations was correctly specified.

3.5 Conclusion

The implementation of inflation targeting and consequently the focus on CPI inflation as a policy target has yielded desirable results especially in view of the fact that the inflation rate has reduced from over 30% to about 9% over the last 12 years. There may have been a few deviations from the target in the past. In this regard, Amoah & Mumuni (2008) observe that the monetary policy committee decisions show a higher weight for output stabilization as opposed to deviations of estimated inflation from set targets. The preference for output
stabilization over meeting the inflation target partly explains the inability to meet inflation targets.

Being able to reduce the inflation rate, while improving total output, attests to the competence of policy makers with respect to monetary management in Ghana. Notwithstanding, monetary management does not rest solely with activities of the monetary authorities i.e. the Bank of Ghana. Formal complaints of persistently high lending interest rates and challenge of access to finance by Ghanaian businesses *inter alia* is suggestive of an ailment in the transmission of monetary policy. The dominance of commercial banks in Ghana’s financial system makes them a prime factor pertaining to the inefficiencies of monetary transmission. The next chapter deals with the impact of banking industry factors such as bank concentration, competition, efficiency and reach on financial intermediation in Ghana.

In the multiple regression analyses, the least squares estimator examines the relationship between the first differenced log transformed variables. In all three models, the coefficient of **MPR** is positive and statistically significant. Commercial bank base lending rate therefore has a positive relationship with the monetary policy rate. This is not surprising owing to the competence of the Monetary Policy Committee and perhaps a lingering effect of long history of direct controls in Ghana’s banking system. The positive relationship between **MPR** and **LR** is suggestive of a functioning bank lending channel where the short term nominal interest (MPR) affects the cost of credit.

Surprisingly, the inflation rate (**INF**), which is the primary target under Ghana’s current monetary regime, is less significant in explaining changes in the lending rate. In a sense, the base market lending rate is least responsive to changes in the inflation rate. To some extent this result lends support to the notion that expected inflation, in Ghana’s inflation targeting

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24 In this context, financial intermediation is used scantly to embrace both monetary transmission and access to finance.
regime, is basically used as basis for fixing the monetary policy rate which plays a more important role on the credit market. In reference to the credit market, it is noteworthy that banks mostly rely on relatively expensive short term funds from the interbank market. Needless to say, lending interest rates on the interbank market are relatively higher than the monetary policy rate. In order to understand the significance of the interbank market, it must be known that although a relatively higher number of Ghanaians are being drawn into the banking system owing to improving savings mobilization undertaken by commercial banks in recent years, less than five (5) million people out of a population of 24 million are banked. Deducting the number of active account holders further reduces the potential level of money that can be deposited in commercial banks. Shallow deposit mobilization affects the amount of loanable funds borrowed at cheaper interest rates from households. Not being able to raise enough funds from households, commercial banks rely on the interbank market and corporate entities (such as multinational companies) for short-term loanable funds which come at higher interest rates.

The negative, but statistically significant coefficient of $TBR$ indicates a negative relationship where $LR$ increases by 0.14 following a decrease of $TBR$ by one unit. This can be interpreted as representing the concentration of bank’s operating assets. This is to say that when TBR is increasing banks allot more funds into securities for a stable return while where TBR is decreasing or low, profitability is sought by increasing lending interest rates. The deposit interest rate has a positive and statistically significant relationship with lending rate. What this result suggests is that as deposit interest rate increases, the lending rate also increases or vice versa. Such an association between the two variables could be interpreted as capturing an almost maintained gap in interest rate spread. (See Figure 3.3)

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25 Commercial banks in Ghana also rely on borrowing from the interbank market to settle reserve requirement shortfalls with the central bank.
Furthermore, the granger causality test indicates that the past values of $TBR$ can predict future values of $LR$ at the significance level of 0.05. The main explanation offered for this result is that following heavy government borrowing from the money market (typified by the attractiveness of the return on Treasury bills) the so-called ‘crowding-out’ effect creates a scarcity of loanable funds which being demanded by many prospective borrowers forces the lending rate to rise.

The error correction term of -0.42 indicates that in a month, the lending rate adjusts from 42% of shocks from explanatory variables. In essence, the result suggests that it takes about two and a half months for the base lending rate to adjust to revisions in the monetary policy rate, for example.

The significant relationship between the monetary policy rate and the market lending rate suggests that the credit (bank lending) channel of monetary transmission mechanism exists and is operational in Ghana - a developing country. However, within the period of analysis, the degree at which market lending rate reacts to changes in policy rates is minimal and takes effect after about 3 months.
CHAPTER 4

IMPACT OF BANK CONCENTRATION, COMPETITION AND EFFICIENCY ON ACCESS TO FINANCE IN GHANA

4.1 Introduction

The monetary transmission mechanism plies a two-step trajectory to reach the real economy (revealing itself through cost of borrowing, output, employment and economic growth). For monetary policy to produce expected outcomes in the real economy there ought to be a thorough understanding of the transmission mechanism in a country. This is so because the efficiency, ability and/or willingness of financial intermediaries to relay become quintessential in attaining the broader objective of price stability and a conducive environment facilitated by access to affordable finance for business activity.

Conventionally, banks seek to maximize their profits. This largely accrues to expectations of a good return on investment undertaken by shareholders. In other words, owing to the fact that shareholders lay claim to profits of the bank, it is in their best interest to minimize costs and maximize revenue. (J. A. Bikker & Bos, 2005, p. 11) Internally, stakeholders use financial ratios as yardstick for measuring the quality of management and overall financial soundness. For example, return on assets (ROA), return on investment (ROI), net interest margin, and the like. These indicators that broadly come under larger captions of liquidity, profitability and leverage are not exclusive to the banking industry. (See, Higgins, 2009, p. 71) Financial regulators keep a close eye on; bank profitability, quality of asset, liquidity, management strategy and attitude towards risk. This is because they are concerned about how the collective performance of banks affects economic performance. (Yue, 1992) In order to arrive at such information about the overall soundness of the banking system, econometric
approaches of measuring efficiency is necessitated. (Vuj & Jemri, 2001) Analysing banks with efficiency models is also compelled by the critical role they play as financial intermediaries. As financial intermediaries and conduits for monetary policy, the soundness of commercial banks directly affects the transmission of monetary policy on the supply side as well as accessibility to credit by the private sector on the demand side.

The general objective of this chapter is to investigate the impact of concentration, competition and efficiency of commercial banks on financial intermediation (particularly, access to finance and financial services) and by extension, the role of banks in transmission of monetary policy in Ghana during inflation targeting regime\textsuperscript{26}. This is in line with the overall thesis direction of analysing the impact of monetary policy and macroeconomic factors, bank specific factors and client specific factors on access to finance by SMEs in Ghana during inflation targeting regime. The study focuses on the inflation targeting regime primarily because, among other things, its practice in Ghana is meant to reduce inflation rate to a single digit of 5\% under the assumption that both the prime rate and market lending rate will reduce so that banks will be able to lend at lower interest rates to SMEs which are the engines of growth. Macroeconomic data shows that although the prime rate and inflation rate have reduced over the period, interest rate spread as well as the gap between prime rate and lending rate remains high. Results from the previous chapter show that although monetary policy (or prime) rate is statistically significant in all three models, the responsiveness of bank lending rates to changes in the monetary policy rate is only 34\%. The results therefore suggest that other factors such as the nature of the banking industry and bank specific factors will be more appropriate in explaining the irresponsiveness of banks to changes in monetary policy variables and by extension, access to finance by SMEs in Ghana.

\textsuperscript{26} It is necessary to reiterate at this point that Ghana is the only country, besides South Africa, that is an official inflation targeter in sub-Saharan Africa.
Consequently, this chapter deals with how market structure (bank concentration and competition), bank efficiency and bank outreach affect access to finance in Ghana using two sample periods. Against the backdrop of the objective for this chapter, the following hypotheses will be tested;

i. Average concentration ratio in the banking industry is greater than 0.6 (or moderate)

ii. Assets of the three largest banks account for half of industry assets.

iii. Market structure of banks within the period of analysis is oligopolistic.

iv. Competition between banks is between 0.5 and 0.6 (using Panzar-Rosse’s H-statistic)

v. Inefficiency in the banking system is attributable to scale efficiency than technical efficiency.

vi. Banking infrastructure is inadequate to ease access to finance.

The chapter gives a brief history about banking in Ghana, reviews theoretical and empirical literature on financial intermediation and on previous analysis of banks in Ghana, and finally estimates and discusses results pertaining to bank concentration, competition, efficiency and outreach on access to finance.

4.1.1 Banking in Ghana (History, Growth and Regulations)

Before Ghana’s independence from British colonial rule in 1957 three commercial banks namely; Standard Chartered Bank Ghana Limited (formerly, British Bank of West Africa), Barclays Bank of Ghana Limited (formerly, Dominion, Colonial and Overseas) and Ghana Commercial Bank Limited operated in Ghana. (Bank of Ghana, 2011) Amongst the three, the first two were foreign-owned bank while the latter was State-owned. Prior to Ghana becoming a republic in 1960, 4 additional banks had begun operations in Ghana. These are
the; Agricultural Development Bank Limited, Merchant Bank Ghana Limited, National Investment Bank Limited and the Social Security Bank Limited (currently, SG-SSB)\(^{27}\). As part of the Economic Recovery Programme (ERP) suggested by the International Monetary Fund in early 1980s, financial reforms via the Financial Sector Adjustment Programme (FINSAP) was initiated. During the first phase of the program, two local banks (CAL Bank Limited and HFC Bank Ghana Limited) and a foreign bank (Ecobank Ghana Limited) received licenses to operate. During the second and third phases of FINSAP (i.e. post-1990)\(^{28}\), a total of 16 banks (6 local and 10 foreign) began operations in Ghana. (PricewaterhouseCoopers, 2011) Interestingly, the number of banks licensed to operate in Ghana after 1990 exceed that of pre-independence up until FINSAP 1. As at June 2009, 27 banks operate in Ghana. Out of the 27, only the representative of the rural banks – ARB Apex Bank Limited does not have universal banking status. (Bank of Ghana, 2011) The total number of licensed banks in Ghana still stands at 27\(^{29}\) as at April, 2013 however; two banks (Citibank N.A. Ghana Rep. Office and Ghana International Bank plc) have set up representative offices in the capital – Accra. (Bank of Ghana, 2013c) The increase in the number of banks has significantly led to an increase in bank branches. For example, bank branches doubled from 360 in 2004 to 790 in 2011. (World Bank, 2011) Notwithstanding the increase in bank branches, comparative data (Figure 4.1) suggests that, in comparison with other developing, emerging and developed economies, Ghana lags behind in terms of the number of bank branches per 100,000 people. Implicatedly, there is a need for more bank branches to be set up in order to satisfactorily reach or extend financial services to the populace.

\(^{27}\) The Social Security Bank Limited was owned by Ghana’s Social Security and National Insurance Trust (SSNIT). Societe Generale bought 51% of SSB’s share in 2004.

\(^{28}\) According to (Mensah, 2008), the second phase of FINSAP was between 1992 and 1999, with an emphasis on non-bank financial institutions between 1995 and 1999. The third phase which was rebranded as Financial Sector Strategic Plan (FINSSP) transpired between 2004 and 2008.

\(^{29}\) See Appendix 5 for a list of banks, year of incorporation and ownership type in Ghana.
Bank regulators have sought to utilize the increase in the number of banks and branches to mitigate, if not completely erase, impediments to improved financial intermediation. The objectives of some recent banking laws and reforms have focused on financial deepening and reduction of asymmetric information, just to mention a few. (Bawumia, 2007) Laudably, banking legislation aimed at achieving the aforementioned objectives are balanced in the sense that they address the concerns of both banks and clients. For instance, while the Venture Capital Trust Fund Act (2004) and Borrowers and Lenders Act (2008) foster lending to businesses and households, the Payment Systems Act (2003) and Central Depository Act (2007) has improved interbank information sharing and speed of transactions.

Table 4.1: List of bank legislation in Ghana from 2002 to 2008

<table>
<thead>
<tr>
<th>Legislation</th>
<th>Year</th>
<th>Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank of Ghana Act*</td>
<td>2002</td>
<td>612</td>
</tr>
<tr>
<td>Financial Administration Act*</td>
<td>2003</td>
<td>654</td>
</tr>
<tr>
<td>Internal Audit Agency Act*</td>
<td>2003</td>
<td>658</td>
</tr>
<tr>
<td>Payment Systems Act*</td>
<td>2003</td>
<td>662</td>
</tr>
</tbody>
</table>
Recent macroeconomic and political stability spurred the parliament of Ghana on to further broaden the horizon of the banking sector by amending the Banking Act 2004 (Act 673) in 2007. This amendment supports the setting up of an “International Financial Services Centre” which will, among other things, seek to attract foreign direct investment and vitalize the financial sector by expanding their use of investment banking instruments. (Government of Ghana, 2007)

Although banks dominate Ghana’s financial industry in terms of assets, financial intermediation is fostered by the activity of rural banks and Non-Bank Financial Institutions (NBFI) as well. As at March, 2013, there are 137 rural and community banks\(^{30}\), 53 NBIFIs\(^{31}\), and 171 microfinance institutions. In addition to these are 333 forex bureaus as at April, 2012. There are 25 Finance Houses, 19 Savings and Loans companies, 3 Credit Reference Bureau, 3 Financing and Leasing companies, 2 Leasing companies and a Mortgage Financing

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\(^{30}\) (Bank of Ghana, 2013d)
\(^{31}\) (Bank of Ghana, 2012)
company. In terms of reach, the rural and community banks (RCB) are heavily situated in 5 out of the 10 regions of Ghana. (See Appendix 6.1) Notably, there are only 7 (or 5%) RCBs in the capital Accra juxtaposed to 25 (or 18%) in the Ashanti Region. 32 In contrast, about 79.6% of forex bureaus are situated in Accra. 33 Together with the Ashanti region, the Greater-Accra region account for 92.2% of forex bureaus in Ghana.

For ease of analysis, the word ‘bank’ is used in reference to only the 27 registered banks licensed to operate in Ghana. This excludes the 2 banks with representative offices in Ghana, RCBs, as well as savings and loans companies. Furthermore no distinction is made between Universal banks, Development banks, and Commercial banks. Again, all 27 banks are referred to as ‘commercial banks’ or simply, ‘banks’. This is done to reflect similarities in operation – charging of interest rates, etc. amongst banks in order to ascertain their collective, rather than individual impact on accessibility to finance and thus financial intermediation in Ghana.

4.2 Literature Review

4.2.1 Theoretical Background

Financial intermediation thrives in an environment where the traditional models of reallocating financial resources apply. The picture here is one in which ‘fund users’ and fund suppliers interact via an intermediary (in the context of this research – commercial banks). It goes without saying that as a result of the development in financial markets, the intermediary role of indirect means of financing (such as commercial banks) has reduced over the years. It is prevalent so much so that an attempt by commercial banks to remain as major players in

32 See Appendix 6.2
33 See Appendix 6.4
the financial industry, led to the infamous taking on of investment banking roles; a contributory factor to the 2008 global financial crises.

Traditional theories of intermediation are based on transaction costs and asymmetric information. They are designed to account for institutions which take deposits or issue insurance policies. Primarily as intermediaries, they mobilize and channel funds. New markets for financial futures and options are mainly markets for intermediaries rather than individuals or firms (Allen & Santomero, 1998) The expanding landscape of financial instruments coupled with the complexity of transactions have indeed broadened the horizon of analysis in financial intermediation. In the context of developing economies like Ghana, notwithstanding, the ‘immaturity’ of the financial system justifies the application of traditional models of financial intermediation especially pertaining to analysis of the banking systems efficiency in monetary transmission.

Table 4.2: Evolution of financial instruments over the last 30 years

<table>
<thead>
<tr>
<th>Issuer or Main Issuer</th>
<th>Traditional Financial Instrument</th>
<th>Recent Financial Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governments</td>
<td>• Bonds</td>
<td>• Securitized loans</td>
</tr>
<tr>
<td></td>
<td>• Notes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Bills</td>
<td></td>
</tr>
<tr>
<td>Banks</td>
<td>• Deposits</td>
<td>• Swaps</td>
</tr>
<tr>
<td></td>
<td>• Acceptances</td>
<td></td>
</tr>
<tr>
<td>Firms</td>
<td>• Equity</td>
<td>• Floating-rate debt</td>
</tr>
<tr>
<td></td>
<td>• Bonds</td>
<td>• Floating rate preferred</td>
</tr>
<tr>
<td></td>
<td>• Convertibles</td>
<td>• Primes and scores</td>
</tr>
<tr>
<td></td>
<td>• Preferred stock</td>
<td>• Synthetics</td>
</tr>
<tr>
<td></td>
<td>• Commercial paper</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Warrants</td>
<td></td>
</tr>
<tr>
<td>Exchanges</td>
<td>• Commodity futures</td>
<td>• Financial futures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Options</td>
</tr>
</tbody>
</table>

Source: Allen & Santomero (1998)
Joseph Schumpeter argued in 1911 that "financial intermediaries play a pivotal role in economic development because they choose which firms get to use society's savings’’ (see Schumpeter, 1934). According to this view, the "financial intermediary sector alters the path of economic progress by affecting the allocation of savings and not necessarily by altering the rate of savings. Thus, the Schumpeterian view of finance and development highlights the impact of financial intermediaries on productivity growth and technological change.” (Beck, Levine, & Loayza, 2000)

Literature has therefore established the all-important role financial intermediaries’ play in fostering economic growth by allocating financial resources. What remains therefore are the ingredients that are sure to provide and sustain the enabling environment for efficient intermediation. Bae & Goyal (2003) uses data from 37 countries to examine how the protection of property rights affect bank loan spreads. The research found that improvement in the cost of external financing will be greater with policies that improve property rights protection at the country level than with policies that aim at improving governance mechanisms at the firm level. Therefore, by improving property rights protection, a country can expect to see a large reduction in its cost of external financing because in countries that provide weak property rights protection, loan spreads are larger. (Bae & Goyal, 2003, p. 26)

4.2.2 Previous empirical results
Salami (2008) conducted a survey and interviews involving top ranking officials of notable banks in Ghana in Fall 2007 and observed that ‘Ghana’s banking industry currently operates within an oligopolistic market environment’ in which more competition is needed to improve bank efficiency that will help reduce [lending] interest rates for the benefit of the financial system and the economy as a whole.
Having used the Lerner Index of bank on quarterly data of Ghanaian banks from 2001 to 2006, Aboagye, Akoena, Antwi-Asare, & Gockel (2008) find that bank size, efficiency of banks in relation to staff costs, the macroeconomic environment and time aid to significantly explain the market power of Ghanaian banks. Their results suggest that the size of the bank, rather than market share or concentration significantly explain the market power of banks. Further analysis of this result asserts that with a persistence of high concentration of the industry’s share, oligopolistic tendencies are likely to evolve which will then manifest in high interest rate margins to the advantage of the bigger banks but at the expense of increasing social welfare. Furthermore, the bank’s ability to reduce staff costs was found to aid their acquisition or increase of market share perhaps as a result of increased profits which can be channelled into expansionary projects. Interestingly, their results empirically throw some light on suspicions that with the improvement in the macroeconomic environment, banks are taking advantage of higher demand for credit (often seen in the charge of astronomical lending interest rates). The authors recommend an increase in the number of financial intermediaries operating in Ghana as a solution to the dominance of the banking system by a few.

Investigating the degree of bank competition and intermediation efficiency in Ghana Biekpe (2011) found evidence suggesting a non-competitive market structure in the Ghanaian banking system which hampers financial intermediation. The key factors found to account for the non-competitive behaviour of banks in Ghana were; **very high overhead costs**, **economies of scale** (or size of bank), persistently **high demand for loans by government**, periodic slippages in **financial discipline** and **dominance of a few large banks**. The study, in congruence with Aboagye et al. (2008), Bucks & Mathisen (2005) and Salami (2008) find that ‘Ghanaian banks are monopolistically competitive’. The prevalence of this

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oligopolistic condition can be traced to the high bank concentration hypothesis asserted by Ofori, Bawumia, & Belnye (2005).

By implication, the few large banks that possess more than 50% of market share to a large extent dictate the pace of progress in the industry. Consequently, this research deems any calls for bank consolidation as a means of improving efficiency and profitability a step in the wrong direction, as oligopolistic tendencies will only be deepened rather than eradicated. Other suggested solutions such as increasing the number of banks is plausible if the new banks can be persuaded through regulation or licensing agreement to aid efforts towards financial deepening in the country by embarking on savings mobilization via an expansion of the deposit base juxtaposed to attempting to share current clients of ‘older’ banks.

Pertaining to bank profitability, net interest margin (difference between interest income and interest expense) increased from 6.7 in 2007 to 9.4 in 2010. Within the same period, interest rate spread also increased from 6.9 to 8.2. (PricewaterhouseCoopers, various issues) In another study, Kutsienyo (2011) examined the impact of five internal determinants (capital adequacy, operating efficiency, liquidity, asset quality and bank size) and four external determinants (GDP, inflation, money supply and banking industry concentration) on bank profitability using panel data of mainly annual accounting data of 26 commercial banks and macroeconomic data of Ghana from 2000 to 2009. Using ROA as a dependent variable, the research found well capitalised banks were more profitable, efficient management of bank operations enhanced profitability, banks were able to accurately predict inflation in order to adjust lending rates, and finally competition contributed to profitability through efficiency

35 There are rumors of connivance between officials of large banks in Ghana in relation to setting of interest rates and bank charges. Such practice, if real is bound to distort records and derail the impact of monetary policy decision as well as the efficient transmission thereof.

36 In Kutsienyo (2011), ROA and ROE were expressed as ‘Return on Average Asset’ and ‘Return on Average Equity’ respectively.
and innovation. Using another panel dataset with ROE as dependent variable, banking concentration and asset quality were significant to bank profitability.

4.3 Methodology

4.3.1 Data

Two separate cross-sectional time series datasets are constructed and used in this chapter. Both comprise unconsolidated financial statements sourced from the Bankscope database of Bureau Van Dijk. The first (hereafter, Panel 1) is a compilation of data on 11 banks spanning 10 years from 2002 to 2011. The second dataset (hereafter, Panel 2) covers 17 banks over 5 years (2007 to 2011). This period is chosen to reflect five years of banking activity after the official adoption of inflation targeting in Ghana. In the case of the Panel 1, the period of analysis encompasses 5 years before and after the official adoption of inflation targeting in Ghana. Coincidentally, inflation targeting as a monetary policy regime began to be formally practised in Ghana in 2002. In all, the selection of 11 banks (in Panel 1) and 17 banks (in Panel 2) out of the 27 licensed banks in Ghana is as a result of; (1) availability of data and (2) although data on some banks were available, the financial statements was not included in this study because they were consolidated and thus are likely to amplify the position of pertinent banks which in turn lead to misleading results.

4.3.2 Bank Concentration

In measuring bank concentration, various researches have used the “k-bank concentration ratio”\textsuperscript{38}, the Herfindahl-Hirschman index (HHI), the Lerner index or combinations of the

\textsuperscript{37} The figures in the financial statements have been aligned to the Universal Banking Model by Bankscope database. This is preferred as results from this research can be easily compared with results from other studies where the Universal banking model is applied.

\textsuperscript{38} (Alegria & Schaeck, 2006)
aforementioned. According to Alegria & Schaeck (2006), the \(k_3\) bank concentration ratio, which is calculated by dividing the assets of the 3 largest banks by the total size of the banking system, is more appropriate when dealing with small samples where \(N<50\) i.e. total number of banks is less than 50. (Alegria & Schaeck, 2006, p. 5) Representatively,

\[
k_3 = \frac{\sum_{i=1}^{3} Z_i}{Z_T}
\]  

(4.1)

Notwithstanding the suitability of the \(k_3\) ratio in analysing bank concentration for small samples, results from the \(k_{5\%}\) bank concentration ratio as well as HHI are reported and discussed in this section. The \(k_{5\%}\) ratio differs from the \(k_3\) ratio in terms of how the numerator is computed. Unlike the \(k_3\) ratio, the numerator of the \(k_{5\%}\) ratio is not simply a sum of the assets of 5 largest banks in the sample but rather, the sum of banks that constitute the top 5\% (5\(^{th}\) percentile) of the sample. The HHI, which is reported used by regulators (See, Cetorelli, 1999) is calculated by summing the squares of individual market shares of the all units (banks) in the sample. In other words, it is the “sum of squared bank market shares”. (Alegria & Schaeck, 2006, p. 2) Therefore, the HHI can be described as a weighted score and notable for taking into account the markets share of all banks in the sample instead of using only three (3) largest banks or top 5\% banks in the \(k_3\) and \(k_{5\%}\) concentration ratio respectively.

The \(k_{5\%}\) and HHI are defined as:

\[
k_{5\%} = \frac{\sum_{i=1}^{5} Z_i}{Z_T}
\]  

(4.2)

\[
HHI = \sum_{i=1}^{N} \left(\frac{Z_i}{Z_T}\right)^2
\]  

(4.3)
The results from the concentration ratios (both $k_3$ and $k_{5\%}$) are interpreted as low (between 0% and 50%), medium (between 50% and 80%) and high (above 80%). Representatively we can let $x$ be $k_3$ and $k_{5\%}$, so that;

<table>
<thead>
<tr>
<th>Ratio</th>
<th>In percentage</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 \leq x \leq 0.5$</td>
<td>0% to 50%</td>
<td>Low concentration (Perfect competition)</td>
</tr>
<tr>
<td>$0.5 \leq x \leq 0.8$</td>
<td>50% to 80%</td>
<td>Medium concentration (Oligopoly or Monopolistic competition)</td>
</tr>
<tr>
<td>$0.8 \leq x \leq 1$</td>
<td>80% to 100%</td>
<td>High concentration (Monopoly)</td>
</tr>
</tbody>
</table>

Using data on Total Assets of 11 banks between 2002 and 2011, $k_3$ and $k_{5\%}$ are computed. The results (shown in Table 4.3) reflect decreasing concentration in the banking industry over the period. Results from the $k_3$ ratio which represents the total number of assets held by three banks show medium concentration of between 72% and 55% over the period and thus reflects oligopoly in the market. Results from the $k_{5\%}$ which represent the proportion of assets held by the top 5% in the industry over the period reduced from 32% to 21%. The implication of the low concentration results from the K5% computation means that the largest bank, in terms of assets, alone does not have an overwhelming power on the market. Analysis of the $k_{5\%}$ ratio thus supports that of the $k_3$ ratio with regards to the oligopolistic market structure.

Again, Table 4.3 shows results of HHI with regards to Total Assets (HHI_TA), Total Deposits (HHI_TD) and Total Loans (HHI_TL). From 2002 to 2011, the concentration of total assets reduced from 0.20 to 0.13. This marks a progression from a moderately concentrated to an unconcentrated market. Although HHI_TD and HHI_TL also show an overall improvement from a moderately concentrated market to an unconcentrated market, the progression is not a continuous downward trend. All three results (HHI_TA, HHI_TD and HHI_TL) show improvement.

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39 The 5th percentile estimation of total assets per bank ranked in descending order pointed to 0.6. Since 0.6 is less than 1, the total asset of the bank in the first rank was used as numerator for calculating the $k_{5\%}$ ratio.
HHL_TL) do not show high competition which is a score of less than 0.01. Moreover the lowest score of 0.11, although indicative of an unconcentrated market lies just below the 0.15 mark of moderate concentration. **Deductively, the results of an unconcentrated market from the HHI on total assets, total deposits and total loans is in congruence with the result of medium concentration reported by the k₃ and k₅% concentration ratios.**

Table 4.3: Concentration ratio and market power using Panel 1

<table>
<thead>
<tr>
<th>Year</th>
<th>K₃</th>
<th>K₅%</th>
<th>HHL_TA</th>
<th>HHL TD</th>
<th>HHL TL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>0.72</td>
<td>0.32</td>
<td>0.20</td>
<td>0.20</td>
<td>0.18</td>
</tr>
<tr>
<td>2003</td>
<td>0.67</td>
<td>0.27</td>
<td>0.18</td>
<td>0.18</td>
<td>0.19</td>
</tr>
<tr>
<td>2004</td>
<td>0.66</td>
<td>0.25</td>
<td>0.17</td>
<td>0.18</td>
<td>0.18</td>
</tr>
<tr>
<td>2005</td>
<td>0.63</td>
<td>0.23</td>
<td>0.16</td>
<td>0.17</td>
<td>0.17</td>
</tr>
<tr>
<td>2006</td>
<td>0.61</td>
<td>0.22</td>
<td>0.15</td>
<td>0.16</td>
<td>0.15</td>
</tr>
<tr>
<td>2007</td>
<td>0.60</td>
<td>0.23</td>
<td>0.15</td>
<td>0.16</td>
<td>0.16</td>
</tr>
<tr>
<td>2008</td>
<td>0.58</td>
<td>0.24</td>
<td>0.14</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>2009</td>
<td>0.57</td>
<td>0.23</td>
<td>0.14</td>
<td>0.13</td>
<td>0.16</td>
</tr>
<tr>
<td>2010</td>
<td>0.54</td>
<td>0.21</td>
<td>0.13</td>
<td>0.13</td>
<td>0.13</td>
</tr>
<tr>
<td>2011</td>
<td>0.55</td>
<td>0.21</td>
<td>0.13</td>
<td>0.14</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Source: Data from Fitch Solutions (2013)

The market structure of 17 banks is examined using firm-level data from 2007 to 2011. Here, the results of the k₃ concentration ratio within the 5-year period declined from 55% to 42% showing a transition from **medium concentration to the upper boundaries of low concentration.** Using the total assets of the bank that fell in the 5th percentile as a proportion of the total assets of all banks in the sample, the k₅% shows **low concentration** (or perfect competition) represented by a decrease from 13% to 9%. Noticeable, the market concentration becomes lower as a result of the increase in the number of banks used in the analysis. All the same, the results Table 4.3 and 4.4 showing the **market concentration**
using two samples show an improvement from medium concentration (or oligopoly) to low concentration (or perfect competition).

Table 4.4: Concentration ratio and market power using Panel 2

<table>
<thead>
<tr>
<th>Year</th>
<th>K₃</th>
<th>K₅%</th>
<th>HHI_TA</th>
<th>HHI_TD</th>
<th>HHI_TL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>0.55</td>
<td>0.13</td>
<td>0.21</td>
<td>0.13</td>
<td>0.14</td>
</tr>
<tr>
<td>2008</td>
<td>0.49</td>
<td>0.11</td>
<td>0.20</td>
<td>0.11</td>
<td>0.13</td>
</tr>
<tr>
<td>2009</td>
<td>0.46</td>
<td>0.10</td>
<td>0.19</td>
<td>0.09</td>
<td>0.12</td>
</tr>
<tr>
<td>2010</td>
<td>0.43</td>
<td>0.09</td>
<td>0.17</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>2011</td>
<td>0.42</td>
<td>0.09</td>
<td>0.16</td>
<td>0.09</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Source: Data from Fitch Solutions (2013)

Results from the HHI presents moderate concentration with regards to total assets and low concentration with respect to total deposits and total loans. The produce of moderate concentration for HHI_TA again demonstrates an oligopolistic market structure. Surprisingly, HHI_TD and HHI_TL paint the picture of a market in which banks, irrespective of their size, participate in deposit mobilization and lending. Interestingly, market concentration in terms of deposits and loans improves with the reduction of HHI_TA with the period.

It is worthy of note that three (3) banks; Ghana Commercial Bank, Barclays Bank of Ghana Ltd., and Standard Chartered Bank Ghana Ltd. record the largest market shares in terms of total assets, total deposits and total loans in the case of both samples analysed above.

To further investigate the impact of market concentration on access to credit by the private sector, a bivariate regression model is constructed where correlation between results of the k₃-concentration ratio and HHI_TA on credit to private sector as a percentage of GDP are examined. Two separate models are used. The general form of the model is expressed as:

\[ y_t = \beta_0 + \beta_1 x_t + \epsilon_t \]  

(4.4)
where the dependent variable $y$ is credit to private sector as a percentage of GDP (CPS) and $x$ is $k_3$-concentration ratio and HHI_TA respectively.

The results show a negative correlation between $k_3$-concentration ratio and CPS (-19.8) as well as between HHI_TA and CPS (-48.4). The coefficients in both regressions are significant at 5%. The negative correlation between the variables indicates that as $k_3$-concentration ratio and HHI_TA decreases, CPS increases. Impliedly, less bank concentration leads to an increase in credit to the private sector.

4.3.3 Bank Competition

Economic theory demonstrates that the market structure of an industry (monopoly, oligopoly, etc.) has a bearing on, among other things, the pricing and profitability of firms in that industry. The literature on market competition spans a variety of industries.

In banking literature, the Iwata, Bresnahan, Panzar-Rosse, Structure-Conduct-Performance model, Cournot model and X-efficiency and Efficiency Hypothesis are used to measure bank market power and competition. These models are broadly categorized into; structural (with the assumption that market structure affects bank conduct and thus performance) and non-structural models. Armenuhi (2005) refers to the two categories of estimating competition as “structural studies” and “cost studies”. The preference of the expression cost studies to non-structural model apparently accrues to the nature of non-structural models like Bresnahan and Panzar-Rosse which measure a firm’s “input-output cost relationship”. (Armenuhi, 2005, p. 68)

Structure-Conduct-Performance (SCP) models are supported by the market power hypothesis, efficiency hypothesis and contestability hypothesis. Among these three, market power hypothesis is the most widely used in literature. Briefly, the market power hypothesis
holds that firms act collusively when the market is highly concentrated. In other words, when a few firms possess a larger share of the market they are bound to act together in order to reap high profits. Efficiency hypothesis on the other hand, disregards collusion of larger firms as a viable explanation and instead proposes that high concentration will yield improved efficiency in the long run. Last but not the least the contestability hypothesis deals with ease of entry and exit conditions in a market. (Armenuhi, 2005)

In this study, **bank competition is measured using the Panzar-Rosse (P-R) model under the market power hypothesis.** The P-R model postulates that the market structure of a firm is predictive of its change in price as a result of a change in cost. To wit, a firm’s change in price following a change in cost is dependent on its position in the market i.e. either monopoly or not. P-R model is computed using reduced-form revenue equations. Bank competition is defined by an ‘H-statistic’ which ranges between 0 and 1 where H≤0, 0<H<1 and H=1 represent monopoly, monopolistic competition and perfect competition respectively. (Gaertner & Sanya, 2012, p. 12; Gelos & Roldos, 2002, p. 13) The H-statistic is derived by adding the elasticities (or coefficients) of input variables (labour, funds and capital). (See, Goddard & Wilson, 2007; Shaffer, 1982)

To attain the elasticities required for computing H-statistic, the cost of labour, funds and capital as well as control variables such as size is regressed on the ratio of Interest Income to Total Assets (IIASS). The functional form of the model is given as;

$$\ln\text{IIASS}_{it} = \alpha_0 + \beta_1 \ln W_{i1} + \beta_2 \ln F_{i2} + \beta_3 \ln K_{i3} + \gamma_4 \ln\text{SIZE}_{i4} + \gamma_5 \ln\text{CAPASS}_{i5}$$

$$+ \gamma_6 \ln\text{LASS}_{i6} + \varepsilon_{it}$$

Where, the dependent variable $\ln\text{IIASS}$ represent the log of Total Interest Income over Total Assets respectively. Other notations in the equation are explained in the table below;
Table 4.5: Definition of variables used in Panzar-Rosse model

<table>
<thead>
<tr>
<th>Label</th>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnW</td>
<td>Labour</td>
<td>Personnel expenses/(Total Deposits + Total Loans)</td>
</tr>
<tr>
<td>lnF</td>
<td>Funds</td>
<td>Total interest expense/Total funds</td>
</tr>
<tr>
<td>lnK</td>
<td>Capital</td>
<td>(Total non-interest expense - Personnel expenses)/Fixed assets</td>
</tr>
<tr>
<td>lnSIZE</td>
<td></td>
<td>Market share of Total assets</td>
</tr>
<tr>
<td>lnCAPASS</td>
<td></td>
<td>Total equity / Total assets</td>
</tr>
<tr>
<td>lnLNASS</td>
<td></td>
<td>Total loans / Total assets</td>
</tr>
<tr>
<td>i</td>
<td>No. of observed bank</td>
<td></td>
</tr>
<tr>
<td>t</td>
<td>Time of &quot;i&quot; observation</td>
<td></td>
</tr>
<tr>
<td>ε</td>
<td>Error term</td>
<td></td>
</tr>
</tbody>
</table>

Note: ‘ln’ represents natural logarithm

The choice of IIASS as the dependent variable is informed by literature and under the assumption that the primary business of commercial banks is financial intermediation. (Aboagye et al., 2008; Armenuhi, 2005; J. Bikker & Groeneveld, 1998; Gelos & Roldos, 2002) Equation (1) above is constructed to reflect the impact of individual bank’s market power, riskiness and combination of resources over time on its profitability or revenue generation. In that light, a bank’s competitiveness is tantamount to its market share coupled with its ability to make use of its resources in order to be profitable and stay ahead of the competition.

The P-R model is used to measure bank competition using Panel 1 and 2. Below is the summary of the variables after the log transformation.
Table 4.6: Summary statistics of variables in Panel 1 for P-R model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnIIASS</td>
<td>110</td>
<td>-2.10568</td>
<td>0.224585</td>
<td>-2.7139</td>
<td>-1.45502</td>
</tr>
<tr>
<td>LnW</td>
<td>109</td>
<td>-3.60014</td>
<td>0.459052</td>
<td>-5.62065</td>
<td>-2.74378</td>
</tr>
<tr>
<td>LnF</td>
<td>110</td>
<td>-2.90525</td>
<td>0.497346</td>
<td>-4.31679</td>
<td>-1.79176</td>
</tr>
<tr>
<td>LnK</td>
<td>110</td>
<td>0.305872</td>
<td>0.571091</td>
<td>-0.96024</td>
<td>1.892564</td>
</tr>
<tr>
<td>LnSIZE</td>
<td>110</td>
<td>-2.82896</td>
<td>1.007041</td>
<td>-5.68464</td>
<td>-1.13686</td>
</tr>
<tr>
<td>LnCAPASS</td>
<td>110</td>
<td>-2.23892</td>
<td>0.452038</td>
<td>-4.71929</td>
<td>-1.30988</td>
</tr>
<tr>
<td>LnLNASS</td>
<td>110</td>
<td>-0.87952</td>
<td>0.345291</td>
<td>-2.21789</td>
<td>-0.32431</td>
</tr>
</tbody>
</table>

Source: Data from Fitch Solutions (2013)

Table 4.7: Summary statistics of variables in Panel 2 for P-R model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnIIASS</td>
<td>85</td>
<td>-2.18281</td>
<td>0.265822</td>
<td>-2.84458</td>
<td>-1.45502</td>
</tr>
<tr>
<td>LnW</td>
<td>82</td>
<td>-3.62509</td>
<td>0.493632</td>
<td>-5.62065</td>
<td>-2.41127</td>
</tr>
<tr>
<td>LnK</td>
<td>84</td>
<td>0.281187</td>
<td>0.547064</td>
<td>-1.00145</td>
<td>1.429756</td>
</tr>
<tr>
<td>LnF</td>
<td>84</td>
<td>-2.85965</td>
<td>0.488986</td>
<td>-4.31679</td>
<td>-1.79176</td>
</tr>
<tr>
<td>LnSIZE</td>
<td>85</td>
<td>-3.21431</td>
<td>0.975886</td>
<td>-6.3124</td>
<td>-1.57349</td>
</tr>
<tr>
<td>LnCAPASS</td>
<td>85</td>
<td>-2.19539</td>
<td>0.656107</td>
<td>-4.71929</td>
<td>-0.03874</td>
</tr>
<tr>
<td>LnLNASS</td>
<td>84</td>
<td>-0.8635</td>
<td>0.348265</td>
<td>-1.95926</td>
<td>-0.32431</td>
</tr>
</tbody>
</table>

Source: Data from Fitch Solutions (2013)

The panel regression specified in Equation (4.4) is run using the fixed effects estimator. The fixed effects estimator is used because individual bank-specific characteristics are oftentimes correlated with other independent variables. The use of fixed effects in panel regression also helps to mitigate the impact of “unobserved heterogeneity” i.e. differences across banks with respect to time (Gelos & Roldos, 2002, p. 15) Moreover, the use of fixed effects regression on panel data when estimating H-statistics is standard procedure. (Goddard & Wilson, 2007) The probability of F-statistics (0.000) in the regression results validates the overall fitness of the model. R-squared of 44% and 49% from the two samples indicate that almost half of the
variations in the dependent variable can be explained by the independent variables. The coefficients of Labour ($lnW$), Funds ($lnF$) and Capital ($lnK$) in panel 1 are significant at the 5% significance level while in panel 2, all except labour is statistically significant at 5%.

Table 4.8: Results from P-R model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Panel 1</th>
<th>Panel 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Std. Err.</td>
</tr>
<tr>
<td>$LnW$ (a)</td>
<td>0.086255</td>
<td>0.04145</td>
</tr>
<tr>
<td>$LnF$ (b)</td>
<td>0.457762</td>
<td>0.042751</td>
</tr>
<tr>
<td>$LnK$ (c)</td>
<td>0.064534</td>
<td>0.030517</td>
</tr>
<tr>
<td>$LnSIZE$</td>
<td>0.004597</td>
<td>0.036546</td>
</tr>
<tr>
<td>$LnCAPASS$</td>
<td>0.099519</td>
<td>0.037011</td>
</tr>
<tr>
<td>$LnLNASS$</td>
<td>0.045879</td>
<td>0.044943</td>
</tr>
<tr>
<td>Obs</td>
<td>109</td>
<td>82</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.44</td>
<td>0.49</td>
</tr>
<tr>
<td>Prob (F-stat)</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>H-Statistic</td>
<td><strong>0.61</strong></td>
<td><strong>0.69</strong></td>
</tr>
</tbody>
</table>

The H-statistics i.e. $\beta_1 + \beta_2 + \beta_3$ for the two samples are 0.61 and 0.69 respectively. According to Panzar & Rosse (1987), the aforementioned results in the range of (0<H<1) demonstrate that competition in the banking industry relative to the two samples is one of monopolistic competition.

The result of monopolistic competition from the P-R model is consistent with the medium concentrated or oligopolistic market structure result from the concentration ratios in subsection (4.3.2) above. This is because under the market power hypothesis which underlies the P-R model, a few large banks are able to act collusively in order to reap high profits. The question of how bank competition affects access (here, availability and affordability) of
finance to firms can be answered from the discussion that the **oligopolistic market structure** accounts for the relatively high market lending rates and furthermore explaining why market lending rates are less responsive to monetary policy and macroeconomic variables.

4.3.4 Bank Efficiency

Simply put, efficiency is the ratio of output over input. Therefore the efficiency of a unit $\varepsilon$ which has $\alpha$ outputs and $\beta$ inputs can be mathematically denoted as ($\varepsilon = \alpha/\beta$). Banking, like other service industries, use many inputs to generate many outputs. Measuring bank efficiency therefore requires models that can evaluate these multiple inputs and outputs.

Financial ratios fall short of analysing bank performance from a broader perspective because their computation usually involves the use of two (2) or three (3) variables. Frontier techniques like Data Envelopment Analysis (or DEA) on the other hand, can measure efficiency using multiple inputs and outputs which is akin to bank operations.

4.3.4.1 Frontier Approaches

Frontier techniques are broadly classified as; parametric or nonparametric. Under these two broad techniques, models are either stochastic or deterministic. In parametric techniques, models appear statistical and econometric in nature whereas models in nonparametric techniques are constructed using mathematical programming. In the case of DEA which is a nonparametric deterministic model, linear programming is used. The table below presents a list of frontier techniques under their subdivisions.
Table 4.9: Examples of frontier techniques under subdivisions

<table>
<thead>
<tr>
<th>Type of Frontier</th>
<th>Methodology</th>
<th>Estimator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parametric</td>
<td>Stochastic</td>
<td>Stochastic Frontier Analysis (SFA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thick Frontier Analysis (TFA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Distribution-Free Approach (DFA)</td>
</tr>
<tr>
<td></td>
<td>Deterministic</td>
<td>Corrected Ordinary Least Squares (COLS)</td>
</tr>
<tr>
<td>Nonparametric</td>
<td>Stochastic</td>
<td>Bootstrap DEA and FDH</td>
</tr>
<tr>
<td></td>
<td>Deterministic</td>
<td>Data Envelopment Analysis (DEA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Free Disposal Hull (FDH)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Malmquist-Index</td>
</tr>
</tbody>
</table>

Source: Ohene-Asare (2011, p. 52)

Parametric approaches are able to distinguish error attributed to inefficiency from that of their statistical properties. This feature aids in the sound interpretation of results as well as their economic significance and application. Conversely, the ability of parametric approaches in separately reporting inefficiencies from statistical noise requires the explicit specification of the two errors in the functional form of the model. (Ohene-Asare, 2011, p. 56) Nonparametric approaches, particularly deterministic models assume that inefficiencies comprise all deviations from the production frontier.

4.3.4.2 Data Envelopment Analysis (DEA)

Data Envelopment Analysis (or DEA) was developed by Charnes, Cooper and Rhodes in 1978. According to Sherman and Zhu (2006), it was developed to “evaluate non-profit and public sector organizations”. (Sherman & Zhu, 2006, p. 49) Since its development, DEA has been used by management of organisations as well as academics in research. Literature mentions DEA as the most applied nonparametric technique used in measuring efficiency. (Berger & Humphrey, 1997)
Basically, DEA analyses the relative efficiencies of entities, referred to as ‘Decision Making Units’ or DMUs. (Charnes, Cooper, & Rhodes, 1978) To do this, DEA determines a most efficient unit or units\(^{40}\) by evaluating the use of inputs and outputs generated by each DMU, in comparison with all other DMUs. As a result of the relative comparison, potent recommendations\(^{41}\) are provided which when implemented will enable inefficient units reach efficiency. The ability of DEA to relatively compare the efficiencies of DMUs in addition to providing references for improvements makes it preferable benchmarking tool for business executives and academics. Before the recent use of DEA to measure efficiency in commercial banks, it was applied to “industrial firms, universities, hospitals, military operations, and baseball players” (Yue, 1992, p. 31)

An inefficient unit can become more efficient by either producing the same level of outputs with fewer inputs, by increasing the output given the same level of input or both. Producing the same level of output with fewer inputs is termed as input-oriented DEA whereas seeking to increase output while keeping the input level constant is referred to as output-oriented DEA. **Output orientated DEA is applied in this study in order to evaluate the relative efficiency of commercial banks in Ghana as a means of testing their impact on financial intermediation and accessibility to credit by SMEs.**

With relatively high economic growth recorded in Ghana in recent years coupled with rising incomes, literacy and availability of technology, it is unmistakable to assume that commercial banks have the capacity to undertake deposit mobilization, recruit qualified professionals among other things and thus increasing inputs. In other words, input variables such as labour and deposits as well as technology needed to improve production can be

\(^{40}\) Efficient DMUs are the ones that, without changes in technology or the production process, are able to reach optimum efficiency i.e. create the best possible output in relation to a unit of input. (Sherman & Zhu, 2006, p. 51)

\(^{41}\) The recommendations are reported as “Efficiency Reference Set” (ERS) or denoted by “Lambda” (Sherman & Zhu, 2006, p. 61)
employed and put to use. However, the crises of intermediation which in the context of this dissertation borders on the transmission of monetary policy and accessibility of credit to private industry may be eradicated by focusing on bank inputs. Alternatively, banks inputs such as loans, securities, interest expense, just to mention a few, directly affect the availability and cost of credit. In a nutshell, the use of output-oriented DEA will focus on assessing the output and to some extent the production process of banks so as to ensure their contribution to financial intermediation during inflation targeting regime in Ghana.

The business of commercial banking makes use of multiple inputs and outputs. It is therefore not a surprise to find disagreements in literature pertaining to classification of certain variables as inputs or outputs. One such example is Deposits. Some researchers consider deposits as an input because it is used to generate outputs such as loans. On the other hand, deposits are considered as output by some researchers who are of the view that banks render a service to depositors when they receive deposits and more often than not, pay interest on the borrowed funds.42 (Ohene-Asare, 2011, p. 18) Additionally, the measurement approach used also influences the classification of variables. For instance, deposits are classified as output in the user-cost approach and as both input and output in the value-added approach. (Wheelock & Wilson, 1995) This research classifies Deposits as an input owing to its placement on the liability side of the balance sheet coupled with its nature of being expended in order to produce outputs.

Again as a result of multiple inputs and outputs used by banks, the construction of variables for measuring efficiency depends on one or more approaches adopted by the researcher. For example, while the profitability model is interested in interest and non-interest income and expense respectively, the Asset approach is more concerned about balance sheet variables like deposits and loans. The production and intermediation approach have been reported to be

42 See Tortosa-ausina (2002) for details of the discourse in classifying variables as inputs or outputs
widely used in literature. (Ohene-Asare, 2011, p. 20) Table 4.9 enumerates main approaches used in literature.

Table 4.10: Variable selection approaches in DEA

<table>
<thead>
<tr>
<th></th>
<th>Production approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Intermediation approach</td>
</tr>
<tr>
<td></td>
<td>i. Asset approach</td>
</tr>
<tr>
<td></td>
<td>ii. User-cost approach</td>
</tr>
<tr>
<td></td>
<td>iii. Value-added approach</td>
</tr>
<tr>
<td>3</td>
<td>Profitability/Revenue-Based model</td>
</tr>
<tr>
<td>4</td>
<td>Marketability model</td>
</tr>
<tr>
<td>5</td>
<td>Portfolio model</td>
</tr>
<tr>
<td>6</td>
<td>“Modern Approach”</td>
</tr>
<tr>
<td>7</td>
<td>Risk-Return Approach</td>
</tr>
</tbody>
</table>

Source: Ohene-Asare (2011, pp. 20–26)

DEA permits the use of relatively efficient banks as benchmarks wherewith recommendations are provided for inefficient units to attain efficiency by refining input combinations or other. (Sherman & Zhu, 2006; Vuj & Jemri, 2001) This property of DEA is thus practically applicable in the sense that it goes beyond identifying inefficient units to propose quantifiable actions that can be executed to make an inefficient unit efficient.

In DEA, the best of each DMU’s efficiency relative to other DMUs is reported (especially with reference to the maximization function). In other words, all the units used in the measurement are made to look their best or given the “benefit of the doubt”43.

DEA as a technique has the flaw of not being able to discompose or “disentangle” inefficiency from random error. (Tortosa-ausina, 2002, p. 203) Moreover the frontier measured by DEA is sensitive to outliers and measurement errors owing to its “basic

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43 Sherman and Zhu, 2006, p. 66
assumption that random errors do not exist and that all deviations from the frontier indicate inefficiency”. (Vuj & Jemri, 2001, p. 7)

4.3.4.3 Model and Results

Bank efficiency is measured using intermediation approach of DEA. This approach is most suitable because it aids in answering the research objective pertaining to the impact of bank efficiency on financial intermediation and by extension, access to credit. The variables used in the analysis are in line with literature (Berger & Humphrey, 1997; Luo & Yao, 2010; Thagunna, 2013; Tortosa-ausina, 2002) and are appropriate for studying efficiency of banks in terms of borrowing (mobilization of funds) and lending (use of funds).

Table 4.11: Description of variables for DEA analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Total Fixed Assets</td>
</tr>
<tr>
<td>Physical Capital</td>
<td>Total Personnel Expenses</td>
</tr>
<tr>
<td>Labour</td>
<td>Total Deposits</td>
</tr>
<tr>
<td>Funding</td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>Total Loans</td>
</tr>
<tr>
<td>Loans</td>
<td>Total Securities</td>
</tr>
<tr>
<td>Other earning assets</td>
<td></td>
</tr>
</tbody>
</table>

Again, using data in Panel 1 and 2, the variables described in Table 4.10 are analysed. BSIC Ghana Limited (in Panel 2) was omitted in this analysis because some variables had missing values. This was done to remove the possibility of an outlier in the estimation. Multi-stage, output-oriented DEA is executed under the assumption of variable returns to scale (VRS). The multi-stage DEA method is used because the approach “identifies efficient projected points which have input and output mixes which are as similar as possible to those of the inefficient points, and that it is also invariant to units of measurement.” (Coelli, 1996, p. 14) The multi-stage method is thus not biased to the scale of the DMUs being measured. Also,
the option of variables returns to scale (VRS) is used instead of constant returns to scale (CRS) because under CRS, it is assumed that “DMUs are operating at an optimal scale”. Additionally, the use of the VRS specification will permit the calculation of TE devoid of scale efficiency effects. (Coelli, 1996, p. 17)

The linear programming model, Equation 5, is given as:

\[
\begin{align*}
\min_{\theta, \lambda} & \theta, \\
\text{st} & y + Y\lambda \geq 0, \\
& \theta x_i - X\lambda \geq 0, \\
& N1'\lambda = 1 \\
& \lambda \geq 0,
\end{align*}
\]

(4.6)

where N1 is an \( N \times 1 \) vector of ones.

The results from the DEA analysis in Figures 4.2 and 4.3 reveal that the mean efficiency score for banks in Ghana over the period is generally high. However, technical efficiency of CRS declined from 0.914 to 0.888 over the period while scale efficiency declined from 0.954 to 0.888. Conversely, technical efficiency pertaining to VRS increased from 0.960 to 1. With respect to the first sample (2002 to 2011), the mean technical efficiency score for all banks is 0.8769 (CRS), 0.9638 (VRS) and 0.9093 (Scale). The larger result for VRS compared to scale efficiency (SE) is indicative of banks having the potential to further utilize their scale.
The results from 16 banks over 5 years (Figure 4.3) show an increase in all efficiency scores. Within the period, CRS increased from 0.656 to 0.781, VRS increased from 0.844 to 0.886 and SE increased from 0.787 to 0.876. The mean efficiency score for all banks with regards to CRS, VRS and SE were 0.726, 0.866 and 0.842 respectively. As with the previous sample, lower score for SE in relation to technical efficiency suggests that inefficiency among banks accrues more to sub-optimal use of their size.
4.3.5 Cross country descriptive analysis

Access to finance as defined by the scope of this research covers both; place (physical access) and service (affordability of credit). World Bank data show that overall; Ghana lags behind in terms of access to financial services. (See Figure 4.4 below)

Figure 4.4: Composite measure of access to financial services

Source: Data from Demirgüç-Kunt, Beck, & Honohan (2007) World Bank Research

Subsequent analysis of the extent of financial access in Ghana is done using data from the Financial Access Survey conducted by the World Bank between 2000 and 2011. Data on four (4) other countries; Nigeria, Kenya, South Africa and Malaysia are used in this section. The use of comparative data in this section is not aimed at prescribing benchmarks for Ghana but rather a reference of Ghana’s position in terms of financial access development in relation to her peers. The selection of these countries is remotely based on their common British colonial background as Ghana. Nigeria is a peer and West African giant both in terms of population and advancement in financial services. Moreover, almost 50% of foreign owned banks in Ghana originate from Nigeria. Kenya and South Africa are East African and Southern

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44 With respect to economic growth, South Africa is also a member of BRICS thus making it an appropriate financial development benchmark for Ghana
African economic giants respectively. Additionally, South Africa is the only country besides Ghana that is an official inflation targeter in Sub-Saharan Africa. Last but not the least; Malaysia is selected because among other things, it has demonstrated remarkable growth after its independence in 1957. In this light, Malaysia stands as success story in terms of the rate of economic development stemming from good economic and financial management.

The fact that the number of banks have doubled in the last 10 years has been illustrated in subsection 4.1.1, however, Figure 4.5 shows that despite the increase Ghana has an average number of banks in relation to her peers. The sudden drop in the number of banks operating in Nigeria was due to nationwide bank consolidation that enforced by the central bank.

Figure 4.5: Number of Commercial Banks from 2004 – 2011 (Selected countries)

Simply observing the number of banks operating in a country alone as a measure of financial access can be misleading. Figures 4.6 and 4.7 present the number of bank branches and banks per 100,000 adults respectively. Assessing the number of branches as well as people per bank ratio is adequate for answering the question of physical access to banks. As shown in Figure 4.6 Ghana (790) has the least number of banks in 2011, compared to Kenya (1163), Malaysia

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45 Ghana became independent in March 1957 ahead of Malaysia which gained independence in August, 1957
(2050), South Africa (3712) and Nigeria (5810). Notwithstanding, when population is factored in the number of banks that can serve 100,000 adults is 5, 6, 5, 10 and 10 for Ghana, Malaysia, Kenya, South Africa and Malaysia respectively.

Figure 4.6: Number of Bank Branches from 2004 – 2011 (selected countries)

Source: International Monetary Fund (2011)

Figure 4.7: Banks per 100,000 adults from 2004 – 2011 (selected countries)

Source: International Monetary Fund (2011)

Besides the brick and mortar structures, automated teller machines (ATM) have become a convenient way to accessing banking services without having to deal with long queues or
hustle of not being able to make it to a before the end of working hours. Figure 4.8 however shows that the number of ATMs per 100,000 people only grew from 3.8 to 4.0 in Ghana from 2008 to 2011. Regrettably, Ghana exhibits the lowest growth when compared to Kenya (6.0 to 9.2), Nigeria (8.4 to 11.7), Malaysia (42.3 to 55.2) and South Africa (44.1 to 59.1)

Figure 4.8: ATMs per 100,000 adults from 2008 to 2011 (Selected countries)

Source: International Monetary Fund (2011)

4.4 Discussion and Conclusion

The chapter examined characteristics of the banking industry in Ghana with respect to concentration, competition, efficiency and outreach.

The aforementioned computations are executed so that, chiefly, the structure performance and efficient structure hypotheses can be employed to connect bank specific factors with access (availability and affordability) of finance.

Two samples of bank-specific data are used in the analysis. One comprises financial statements of 11 banks from 2002 to 2011 and the other is on 17 banks from 2007 to 2011. As mentioned earlier, the second dataset covers 5 years after the official adoption of inflation targeting as monetary policy regime in Ghana while the first dataset spanning 10 years (2002 to 2011) allows for analysis covering 5 years before and after the official adoption of
inflation targeting. Needless to say, the two samples are constructed and used in the analysis in order to capture any changes over time. It is important to reiterate that the unmatched number of banks in the two samples is as a result of (1) unavailable data for certain banks and (2) available data on some banks were excluded because they were consolidated and therefore likely to overstate their position in the analysis.

Bank concentration is measured using the $k_3$ and $k_{5\%}$ concentration ratios as well as the Herfindahl-Hirschman Index (HHI). The results for both samples show that although market concentration has reduced over the years the banking industry is generally an oligopoly (i.e. moderately concentrated) but approaching upper boundaries of perfect competition (i.e. low concentration) particularly in the case of the second sample. The finding of a moderately concentrated market or oligopoly is similar to that of previous studies on market structure of banks in Ghana. (See, Biekpe, 2011; Bucks & Mathisen, 2005; Ofori, Bawumia, & Belnye, 2005) Presumably, the upper boundary figure indicating low concentration as per the results in the second sample is as a result of an increase in the number of banks that make up that sample. This chapter’s hypotheses of an oligopolistic market structure as a result of a few large banks owning half of industry assets is validated. Through the lenses of the structure performance hypothesis, the prevailing oligopoly is blamed for relatively high cost of credit under the assumption that the few large banks ‘collude’ in order to reap high profits.

Results from the Panzar-Rosse model used to measure bank competition presents H-statistics of 0.61 and 0.69 with respect to the two samples. The H-statistics laying between 0 and 1 (0<H<1) show that bank competition in the case of both samples is a monopolistic competition. Salami (2008) also came to the same conclusion of monopolistic competition having conducted a survey and interviews with top ranking bank officials in 2007. Apart from the results of bank concentration being in agreement with the results on bank concentration, they collectively aid in filling the gap of surrounding challenges of access to
finance - particularly cost of credit in Ghana. First of all, the few large banks that own a significant portion of industry shares are likely to dictate the pace of changes in the market. For example, location of physical banking infrastructure (ATMs, branches) due to the benefits of economies of scale. Secondly, owning huge assets creates the opportunity for oligopolists to dominate the interbank lending market. This by extension enables them to influence cost of borrowing which subsequently results in higher base market lending rates.

The hypothesis of bank inefficiency attributable to scale rather than technical efficiency is confirmed by a lower efficiency score of 0.9638 and 0.866 for technical efficiency compared to 0.9093 and 0.842 for scale efficiency. Summarily, this result is suggestive of inefficiency among banks as a result of suboptimal use of size. In a way, such an assertion ties in with the influence the oligopolists have in influencing the pace of growth of banking infrastructure. Inefficiency with regards to scale could also stem from geographical congestion where banking infrastructure is concentrated in urban centres. In another vein, the descriptive analysis in subsection (3.5) show that although banking infrastructure has increased following financial reforms and increase in the number of banks operating in Ghana, access to finance (referring to both physical access and service) is inadequate.

\[^{46}\text{An antithesis of “geographical exclusion” observed in Peachey & Roe (2004)}}\]
CHAPTER 5

BANK LENDING TO SMES IN GHANA: A SURVEY ANALYSIS

5.1 Introduction

The previous empirical chapter (Chapter 4) discusses the impact of banking industry-wide factors namely; concentration, competition, efficiency and outreach on both access to financial infrastructure and services. The discussion in that chapter studies the dynamics in the banking industry as a means of providing explanation for availability and affordability of finance to firms (including SMEs) in general. This chapter expands the discourse of the impact of bank-specific factors on SMEs access to finance by analysing primary data collected from banks in relation to their practice of lending to SMEs. The use of survey (questionnaires) is done to enable this dissertation gain practical information that will contribute to academic literature on SMEs’ access to finance as well as put forward workable solutions that will lead to the improvement of SMEs’ access to finance in Ghana and other developing countries.

The general objective of this chapter is to give insight into issues relating to SME financing from the bank (practitioners) perspective. This includes, but not limited to, items required from SMEs in loan applications, type of collaterals deemed sufficient by banks, bank’s preferred characteristics of an ideal SME client and details of loan contracts with such an ideal client. This chapter seeks to answer the following questions, (1) what is the current range of loan amounts, interest rates and maturity periods of bank loans to SMEs? (2) what levels of SME operating capital, years of operation, number of employees, type of industry, etc. are considered ideal for lending to by banks? In other words, how do SME-specific characteristics impact its potential of securing loans from banks? (3) what type of assets do
banks in Ghana consider appropriate for SME loan applications? (4) which monetary policy, banking operations and banking regulation variables do bank’s consider as having an impact on their lending to operations – particularly in lending to SMEs and (5) does relationship banking improve SMEs access to finance? In other words, does familiarity with a bank based on longer duration as an active customer improve SMEs’ access to finance in Ghana?

To answer the research questions, the following hypotheses (and propositions) are formed;

1. Banks are most likely to lend to businesses engaged in transportation and wholesale, retail trade.
2. Banks are less likely to lend to SMEs engaged in construction and primary, extractions industries like fishing and mining.
3. Items for successful loan applications are heavily based on collateral
4. Most banks prefer immovable assets to movable assets as collateral.
5. A higher percentage of banks perceive SMEs as having a high risk of default.
6. Lending interest rates to SMEs considered by banks as ideal clients are above 25%.
7. Banks rely more on interbank lending for short term borrowing.
8. Similar to the findings in Chapter 3, the monetary policy rate and Treasury bill rate have the most impact on bank lending interest rate.
9. Relationship banking does not significantly improve access to affordable credit for SMEs.

The chapter comprises four sections. Section one comprises the introduction, objectives and hypotheses to be tested in the chapter. The second section presents information about the survey instrument, method of data collection, tools for data analysis and details of the sample. The third section deals with the data analyses under; the practice of bank lending, description of the ideal SME client, impact of monetary variables, bank regulation and relationship

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25% is arbitrarily used to represent current average base market lending interest rate.
banking on access to finance. The fourth section summarises the discussion to conclude the chapter.

5.2 Methodology: data collection

5.2.1 Survey instrument

The survey is conducted using questionnaires. The questionnaire constitutes 5-pages. Half of the first page contains information addressed to the respondent regarding the researcher and use of the survey data. The last page (i.e. 5) contains a coded list of major divisions of industries on the left and subdivisions of the manufacturing industry on the right. In terms of structure, the questions are grouped under five (5) themes; ‘About the respondent’, ‘Bank lending’, ‘Defining the ideal client’, ‘Bank regulation and industry factors’ and ‘Relationship Banking’. A mix of open-ended, closed-ended and a combination of the two are used. For instance, closed-ended questions are used regarding the type of industries banks are most likely to lend to (given the list of industries on page 5 of the questionnaire). On the other hand, responses regarding the banks deem as satisfactory collateral is completely opened. For example, in the question regarding the source of bank borrowing respondents are allowed to input information other than what has been provided by the researcher.

5.2.2 Data collection

The simple random sampling method was used in data collection. Banks included in the survey were not particularly targeted prior to the data collection. The population size comprises all banks on the list of licensed banks disseminated by the Bank of Ghana. (Bank of Ghana, 2013c) The targeted population is reduced from 29 to 27 because two of the banks in the list – Citibank N.A. Ghana Rep. Office and Ghana International Bank plc are only representative offices in Ghana. Responses were obtained from 10 banks which constitute the
sample in this chapter’s analysis. Although the sample size of 10 is less than half of the number of banks operating in Ghana, it is worthy of note that three (3)\textsuperscript{48} of the banks included in the sample (N=10), together, have the largest market shares in terms of total assets, total deposits and total loans. Consequently, results from analyses involving the sample of 10 banks (which is less than half of the total number of licensed banks) holds weight.

5.2.3 Data analysis tool and details of the sample

The data is analysed using descriptive statistics such as mean, median and percentages and presented in tables and graphical representations such as pie chart and bar graphs.

All banks in the sample have branches in at least five geographical regions of Ghana. 100% of the headquarters of all banks are located in the Greater-Accra region where the national capital city – Accra is located. Nine (9) of the banks are commercial banks while 1 (National Investment Bank) is a development bank\textsuperscript{49}. To ensure that the information provided by the bank reflect what transpires in its day-to-day operations as well as its interaction with SMEs, bank staff engaged in retail banking, corporate banking or operations at either at the headquarters or branches were targeted to complete the questionnaire. Only one (1) employee at each bank completed the questionnaire. 60% of the respondents (i.e. bank employee) work in retail banking division while 20% work in corporate banking and operations respectively. The job titles of respondents (N=9) include; relationship managers (3), operations manager (1), credit officers (1), credit analyst (1), project officer (1) and work place banking (1). 50% of the respondents work in branches while the other 50% are stationed at the headquarters. In

\textsuperscript{48} These banks are; Commercial Bank, Barclays Bank of Ghana Ltd. And Standard Chartered Bank Ghana Ltd. This was arrived at during the analysis of K\textsuperscript{3} bank concentration in Ghana. (See Section 3.2 of Chapter 3)

\textsuperscript{49} The types of banks are not differentiated in the analysis because in addition to development banks functioning as commercial banks in Ghana, interest rates and dealings with SMEs do not significantly differ across banks.
terms of academic qualifications, 6 of the respondents (N=8) have a Masters’ in Business Administration (MBA), 1 has undertaken some other post graduate degree and 1 has Bachelor’s degree.

5.3 Survey results and discussion

5.3.1 Bank lending

Type of industry

The analysis of the data from banks begins with bank’s experience of lending to SMEs. Respondents were asked to select three industries out of a list of 17 industries that they are most likely to lend to or do lend to. The results (in Figure 5.1) show that 10 out of the 17 industries were selected by respondents. The two top industries or SMEs that banks are more willing to lend to are wholesale and retail trade (26%) and manufacturing (16%). Financial intermediation, construction and transportation, storage and communications have 11% each. Based on the responses from banks, the proposition that banks are most likely to lend to SMEs engaged in manufacturing and transportation is partly accepted. The researcher constructed the proposition against the backdrop that in line with economic development and increase in demand for goods and services, wholesale and retail businesses will be booming and thus will have reliable cash flow and high operating profit that will be attractive to banks. In another vein, the growth of Ghana’s economy has been accompanied by significant improvement in physical infrastructure such as roads, bridges and the like. This reason, coupled with the expansion of business activity across the country, has resulted in an increase in the use of transportation services. Transportation services have become more lucrative – earning higher operating profits. In terms of lending, vehicles owned by firms in transportation services can be used as collateral for loans.
The outcome that banks deem manufacturing businesses worthy of lending to is interesting because as mentioned in Chapter 1, access to finance is reported as a challenge by members of the Association of Ghana Industries (AGI) in various issues of their quarterly bulletin – ‘The Business Barometer’. Understandably, manufacturing firms, by the nature of their business, possess plants, machinery or factories which may be deemed sufficient collateral by banks hence the willingness to lend to them.

Figure 5.1: Industry divisions that banks are most likely to lend to (N=10)

The type of industries that banks are least likely to lend to, are ‘Agriculture, hunting and forestry’, ‘Fishing’ and ‘Mining and quarrying’. The proposition that SMEs engaged in construction and primary/extractions industries like fishing and mining are less likely access loans from banks is supported by the data since construction follows immediately after the primary/extractions industries. (See Figure 5.2) Why banks are less likely to lend to these types of industries is unclear. Notwithstanding, firms engaged in primary or raw material based products like agriculture and fishing are usually small scale and not deemed as creditworthy. In the case of mining firms, the period between when the loan is contracted and when explored minerals will be able to rake in returns are long and thus undesirable since
banks could lend same loan amounts to SMEs engaged in other industries for shorter loan periods or purchase government securities. The same tendency of SMEs engaged in extraction to borrow for longer periods goes for firms engaged in construction as well since it is expensive and takes a lot of time for them to prepare their products – buildings.

Figure 5.2: Industry divisions that banks are **less likely** to lend to (N=10)

Loan applications

In this subsection, banks’ perception of appropriate items for loan, collateral as well as details of what goes on in current practice regarding lending to SME clients – loan amount, interest and maturity period is discussed.

Respondents were asked to select top five (5) items and requirements that are necessary for successful loan applications from their banks. From their bank’s experiences with SMEs, the responses selected are; audited financial statements (16%), value of collateral (14%), type of industry (14%), liquidity of collateral (12%) and insured collateral (10%). Interestingly, three (3) out of the five (5) top items are about collateral namely; value, liquidity and insurance-
status of collateral. (See Figure 5.3) The proposition that items for successful loan applications are heavily based on collateral is validated by the data.

It can be observed that longer duration as bank’s customer does not matter so much for successfully procuring loans from banks. Why audited financial statements tops the list can perhaps be associated to the need for bankers to be assured of the profitability of the loan seeker’s establishment. The availability of audited financial statements also gives credibility to the existence of the firm (or SME) particularly in recent times when fraudsters (locally called ‘Sakawa’ or ‘419’) are on the rise in West Africa. Audited financial statements, where there is inadequate proof of potential success of borrowed funds, aids in assuring lenders of a borrower’s competence in financial management as well as in making sound management decisions. Type of industry discussed above is ranked third.

Figure 5.3: Items for successful application of loans (N=10)
After asking respondents what aids in successful application of loans, the question of what items or requirements SMEs find difficult to provide in loan applications was posed. According to the data provided by banks top five things SMEs find difficult to present include ‘Audited financial statements’, ‘Insured collateral’, ‘Proof of potential success of project’, ‘Value of collateral’ and ‘Unaudited financial statements’. The top five facets chosen in Figure 5.4 is suggestive of the point that from banks experiences of dealing with SME, it is difficult for SMEs to show adequate proof of formal registration, book keeping and thus trustworthy records of profitability and sound management. Interestingly, the point of insured collateral seems to be gaining attention among academics and practitioners alike. The International Financial Corporation (IFC), for example, is assisting developing countries including Ghana to set up credit guarantee bureaus as well as collateral registries to mitigate challenges faced by firms in providing secured collaterals during loan applications. (IFC, 2011, p. 19)

Figure 5.4: Items for loan application difficult for SMEs to provide (N=10)

These facets provided by banks will be compared with responses by SMEs for construction of practical policy.
In Chapter 2 of this dissertation, current discourse on SME lending pertaining to collateral is presented. There seems to be a concern for banks to also accept movable assets as much as immovable assets as sufficient collateral from firms in general. (See, Ayogyam, Appienti, Asaah, & Abubakari, 2012; Okoh & Ping, 2000) The hypothesis regarding collateral is that banks are reluctant to accept movable assets as collateral because most movable assets like inventory and motor vehicles are uninsured. The result in Figure 5.5, show that building / houses / landed property comprise 25% of assets preferred as collateral by banks during loan applications. Cash make up 14% while cars, equipment / plant / machinery and bonds/debentures comprise 11% respectively. After grouping the assets suggested by banks as sufficient collateral into immovable and movable, their corresponding percentages are summed up. The summation reveals 43% for immovable assets and 57% for movable assets. The outcome indicates that currently banks consider movable assets as sufficient collateral.

The proposition that banks prefer immovable assets to movable assets in terms of collateral is unsupported by the data. An explanation for the apparent change in preference of immovable assets to movable assets could be positive impacts brought about by the establishment of a collateral registry by IFC in Ghana. (IFC, 2013) Credit for the improvement in the range of acceptable collateral could also be ascribed to the enactment and implementation of the Borrowers and Lenders Act, 2008. (Bank of Ghana, 2013a)
Figure 5.5: Suggested collateral for loan applications (N=10)

According to the banks, SMEs request more of working capital loan (70%) than project financing loans (30%). (See Figure 5.6) First of all, it is expected that SMEs will borrow or request for more working capital loan than project financing loans because relatively, there are less projects being undertaken in comparison to day-to-day operations. In the same vein, loans for projects may be used over a relatively longer time than funds borrowed to be used as working capital. Notwithstanding, a higher frequency of requesting working capital loans could mean that SMEs are often faced with liquidity problems and therefore need loans to support operations. **More positively, the result suggests that in tandem with increasing demand of SMEs’ products owing to improvement in the Ghanaian economy, there are more requests for working capital loans to help finance gradual expansion of operations in response to the demands of the market.** A third option ‘Investment’ was provided for this question on what type of loan SMEs usually request from banks. Coincidentally, none of the banks selected that option in answering the question. Choosing ‘Project-financing loans’ instead of ‘Investment loan’ could be interpreted as follows. **While investment loan could range from borrowing for the purposes of buying equipment to larger scale activities**
like building a plant (in the case of manufacturing companies), project-financing loans give a stronger indication of borrowing in order to undertake expansion projects.

Figure 5.7 indicates that banks do not have specific preferences as per granting loan requests of SMEs. The figure shows that banks “easily grant” both working capital and project-financing loans to SMEs.

Figure 5.6: Type of loan requested by SMEs  
(N=10)  

Figure 5.7: Type of loan granted by banks  
(N=10)  

In terms of actual bank lending to SMEs, majority of respondents pointed out that in line with bank policy their respective banks usually grant loans above GH₵ 500,000 for an average of 3 years with lending interest rates between 27% and 33%. A respondent from one of the leading banks indicated that out of 3500 loan requests received from SMEs in a year, 3480 are rejected on average.
Table 5.1: Usual amounts, interest rates and maturity periods of bank loans to SMEs

<table>
<thead>
<tr>
<th>Amount regularly lent</th>
<th>Loan duration</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than GH₵20,000</td>
<td>2</td>
<td>1 - 2 years</td>
<td>base rate</td>
</tr>
<tr>
<td>GH₵ 21,000 – GH₵ 40,000</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GH₵ 41,000 – GH₵ 60,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GH₵ 61,000 – GH₵ 100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GH₵ 100,000 – GH₵ 500,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GH₵ 500,000 – GH₵ 1 million</td>
<td>2</td>
<td>1 year</td>
<td>29</td>
</tr>
<tr>
<td>more than GH₵ 1 million</td>
<td>2</td>
<td>5 years</td>
<td>25</td>
</tr>
<tr>
<td>There are no limits as to what we can give</td>
<td>3</td>
<td>1 - 3 years</td>
<td>28</td>
</tr>
</tbody>
</table>

90% of respondents pointed out that ‘Perceived risk of lending to SMEs’ defined in the survey as “perception of SMEs as having high risk of default” account for higher lending interest rates meted out by banks to SME clients. This outcome supports the hypothesis that more than 80% of banks perceive SMEs as having a high risk of default.

5.3.2 Defining the Ideal SME client

In the last subsection, issues pertaining to banks’ experiences of dealing with lending to SMEs have been discussed. This subsection is aimed at (1) discussing the components of ideal SME clients as perceived by bankers and (2) to ascertain if there is a significant difference between intended treatment of ideal clients and the status quo.

Table 5.2 contains perceived characteristics of an ideal small enterprise client by banks. The lowest and highest values per item are tabulated. In the case of nominal data such as gender and nationality, responses with the lowest frequency are recorded as low and vice versa.
Summarily, the data from Table 5.2 presents the ideal small enterprise client as having a present capital between Gh¢ 40,000 and Gh¢ 5,000,000 of which less than 25% is already financed by loans. The enterprise should have been in business for at least six (6) months, with at least 1 employee and could be located in any geographical region in Ghana but preferably, Accra central. The enterprise can be under any type of ownership, have either male or female owner(s) and managers who must have at least completed Junior High School and preferably be citizens of Ghana. Banks also prefer firms that export up to about 25% of their products, have a record of no defaults on loan repayment and been a client of the bank for at least 6 months.

Table 5.2: Characteristics of the ideal small enterprise client

<table>
<thead>
<tr>
<th>Item</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of present capital (in Gh¢)</td>
<td>40,000</td>
<td>5,000,000</td>
</tr>
<tr>
<td>Years in operation</td>
<td>6 months</td>
<td>5 years</td>
</tr>
<tr>
<td>Location i.e. region(s) of operation</td>
<td>Any region</td>
<td>Accra Central / Major city</td>
</tr>
<tr>
<td>Number of employees</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Gender of owner(s): Male or Female</td>
<td>Female</td>
<td>Both sexes</td>
</tr>
<tr>
<td>Type of ownership</td>
<td>Any</td>
<td>Sole proprietorship / Limited liability</td>
</tr>
<tr>
<td>Qualification of owner(s)</td>
<td>Junior High</td>
<td>Degree / PhD</td>
</tr>
<tr>
<td>Nationality: Ghanaian or Foreigner</td>
<td>Both</td>
<td>Ghanaian</td>
</tr>
<tr>
<td>Percentage of export-orientation</td>
<td>0</td>
<td>25%</td>
</tr>
<tr>
<td>Number of loan defaults in the past</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Percentage of present capital already financed by loans</td>
<td>0</td>
<td>25%</td>
</tr>
<tr>
<td>Number of years as your client</td>
<td>6 months</td>
<td>5 years</td>
</tr>
</tbody>
</table>

With respect to defining the ideal medium enterprise client, respondents mentioned that a medium enterprise worth lending should have been a client of the bank for at least a year. The
enterprise should have a present capital in the range of Ghȼ 50,000 and Ghȼ 25,000,000 of which not more than 40% should comprise loans. The client should have records of no prior defaults on loans. The enterprise should have been in operating for at least a year in any part of Ghana but preferably Accra central. The firm should be preferably a limited partnership with at least 5 workers. Owners or managers can be either male or female with at least a Junior High School certificate. It is preferred if Ghanaians are majority owners of the business. Finally, the enterprises’ sales could comprise 75% exports.

Table 5.3: Characteristics of the ideal medium enterprise client

<table>
<thead>
<tr>
<th>Item</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of present capital (in Ghȼ)</td>
<td>50,000</td>
<td>25,000,000</td>
</tr>
<tr>
<td>Years in operation</td>
<td>1 year</td>
<td>12 years</td>
</tr>
<tr>
<td>Location i.e. region(s) of operation</td>
<td>Any region</td>
<td>Accra Central / Major city</td>
</tr>
<tr>
<td>Number of employees</td>
<td>5</td>
<td>&gt; 50</td>
</tr>
<tr>
<td>Gender of owner(s): Male or Female</td>
<td>Male</td>
<td>Both sexes</td>
</tr>
<tr>
<td>Type of ownership</td>
<td>Any</td>
<td>Limited partnership</td>
</tr>
<tr>
<td>Qualification of owner(s)</td>
<td>Junior High</td>
<td>Degree / PhD</td>
</tr>
<tr>
<td>Nationality: Ghanaian or Foreigner</td>
<td>Both</td>
<td>Ghanaian</td>
</tr>
<tr>
<td>Percentage of export-orientation</td>
<td>0</td>
<td>75%</td>
</tr>
<tr>
<td>Number of loan defaults in the past</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Percentage of present capital already</td>
<td>35%</td>
<td>40%</td>
</tr>
<tr>
<td>financed by loans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of years as your client</td>
<td>1 year</td>
<td>6 years</td>
</tr>
</tbody>
</table>

In bringing the two points together, it can be noted that banks have a zero tolerance for SME clients with a history of default on loan repayments. That is agreeable since as financial intermediaries, banks mobilize funds for which they have to make returns. Also as profit-making ventures, banks cannot afford to a high percentages of non-performing loans as result of defaults on loan repayment by SMEs or clients in general. When it comes to regions
in which the operation of the SME is located, half of the respondents indicate that any of the
10 regions in Ghana is fine. The other half of respondents will prefer that the SME is
located in and around Accra central or a major city in Ghana. Comparatively, the lower
limit of present capital suggested for both small enterprises and medium enterprises is only a
difference of Gh₵10,000 (Gh₵ 50,000 - Gh₵40,000). The difference between the upper
limits of present capital for small enterprises and medium enterprises is Gh₵20,000,000
(5 times that upper limit for small enterprises). Regarding the proportion of present capital
consisting loans, banks consider less than 35% of present capital already financed by
loans as acceptable. In terms of the number of years in operation, 5 and 12 years are most
preferred for small enterprises and medium enterprises respectively. Regarding the number of
employees, 3 banks indicated 1, 2 and 3 employees respectively as lower limits for small
enterprises. Banks are suggestively lenient when it comes to lower limits of employees.
This could be because banks are more concerned about the financial position of potential
clients in addition to the quality of collateral presented. (See Figure 5.3) Pertaining to type of
ownership, any is acceptable however sole proprietorship and limited partnership are
preferred in the case of small enterprises and medium enterprises respectively. In
relation to business activity, firms engaged in export of 25% to 75% of their products are
considered more creditworthy by banks.

Regarding the characteristics of the owner, there is no discrimination between genders since
both sexes are deemed preferable with respect to gender of the owner. In relation to
academic qualification of the owner, “basic education” which in Ghana is often used to
represent completion of Junior High School is recommended for SMEs. While there are no
restrictions on the nationality of the owner, a Ghanaian is more preferred. As noted
earlier in the analysis of Figure 5.3 the rise of fraud cases in Ghana’s business environment
have compelled banks to observe extra caution in dealing with foreigners (especially those
from neighbouring West African countries). Although banks seem to not place weight on the duration a prospective borrower has been their client (See Figure 5.3), a period of 5 or 6 years is most desired by bankers.

Although not expressly mentioned in the summary and discussion of responses provided by banks for every item defining the ideal client, it is envisaged that SMEs that have same or similar characteristics of banker’s ideal client will undoubtedly be able to easily access finance from banks in Ghana.

In order to establish if the terms of loans for ideal clients are significantly different from prevailing practice, banks were asked to provide information regarding the interest rate, maturity period and largest loan amount ideal clients will be offered or granted. Low and high limits as well as the median of bank’s responses have been presented in Table 5.4 and 5.5 below.

Table 5.4: Terms of loan for an ideal small scale enterprise client

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>High</th>
<th>Median</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Largest loan amount (in GH₵)</td>
<td>2,400</td>
<td>4,000,000</td>
<td>50,000</td>
<td>696,233</td>
</tr>
<tr>
<td>Interest rate (in %)</td>
<td>25%</td>
<td>36%</td>
<td>27%</td>
<td>29%</td>
</tr>
<tr>
<td>Maturity period</td>
<td>1 year</td>
<td>5 years</td>
<td>1 year</td>
<td>2 years</td>
</tr>
</tbody>
</table>

Table 5.5: Terms of loan for an ideal medium scale enterprise client

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>High</th>
<th>Median</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Largest loan amount (in GH₵)</td>
<td>15,000</td>
<td>8,000,000</td>
<td>140,000</td>
<td>1,474,166</td>
</tr>
<tr>
<td>Interest rate (in %)</td>
<td>26%</td>
<td>36%</td>
<td>29%</td>
<td>29%</td>
</tr>
<tr>
<td>Maturity period</td>
<td>1 year</td>
<td>5 years</td>
<td>1 year</td>
<td>2 years</td>
</tr>
</tbody>
</table>
In a nutshell, the average loan amount banks will offer or grant an ideal small scale enterprise client is GH₵ 696,233 and GH₵ 1,474,166 for an ideal medium scale enterprise client. In both cases the average interest rate is 29% and the average maturity period is approximately 2 years. The proposition that lending interest rates offered by banks to ideal SME clients is above 25% cannot be rejected.

It had been deduced from data in Table 5.1 that banks (in the sample) usually grant loans above GH₵ 500,000 for an average of 3 years with lending interest rates between 27% and 33%. This deduction is generalized to represent prevailing practice of bank lending to SMEs. The prevailing practice is then compared to information about respondent’s treatment of ideal SME clients to ascertain if there is a significant difference. The result of the comparison displayed in Table 5.6 below shows that ideal SME clients on the average receive GH₵ 585,200 more than the prevailing practice. Average interest rates for ideal clients are 1% cheaper (29%) compared to (30%) ensuing in the status quo. The average maturity period available to ideal clients is however 1 year shorter than what transpires in current practice.

Table 5.6: Difference in terms of loan offered to ideal SME client and the status quo

<table>
<thead>
<tr>
<th></th>
<th>Prevailing practice</th>
<th>Ideal client</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average loan amount (in GH₵)</td>
<td>GH₵ 500,000</td>
<td>GH₵ 1,085,200</td>
<td>GH₵ 585,200</td>
</tr>
<tr>
<td>Average Interest rate (in %)</td>
<td>30%</td>
<td>29%</td>
<td>1%</td>
</tr>
<tr>
<td>Average maturity period</td>
<td>3 years</td>
<td>2 years (Approx.)</td>
<td>1 year</td>
</tr>
</tbody>
</table>

5.3.3 Bank regulation and industry factors

The pricing of bank loans as well as details of loan contracts are not done in isolation, there are internal (bank-level) and external (bank regulation and industry-wide factors) that affect availability of funds and lending. One example of external factors that affect bank lending is
the source of borrowing. Simply put, if the cost of borrowing (like the deposit interest rate or interbank lending interest rate) is high, the price of loans (here, lending interest rate) will be high, all things being equal. Usually, the deposit interest rate is lower than the interbank market lending rate. Being able to mobilize funds at a cheaper interest rate from households, as part of financial deepening, has a higher probability of resulting in cheaper lending interest rates from banks. Owing to a concentration of banking services to major cities as well as medium to high income earners, financial deepening is quite shallow thereby forcing banks to rely on the interbank market for short term funds. Against this background, it is hypothesized that banks in Ghana rely more on the interbank market than other sources of bank borrowing. The data presented in Figure 5.8 show that the largest source of short term borrowing for 50% of respondents (N=8) is the interbank market. The hypothesis that banks rely more on the interbank market for short term funds is accepted. Furthermore, the acceptance of this hypothesis also lends support to the assertion that higher lending interest rates in Ghana (particularly to SMEs) are significantly influenced by borrowing at expensive interest rates from the interbank market.

Figure 5.8: Sources of short term bank borrowing (N=8)
An explanation for the apparent lack of incentives for deposit mobilization was investigated by asking respondents if the deposit interest rate over the last ten years has been encouraging for banks to mobilize funds. 60% of respondents indicated that the deposit interest rate has not been a catalyst for deposit mobilization.

Figure 5.9: Impact of the deposit interest rate on savings mobilization (N=10)

Using the variables in the regression analysis in Chapter 3, respondents were allowed to choose up to 3 from the list of monetary policy and money market variables that they perceive the base lending rate responds to the most. The outcome (in Figure 5.10) shows a tie between monetary policy rate (28%) and Treasury bill rate (28%). There is also a tie between the deposit interest rate (17%) and inflation rate (17%). Interestingly, both the monetary policy rate and Treasury bill rate are statistically significant at 1% in Chapter 3. Again in Chapter 3, the monetary policy rate is found to granger-cause the base lending rate at the significance level of 5%. **Rating the lending rate as most responsive to both the monetary policy rate and Treasury bill rate is consistent with the findings from the regression and granger causality analyses in Chapter 3** (albeit via different methodologies).
Figure 5.10: Impact of monetary policy factors on lending interest rate (N=10)

![Pie chart showing the impact of monetary policy factors on lending interest rate.](chart)

Figure 5.11 below presents responses of banks regarding the impact of bank regulation and government borrowing on loanable funds for SMEs. 20% secondary reserve requirement imposed by the Bank of Ghana on commercial banks was abolished to improve the liquidity position of banks. (See, Addison, 2001) Banks were expected to increase lending because following the abolishing of secondary reserves the volume of operating assets (including loanable funds) increased. In the survey, 40% of respondents said ‘Yes’ the abolishment of secondary reserve requirements has increased loanable funds meant for SMEs while another 40% disagreed. The split outcome suggests that **improvement SMEs’ access to finance as a result of the abolishment of secondary reserves is inconclusive.**
Regarding the impact of attractiveness of returns on Treasury bills on loanable funds allotted to SMEs, 50% of respondents agreed while 40% disagreed that the attractiveness of return from buying and selling Treasury bills affects loanable funds to SMEs. In other words, 50% of respondents agree to government crowding out SMEs in terms of access to commercial bank’s loanable funds.

Figure 5.12: Impact of monitoring costs on bank lending to SMEs (N=10)
The fact that 60% of banks indicate that monitoring cost of lending to SMEs does not discourage lending to them is not surprising in view of the observation that banks place a lot of emphasis on screening of potential borrowers. Going by the results in Figure 5.3, banks may not expend much in monitoring owing to prior confirmations about a client’s profitability and genuineness by studying audited financial statements. Again, since banks emphasise requirements related to collateral (i.e. value, liquidity and insurance), less monitoring is needed as a result of banks possessing ‘sufficient’ collaterals with which loan repayments have been guaranteed.

5.3.4 Relationship Banking

Relationship banking is perceived as a tenet of the main bank system. During Japan’s post war miraculous development, businesses were reported to form good relationships with major banks in order to secure access to finance. (Suzuki, n.d., p. 16) As a result of extended periods of interacting with banks or in cases, owing to repeated transactions (Aoki, et al, 1994) ‘soft information’ about the business is acquired by the bank. (Beck & Demirguc-Kunt, 2006) This ‘soft’ information helps tailor financial products to meet the needs of the client (SMEs included) According to Beck et al (2006), relationship lending founded on soft information and long-term relationships has been considered an effective lending tool that benefits SMEs. (Beck & Demirguc-Kunt, 2006, p. 2940) In their paper, Hinson, Owusu-Frimpong, & Dasah (2009) acknowledge that it is about time for banks in Ghana to practice relationship marketing. Literature hypothesises that relationship lending makes use of soft information while transaction based lending is mostly conducted using hard information. Again, relationship lending is more suitable for “smaller, riskier and opaque borrowers”. (Berger, Demirgüç-Kunt, Levine, & Haubrich, 2004, p. 437)

51 Soft information in this context refers to information about the SME client that can only be given by the business owner or an ‘insider’. It is the kind of information that cannot be acquired by studying financial statements or other formal publications of the establishment in question.
In the survey, banks are asked whether they practice relationship banking. Figure 5.13 shows that 90% of respondents intimate that as an establishment, they practice relationship banking routinely and even have a special desk, office, branch or personnel for it.

Figure 5.13: Percentage of respondents that practice relationship banking (N=10)

![Pie chart showing 90% routine and 10% occasionally depending on how well they know the client]

The concept of relationship banking is included in the discourse of this chapter to ascertain its potency as a solution for improving SME access to finance in Ghana. To do this, respondents are quizzed on the benefits of relationship banking to banks in addition to its impact on some factors bordering on SMEs’ access to finance namely; lending interest rate, period of processing loans, maturity period and rolling over of loans.

Figure 5.14 shows that 50% of banks confirm that the practice of relationship banking has led to an increase in the number of SME clients. Since an increase in the number of customers is good for business activity, it can be speculated that practicing relationship banking is beneficial for banks since it leads to an increase in SME clients or customers.
The results pertaining to benefits resulting from the practice of relationship banking to borrowers are displayed in Figure 5.15. It is hypothesised that the practice of relationship banking does not significantly improve access to affordable credit to SMEs. According to majority of the respondents, the practice of relationship banking does not lead to lower lending interest rates for SMEs. This result is buttressed by an earlier observation that longer duration as bank’s customer is less important during SME loan applications. (See Figure 5.3) SMEs on bank’s relationship banking programs do not benefit from rolling-over of loans. Positively, relationship banking helps in reducing the time for processing bank loans and for contracting loans with longer maturity periods.
5.4 Conclusion

The previous empirical chapter (Chapter 4) deals with the impact of banking industry factors on access to banking infrastructure and employs the market power hypothesis in explaining the availability and affordability of credit from banks to businesses (including SMEs). This chapter (Chapter 5) has discussed the impact of internal operations decisions and perception of SMEs’ profitability on availability of finance to SMEs. The chapter also looked at affordability of credit by examining prevailing practices in relation to essentials of loan agreements (loan amount, lending interest rate and maturity period) between banks and SMEs. To connect the discussion in this chapter to the impact of monetary policy and money market variables, bank’s perception on the impact of the aforementioned variables on the base lending rate were collected and compared with the findings in Chapter 3. The impact of SME-specific factors on access to finance from banks is treated chiefly by using the responses of banks to construct characteristics of an ideal SME client. Furthermore, the details of loan terms to be offered or granted to the defined ideal client have been presented and discussed.
Structured questionnaires were used to collect data from respondents using the simple random sampling method. 50% of the respondents are stationed at the headquarters of their respective banks while the other half work at other bank branches. The job titles of respondents include; operations manager, relationship manager, credit analyst and credit officer.

The results show that banks mostly prefer to lend to wholesale, retail trade and manufacturing SMEs while SMEs engaged in agriculture, forestry, hunting, fishing, mining and quarrying are least preferred by banks. It was found that items or requirements deemed necessary by banks in loan applications are mostly centred on collateral (value, liquidity and insurance). Surprisingly, longer duration as bank’s customer is a less important criterion during loan applications as well as in accessing loans at cheaper interest rates.

Remarkably, banks prefer the use of movable collateral to immovable collateral during loan applications. This result seems to suggest that following the operation of the collateral registry under the Secured Transaction Regime, which began with the enactment of the Borrowers and Lenders Act 2008 (Act 773), using immovable assets as collateral on loans is becoming more acceptable by banks in Ghana.

Regarding the current state of lending to SMEs, banks usually grant loans above GH₵500,000 for an average of 3 years with lending interest rates between 27% and 33%. In the case of an average ideal client, the lower limit of loan terms is GH₵ 696,233 at an interest rate of 29% for 2 years.

Regarding the impact of industry factors on cost of bank borrowing, it was found that because banks rely more on the interbank market for short term funds instead of households, cost of funds and subsequently lending interest rates in general is high. On the responsiveness of the lending interest rate to monetary policy and money market variables, monetary policy rate
and Treasury bill rate are considered to have the largest impact. This response by banks is in concordance with the findings in Chapter 3. Interestingly, 50% of respondents impliedly agree that the attractiveness of returns from Treasury bills affect (or decrease) loanable funds allotted to SMEs.

In all, the content of this chapter gives an insight into issues pertaining to availability and affordability (access) of credit to SMEs based on analysis of internal information bordering on commercial bank’s experiences, practices and perceptions.
CHAPTER 6

IMPACT OF FIRM LEVEL CHARACTERISTICS ON SMES ACCESS TO FINANCE IN GHANA

6.1 Introduction

The last three chapters have dealt with SME access to finance from mainly the supply side i.e. impact of monetary policy and macroeconomic variables (Chapter 3) and impact of banking industry factors on access to financial services in general and credit in particular (Chapter 4 and 5). The results in chapter 3 show that although monetary policy variables are statistically significant in explaining changes in the lending rate, the responsiveness of lending rate was dull (the largest coefficient being 0.56 and an adjusted $R^2$ of 63%). In addition to this, it was estimated that it take the lending rate about 2 months to fully adjust to shocks from monetary policy variables (money supply, monetary policy rate and inflation). With the times series data fully unable to explain the cost of credit – typified by the lending rate, banking industry factors were examined in chapter 4. Summarily, the results suggest that ‘collusion’ could be a probable explanation for the relatively high cost of credit under the market power hypothesis.

The three empirical chapters have dealt with accessibility to finance from the supply side based on monetary transmission mechanism and financial intermediation themes. In view of the fact that accessibility to credit depends on both demand and supply factors, this chapter will deal with the impact of SME specific factors on access to finance using primary data collected via questionnaires from 441 businesses spanning five (5) industries.

Previous literature has dealt with the issue of SME characteristics on access to finance. (Indarti & Langenberg, 2004; Kuntchev et al., 2012) The variables used have been in relation to size, ownership structure, gender of owner, proximity to banking services, just to mention
a few. While studying the creditworthiness of SMEs (even in the case of Ghana) is not new, this research seeks to make a contribution by analysing SME access to finance following the institution of inflation targeting in Ghana. Also, having assigned quotas to certain industries it is envisaged that beyond the general SME-specific characteristics, industry-specific characteristics will be educed. Furthermore, the results will show how much capital SMEs require from banks, the purposes of the loans, the desired interest rate for the said loan amount and challenges in meeting requirements for loan access, among other things. In essence, the chapter contributes to academic literature on one hand while providing a reference for bankers and other stakeholders.

6.2 Chapter’s research questions, objectives and hypotheses

Overall, the objective of this chapter is to analyse SME-specific factors that affect their accessibility to bank credit. The objective is constructed based on the following questions;

i. What SME-specific factors affect their access to finance in Ghana? What characteristics make SMEs credit worthy?

ii. To what degree do factors like age, size, level of present capital, type of industry, etc. correlate with the ease of accessing finance?

iii. What type of loans do SMEs need and for what?

iv. What requirements during loan applications are most difficult for SMEs to come by?

v. What do SMEs refer to when they mention access to finance – availability, affordability or both?
To answer the research questions as a means of meeting the research objective the following hypotheses\textsuperscript{52} are created:

1. SME-specific factors such as location, size and type of industry are statistically significant to SMEs’ access to finance.
2. Reinvested profit makes up the largest part of present capital.
3. There is higher preference for debt than equity financing when it comes to investments.
4. There are more SMEs that prefer to finance debt from bank loans than from microfinance institutions.
5. More than half of SMEs require additional loans for financing operations and growth.
6. A greater proportion of loans needed is for investment not working capital
7. Almost all respondents rate access to banking infrastructure as easy.
8. Among monetary policy variables, SMEs consider inflation the biggest threat to affordable finance.
9. A greater percentage of SMEs perceive that higher lending rates from banks are as a result of perceived risk of SMEs by banks.
10. More than half of SMEs rate overall access to finance from banks as generally difficult.
11. The meaning of access to finance is more about affordability than availability

This chapter is divided into six sections. The first section covers the introduction, research questions, objectives and hypotheses. The second and third sections present the method of data collection, tools for data collection and analysis as well as general information about the

\textsuperscript{52} Since some analysis of the survey data is conducted using descriptive statistics, the corresponding hypotheses are constructed using percentages and means.
sample. Data analysis, results and discussion span sections four through six. Summary of the findings are presented in section seven.

6.3 Methodology

6.3.1 Data collection
The data used in this chapter is collected using questionnaires. Five hundred (500) questionnaires were distributed and 439 (about 88%) were completed and returned. The survey was conducted in two phases, a pilot phase and the main phase. The pilot phase was conducted during summer 2011 and the main survey was executed in 2013\textsuperscript{53}. During the pilot phase of the data collection, 100 questionnaires were distributed out of which 30 were considered valid upon return. Based on the experience from the pilot phase, some questions as well as the general outline of the questionnaires were improved to make them intuitive and unambiguous. Pertaining to addressing the research puzzle on affordability of credit, the questionnaire used in the pilot survey failed to solicit answers regarding the perception of affordable lending interest rate on loans for SMEs. In the main data collection, a quota regarding the number of respondents per industry sector was created. The quota comprises businesses engaged in; primary products and extraction (50), manufacturing (100), trade and retail (50), services (50) and other (social) services (50). Stratified random sampling was used in distributing the surveys because under every quota questionnaires were administered to businesses randomly. All questionnaires were completed on paper by the respondents. Owing to busy schedules and other constraints on the part of respondents, a number of them were visited more than once before completed questionnaires could be picked up.

\textsuperscript{53} The main survey was carried out two years later because the researcher need to incorporate results from the first two empirical chapters into the survey to enhance consistence in the research’s analysis.
6.3.2 Questionnaire

The questionnaire is six (6) pages long and contains 31 questions in all. The 31 questions are contained in the first 5 pages. The last page shows a list of 17 industries divisions on the left and a list of 23 classifications of products representing subdivisions under manufacturing on the right. The questions are mainly closed questions where respondents are given limited options to choose from. Close-ended questions are used to facilitate hypotheses testing regarding claims made in literature as well as with the research objectives in mind. There are a few open-ended questions in which respondents are asked to provide answers without options from the researcher. Using close-ended questions in constructing a questionnaire has the disadvantage of missing out on information that a respondent may want to provide but is absent from options provided because they were unknown to the researcher. To mitigate this, some close-ended questions were augmented by including ‘Other(s)’ as an option so respondents can specify additional responses.

In terms of structure, the questionnaire is divided into three (3) sections; company information, corporate finance and access to finance. Section (A) – ‘Company Information’ poses questions in relation to the age, location, size (employees), type of industry, ownership structure, export orientation as well as gender and nationality of owner(s). Section (B) – ‘Corporate Finance’ solicits answers pertaining to the respondent’s capital structure and preferences of funding (both present and future sources). The third section (C) dubbed ‘Access to Finance’ in a nutshell delves into the respondent’s interaction with banks, experience and perceptions about access to banking infrastructure, financial services and credit.

As part of the overall objective of this research, this chapter deals with how SME specific factors affect their access to finance. By using the questionnaire, the researcher is able to acquire information regarding SME characteristics as well as their perceptions and
experiences with banks and access to finance. Undertaking the survey using questionnaires affords the researcher the opportunity of receiving feedback that directly answer research questions. Furthermore, through primary data collection the researcher is unbounded by sample bias that may accompany secondary data collected by an organisation for other purposes.

6.4 Data analysis and results

6.4.1 Tools for analyses
In tandem with this chapter’s objective, causation between SME characteristics (both background and finance factors) and their rating of access to finance is measured. A linear regression model is constructed to test the relationships of SME characteristics on access to finance. In addition to these, descriptive statistics pertaining to the distribution of variables using means and frequencies are used. Bivariate and multivariate analysis is also conducted using cross tabulation and graphical tools such as scatterplots, bar graphs and pie charts. Generally, descriptive statistical tools are used in the analyses as a means to testing the hypothesis enumerated in this chapter.

Two (2) statistical softwares (Ms Excel and Stata) are used in the analyses. Stata is mainly used in the analysis of causal relationships (regression and correlation) while the PivotTable function in Microsoft Excel is mainly used to generate graphical representations of data from descriptive statistical analyses.

6.4.2 The sample: general information about respondents
As mentioned earlier, 441 questionnaires were completed and returned out of the five hundred (500) questionnaires that were distributed. Not all the 441 responses received could
be used in the analyses because the firms were found to be either micro or large enterprises with few than 5 or more than 100 employees respectively. The total number of collected questionnaires that is used in the analyses, after the ‘clean up’, is three hundred and forty (340)

The oldest respondent started operations in 1986 while the youngest SMEs started operations in 2013. Figure 6.1 shows an increase in the number of SMEs established in a year until about 2008/9 where there is a decline. The increase in the establishment of businesses from the late 1980s may reflect economic recovery after the institution of economic reforms – the Structural Adjustment Programme (SAP) of the Economic Recovery Programme (ERP) recommended by the International Monetary Fund (IMF) – from the early 1980s. Since the SAP advocated the downsizing of government as part of liberalisation, skilled workers were laid off from government agencies and privatized state-owned enterprises. With knowledge and perhaps limited capital, some workers who were laid off as a result of the SAP ventured into setting up private businesses. (Steel & Webster, 1992) In the same breathe, the ‘toning down’ of government involvement in the provision of goods and services may have created a vacuum that encouraged the formation of private businesses to meet the needs of the market. While there is a supposed decline in the number of companies being established from 2008, domestic economic policies may fall short of explaining this trend. Albeit a long shot, the downward trend can be ascribed to indirect impacts of the 2008 global financial crises on the Ghanaian economy.

54 Hereafter, references made to respondents or SMEs surveyed pertains to the sample size of 340 SMEs. Where the number of respondents regarding a question differs from 340, the actual number will be specified.
Since there is not much gap between when businesses were established and the year in which they were registered, a similar pattern can be observed in the case of Figure 6.1 and 6.2.

**Five (5) industry divisions** were targeted during the survey. The sample (N=326) comprises firms engaged in **Primary and Extraction (6%)**, **Manufacturing (36%)**, **Trade and Retail (11%)**, **Services (33%)** and **Social services (14%)**. Respondents who engage in manufacturing were asked to provide details about the subdivision they belonged to. The five (5) top subdivisions marked by respondents – which also makes up 58% of all manufacturing firms sampled – are food products and beverages, textiles, wearing apparel/dressing and dyeing fur, rubber and plastics products and furniture.
The data shows that two (2) out of the ten (10) regions in Ghana do not have headquarters located in them. These regions are (1) Upper East and (2) Upper West – the two most northern regions of the Ghana. Greater-Accra region (where the national capital – Accra is located) has the largest number of headquarters numbering 233 (68%). This is followed by Central region (74), Ashanti region (15), Eastern region (9), Volta region (6) and Western region (3). Unexpectedly, Ashanti region where Ghana’s second largest capital – Kumasi – is located comes third in terms of the number of headquarters by region.
In addition to the region in which the headquarters is located, respondents were asked to provide information regarding locations of other branches, offices or factories. The total number of branches in addition to the headquarters is 338. Out of this, 28% are in Greater-Accra, 22% in Ashanti, 21% in Central, 12% in Eastern and 17% in the rest of the regions combined. Although Ashanti region has only 4% of total headquarters observed, its place as the second largest economic centre in Ghana can be seen through its second place in terms of number of branches per region.

The expanse of regional distribution of headquarters and branches captured by this survey involves all 10 regions of Ghana. In this light, the results of the analyses are arguably representative of SMEs operating in Ghana.

The total number of employees stands at 7,247 as against 2,754 at the start of operations – in all, a 263% increase. 80% of 333 respondents do not engage in exports. Impliedly, most of the companies surveyed (N=333) only deal with the domestic market – Ghana. Pertaining to ownership, 55% out of 338 respondents are sole proprietorships, 22% general partnerships, 12% limited partnerships and 11% private corporations.

Figure 6.6: Export-orientation (N=333)  Figure 6.7: Ownership structure (N=338)
With respect to the largest gender in terms of owner(s), data from 322 firms show 242 males and 80 female. Figure 6.8 shows that 93% of 334 respondents are owned by Ghanaians and 7% (23 of 334) by foreign nationals. Interestingly, 14 out of the 23 of the businesses owned by foreign nationals are in manufacturing.

To ensure that information provided in the survey reflect the actual experiences and makeup of the firm, higher level management were asked to complete the questionnaire. Moreover, since the focus of the survey is on access to finance over a long period, company employees who may be privy to search information such as owners, partners, general managers, finance managers and company accountants were approached. Figure 6.9 shows the position of the respondents\(^55\) in the organisational structure.

The survey also collected data about the academic or professional qualification of the respondents. Figure 6.10 reveals that 50% of respondents (N=317) are bachelor degree holders. In the case of Junior High School and Senior High School the qualifications are the certificates awarded after sitting the national exams. At the Senior High School level,

\(^{55}\) Here ‘respondent’ is used to mean the individual (employee or owner) in the organisation that completed the questionnaire.
students are allowed to major in the field of business where courses such as economics, business management and accounting are offered. The final examinations and award of certificates are organized by the West African Examination Council. The Higher Diploma or Higher National Diploma (HND) is a tertiary level qualification awarded by Polytechnics in Ghana. Under professional qualifications are respondents who have pursued specializations in accountancy with bodies like the Institute of Chartered Accountants (ICA) Ghana and ACCA.

Figure 6.10: Qualification of owners (N=317)

6.5 Corporate Finance

This section deals with the financial position of respondents, as well as their preferred financing mix and sources of finance. Hypothesis in relation to preferred source of financing and composition of present capital will be discussed in the section.

The final position of businesses are important in increasing their chances of successful loan applications and thus access to finance. To be assured of a business’ profitability, creditors look at level of present capital (operating capital) in addition to net income (or in some cases, operating profit). In addition to showing that a borrower (firm) has a good track record of profitability, the present capital also informs lenders of the ability of a firm to meet its debt (cash) obligations. This is because the composition of present capital also gives indication of
the liquidity of a firm. Furthermore, a business might find it difficult to access affordable finance if the composition of present capital already has a higher proportion of debt. With a high percentage of the present capital financed by debt, the risk of default increases thus attracting higher interest rates from lenders.

In Chapter 1, it was asserted that owing to improving macroeconomic conditions increasing SMEs are expanding to cater for increasing demand of goods and services. It was further speculated that owing to the scale of expansion needed, sources of financing such as family and friends, personal savings and reinvested profit will be inadequate. The appropriateness of bank loans for SMEs’ investment financing was suggested. The aforementioned claims will be tested using the survey data in this section.

Figure 6.11: Source of start-up capital (N=323)

Figure 6.12: Start-up capital financed by loan (N=183)

The source of start-up capital for 323 respondents show the use of debt (58% as loan) against 42% comprising personal savings, contribution by partners and others. With loan being the largest part of start-up capital, the specific amount sourced as start-up capital was probed. The result (Figure 6.12) reveals that 65% of loans used as start-up capital were under GH₵
21,000\textsuperscript{56}. Among the sources of loans for start-up capital is bank (62%), microfinance institution (20%), family and friends (8%), government agency (2%) and finance NGO (1%). (See Figure 6.13)\textsuperscript{57}

Figure 6.13: Source of loans used for start-up capital (N=188)

In the survey, respondents were asked to rank the sources of their present capital and indicate the percentage of each source relative to its composition of present capital. In analysing the results, two groups were carved out i.e. (1) sources that were said to be 20% and below and (2) sources that were ranked between 80% and 100%. The results, presented in Figure 6.14 shows that ‘Personal savings’ is high in both cases. 41 respondents replied that over 80% of their present capital comprises loans. On the contrary, on six (6) respondents selected reinvested profit as being above 80% of their present capital. With reference to the results in Table 14, it can be concluded that in reference to the largest source of capital, the role of reinvested profit is outstripped by loans. The greater proportion of bank loans to reinvested profit is thus unsupportive of claims of this research regarding SMEs need of loans in operations. The hypothesis that reinvested profit makes up a larger portion of SMEs present capital is rejected.

\textsuperscript{56} In the questionnaire, all amounts are expressed in GH₵ in order to avoid differences in exchange rate conversions by respondents. In this research the conversion rate between USD and GH₵ is pegged at 1.9. Hence, 1 USD = 1.9 GH₵.

\textsuperscript{57} In Figure 6.13, the number of blank entries is added to show that all the numbers put together equal 188.
The amount of start-up capital, present capital and earnings before interest and taxes (EBIT) are compiled in Figure 6.15 to (1) ascertain if there has been a significant increase in the financial position of firms since the start of operations. Here, the difference between the number of respondents per amount (range) with respect to start-up capital and present capital is used. (2) The number of respondents per amount (range) is also compared in the case of present capital and EBIT. These comparisons are expected to show the profitability of firms in the sample.
61% of respondents had a start-up capital between GH₵ 11,000 – GH₵ 20,000 and 12% between GH₵ 21,000 – GH₵ 40,000. The highest frequency regarding amount of present capital is between GH₵ 21,000 and GH₵ 500,000 with GH₵ 21,000 – GH₵ 40,000 (25%), GH₵ 41,000 – GH₵ 60,000 (21%) and GH₵ 100,000 – GH₵ 500,000 (14%). The results regarding EBIT show a non-response of 38%. Presumably, respondents are unwilling to share information regarding their income even when options provided are in ranges. The two trend lines in Figure 6.15 show the angle at which ranges of capital are distributed. The blue representing start-up capital is steep and indicates a higher proportion of respondents using lower than GH₵ 21,000 as initial capital. The red line representing present capital is relatively less steep and shows to shift toward the centre. Put together, the shift in the number of respondents from a start-up of less than GH₵ 21,000 to a present capital spread between GH₵ 21,000 and GH₵ 500,000 is suggestive of profitability and growth.

In prior discussions, this research has posited that owing to the increase in demand spurred by improving economic conditions in Ghana, a greater percentage of SMEs require bank loans for scale expansion. Figure 6.16 shows that counter to the aforementioned claim 47% of respondents (N=274) prefer debt financing while 53% prefer equity financing options for investment. The hypothesis regarding a higher percentage of SMEs preferring debt to equity financing options for investment is thus rejected. Notwithstanding, the difference between respondents that prefer equity to debt financing for investment is only 6% (53% minus 47%) – a differential of 14 respondents. Moreover, the preference for equity instead of debt for financing can be interpreted as reflecting the higher cost of debt financing as well as other challenges present in the existing credit market such as the long time it takes to process loans.
The specifics of respondents that choose either equity or debt finance as preferred source of investment capital was probed. Figure 6.17 and 6.18 show details of preferred sources of investment capital pertaining to equity (N=144) and debt (N=130) respectively. Respondents were allowed to choose multiple options regarding the details of the preferred source of finance. As result, the number of responses used in Figure 6.17 and 6.18 come up to 177 and 178 respectively.

In terms of equity financing, capital contributed by joining partners recorded the highest frequency (47% of all responses). Capital from old partners came second with 27%. Sale of shares had 17% of the responses and Others 15%. Interestingly the data in Figure 6.17 show that SMEs that prefer equity financing particularly prefer capital from joining or new partners. In a way, relying on capital contribution from joining partners is suggestive of the inadequacy of present capital and resources of current partners in financing investments (including expansions). In another vein, the willingness of respondents to take on partners is strategically sound as 55% of SMEs surveyed are sole proprietorships and hence relatively can afford to take on new partners. (See Figure 6.7)

58 Specific details about the options ‘others’ were not provided by respondents.
With respect to debt financing, bank loan make up 54% of responses, followed by supplier credit (13%), loan from microfinance institutions (12%), loan from family and friends (11%), others (6%) and money lenders (4%). Again it was proposed that owing to the amount of money required by SMEs to undertake investment, bank loans are preferred to other formal sources like supplier credit and microfinance institutions. The hypothesis that more SMEs prefer debt financing through bank loans than microfinance institutions is accepted.

Additionally, this finding gives weight to the assertion in literature that micro enterprises are better served by microfinance institutions while SMEs are better served by banks in terms of loan amount required for investment.

Details provided for ‘others’ are; ‘personal savings’, ‘self-generated’ and ‘self-finance’. Using personal savings as a source of loans means that respondents borrow monies from themselves thus suggesting that personal accounts are separated from that of the business. This is interesting because private businesses, especially sole proprietorships, are generally perceived to be unable to detach the finances of the owner from the business entity.
6.6 Access to finance

This section is divided into three (3) subsections. The first deals with access to financial services and information about SME loan applications. The second subsection deals with challenges faced by SMEs in obtaining credit and the third subsection chiefly presents SMEs’ perception of ease of finance as well as their perception on the impact of monetary policy and banking industry variables on cost of credit in Ghana.

Although the first two sections of the analyses (6.4.2 – Sample and 6.5 – Corporate finance) are important in answering research questions pertaining to the impact of SME characteristics on access to finance, this section (6.6) links demand side factors (discussed in this chapter) to the other three empirical chapters that have focused on supply-side factors.

6.6.1 Access to financial services

Table 6.1: Type and number of accounts used by respondents

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings account</td>
<td>3</td>
<td>18</td>
<td>21</td>
<td>11</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>Current account</td>
<td>6</td>
<td>43</td>
<td>54</td>
<td>45</td>
<td>36</td>
<td>30</td>
<td>23</td>
<td>12</td>
<td>4</td>
<td>8</td>
<td>261</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Column Total</td>
<td>9</td>
<td>61</td>
<td>75</td>
<td>56</td>
<td>41</td>
<td>33</td>
<td>25</td>
<td>13</td>
<td>4</td>
<td>9</td>
<td>326</td>
</tr>
</tbody>
</table>

Generally, businesses use capital account owing to its flexibility for business transactions – use of cheques, frequent accessibility and ease of arranging overdrafts, to mention a few.

The data shows that some respondents have active bank accounts in a number of banks. Out of 335 respondents, 17%, 36%, 31%, 11%, 3% and 1% have active accounts in 1, 2, 3, 4, 5 and 6 separate banks respectively. (See Figure 6.19) Respondents were further asked if they
consider any of the banks they have accounts with as a ‘main bank’\textsuperscript{59}. Out of the 256 firms that responded 63\% said ‘Yes’ to one of the banks they have active accounts as a main bank and 37\% said ‘No’.

Figure 6.19: Number of banks respondents have accounts in (N=335)

Access to financial services traditionally begins with the ability to access banking infrastructure. Usually physical banking infrastructure like brick-and-mortar buildings are relatively easily accessible than internet banking, especially in the context of developing countries where information communication technology is not widespread. Respondents were asked how long it took for them to reach the branch of the bank they most frequented. Figure 6.20 shows the responses of 311 SMEs. Interestingly, 74\% (230 respondents) indicated that they can reach their most frequented branch within 30 minutes. On the other end, a total of 5 respondents (2\%) indicated that it usually takes between an hour and forty-five minutes to three hours to reach their most frequented bank branch.

\begin{center}
\includegraphics[width=\textwidth]{chart6.19.png}
\end{center}

\textsuperscript{59} The definition of main bank provided in the questionnaire is “A bank you deal with regularly and where you are known to the bank staff”. (See Appendix 9, Section C, Question 3)
In relation to how long it takes to reach an automated teller machine (ATM) from their offices, the data shows that it takes all respondents (N=318) about an hour and a half. Interestingly, 74% (224 out of 318) noted that they could access ATMs in 15 minutes. 14% indicated 30 minutes, 13% in 75 minutes and 2% in 90 minutes.

Generally respondents’ (N=335) rate access to banking infrastructure i.e. branches, ATMs and internet as easy. Together, respondents that selected ‘Very easy’, ‘Easy’ and ‘Somewhat easy’ make up 81%. Only about 8% rated access to banking infrastructure as ‘Somewhat
difficult’, ‘Difficult’ and ‘Very difficult’. The hypothesis that almost all respondents rate access to banking infrastructure as easy is accepted.

Figure 6.22: Rating of access to banking infrastructure (N=335)

![Bar chart showing the distribution of responses](chart.png)

In relation to financial services, SMEs were asked to rank the overall usefulness and benefits (i.e. eased loan application and reduced lending interest rate) of SME-specific products offered by their main bank and all other banks separately. The result in Figure 6.23 and 6.24 show strong agreement in reference to the usefulness of SME-specific products offered by both their main bank and other banks. In both scenarios, respondents seem to be indifferent about SME-specific products being easily accessible. A similar result can be observed regarding whether SME-specific products offered by both main banks and all other banks. Taking away the number of respondents that marked ‘Indifferent’, the data shows that majority of the respondents perceive SME-specific products offered by either their main bank or other banks as useful, makes loans easily accessible but uncertain about its benefit in procuring loans at cheaper lending interest rates.

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60 The 7-point scale is used in the ranking where 1=Strongly disagree and 7=Strongly agree
When respondents were asked whether they needed loans now, 62% (211) chose ‘No’, 34% (114) chose ‘Yes’ and 4% (15) gave no response. The majority of respondents stating that they do not need loans now is not so surprising as analyses in previous sections of this chapter has shown that SMEs have significant portions of their start-up capital and present capital financed by loans. In the case of present capital, 41 (the largest number of respondents) indicated that loans comprise more than 80% of their present capital. Having a higher debt to equity ratio (leverage) increases the default risk of firms as well as risk taking behaviour in the quest to the strive to repay loans. On the supply side, lenders (especially banks) are likely to increase lending interest rates for such borrowers as a result of high risk of default as well.

In Figure 6.25, data from respondent’s preferred source of investment capital is compared with their need for loans. The result shows that 61% of respondent who chose debt financing as the preferred source for investment capital also indicated that they need bank loans. Here, 38% mentioned that they do not need loans. On the other hand, 77% of respondents that prefer equity as source for investment capital indicated that their establishments do not need
loans now. 22% ticked ‘Yes’. It goes without saying that majority of SMEs that prefer debt financing for investments require loans now while majority of SMEs that prefer equity-based sources for financing investments do not need loans now. Overall, the number of SMEs that do not require loans now are more than SMEs that do. **The hypothesis that more than half of respondents need additional loans now is rejected.** Notwithstanding, 61% of SMEs that prefer debt financing indicate that they need loans now. In this regard, it can be argued that more than half of SMEs, based on their preference for debt financing, require additional loans now.

Figure 6.25: Need for loans based on financing preference for investment (N=274)

When respondents were asked what they needed loans for, 43% chose ‘Working Capital’ and 57% said ‘Investment’. (See Figure 6.26) **This satisfies the hypothesis that a greater number of respondents need loans for investment than working capital.** By extension it can be accepted also that although SMEs are moving towards increasing production using loans, the number of SMEs pursuing debt financing (loans) currently are not overwhelmingly larger than those not requiring (or prefer) debt financing for expansion.
Figure 6.26 also shows a breakdown of what SMEs intend to use the investment loan for. From the figure it can be observed that most respondents selected ‘Purchase of fixed assets’ (29%), ‘Building of offices’ (8%), and ‘Building of factory’ (8%) among others. The three top items selected by respondents (N=101) give indication into the expansion drive assumed earlier in Chapter 1 of this dissertation.

The final part in this subsection deals with experiences and perception of loan contracts entered into by respondents following their answers regarding need of loans for working capital or investment.
Table 6.2: Details of investment loan contracts

<table>
<thead>
<tr>
<th>Number of Respondents</th>
<th>Loan amount</th>
<th>Repayment Period</th>
<th>Desired interest rate</th>
<th>Perceived interest rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>more than GH₵ 1 million</td>
<td>1 - 2 years</td>
<td>14.5</td>
<td>12</td>
</tr>
<tr>
<td>11</td>
<td>GH₵ 500,000 – GH₵ 1 million</td>
<td>1 - 3 years</td>
<td>14.57143</td>
<td>17.4</td>
</tr>
<tr>
<td>12</td>
<td>GH₵ 100,000 – GH₵ 500,000</td>
<td>1 - 5 years</td>
<td>13.5</td>
<td>15.33333</td>
</tr>
<tr>
<td>6</td>
<td>GH₵ 61,000 – GH₵ 100,000</td>
<td>1 - 3 years</td>
<td>14.8</td>
<td>18.5</td>
</tr>
<tr>
<td>12</td>
<td>GH₵ 41,000 – GH₵ 60,000</td>
<td>1 - 8 years</td>
<td>16.28571</td>
<td>26.8</td>
</tr>
<tr>
<td>19</td>
<td>GH₵ 21,000 – GH₵ 40,000</td>
<td>1 - 5 years</td>
<td>20.11111</td>
<td>19.53846</td>
</tr>
<tr>
<td>16</td>
<td>Less than GH₵20,000</td>
<td>1 - 3 years</td>
<td>15</td>
<td>15.66667</td>
</tr>
<tr>
<td>10</td>
<td>(blank)</td>
<td>(blank)</td>
<td>(blank)</td>
<td>(blank)</td>
</tr>
</tbody>
</table>

Average of 15.6%  Average of 17.9%

In Table 6.2 (N=101), the top three loan amounts sought after are ‘GH₵ 21,000 – GH₵ 40,000’, ‘Less than GH₵20,000’ and ‘more than GH₵ 1 million’. The respondents who selected these amounts indicated that they could or actually paid the loan amount between 1 and 5 years. Respondents were also asked to provide information regarding what interest rate they were “willing to borrow the loan amount” they had specified – ‘Desired interest rate’. Following that, respondents were asked what interest rate they thought “banks will charge…for the loan amount specified” – ‘Perceived interest rate’. Interestingly, the perceived interest rates for the most selected loan amount options are lower than their corresponding desired interest rates. Apart from the top three loan amounts sought after, the perceived interest rate was higher than the desired interest rate for all loan amounts.

61 The ‘Desired interest rate’ is an average of interest rates expressed by respondents who belong to the same loan amount group. The same is done for ‘Perceived interest rate’.
With reference to Table 6.3, 32 out of 79 respondents indicated that they needed or need to borrow ‘Less than GH¢20,000’. 11 respondents indicated that they needed or need between ‘GH¢ 41,000 – GH¢ 60,000’ as working capital loan. Together these two groups of respondents make up 55%. Both groups mention that they can or could repay their loans in less than 3 years. The difference between the desired and perceived interest for the 32 respondents is about 4.7% while that of the 11 respondents is -0.25% lower.

Overall the average desired interest rate and perceived interest rate for investment loans are 15.6% and 17.9% respectively. In the case of working capital loans, they are 14.2% and 14.3% respectively. To put it simply, SMEs are willing to pay a higher interest rate on investment loans than working capital loans. Moreover, while SMEs expect interest rate on investment loans to be higher than what they are willing to pay for, there is not much difference between the interest rate they are willing to pay and what they expect to the charged when it comes to working capital loans.

Table 6.3: Details of working capital loan contracts

<table>
<thead>
<tr>
<th>Number of Respondents</th>
<th>Loan amount</th>
<th>Repayment Period</th>
<th>Desired interest rate</th>
<th>Perceived interest rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>more than GH¢ 1 million</td>
<td>1 - 3 years</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>GH¢ 500,000 – GH¢ 1 million</td>
<td>1 - 3 years</td>
<td>16.5</td>
<td>17.33333</td>
</tr>
<tr>
<td>9</td>
<td>GH¢ 100,000 – GH¢ 500,000</td>
<td>1 - 5 years</td>
<td>14</td>
<td>18.2</td>
</tr>
<tr>
<td>6</td>
<td>GH¢ 61,000 – GH¢ 100,000</td>
<td>1 - 2 years</td>
<td>17</td>
<td>10.5</td>
</tr>
<tr>
<td>11</td>
<td>GH¢ 41,000 – GH¢ 60,000</td>
<td>1 - 3 years</td>
<td>13.5</td>
<td>13.25</td>
</tr>
<tr>
<td>8</td>
<td>GH¢ 21,000 – GH¢ 40,000</td>
<td>1 - 4 years</td>
<td>12.66667</td>
<td>14.6</td>
</tr>
<tr>
<td>32</td>
<td>Less than GH¢20,000</td>
<td>1 - 3 years</td>
<td>11.83333</td>
<td>16.5</td>
</tr>
<tr>
<td>1</td>
<td>(blank)</td>
<td>(blank)</td>
<td>(blank)</td>
<td>(blank)</td>
</tr>
<tr>
<td><strong>Average of</strong></td>
<td><strong>14.2%</strong></td>
<td><strong>Average of</strong></td>
<td><strong>14.3%</strong></td>
<td></td>
</tr>
</tbody>
</table>

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6.6.2 Challenges faced by SMEs in loan applications

In prior discussions, it has been observed that SMEs use loans (especially from banks) in financing initial capital, operating capital as well as investments. Literature posits that SMEs face challenges in accessing loans from banks. (Abor & Quartey, 2010; Ayyagari et al., 2007; Basu, 2006; Beck & Demirgüç-Kunt, 2006; Beck et al., 2000) Information provided by respondents in relation to the number of loan applications made, number of approved applications and number rejected are inconclusive and thus excluding from this subsection’s analysis. Nonetheless, there is meaningful data with regards to the reasons why loan applications to banks were rejected. Figure 6.27 shows that out of 14 options (including a space for additional points) provided for SMEs, **50 out of 303 responses cite ‘Short duration as bank’s customer’**. Other conditions cited are ‘Value of collateral’, ‘Perceived default risk of borrower’, ‘Absence of audited financial statements’ and ‘Inadequate proof of potential success of project’. It is worthy of note that **instead of issues related to collateral (value, liquidity, etc.) that is emphasized by banking practitioners and some literature, it is on the basis of the short period of time a customer is known to the bank that loan applications by SMEs (surveyed) are rejected.**
Also with respect to loans, the perception of SMEs was sought on which items or factors or requirements are necessary for loan applications and which of them they find difficult to present, satisfy or meet. Figure 6.28 shows the response of SMEs regarding which items they perceive to be necessary in loan applications and Figure 6.29 shows their responses with respect to items or requirements they deem difficult to satisfy. The top five responses in Figure 6.28 are: value of collateral, proof of potential success of project, audited financial statements, longer duration as bank’s customer and size of present capital. Comparing the results in Figure 6.28 with Figure 6.27 reveals that SMEs agree on the top four options, their placement are not the same with what agents in the credit market (especially) expect. For example, duration as bank’s customer ranks 4th in SMEs perception of what is necessary for loan application while in practice (following data in Figure 6.27) duration as bank’s customer ranks 1st. Interestingly, although SMEs perceive and are aware that the value of collateral is very necessary in loan applications, many (See Figure 6.27) of their loan applications got turned down because of that. An explanation could be because SMEs

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62 Respondents were allowed to select multiple answers so the results presented refer to the total number of responses, not respondents.
admit that the value of collateral is among the top 3 items they find difficult to produce. (See Figure 6.29)

Figure 6.28: Perception of necessary loan application items

When asked what items and requirements SMEs deemed difficult to provide or meet the following top five were cited; size of present capital, proof of potential success of project, value of collateral, perceived default risk of borrower and audited financial statements.
Simply put, SMEs regard value of collateral as important for loan applications but point out that it is difficult for them to come by. The results in Figure 6.29 point out that the value of collateral is among the top 3 items SMEs find difficult to satisfy.

Some respondents who selected options related to loan (i.e. value, liquidity and insurance) in Figure 6.27 also provided information about the type of collateral they used in loan applications. Their response in Figure 6.30 show a higher proportion (77%) are immovable assets (Land – 43%, Building – 30% and Fixed asset/Machinery – 4%)
Fewer SMEs claim to have defaulted on loan repayments. Remarkably, 90% of SMEs mentioned that they have never defaulted on a loan repayment.

Figure 6.31: Respondent’s loan default history (N=265)
6.6.3 Perception of SMEs on access to finance and impact of external factors on cost of credit

The third subsection under access to finance will deal with perception SMEs have on the impact of external factors (i.e. monetary policy, macroeconomic and banking industry factors) on cost of lending interest rates (or in other words, cost of external debt financing) In this subsection also the meaning of the phrase ‘Access to finance’ as used by SMEs is reported and discussed.

Under the inflation targeting regime of monetary management practised in Ghana from 2007, the inflation rate has become the focus when constructing monetary and fiscal policies. In terms of credit, the short term nominal interest rate referred to as the monetary policy rate is set based on inflation forecasts and targets. The cost of credit to SMEs is affected by the monetary policy rate (MPR) because the MPR is the base rate on top of which interbank lending rates and thus base market lending rates are priced. Although not a monetary policy target, the Treasury bill rate (TBR) is included as an option in this questionnaire owing to its importance in the credit market. It can be recalled from Chapter 3 that there is crowding out on the money market by the government owing to the attractiveness of Treasury bills to banks. It was opined then that as long as TBR remain attractive, banks will have less incentive to lend to SMEs based on the perception that they are relatively high risk investments. In short, Treasury bills compete with SMEs for bank’s operating capital.

Given three options (i.e. monetary policy rate (MPR), Treasury bill rate (TBR) and inflation (INF)), respondents (N=277) cited inflation (74%) as being the variable that accounts for higher lending interest rate in Ghana. In view of this outcome, the hypothesis that SMEs perceive inflation as the biggest threat to affordable finance is accepted. Understandably, inflation does not only affect the cost of credit to firms (SME or otherwise) but also general prices of goods and services. Following this logic, the choice of inflation as the biggest threat
to cost of credit could stem from the need to borrow more in order to pay for rising input costs such as labour and raw materials.

Figure 6.32: Perceived influence of monetary policy factors on cost of credit (N=277)

![Bar chart showing perceived influence of monetary policy factors on cost of credit](chart)

Regarding SMEs perception about the impact of banking industry factors on high lending interest rates, almost half of the respondents (N=272) selected ‘High operating costs of banks’ (47%). 39% thought it was ‘Perceived risk of lending to SMEs’, 8% cited ‘Transaction costs’ and 6% cited ‘Presence of Oligopoly’. The results suggest that SMEs ascribe higher lending rates from banks to firms on costs of bank operations than the bank’s perception of SMEs default risk. The hypothesis that a greater percentage of SMEs attribute high lending interest rates from banks to bank’s perception of SMEs’ risk is accepted based on the response by 39% of respondents (N=272). In a way the results in Figure 6.33 also suggest that SMEs blame higher lending interest rates on costs associated with bank operations and by extension inefficiency of banks. Complimentarily, one of the findings in Chapter 4 points out that banks in Ghana are inefficient in terms of scale. SMEs are therefore right in their assumption of the banking industry factor affecting lending. Moreover, not rating ‘Perceived risk of lending to SMEs’ as the biggest banking industry threat to lending interest rates could indicate that SMEs do not think that banks consider lending to them as an entirely high risk undertaking.
As this subsection deals with access to finance, SMEs were asked to indicate their (overall) ease of access to finance from banks in Ghana a 7-point scale from ‘Very difficult’ to ‘Very easy’. Graphically, the results (in Figure 6.34) show a left-hand sided majority in terms of the number of respondents that selected ‘Very difficult’, ‘Difficult’ and ‘Somewhat difficult’. In terms of percentage, 57% of respondents \((N=277)\) rated the overall ease of access to finance as generally difficult while 32% of respondents rated it as generally easy. Taking out the 10% of SMEs that did not take sides, the overall access to finance by SMEs in Ghana can be concluded as difficult. Consequently, the hypothesis that more than half of SMEs rate overall access to finance from banks as generally difficult is accepted.

Occasionally, businesses run into unexpected financial situations which constrain them from being able to repay loans on time hence the need for extending the contracted loan maturity period. Figure 6.34 also shows responses from 273 SMEs regarding their experiences with the ease of extending maturity periods of loans. Although the largest response was ‘Somewhat easy’ (29%), most respondents (49%) selected options relating to difficult while 39% of respondents selected options relating to easy. By interpretation, SMEs rate extending maturity period of loans as generally difficult from their experience.
Admittedly, challenges facing SMEs is not limited to access to finance. To get a sense of the magnitude of the challenge posed by access to finance in SME operations, respondents were asked to provide information on threats to their business operations. Figure 6.35 shows that out of 12 options, ‘Access to finance’ ranks 5th after taxation, cost of raw materials, cost of labour and inflation.
Finally, respondents who indicated that access to finance has been one of top five challenges from 2007 to 2011 were asked to clarify what they meant by ‘access to finance’. Two options ‘Availability’\(^{63}\) and ‘Affordability’\(^{64}\) were provided and respondents were allowed to choose more than one option. 67% of 234 respondents selected ‘Affordability’, 24% selected ‘Both’\(^{65}\) and 10% selected ‘Availability’. The result suggests that the specific meaning of access to finance as a challenge to SMEs is actually the problem of being able to obtain affordable credit. This result ties in with the result from Figure 6.22 where 81% of SMEs’ rate access to physical infrastructure as easy.

To wit, SMEs do not face a challenge of being able to engage banks. The interpretation of the result in Figure 6.36, based on the explanation provided for SMEs regarding ‘Availability’ and ‘Affordability’ indicates that (1) fewer SMEs agree that banks do have funds but are not interested in lending to them and (2) majority of SMEs agree that although banks have funds to lend to them, the interest rates are expensive.

![Figure 6.36: Meaning of access to finance for SMEs (N=234)](image)

\(^{63}\) Availability is explained as “I believe banks have funds but are not interested in lending to SMEs like us” in the questionnaire.

\(^{64}\) Affordability is explained in the questionnaire as “The cost of credit is high. Lending interest rates are expensive”.

\(^{65}\) During the data entry, a new option ‘Both’ was created for respondents who ticked both ‘Affordability’ and ‘Availability’.
6.7 Regression analysis

Chiefly in this chapter’s analyses is to ascertain the impact of SMEs characteristics or factors on their accessibility to bank credit. In addition to the aforementioned main objective of this chapter, finding the impact of SME-specific factors on access to finance is needed to adequately deal with the third component of this dissertation (following the impact of monetary policy and money market variables and impact of banking industry factors).

A regression model (Equation 6.1) is constructed and estimated to show the relationship between SME-specific factors or firm level characteristics with SMEs’ rating of access to finance. The regression model is given as;

\[
\begin{align*}
Access to finance_k &= \beta_0 + \beta_1 Age_k + \beta_2 Location_k + \beta_3 Employees_k + \beta_4 Industry_k \\
&+ \beta_5 Export_k + \beta_6 Ownership_k + \beta_7 Gender_k + \beta_8 Nationality_k \\
&+ \beta_9 Capital_k + \beta_{10} EBIT_k + \beta_{11} Loanuse_k + \beta_{12} Amount_k \\
&+ \beta_{13} Default_k + \beta_{14} Acctype_k + \beta_{15} Accnos_k \\
&+ \beta_{16} Infrastructure_k + \beta_{17} Interestrate_k + \beta_{18} Maturity_k \\
&+ \epsilon_k
\end{align*}
\]  

(6.1)

The null hypothesis for this equation is that the coefficient of an explanatory variable equals zero (0). The alternative hypothesis is that the coefficient of an explanatory variable is not equal to zero. Representatively, the hypotheses are expressed as;

\[H_0: \beta_k = 0\]

\[H_a: \beta_k \neq 0, \text{ where } k = (1, 2, 3… 18)\]

Using version 12 of Stata statistics software, the data was declared as survey data to avoid confusion as time series data in order to ensure reliability of the results. The results from the
linear regression show that two variables – **age of the firm and loan amount required with coefficients of -0.87 and -0.46 respectively are significant at 1%** while the coefficients of three variables – **location of headquarters (-0.24), type of industry (0.10) and operating profit (0.24) are significant at 10%**.

Table 6.4: Regression results from SME survey

<table>
<thead>
<tr>
<th>Label</th>
<th>Variable description</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>a2a</td>
<td>Age of the firm</td>
<td>-0.0873815***</td>
</tr>
<tr>
<td>a3</td>
<td>Location of headquarters</td>
<td>-0.2398103*</td>
</tr>
<tr>
<td>a5b1</td>
<td>Number of employees</td>
<td>-0.0029488</td>
</tr>
<tr>
<td>a7</td>
<td>Type of industry</td>
<td>0.1049363*</td>
</tr>
<tr>
<td>a9</td>
<td>Export (engagement in)</td>
<td>0.67022</td>
</tr>
<tr>
<td>a10</td>
<td>Ownership structure</td>
<td>-0.2179912</td>
</tr>
<tr>
<td>a12</td>
<td>Gender of owner</td>
<td>0.2251813</td>
</tr>
<tr>
<td>a13</td>
<td>Nationality of owner</td>
<td>-0.5511066</td>
</tr>
<tr>
<td>b3</td>
<td>Present capital</td>
<td>0.2153316</td>
</tr>
<tr>
<td>b6</td>
<td>Earnings before taxes and interest</td>
<td>0.238147*</td>
</tr>
<tr>
<td>c11</td>
<td>Intended use of loan</td>
<td>-0.1019516</td>
</tr>
<tr>
<td>c13</td>
<td>Loan amount required</td>
<td>-0.4570455***</td>
</tr>
<tr>
<td>c22</td>
<td>Number of defaults (loan repayment)</td>
<td>-0.0483513</td>
</tr>
<tr>
<td>c1a</td>
<td>Type of bank account</td>
<td>-0.4596632</td>
</tr>
<tr>
<td>c1b</td>
<td>Number of bank accounts</td>
<td>0.0988715</td>
</tr>
<tr>
<td>c2</td>
<td>Ease of access banking infrastructure (rating)</td>
<td>-0.444199</td>
</tr>
<tr>
<td>c7</td>
<td>Desired lending interest rate for loan</td>
<td>-0.0879491</td>
</tr>
<tr>
<td>c16</td>
<td>Loan maturity period</td>
<td>-0.0373184</td>
</tr>
<tr>
<td>R-squared</td>
<td></td>
<td>0.4284</td>
</tr>
<tr>
<td>F statistic</td>
<td></td>
<td>8.33***</td>
</tr>
<tr>
<td>N=340 observations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: ***, **, * represent significance levels of 1%, 5% and 10% respectively
In terms of reliability of the estimates, the F-test posts a p-value of 0.00 to indicate the overall fitness of the model. $R^2$ is 0.4284, meaning that 43% of variations in the dependent variable (access to finance) is explained by variations in the explanatory variables.

The statistical significance of age of firm could be related to proof of going-concern in that as a firm grows older, it is able to acquire assets that can be used as collateral for loans. Moreover, being able to stay in business may be indicative of good management practices and profitability of the firm.

However, the coefficient of age of the firms is negative, meaning that as age of the firm increases its access to finance decreases. Without probing further, this result seems strange considering that as firms grow older, and usually larger, they are able to access other financing options like supplier credit and line of credit that may be inaccessible to younger firms because they may not yet have gained the trust and confidence of suppliers or banks. Figure 6.27 lends support to this line of thought as loan applications are rejected owing to shorter duration as a bank’s customer. Notwithstanding, a negative relationship between age of firm and its access to finance can be explained by the following points. First, the use of debt financing for working capital or investments partially depends on the stage of growth of a firm. When (older) firms are profitable and so have sufficient income, there is less likely to pursue bank loans. More so, the availability of alternative sources of finance like supplier credit and contribution by joining partners (See Figure 6.17) keeps bank loans at bay. In Figure 6.16, for example, respondents indicate that they prefer sources of equity financing to that of debt. In this case, as the age of firms increase, their use of debt and thus access to finance by bank loans reduces. Furthermore, it was found in previous sections that a significant number of firms have bank loans comprising between 80% and 100% of their present capital (See Figure 6.14). Having financed substantial portions of both initial capital
(See Figure 6.11) and present capital with loans, creditors are likely to refrain from dealing with such clients and hence a decrease in access to finance.

The significant negative relationship between loan amount and access to finance can be linked to the perceived risk of lending to SMEs by banks. Against the backdrop that loan applications by SMEs are rejected on the basis of perceived default risk (See Figure 6.27), seeking for large loan amounts from banks attract higher interest rates which makes lending unaffordable and thus negatively affects SMEs access to credit. Again with reference to Figure 6.27, loan applications are denied owing to the value of collateral. Coupled with the result of larger loan amounts decreasing access to finance, it can be posited that as the value of the collateral is insufficient in relation to the loan amount applied for by SMEs, the requests are denied thereby resulting in reduced access to credit.

Location of the SME in accessing finance is significant at 10%. Against the backdrop that all banks in Ghana have office in the Greater-Accra region as do majority of SME headquarters, location or physical proximity to banking services matters. It is observed in the descriptive results that 74% of respondents can reach their most frequented bank branch in 30 minutes, 74% indicate that they can access ATMs in 15 minutes and 81% of respondents rate access to banking infrastructure as generally easy. (See Figure 6.20, 6.21 and 6.22) The regression results however present a negative relationship between location and access to finance. On one hand, this implies that sheer proximity and physical access to banking services does not guarantee access to affordable finance. In another vein, merely increasing the number of branches in the Greater-Accra region owing the concentration of banks does not guarantee access to affordable credit as well. The negative relationship between location and access to finance could also be explained from the direction of scarcity and competition in loan demand. In this case, loanable funds by banks are deemed a scarce resource being sought
after by many firms. As a result of the many prospective borrowers competing for ‘limited’ loanable funds, interest rate on lending rises and in turn causes bank loans to be inaccessible.

Type of industry is significant at 10% and carries a positive coefficient of 0.105. The issue of type of industry can basically be narrowed down to the nature of cash flows in the type of industry. In practice, creditors (including banks) are interested in being able to receive returns (in case of banks – principal and interest) on their investments. Having a reliable cash flow places certain industries like transportation and communications businesses in good positions for bank lending. In addition to the level of cash flow is the problem of maturity of borrowed funds. To put it simply, businesses engaged in construction for example, may not be able to pay back borrowed funds until months after houses have been built and are ready to be sold. The positive relationship between the type of industry and access to finance can be ascribed to the pattern (level and timing) of cash flow associated with that industry.

Finally the regression result shows that operating profit has a positive relationship of 0.215 with access to finance. Understandably, the profitability of an SME enhances its position in negotiation of loan contracts by assuring lenders that it is able to repay borrowed funds as a result of judicious use of funds. As observed in Chapter 5, cash and fixed deposits are accepted as collateral by banks in Ghana. A huge operating profit or records of increasing operating profit, as presented by the regression analysis, increases SMEs’ access to finance.

6.8 Conclusion

The chapter provides the third part of the dissertation’s three-way impact [(1) monetary policy and money market variables, (2) banking industry and bank-specific factors and (3) SME-specific factors] on SMEs’ access to finance in Ghana. As the overall objective, the chapter analyses the impact of SME-specific factors on their accessibility to bank credit.
The chapter uses survey data of 340 SMEs collected using questionnaires. Out of the 340 SMEs, 326 cover five (5) major industry divisions which are; Primary and Extraction (6%), Manufacturing (36%), Trade and Retail (11%), Services (33%) and Social services (14%). Analysis of the data mainly employs means, percentages and cross tabulation. The results are presented using pie charts, bar graphs and scatter plots. A linear regression model is constructed to analyse the impact of SME-specific factors or characteristics on their ease of accessing finance.

Scatter plots drawn using data on the number of SMEs that started operations or were registered per year reveal that the oldest SMEs in the sample were established during the period of economic reform in the early 1980s. A decline in the number of SMEs that were set up or registered after 2008 is observed. This could be explained as business activity in Ghana responding to the 2008 global financial crises. It was found that the expectation that SMEs support regular operations by using reinvested profit is unsupported by the data because bank loans constitute a larger percentage of both start-up capital and present capital.

53% of respondents prefer equity to debt financing options as sources for investment capital. Although surprising, this result possibly stems out of frustration in accessing debt (mainly bank credit). Moreover, the difference of 6% represents only 14 respondents. The most preferred source of equity finance is contribution by new or joining partners and that of debt financing is loan from banks (followed by supplier credit and loan from microfinance institutions)

In terms of access to banking infrastructure, 74% of respondents (N=311) indicated that it takes less than 30 minutes to reach their most frequented bank branches. For ATMs 74% of respondents (N=318) indicated that it takes less than 15 minutes to get to the nearest ATM from their offices. In concordance with the aforementioned, 81% of respondents (N=335)
rated access to banking infrastructure as generally easy (i.e. ‘Very easy’, ‘Easy’ and ‘Somewhat easy’). Pertaining to benefits of programs offered by ‘main’ banks and ‘other’ banks, majority of respondents confirmed that although the programs help in terms of access to loans its help in procuring loans at cheaper lending rates is unclear. In Figure 5.15, most banks indicate that they do not reduce lending interest rates for SME clients involved in relationship banking.

Figures 6.27 and Figure 6.28 show that the inability to present collateral of sufficient value is the primary reason for rejection of SME loan applications to banks. Regarding access to finance, 57% of respondents (N=277) rated the overall ease of access to finance as generally difficult. Finally the results from the linear regression model which is constructed to capture the relationship between SME-specific factors and their ease of access of finance shows that out of 18 variables, two (2) i.e. age of the firm and loan amount required are significant at 1% while location of headquarters, type of industry and operating profit are significant at 10%.
CHAPTER 7

CONCLUSION AND POLICY RECOMMENDATIONS

7.1 Introduction to the chapter

Prior to this chapter, the impact of monetary policy, commercial bank operations and firm-level characteristics on access to finance by SMEs in Ghana have been introduced and discussed. On the onset, it was mentioned that the average GDP per capita growth rate of Ghana in the last twenty (20) years has been 5.5%. The sustained and improving economic growth rate could be traced to the implementation of the Economic Recovery Programme recommended by the International Monetary Fund in the early 1980s. According to the African Development Bank (2010) private businesses contribute about 22% to GDP and 44% to GNI in Ghana. The participation of private businesses (of which SMEs form a greater part) in driving Ghana’s economy and thus economic growth rate is unquestioned. In recognition of SMEs contribution to economic growth, recent policy documents by the government of Ghana have sought to mitigate challenges faced by SMEs. One of the areas mentioned in one of such development documents (Private Sector Development Strategy) is access and cost of credit. Moreover, in a number of quarterly bulletins issued by the Association of Ghana Industries (AGI), results from surveys conducted among its members have highlighted access and cost of credit as top challenges they battle with in doing business. Again, as a result of improving economic conditions in Ghana, incomes as well as demand for goods and services are increasing. Comprising a greater percentage of businesses in Ghana, SMEs are having to increase the scale of operations in order to meet the needs of the growing market. As a result, SMEs have turned to banks in Ghana for loans to finance their growth. It is challenges faced by SMEs in accessing loans from banks that this dissertation has dealt with by looking
at the impact of monetary policy and money market factors, factors pertaining to the nature of the banking industry and bank operations as well as SME-specific factors.

The research puzzles have been, in short, (1) what the impact of monetary policy targets and money market rates on base commercial bank lending rate in Ghana is and how long it takes for the lending rate to adjust to changes and shocks from monetary policy and money market variables, (2) the impact of banking industry factors such as concentration, competition, efficiency and outreach on access and cost of credit and (3) the impact of SME-specific factors in Ghana on access and cost of credit from banks.

In answering the aforementioned research questions, a number of theories were employed. The theory underpinning discussions in the entire dissertation is the bank lending channel of the monetary transmission mechanism. As the dissertation dealt with the financial system and allocation of funds, Mundell-Fleming’s ISLM model is recognized as an economic theory supporting both supply and demand side discussions. Analysis of the impact of monetary policy and money market variables on base lending rate was mainly based on the monetary transmission mechanism. Responsiveness of the lending rate to monetary policy and money markets is briefly discussed against the backdrop of new Keynesian ‘menu costs’. In the analysis of bank specific factors, the financial restraint model (financial repression, financial liberalization and financial restraint) underpins discussions pertaining to financial intermediation. Furthermore the structure-conduct-performance paradigm is employed in explaining the impact of bank concentration, competition and efficiency on access to finance in Ghana. Discussions pertaining to the composition of SMEs’ present capital as well as preference for debt or equity finance stem out of external finance premium and weighted average cost of capital in corporate finance.
7.2 Summary of findings

The three directions from which SMEs’ access to finance is analysed in this dissertation are treated in three separate empirical chapters – albeit with connections to matters beyond the scope of the chapter but within the objectives of the entire dissertation. For instance, although the fourth empirical chapter (Chapter 6 of the dissertation) analyses survey data from SMEs, the discussion is extended to include the perception on the impact of monetary policy targets and banking industry factors.

Again, there are four empirical chapters in this dissertation. While two of the chapters (Chapters 5 and 6) use similar methodologies in their analyses owing to the use of survey data, the first and second empirical chapters (Chapters 3 and 4) use completely different models for analyses. Briefly, the difference in methodology in the case of the first and second empirical chapters is as a result of the fact that times series data is used in Chapter 3 while panel data is used in Chapter 4. Moreover, the models are also applied based on their appropriateness in testing hypotheses out of which research questions are answered thereby meeting the research objectives. In the succeeding paragraphs, the data, methodology and findings in the four empirical chapters are summarized.

To examine the impact of monetary policy and money market variables on base lending rate, monthly data on the base market lending rate, monetary policy rate, inflation, broad money supply, Treasury bill rate, exchange rate and deposit interest rate were compiled. A total of 120 observations, being monthly data (12 months) over a period of 10 years, are used in the analyses. The multiple regression model is used to obtain long run impacts of explanatory variables on the base lending rate. The results show, where all variables are used, that apart from inflation, all other explanatory variables hold explanatory power or are significant in explaining changes in the base lending rate over the period of analysis. The exchange rate between the United States Dollar (USD) and new Ghana Cedis (GH₵) had the largest long
run impact of 0.54, followed by the monetary policy rate with a coefficient of 0.29. By interpretation, a 1 unit change in the exchange rate and monetary policy rate will result in a 0.54 and 0.29 change respectively in the base lending rate. The results show that although inflation targeting is being practiced in Ghana, the inflation rate holds less explanatory power on changes in the base lending rate. Notwithstanding, the short term nominal rate which in Ghana’s case is the monetary policy rate holds a significant position in explaining changes in the base lending rate although that change is minimal (0.29). Following this, the granger causality model is employed to ascertain if past values of a variable (A) are jointly able to predict future values of a variable (B). The results show that the Treasury bill rate granger causes the base lending rate at the 5% significance level. The main explanation offered for this result is that following heavy government borrowing from the money market (typified by the attractiveness of the return on Treasury bills) the so-called ‘crowding-out’ effect creates a scarcity of loanable funds which being demanded by many prospective borrowers forces the lending rate to rise. Further investigation into the ratio of loans and securities to banks’ total earning assets suggest that although crowding-out by the government cannot be denied, its severity may have been overdramatized (by previous studies) since the portion of loans remains the largest share of total earning assets by banks. In order to meet the objective of determining how long it takes to for the lending rate to adjust to shocks from the explanatory variables, the vector error correction model (VECM) is used. The error correction term of -0.42 indicates that in a month, the lending rate adjusts from 42% of shocks from explanatory variables. In essence, the result suggests that it takes about two and a half months for the base lending rate to adjust to revisions in the monetary policy rate, for example. Going back to the results from the multiple regression analysis, the reported adjusted $R^2$ for the model is 0.63. Simply put, this means that other variables that can explain variations in the base lending rate have not been included in the model. The insufficiency of the time series variables in fully
explaining changes in the base lending rate warranted further investigation into the impact of banking industry factors on cost and access to credit.

The second empirical chapter dealt with the impact of bank concentration, competition, efficiency and outreach on availability and affordability of finance. Although the methodology employed did not directly test the impact of banking industry factors on the base lending rate, it covered the impact of banking industry features in relation to general bank operations (including lending behaviour and allocation of funds) and physical outreach of banking infrastructure. In other words, the second empirical chapter examines dynamics in the banking industry through the lenses of the structure performance and efficient structure hypotheses as a means of understanding bank operational decisions on the macro level and by so doing provide the basis for understanding the availability and affordability of credit to firms in general and SMEs in particular. Data from financial statements of banks are used in the analysis. Two sets of data are compiled. The first sample constitutes financial statements of 11 banks from 2002 to 2011 and the second sample is composed of data on 17 banks from 2007 to 2011. The two samples are constructed to capture information five years before and after the official adoption of inflation targeting as monetary policy in Ghana. Inflation targeting was formally introduced into Ghana from 2002 but was officially adopted in 2007 hence the two sample periods. The difference in the number of banks per sample is as a result of unavailable data for certain banks. In the analysis of bank concentration, the k₃ and k₅₆ concentration ratios as well as the Herfindahl-Hirschman Index (HHI) are used in the case of the two samples. The results reveal a moderately concentrated market or oligopoly. The implication here is that under such a condition, the few large banks may ‘collude’ to fix higher lending rates in the bid to reap higher profits. Negative correlation between variables for bank concentration (k₃ ratio and HHI_TA) implies that less bank concentration leads to an increase in loan to the private sector. Bank competition was measured using the Panzar-Rosse
model. H-statistics of 0.61 and 0.69, indicating monopolistic competition, were obtained for the two samples 2002 – 2011 and 2007 – 2011 respectively. In terms of industry lending, monopolistic competition suggests that a few banks own a greater percentage of industry assets. In this case, they are able to dominate and drive up cost of borrowing from the interbank lending market which will trickle down into higher base lending rates for borrowers (including SMEs). Efficiency is calculated using data envelopment analysis. The analysis on the efficiency of banks presented a higher score for technical efficiency than for scale efficiency thus attributing inefficiency in the bank operations to a suboptimal use of size. Putting together the finding that the banking industry in Ghana is one of monopolistic competition and the finding that inefficiency among banks accrues to scale, it can be fairly interpreted that a few banks may have saturated strategic locations for banking with their infrastructure (branches, ATMs, etc.) thereby resulting in the suboptimal use of scale in the industry as a whole.

The analysis of the impact of bank-specific factors on access to finance by SME continues in the third empirical chapter – Chapter 5 of the dissertation. As an addition to the industry-wide analysis conducted in Chapter 4, Chapter 5 focuses on the impact of individual bank’s practice of lending to SMEs. In other words, Chapter 5 deals with the impact of internal operations decisions and perception of banks on SMEs’ profitability on availability of finance to SMEs. It also looked at affordability of credit by examining prevailing practices in relation to essentials of loan agreements (loan amount, lending interest rate and maturity period) between banks and SMEs. The impact of SME-specific factors on access to finance from banks is treated chiefly by using the responses of banks to construct characteristics of an ideal SME client. Furthermore, the details of loan terms to be offered or granted to the defined ideal client are presented and discussed. Primary data was collected using structured questionnaires that were administered via the simple random sampling method. Although the
data gathered represents 10 out of 29 licensed banks in Ghana, 3 of the banks included in the sample possess about 50% of industry share in terms of assets. The questionnaires were completed by bank staff in their capacities as operations manager, relationship manager, credit analyst and credit officer. The data shows that banks mostly prefer to lend to wholesale, retail trade and manufacturing SMEs while SMEs engaged in agriculture, forestry, hunting, fishing, mining and quarrying are least preferred when it comes to granting loans. It was found that items or requirements deemed necessary by banks in loan applications are mostly centred on collateral (value, liquidity and insurance). Remarkably, the analysis shows that bank prefer the use of movable collateral to immovable collateral during loan applications. Regarding the current state of lending to SMEs, banks usually grant loans above GH₵500,000 for an average of 3 years with lending interest rates between 27% and 33%. In the case of an average ideal client, the lower limit of loan terms is GH₵ 696,233 at an interest rate of 29% for 2 years. The data supports the argument that high lending interest rates by banks stems from their reliance on high borrowing cost of short term funds from the interbank market, all things being equal. Also in support of prior discussions, 50% of respondents impliedly agree that the attractiveness of returns from Treasury bills affect (or decrease) loanable funds allotted to SMEs.

To balance out the overall treatment of SMEs’ access to finance in this dissertation, demand side elements are incorporated. The make-up of SMEs’, their needs, experiences and perception on access to finance are discussed in the fourth empirical chapter (Chapter 6). Essentially, the Chapter 6 provides the third part of the dissertation’s three-way impact [(1) monetary policy and money market variables, (2) banking industry and bank-specific factors and (3) SME-specific factors] on SMEs’ access to finance in Ghana. Examples of issues discussed in the chapter include the source of composition of SMEs’ present capital, preferred sources of investment finance, the amount, interest rate and maturity period of
required loans, challenges faced in loan applications, rating of access to banking infrastructure and ease of access to finance. In addition to dealing with demand side issues, information regarding SMEs’ perception about impact of monetary policy variables as well as banking industry factors on lending interest rates are collected and analysed. The analysis is based on primary data collected via questionnaires. The questionnaire comprises three (3) sections: ‘Company Information’, ‘Corporate Finance’ and ‘Access to Finance’. Five (5) divisions of industries, namely primary products and extraction, manufacturing, trade and retail, services and other [social] services were targeted in the survey. The stratified random sampling technique was used in administering the questionnaires. Data on 340 SMEs are used in the analysis. Out of the 340 SMEs, 326 cover five major industry divisions which are Primary and Extraction (6%), Manufacturing (36%), Trade and Retail (11%), Services (33%) and Social services (14%). 53% of respondents prefer equity to debt financing options as sources for investment capital. Although surprising, this result possibly stems out of frustration in accessing debt (mainly bank credit). Moreover, the difference of 6% represents only 14 respondents. The most preferred source of equity finance is contribution by new or joining partners and that of debt financing is loan from banks (followed by supplier credit and loan from microfinance institutions). In terms of access to banking infrastructure, 74% of respondents (N=311) indicated that it takes less than 30 minutes to reach their most frequented bank branches. For ATMs 74% of respondents (N=318) indicated that it takes less than 15 minutes to get to the nearest ATM from their offices. 81% of respondents (N=335) rated access to banking infrastructure as generally easy (i.e. ‘Very easy’, ‘Easy’ and ‘Somewhat easy’). Regarding access to finance, 57% of respondents (N=277) rated the overall access to finance as generally difficult. The SME-specific factors that were found to be significant in influencing access to finance are age of the firm, loan amount required, location of headquarters, type of industry and level of operating profit.
7.3 Contributions of the dissertation

Overall, this research attempts to differentiate its contents from that of existing work by chiefly following a three-way analysis i.e. impact of (1) monetary policy and money market variables, (2) banking industry and bank-specific factors and (3) SME-specific factors on SMEs’ access to finance.

There are existing empirical studies that have tackled issues connecting monetary policy to bank lending. (Amidu & Wolfe, 2008; Cenesizoglu & Essid, 2010; Morris & Sellon, 1995) There are also studies relating bank-specific factors to access to finance by private businesses. (Cerqueiro, 2009; G Clarke, Cull, & Peria, 2001; George Clarke, Cull, Peria, & Sánchez, 2005; Corvoisier & Gropp, 2002) The impact of SME-specific or firm level factors on access to finance has also been dealt with in literature. (Abor & Biekpe, 2007; Abor, 2008; Agyei-Mensah, 2012) In almost all of these studies, the focus has been on either the impact of some supply side variables like bank regulation, monetary policy, interest rate spread, bank concentration, banking infrastructure or SME-specific factors like age, size of the firm, type of collateral on access to finance. To put it simply, no existing literature that deals with the impact of all three (3) dimensions (at once) was found.

Although an existing work may have analysed the impact of monetary policy and money market variables, banking industry and bank-specific factors as well as SME-specific factors on SMEs’ access to finance, it is unlikely that is will concerned with (1) Ghana, (2) analysis during inflation targeting regime, (3) monthly data on monetary policy variables from 2002 to 2011, (4) financial statement of banks spanning 10 years (2002 to 2011) or 5 years (2007 to 2011), (5) analysis of primary data from both banks and SMEs collected using questionnaires and (6) analysing data using linear regression models, granger causality, vector error-correction (VEC) model and data envelopment analysis (DEA).
Additionally, channels of the monetary transmission mechanism have been studied in many countries pertaining to the existence of a channel or its relationship with credit constraints of firms. As Ghana is the second Sub-Saharan country to officially adopt inflation targeting, this research takes the lead in examining the effectiveness of this monetary policy regime in lowering lending interest rates via the reduction of inflation. By doing this, the research serves as both a reference for policy makers as well as academics when it comes to using monetary policy to influence (reduce) cost of credit during inflation targeting regime in the context of developing countries.

Pertaining to the area of SME financing or SMEs’ access to finance, again, this dissertation has dealt with the impact of both internal and external factors. Regarding internal factors primary data is collected from 10 banks and 340 SMEs, which give insight into how firm-level characteristics on both the supply (bank) and demand (SMEs) sides affect access to credit. Primary data collected from SMEs, especially, can be used in panel data analysis or cross country comparisons with data from World Bank’s Enterprise Survey, the Ghana Statistical Service and Executive Opinion Survey of the World Economic Forum. This is because in addition to the substantial sample size of 340 enterprises, the definition in terms of the classification of firms by size and industry is the same.

As an original contribution, the research has shown that although the financial restraint model is sufficient for transferring rent from the government to private agents (banks) which leads to financial deepening, a constraint such as limiting government borrowing from the domestic market may be necessary to ensure the allocation of bank operating asset towards private businesses especially SMEs. Again, this research fills a gap in terms of evidence regarding the existence and functionality of the credit channel of monetary transmission mechanism in a developing countries’ (Ghana) context.
For both financial intermediaries and SME stakeholders, one finding of this research is the
detailed definition of an ideal SME client as well as details regarding loans (amount, interest
rate and maturity period) that banks will offer or grant to such a client.

In addition, the revelation of banks’ practice of accepting movable collateral under the
Secured Transaction Regime is noteworthy. In terms of relationship banking, the discourse in
Chapter 5 has shown that while relationship banking assists SMEs in processing loans faster
and with longer maturity periods, it does not help in procuring loans at lower interest rates.

7.4 Limitations of the research and points for further study

While much has been covered in the discourse of this dissertation, the researcher
acknowledges the following limitations and provides points for improvement that can be
pursued in further studies.

The adjusted- $R^2$ in the multiple regression model in Chapter 3 is 0.63. As interpreted earlier,
this means that 63% of variations in the dependent variable (lending interest rate) can be
explained by variations in the explanatory variables. Impliendy, more explanatory variables
are needed to fully explain variations in the lending interest rate. In the cause of analysis,
prices of gold, oil and cocoa were added but, these were found to be statistically insignificant.
The researcher proposes the inclusion of a variable that captures economic activity like gross
domestic product (GDP) or economic activity index from the Ghana Statistical Service. Such
information could not be used this time because only quarterly data on GDP for Ghana could
be accessed whereas monthly data was needed.

In investigating the crowding-out effect posed by government borrowing on the domestic
market, future studies will include a correlation between Treasury bill rate and credit to
private sector as a percent of GDP. Also on the issue of investigating the severity of
crowding-out by the government, decomposition of net loans into loans to private businesses and public corporations is necessary.

The surveys conducted in this research were executed once. According to Karlan & Morduch (2009, p. 10) some information may have been missed “partly because respondents hesitate to disclose intimate information about their financial lives to outsiders”. Against this background, the use of data from multiple surveys on the same sample is recommended in further studies.

In relation to the questionnaires for SMEs, the question regarding impact of monetary policy variables was not framed to ask the direct impact of monetary policy variables on lending interest rates to SMEs in particular. An improvement on the ‘SME’ questionnaire will be to include a question relating to access of financial services, particularly how much time respondents spend at banking halls given a list of financial transactions.

7.5 Policy recommendations

Based on the findings in this research the following recommendations are made to dominant subjects involved in the three-way impact on SMEs’ access to finance. These subjects are the government, commercial banks and owners or managers of SMEs.

**Government**

Inflation targeting has helped in lowering the inflation rate and monetary policy rate in Ghana; however base lending interest rates remain high. This research has found that the monetary policy rate and 91-day Treasury bill rate have a significant influence on base commercial bank lending interest rate. On one hand, reduced monetary policy rate is a good sign, as commercial banks can borrow at cheaper interest rates from the central bank which may lead to cheaper lending interest rate for firms. In practice, this borrowing at the monetary
policy rate has not lead to the reduction of base lending rates because banks rely more on the interbank market than the central bank for loanable funds. It is recommended that the central bank uses moral suasion to encourage big players (banks) on the interbank market to reduce the cost of borrowing by fixing prices closer to the monetary policy rate.

On the other hand, attractiveness of Treasury bills was found to affect commercial banks loanable funds set aside (or allotted) for SMEs. As this indicates crowding out by the government, it is the recommendation of this research that the government reduces its current level of borrowing from the money market. Alternatively, private businesses (SMEs) should be encouraged to undertake projects on behalf of the government. By so doing, the government will not have to borrow from the money market for the purposes of financing those expenditures but rather encourage banks to lend at cheaper interest rates to such enterprises. It is envisaged that this arrangement will be profitable to banks once the lending interest rates are priced above the prevailing Treasury bill rate.

It is further recommended that following the financial restraint model proposed by Hellmann, Murdock, & Stiglitz (1996, p. 5, 21), “deposit rate controls” can be instituted by the government to encourage banks to invest in deposit mobilization (or financial deepening). In this case, the operating assets (loanable funds) will increase, thereby positioning banks to be able to lend to SMEs and have enough funds to lend to the government as well. Pertaining to deposit mobilization (or financial deepening) the government could support bank’s nationwide outreach by sharing or leasing parts of government office buildings or post offices especially in rural areas to banks.
Commercial banks

In reference to the finding that banks are scale inefficient – to put it simply not making full use of their size, the notion of expanding their presence by sparsely relocating physical infrastructure is laudable especially in present geographically excluded areas.

SMEs

Also in relation to the findings of this research, SMEs are recommended to use movable assets such as motor vehicle and inventory as collateral when applying for bank loans. However, the use of movable assets is easily acceptable by banks when they are valuable and insured. SMEs are therefore encouraged to utilize the collateral registry established under the Secured Transaction Regime (STR). Pertaining to type of industry, SMEs engaged in wholesale, retail trade and manufacturing are advised to be confident about pursuing bank loans as commercial banks are most likely to lend to them. As the period of relationship with a bank is less important in loan applications from banks, SMEs are encouraged to not expend so much in forming relationships with banks. Moreover, relationship banking does not lead to procuring loans at cheaper interest rates from banks. Conversely, the age of the firm, its location, operating profit and amount of loan required directly significantly affect a firms’ access to credit from banks.
REFERENCES


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Ono, A., & Uesugi, I. (2009). Role of collateral and personal guarantees in relationship lending: Evidence from Japan’s SME loan market. Journal of Money, Credit and


APPENDICES

Appendix 1: Compiled definitions of ‘Access’ and ‘Accessibility’

<table>
<thead>
<tr>
<th>Word or Phrase</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easily obtained (approached, entered, talk to, influenced)</td>
<td><a href="http://www.thefreedictionary.com/accessibility">http://www.thefreedictionary.com/accessibility</a></td>
</tr>
<tr>
<td>Capable of being reached, influenced, used or seen, understood and appreciated, able to provide access</td>
<td><a href="http://www.merriam-webster.com/dictionary/accessible">http://www.merriam-webster.com/dictionary/accessible</a></td>
</tr>
<tr>
<td>Reachable or entered, obtained or used, understood or appreciated, easy to talk to, approachable</td>
<td><a href="http://oxforddictionaries.com/definition/english/accessible">http://oxforddictionaries.com/definition/english/accessible</a></td>
</tr>
<tr>
<td>Easy to approach, reach, enter, speak with, used, entered, obtainable, attainable, open to influence</td>
<td><a href="http://dictionary.reference.com/browse/accessible">http://dictionary.reference.com/browse/accessible</a></td>
</tr>
<tr>
<td>Extent that a consumer or user obtain service when needed, ease to reach facility or location from other locations, ease to contact, opportunity or right to access information</td>
<td><a href="http://www.businessdictionary.com/definition/accessibility.html">http://www.businessdictionary.com/definition/accessibility.html</a></td>
</tr>
<tr>
<td>When an interface is easily understood or adaptive</td>
<td><a href="http://accessibility.psu.edu/definition">http://accessibility.psu.edu/definition</a></td>
</tr>
<tr>
<td>Easy to obtain and use, find or get to, friendly or easy to talk to, understand and enjoy</td>
<td><a href="http://www.macmillandictionary.com/dictionary/british/accessible">http://www.macmillandictionary.com/dictionary/british/accessible</a></td>
</tr>
<tr>
<td>Able to be reached or easily got, easy to understand</td>
<td><a href="http://dictionary.cambridge.org/dictionary/british/accessible">http://dictionary.cambridge.org/dictionary/british/accessible</a></td>
</tr>
<tr>
<td>Open, receptive, approachable</td>
<td><a href="http://psychologydictionary.org/accessibility/">http://psychologydictionary.org/accessibility/</a></td>
</tr>
<tr>
<td>Being at hand when needed, easy to meet or deal with</td>
<td><a href="https://www.vocabulary.com/dictionary/accessibility/">https://www.vocabulary.com/dictionary/accessibility/</a></td>
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</table>
Appendix 2.1: Line plots of variables in log form

Appendix 2.2: Line plots of variables after First Differencing
Appendix 3: Variables and methodology in previous studies

<table>
<thead>
<tr>
<th>Author and Year</th>
<th>Variables</th>
<th>Explanation</th>
<th>Other</th>
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<tbody>
<tr>
<td>(Amidu &amp; Harvey, 2006)</td>
<td>Credit (Dep)</td>
<td>Loans and advances to total assets</td>
<td>Period: 1960 – 1997</td>
</tr>
<tr>
<td></td>
<td>Interest rate</td>
<td>Central bank prime rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Money supply</td>
<td>Aggregate money supply</td>
<td>Model: Regression</td>
</tr>
<tr>
<td></td>
<td>Economic Growth</td>
<td>Growth in real GDP</td>
<td>(Credit Channel)</td>
</tr>
<tr>
<td></td>
<td>Inflation rate</td>
<td>First difference of GDP deflator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interest rate</td>
<td>Central bank prime rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Money supply</td>
<td>Change in money supply</td>
<td>Model: Regression</td>
</tr>
<tr>
<td></td>
<td>Economic growth</td>
<td>Change in real GDP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inflation rate</td>
<td>Monthly variation of CPI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bank size</td>
<td>Log of total bank assets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bank liquidity</td>
<td>Ratio of liquid assets to total assets</td>
<td></td>
</tr>
<tr>
<td>(Epstein &amp; Heintz, 2006)</td>
<td>Treasury bill rate (Dep 1)</td>
<td>90-day interest rate</td>
<td>Period: Mid 1980s</td>
</tr>
<tr>
<td></td>
<td>Money supply (Dep 2)</td>
<td>Rate of Growth of M2 supply</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inflation</td>
<td>4-quarter rate of change of CPI</td>
<td></td>
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<tr>
<td>Exchange rate</td>
<td>4-quarter rate of change</td>
<td>VAR</td>
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</tr>
<tr>
<td>----------------</td>
<td>-------------------------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Real economic growth</td>
<td>4-quarter rate of growth or real GDP</td>
<td>VAR</td>
<td></td>
</tr>
<tr>
<td>(Kovanen, 2011b)</td>
<td>BoG prime rate</td>
<td>All endogenous variables</td>
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<tr>
<td></td>
<td>Interbank lending rate</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Lending interest rate</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Treasury bill rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deposit interest rate (time and savings)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interest rate spread</td>
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<td></td>
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<tr>
<td>(Abradu-otoo et al., 2003)</td>
<td>Inflation rate</td>
<td>Rate of change in annual CPI (1997=100)</td>
<td></td>
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<tr>
<td></td>
<td>Real GDP</td>
<td>Nominal GDP/price deflator (at 1993 constant prices)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exchange rate</td>
<td>Cedi and US Dollar exchange rate</td>
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</tr>
<tr>
<td></td>
<td>Credit to private sector M2+</td>
<td>Bank loans to the private sector</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prime rate</td>
<td>Broad money supply</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oil price</td>
<td>Central Bank prime rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Treasury Bill rate</td>
<td>World price of brent crude oil</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interest rate equivalent of 91-day t-bill</td>
<td></td>
</tr>
<tr>
<td>(Kinful, 2005)</td>
<td>M1</td>
<td>Narrow money</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M2</td>
<td>M1 plus Time and Savings deposit</td>
<td></td>
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</table>
| | Period: | 1969:4 to 2002:4
| | Model: | S-VECM and Impulse Response Function |

Period:
<table>
<thead>
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<th>Dagher &amp; Kovanen, 2011</th>
<th>M2+</th>
<th>M2 plus foreign currency deposits</th>
<th>Model: Granger Causality, VECM, Variance Decomposition and Impulse Response Function</th>
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</thead>
<tbody>
<tr>
<td>Prime rate</td>
<td></td>
<td>Bank of Ghana prime rate (interest rate)</td>
<td></td>
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<tr>
<td>Price level</td>
<td></td>
<td>Consumer Price Index</td>
<td></td>
</tr>
<tr>
<td>Real GDP (output)</td>
<td></td>
<td>GDP at 1993 constant prices</td>
<td></td>
</tr>
<tr>
<td>All variables were in log form except Prime rate</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>M2+</td>
<td></td>
<td>Broad money including foreign currency</td>
<td></td>
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<tr>
<td>P</td>
<td></td>
<td>Consumer Price Index (100=2000)</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td></td>
<td>Real GDP (in millions of cedis)</td>
<td></td>
</tr>
<tr>
<td>NEER</td>
<td></td>
<td>Nominal Effective Exchange rate (100=2000)</td>
<td></td>
</tr>
<tr>
<td>Deposit rate</td>
<td></td>
<td>Average deposit interest rate</td>
<td></td>
</tr>
<tr>
<td>TB rate</td>
<td></td>
<td>Three-month treasury bill interest rate</td>
<td></td>
</tr>
<tr>
<td>US TB rate</td>
<td></td>
<td>Three-month treasury bill interest rate</td>
<td></td>
</tr>
<tr>
<td>USD Libor</td>
<td></td>
<td>Three-month U.S. Libor interest rate</td>
<td></td>
</tr>
<tr>
<td>GHcedis/USD</td>
<td></td>
<td>Ghana Cedi/U.S. Dollar exchange rate</td>
<td></td>
</tr>
<tr>
<td>Velocity</td>
<td></td>
<td>Ration Y/M2+</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amoah &amp; Mumuni, 2008</th>
<th>M2+</th>
<th>Broad money supply</th>
<th>Period: 1980:1 to 2007:1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td></td>
<td>Real GDP</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>Exchange rate</td>
<td>Deposit rate</td>
<td>T-bill</td>
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<tr>
<td>-------</td>
<td>---------------</td>
<td>--------------</td>
<td>--------</td>
</tr>
<tr>
<td>(Ofori et al., 2005)</td>
<td>Interest rate margin</td>
<td>LLP</td>
<td>OPC</td>
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</table>
Appendix 4.1: Selecting order criteria

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<th>lag</th>
<th>LL</th>
<th>LR</th>
<th>df</th>
<th>p</th>
<th>FPE</th>
<th>AIC</th>
<th>HQIC</th>
<th>SBIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>511.017</td>
<td>4.0e-13</td>
<td>8.68995</td>
<td>8.6225</td>
<td>8.52379</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>955.309</td>
<td>888.58</td>
<td>49</td>
<td>0.000</td>
<td>4.4e-16</td>
<td>15.5053</td>
<td>14.9657*</td>
<td>14.176*</td>
</tr>
<tr>
<td>2</td>
<td>983.367</td>
<td>56.116</td>
<td>49</td>
<td>0.226</td>
<td>6.3e-16</td>
<td>15.1443</td>
<td>14.1325</td>
<td>12.6518</td>
</tr>
<tr>
<td>3</td>
<td>1059.2</td>
<td>151.66*</td>
<td>49</td>
<td>0.000</td>
<td>4.1e-16*</td>
<td>15.6069*</td>
<td>14.1229</td>
<td>11.9512</td>
</tr>
<tr>
<td>4</td>
<td>1086.99</td>
<td>55.575</td>
<td>49</td>
<td>0.241</td>
<td>6.1e-16</td>
<td>15.2411</td>
<td>13.285</td>
<td>10.4223</td>
</tr>
</tbody>
</table>

Appendix 4.2: Johansen cointegration test result

<table>
<thead>
<tr>
<th>maximum rank</th>
<th>parms</th>
<th>LL</th>
<th>eigenvalue</th>
<th>trace statistic</th>
<th>critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>105</td>
<td>1004.1251</td>
<td>154.2724</td>
<td>146.76</td>
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</tr>
<tr>
<td>1</td>
<td>119</td>
<td>1025.7885</td>
<td>0.30948</td>
<td>110.9455*</td>
<td>114.90</td>
</tr>
<tr>
<td>2</td>
<td>131</td>
<td>1044.2691</td>
<td>0.27087</td>
<td>73.9843</td>
<td>87.31</td>
</tr>
<tr>
<td>3</td>
<td>141</td>
<td>1057.0243</td>
<td>0.19590</td>
<td>48.4739</td>
<td>62.99</td>
</tr>
<tr>
<td>4</td>
<td>149</td>
<td>1066.9512</td>
<td>0.15607</td>
<td>28.6201</td>
<td>42.44</td>
</tr>
<tr>
<td>5</td>
<td>155</td>
<td>1073.065</td>
<td>0.09923</td>
<td>16.3925</td>
<td>25.32</td>
</tr>
<tr>
<td>6</td>
<td>159</td>
<td>1078.5895</td>
<td>0.09011</td>
<td>5.3436</td>
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<tr>
<td>7</td>
<td>161</td>
<td>1081.2613</td>
<td>0.04464</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix 4.3: Result from VECM

| alpha | Coef. | Std. Err. | t   | p>|z| | 95% Conf. Interval |
|-------|-------|-----------|-----|-----|-----------------|----------------|
| D lnLR |       |           |     |     |                |                |
| _cel  | L1.   | -.4183093 | .1047203 | -3.99 | 0.000         | -.6235574      |
|       |       |           |     |     |                |                |
| D lnMFR |       |           |     |     |                |                |
| _cel  | L1.   | -.103271 | .161984 | -0.64 | 0.524         | -.4207538      |
|       |       |           |     |     |                |                |
| D lnM2 |       |           |     |     |                |                |
| _cel  | L1.   | .0572141 | .243015 | 0.24 | 0.814         | -.4190865      |
|       |       |           |     |     |                |                |
| D lnINF |       |           |     |     |                |                |
| _cel  | L1.   | -.14426 | .3754502 | -3.90 | 0.000         | -2.200129      |

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Appendix 4.4a: Stability condition of the vector error correction model

```
.vecstable, graph
```

**Eigenvalue stability condition**

<table>
<thead>
<tr>
<th>Eigenvalue</th>
<th>Modulus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>-1.462026 + .6736764i</td>
<td>.689358</td>
</tr>
<tr>
<td>-1.462026 - .6736764i</td>
<td>.689358</td>
</tr>
<tr>
<td>.6519559</td>
<td>.651956</td>
</tr>
<tr>
<td>-1.252188 + .5961227i</td>
<td>.609132</td>
</tr>
<tr>
<td>-1.252188 - .5961227i</td>
<td>.609132</td>
</tr>
<tr>
<td>-1.210895 + .4588749i</td>
<td>.474583</td>
</tr>
<tr>
<td>-1.210895 - .4588749i</td>
<td>.474583</td>
</tr>
<tr>
<td>-1.1628147 + .4151174i</td>
<td>.445905</td>
</tr>
<tr>
<td>-1.1628147 - .4151174i</td>
<td>.445905</td>
</tr>
</tbody>
</table>

The VECM specification imposes 3 unit moduli.

Appendix 4.4b: Stability graph

![Roots of the companion matrix](image)

Appendix 4.5: Serial correlation test result

```
.vecclmar
```

**Lagrange-multiplier test**

<table>
<thead>
<tr>
<th>lag</th>
<th>chi2</th>
<th>df</th>
<th>Prob &gt; chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23.1779</td>
<td>16</td>
<td>0.10906</td>
</tr>
<tr>
<td>2</td>
<td>17.0250</td>
<td>16</td>
<td>0.38398</td>
</tr>
</tbody>
</table>

H0: no autocorrelation at lag order
<table>
<thead>
<tr>
<th>Name of bank</th>
<th>Year of incorporation</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Bank (Ghana) Limited</td>
<td>2008</td>
<td>Foreign</td>
</tr>
<tr>
<td>Agricultural Development Bank Limited</td>
<td>1965</td>
<td>Local</td>
</tr>
<tr>
<td>Amalgamated Bank Limited</td>
<td>1997</td>
<td>Foreign</td>
</tr>
<tr>
<td>ARB Apex Bank Limited</td>
<td>2000</td>
<td>Local</td>
</tr>
<tr>
<td>Bank of Baroda (Ghana) Limited</td>
<td>2007</td>
<td>Foreign</td>
</tr>
<tr>
<td>Barclays Bank of Ghana Limited</td>
<td>1917</td>
<td>Foreign</td>
</tr>
<tr>
<td>BSIC (Ghana) Limited</td>
<td>2008</td>
<td>Foreign</td>
</tr>
<tr>
<td>CAL Bank Limited*</td>
<td>1990</td>
<td>Local</td>
</tr>
<tr>
<td>Ecobank Ghana Limited*</td>
<td>1990</td>
<td>Foreign</td>
</tr>
<tr>
<td>Fidelity Bank Limited</td>
<td>2006</td>
<td>Local</td>
</tr>
<tr>
<td>First Atlantic Merchant Bank Limited</td>
<td>1994</td>
<td>Local</td>
</tr>
<tr>
<td>Ghana Commercial Bank Limited*</td>
<td>1953</td>
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</tr>
<tr>
<td>Guaranty Trust Bank (Ghana) Limited</td>
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<td>Foreign</td>
</tr>
<tr>
<td>HFC Bank Ghana Limited*</td>
<td>1990</td>
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</tr>
<tr>
<td>Intercontinental Bank Ghana Limited</td>
<td>2006</td>
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<tr>
<td>International Commercial Bank Limited</td>
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<tr>
<td>Merchant Bank Ghana Limited</td>
<td>1971</td>
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<tr>
<td>National Investment Bank Limited**</td>
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<td>Prudential Bank Limited</td>
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<tr>
<td>SG-SSB Bank Limited*</td>
<td>1975</td>
<td>Foreign</td>
</tr>
<tr>
<td>Stanbic Bank Ghana Limited</td>
<td>1999</td>
<td>Foreign</td>
</tr>
<tr>
<td>Standard Chartered Bank Ghana Limited*</td>
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</tr>
<tr>
<td>The Trust Bank Limited</td>
<td>1996</td>
<td>Local</td>
</tr>
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<td>UniBank (Ghana) Limited</td>
<td>1997</td>
<td>Local</td>
</tr>
<tr>
<td>United Bank for Africa (Ghana) Limited</td>
<td>2004</td>
<td>Foreign</td>
</tr>
<tr>
<td>UT Bank Limited</td>
<td>1995</td>
<td>Local</td>
</tr>
<tr>
<td>Zenith Bank (Ghana)</td>
<td>2005</td>
<td>Foreign</td>
</tr>
</tbody>
</table>
Appendix 6.1: Regional distribution of rural and community banks as at January 2013

Appendix 6.2: Regional distribution of rural and community banks (in %) as at January 2013

Appendix 6.3: Number of non-bank financial institutions as at March 2013
Appendix 6.4: Number of forex bureau by region

Appendix 6.5: Licensed forex bureau between 1988 and 2012
Appendix 6.6: Number of microfinance institutions by type as at 2013

![Pie chart showing the distribution of microfinance institutions by type.](image)

Appendix 7: Summary statistics of variables for DEA analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Panel 1</th>
<th>Panel 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Obs</td>
<td>Mean</td>
</tr>
<tr>
<td>Fixed Assets</td>
<td>110</td>
<td>9.960909</td>
</tr>
<tr>
<td>Physical Capital</td>
<td>109</td>
<td>14.54156</td>
</tr>
<tr>
<td>Funding</td>
<td>110</td>
<td>292.059</td>
</tr>
<tr>
<td>Loans</td>
<td>110</td>
<td>177.5267</td>
</tr>
<tr>
<td>Other earning assets</td>
<td>110</td>
<td>91.47973</td>
</tr>
<tr>
<td>Fixed Assets</td>
<td>80</td>
<td>11.95087</td>
</tr>
<tr>
<td>Physical Capital</td>
<td>80</td>
<td>15.9045</td>
</tr>
<tr>
<td>Funding</td>
<td>80</td>
<td>353.4924</td>
</tr>
<tr>
<td>Loans</td>
<td>80</td>
<td>209.7365</td>
</tr>
<tr>
<td>Other earning assets</td>
<td>80</td>
<td>101.3333</td>
</tr>
</tbody>
</table>
Appendix 8: Questionnaire administered to banks

Dear Respondent,

This questionnaire is part of an on-going doctoral student research on small and medium scale enterprises access to finance in Ghana.

It will only take **15 minutes**.

The information you provide in this questionnaire will be treated as strictly confidential. All information provided by your company will not be disclosed to third parties under any circumstances. Only results from the analysis of aggregate data may be made available for the purposes of improving access to finance plaguing private industries in Ghana.

Your objective responses are highly appreciated. Thank you very much.

Researcher: QUARSHIE, Joseph
Supervisor: Professor YAMAGAMI, Susumu
Graduate School of Asia Pacific Studies
Ritsumeikan Asia Pacific University
Beppu City, Oita Prefecture, JAPAN (josequ11@apu.ac.jp)

(To select options, simply make a check mark ☑ in the desired box and kindly enter information where required)

<table>
<thead>
<tr>
<th>A. ABOUT THE RESPONDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When did your bank begin operations in Ghana? □ □ □ □ (Year)</td>
</tr>
<tr>
<td>2. In which region is your headquarters located?</td>
</tr>
<tr>
<td>□ Greater-Accra □ Ashanti □ Central □ Eastern □ Western □ Brong-Ahafo □Volta □ Northern □ Upper West □ Upper East</td>
</tr>
<tr>
<td>3. In which other region(s) do you have offices, branches, affiliates or network?</td>
</tr>
<tr>
<td>□ Greater-Accra □ Ashanti □ Central □ Eastern □ Western □ Brong-Ahafo □Volta □ Northern □ Upper West □ Upper East</td>
</tr>
<tr>
<td>4. How many of the following represent your outreach infrastructure?</td>
</tr>
<tr>
<td><strong>Type of facility</strong></td>
</tr>
<tr>
<td>Branches (Brick and mortar, shipping container, etc.)</td>
</tr>
<tr>
<td>Automated Teller Machines (ATMs)</td>
</tr>
<tr>
<td>Mobile banking centre (how many are located outside branches?)</td>
</tr>
<tr>
<td>Internet banking centre (how many are located outside branches?)</td>
</tr>
<tr>
<td>5. Which of the following best describes your establishment?</td>
</tr>
<tr>
<td>□ Commercial Bank □ Development Bank □ Merchant Bank □ Other (please specify)</td>
</tr>
<tr>
<td>6. How long has it been since you attained universal banking status? <em>(Skip if not a universal bank)</em> □ □ □ □ years</td>
</tr>
<tr>
<td>7. How many employees are there in your company? □ □ □ □</td>
</tr>
<tr>
<td>8. Regarding particulars of the respondent</td>
</tr>
<tr>
<td>a. Please specify your job title:</td>
</tr>
<tr>
<td>b. Where is your office currently located? □ Headquarters □ Branch □ Other</td>
</tr>
<tr>
<td>c. Which department do you belong to: □ Operations □ Retail Banking □ Corporate Banking □ Other (please specify)</td>
</tr>
<tr>
<td>d. What is your highest academic or professional qualification:</td>
</tr>
</tbody>
</table>

B. BANK LENDING
**NOTE:**
SMEs, in this questionnaire, refer to firms with present capital of at least GH₵ 40,000 and employees between 5 and 100.

1. Which of the following industry or category of businesses is your establishment most likely to lend to? (Kindly select top three choices)

   *(Please choose a two-digit code from the list of businesses on Page 5)*

<table>
<thead>
<tr>
<th></th>
<th>Major division code:</th>
<th>If manufacturing [04], please specify subdivision:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. What is your reason for selecting those businesses in B2 above? (Optional)

____________________________________________________________________________________
____________________________________________________________________________________

3. Which of the following industry or category of companies is your bank less likely to lend to? (Kindly select top three choices)

   *(Please choose a two-digit code from the list of businesses on Page 5)*

<table>
<thead>
<tr>
<th></th>
<th>Major division code:</th>
<th>If manufacturing [04], please specify subdivision:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. What is your reason for selecting those businesses in B2 above? (Optional)

____________________________________________________________________________________
____________________________________________________________________________________

5. As a bank, which of the following factors are necessary for successful loan applications from SMEs? (Please select top 5 items)

| Audited financial statements | Small portion of present capital from loans |
| Unaudited financial statements | Short loan maturity period |
| Liquidity of collateral      | Longer duration as bank’s customer |
| Value of collateral          | Size of firm (number of employees) |
| Insured collateral           | Size of present capital |
| Proof of potential success of project | Gender of owner(s) |
| No history of defaults       | Academic qualification of owner(s) or top management |
| Perceived default risk of borrower | Other(s) |
| Type of industry             |                                      |

6. As a bank, which assets do you deem satisfactory collateral for loan applications in general?

A. ____________________________  C. ____________________________
B. ____________________________  D. ____________________________

7. From your experience, which of the following facets are most difficult for SMEs to satisfy when applying for loans? (Please select top 5 items)

| Audited financial statements | Short loan maturity period |
| Unaudited financial statements | Longer duration as bank’s customer |
| Liquidity of collateral      | Size of firm (number of employees) |
| Value of collateral          | Size of present capital |
| Insured collateral           | Gender of owner(s) |
| Proof of potential success of project | Academic qualification of owner(s) or top management |
| No history of defaults       | Other(s) |
| Perceived default risk of borrower | Small portion of present capital from loans |
| Type of industry             |                                      |

8. What type of loan do SMEs usually request from your establishment?

- [ ] Working Capital Loan
- [ ] Investment Loan
- [ ] Project-financing loans

9. Which of the following loan applications would you easily grant to SMEs?

- [ ] Working Capital Loan
- [ ] Investment Loan
- [ ] Project-financing loans

9. (b) Reason __________________________________________________________

10. How much money do SMEs normally request from your establishment as loans?

- [ ] Less than GH₵20,000
- [ ] GH₵ 21,000 – GH₵ 40,000
- [ ] GH₵ 41,000 – GH₵ 60,000

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11. About how much money does your bank usually lend to SMEs based on bank policy?

- Less than GH₵20,000
- GH₵21,000 – GH₵40,000
- GH₵41,000 – GH₵60,000
- GH₵61,000 – GH₵100,000
- GH₵100,000 – GH₵500,000
- GH₵500,000 – GH₵1 million
- More than GH₵1 million
- There are no limits as to what we can give

12. What is the average maturity period your bank gives for the loan amount selected in B11 above?

- Year(s)
- Month(s)

13. On the average, at what lending interest rate is the loan amount in B11 contracted?

14. Regarding average number of loan applications received from SMEs in a year.

<table>
<thead>
<tr>
<th>Total number of loan applications</th>
<th>Number of approved applications</th>
<th>Number of rejected applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>[(a)=(b)+(c)]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. What percentage of your loan to deposit ratio is directed towards SMEs?

16. Which of these variables related to the banking industry do you think account for higher bank lending interest rates?

- Presence of Oligopoly (i.e. dominance of the banking industry by a few large banks)
- High operating cost of banks
- Perceived risk of lending to SMEs (i.e. perception of SMEs as having high risk of default)
- Transaction costs (i.e. the cost of screening and monitoring SME clients)

C. DEFINING THE IDEAL SME CLIENT

<table>
<thead>
<tr>
<th>Item</th>
<th>Characteristics of an ideal client</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Level of present capital (in GH₵)</td>
</tr>
<tr>
<td>2.</td>
<td>Years in operation</td>
</tr>
<tr>
<td>3.</td>
<td>Location i.e. region(s) of operation</td>
</tr>
<tr>
<td>4.</td>
<td>Number of employees</td>
</tr>
<tr>
<td>5.</td>
<td>Gender of owner(s): Male or Female</td>
</tr>
<tr>
<td>6.</td>
<td>Type of ownership: Sole proprietorship, General partnership, Limited partnership, Private corporation, etc.</td>
</tr>
<tr>
<td>7.</td>
<td>Qualification of owner(s)</td>
</tr>
<tr>
<td>8.</td>
<td>Nationality: Ghanaian or Foreigner</td>
</tr>
<tr>
<td>9.</td>
<td>Percentage of export-orientation</td>
</tr>
<tr>
<td>10.</td>
<td>Number of loan defaults in the past</td>
</tr>
<tr>
<td>11.</td>
<td>Percentage of present capital already financed by loans</td>
</tr>
<tr>
<td>12.</td>
<td>Number of years as your client</td>
</tr>
</tbody>
</table>

13. What will be your bank’s treatment of an ideal client (defined above) regarding the following?

<table>
<thead>
<tr>
<th>Small scale enterprise</th>
<th>Medium scale enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Largest loan amount (in GH₵)</td>
<td>Interest rate (in %)</td>
</tr>
<tr>
<td>Largest loan amount (in GH₵)</td>
<td>Interest rate (in %)</td>
</tr>
</tbody>
</table>

D. BANK REGULATION AND INDUSTRY FACTORS

1. Has the abolishment of secondary reserve requirements by the Bank of Ghana increased your loanable funds particularly for SMEs?

- Yes
- No

2. Does the attractiveness of returns from Treasury bills affect loanable funds that would have been accessible by SMEs?

- Yes
- No

3. Do monitoring costs of lending to SMEs discourage you from lending to them?
4. Which of the following is your largest source of short term borrowing?
- Interbank market
- Corporate entities (Large firms, multinationals, etc.)
- Households
- Central Bank
- Others (please specify) ___________________________________________________________

5. Has the deposit interest rate in the last ten (10) years encouraged deposit mobilization?
- Yes ☐
- No ☐

6. Which of the following variables does the base lending rate of your bank respond to the most?  
   (Up to 3 choices allowed)
- Monetary Policy Rate (MPR)
- Inflation rate (CPI)
- Treasury bill rate
- Exchange rate (GH₵-USD)
- Money supply (M2+)
- Deposit interest rate

E. RELATIONSHIP BANKING

1. Does your establishment practise Relationship Banking?
- Never heard of it ☐
- No ☐
- Occasionally, depending on how well we know the client ☐
- Routinely, we have a special desk/office/branch/personnel for it ☐

2. How long has your establishment been practising Relationship Banking?
- Year(s) ☐
- Month(s) ☐

3. Practising Relationship Banking has led to an increase in SME clients.
- Totally Agree ☐
- Agree ☐
- Somewhat agree ☐
- Indifferent ☐
- Somewhat disagree ☐
- Disagree ☐
- Totally disagree ☐

4. Do your SME clients on your relationship banking program benefit from the following?
- Lower lending interest rates Yes ☐ No ☐
- Shorter period of processing loans Yes ☐ No ☐
- Longer loan maturity period Yes ☐ No ☐
- Ease of rolling-over loans Yes ☐ No ☐
- Other(s): __________________________________________________________

Thank you very much for your cooperation.
<table>
<thead>
<tr>
<th>Codes for MAJOR DIVISION of industries:</th>
<th>Codes for MANUFACTURING subdivision:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[01] Agriculture, hunting and forestry</td>
<td>[01] Food products and beverages</td>
</tr>
<tr>
<td>[02] Fishing</td>
<td>[02] Tobacco products</td>
</tr>
<tr>
<td>[03] Mining and quarrying</td>
<td>[03] Textiles</td>
</tr>
<tr>
<td>[04] Manufacturing</td>
<td>[04] Wearing apparel; dressing and dyeing of fur</td>
</tr>
<tr>
<td>[05] Electricity, gas and water supply</td>
<td>[05] Tanning and dressing of leather; manufacture of luggage, handbags, saddler, harness and footwear</td>
</tr>
<tr>
<td>[06] Construction</td>
<td>[06] Wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials</td>
</tr>
<tr>
<td>[08] Hotels and restaurants</td>
<td>[08] Publishing, printing and reproduction</td>
</tr>
<tr>
<td>[09] Transport, storage and communications</td>
<td>[09] Coke, refined petroleum products and nuclear fuel</td>
</tr>
<tr>
<td>[12] Public administration and defence; compulsory social security</td>
<td>[12] Other non-metallic mineral products</td>
</tr>
<tr>
<td></td>
<td>[18] Radio, television and communication equipment and apparatus</td>
</tr>
<tr>
<td></td>
<td>[19] Medical, precision and optical instruments, watches and clocks</td>
</tr>
<tr>
<td></td>
<td>[21] Other transport equipment</td>
</tr>
<tr>
<td></td>
<td>[22] Furniture; manufacturing</td>
</tr>
<tr>
<td></td>
<td>[23] Recycling</td>
</tr>
</tbody>
</table>
Appendix 9: Questionnaire administered to SMEs

Dear Respondent,

This questionnaire is part of an on-going doctoral student research on small and medium scale enterprises access to finance in Ghana.

It will only take **15 minutes**.

The information you provide in this questionnaire will be treated as strictly **confidential**. All information provided by your company will not be disclosed to third parties under any circumstances. Only results from the analysis of aggregate data may be made available for the purposes of improving access to finance plaguing private industries in Ghana.

Your objective responses are highly appreciated. Thank you very much.

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Supervisor: Professor YAMAGAMI, Susumu
Graduate School of Asia Pacific Studies
Ritsumeikan Asia Pacific University
Beppu City, Oita Prefecture, JAPAN

*(To select options, simply make a check mark ✓ in the desired box)*

### A. COMPANY INFORMATION

9. When did this business begin operations? □□□□□ / □□□ (Year/Month)

10. When was the business registered? □□□□□ / □□□ (Year/Month)

11. In which region is your headquarters located?
   - Greater-Accra
   - Ashanti
   - Central
   - Eastern
   - Western
   - Brong-Ahafo
   - volta
   - Northern
   - Upper West
   - Upper East

12. In which other region(s) do you have offices, branches or factories?
   - Greater-Accra
   - Ashanti
   - Central
   - Eastern
   - Western
   - Brong-Ahafo
   - volta
   - Northern
   - Upper West
   - Upper East

13. What was the number of employees;

<table>
<thead>
<tr>
<th>Total number of employees (including management)</th>
<th>Number of part-time employees</th>
<th>Number of management</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. At start of operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. At the end of 2012</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. What is your current position in this establishment?
   - Owner/Partner
   - Top-level management
   - Middle-level management
   - Please specify your job title: ____________________________
   - Which department do you belong to: _______________________
   - What is your highest academic or professional qualification:

15. What type of business or industry are you engaged in now?

*(Please choose a two-digit code that best describes your business from the list on Page 6)*

| Major division code: □□ | If manufacturing [04], please specify subdivision: □□ |

16. What type of business or industry were you engaged in at start of operations? *(If different from question 7 above)*

| Major division code: □□ | If manufacturing [04], please specify subdivision: □□ |

17. (i) Does your company engage in exports? □ Yes □ No *(If No, skip to question 10.)*

   (ii) If yes, what percentage of your products (goods or services) are sold locally or exported?
   - Percentage of sales in domestic market □□□□
   - Percentage of sales in foreign market (export) □□□□

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18. What is the current type of ownership?

- Sole proprietorship
- General Partnership
- Limited Partnership
- Private corporation (Shareholding is privately owned and traded)

19. What was the type of ownership at start of operations? *(If different from question 10 above)*

- Sole proprietorship
- General Partnership
- Limited Partnership
- Private corporation (Shareholding is privately owned and traded)

20. What is the gender of the owner(s)? *(Please provide number of male or female)*

- Male
- Female

21. What percentage of this business is;

- Owned by Ghanaians
- Owned by foreign nationals

---

**B. CORPORATE FINANCE**

1. What was your company’s capital at the start of business? *(All amounts in new Ghana Cedis)*

   - Less than GH₵10,000
   - GH₵ 11,000 – GH₵ 20,000
   - GH₵ 21,000 – GH₵ 40,000
   - GH₵ 41,000 – GH₵ 60,000
   - GH₵ 61,000 – GH₵ 100,000
   - GH₵ 100,000 – GH₵ 500,000
   - GH₵ 500,000 – GH₵ 1 million
   - more than GH₵ 1 million

2. How was that initial capital *(in B1)* financed?

   - Loan *(kindly specify source of loan)*
   - Personal savings
   - Contribution by partners
   - Other(s)

3. How much is your capital at present? *(All amounts in new Ghana Cedis)*

   - Less than GH₵20,000
   - GH₵ 21,000 – GH₵ 40,000
   - GH₵ 41,000 – GH₵ 60,000
   - GH₵ 61,000 – GH₵ 100,000
   - GH₵ 100,000 – GH₵ 500,000
   - GH₵ 500,000 – GH₵ 1 million
   - more than GH₵ 1 million

4. Overall, please rank the following items in terms of their composition of your present capital? *(Kindly rank from 1 to 5, where 1 = largest and 5 = smallest)*

   - Loan *(kindly specify source of loan)*
   - Personal savings
   - Contribution by partners
   - Reinvested profit
   - Other(s)

5. What percentage of the items selected in *(B4)* above make up your present capital?

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Percentage of present capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

6. How much was your operating profit or earnings before interest and tax (EBIT) in the 2012 fiscal year?

   - Less than GH₵20,000
   - GH₵ 21,000 – GH₵ 40,000
   - GH₵ 41,000 – GH₵ 60,000
   - GH₵ 61,000 – GH₵ 100,000
   - GH₵ 100,000 – GH₵ 500,000
   - GH₵ 500,000 – GH₵ 1 million
   - more than GH₵ 1 million

7. What percentage of your operating profit did you pay as taxes? |

8. (i) Which of the following financing options does your establishment prefer for investment?

   - Debt financing
   - Equity financing

8. (ii) Please provide details of your answer in 8 (i) above *(multiple options allowed)*
## Debt financing:
- Loan from bank
- Supplier credit
- Loan from microfinance institution (MFI)
- Money lenders
- Loan from family and friends
- Other(s) __________________________________

## Equity financing:
- Capital contribution by old partners
- Capital contributed by joining partner
- Sale of shares
- Other(s) ___________________________

### 9. (i) Which of the following financing options has your establishment **used most in the past**?
- Debt financing
- Equity financing

#### Debt financing:
- Loan from bank
- Supplier credit
- Loan from microfinance institution (MFI)
- Money lenders
- Loan from family and friends
- Other(s) __________________________________

#### Equity financing:
- Capital contribution by old partners
- Capital contributed by joining partner
- Sale of shares
- Other(s) ___________________________

### 9. (ii) Please provide details of your answer in 9 (i) above (multiple options allowed)

#### Debt financing:
- Loan from bank
- Supplier credit
- Loan from microfinance institution (MFI)
- Money lenders
- Loan from family and friends
- Other(s) __________________________________

#### Equity financing:
- Capital contribution by old partners
- Capital contributed by joining partner
- Sale of shares
- Other(s) ___________________________

## C. ACCESS TO FINANCE

1. How many bank accounts do you have under the following:

<table>
<thead>
<tr>
<th>Type of account</th>
<th>Number of accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Savings account</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>b. Current account</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>c. Other</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
</tbody>
</table>

2. In how many banks do you have active accounts? 1 2 3 4 5 6 7 8 9 10

3. Can you refer to one of the banks in C2 as your main bank? Yes No

(A bank you deal with regularly and where you are known to the bank staff)

Could you please provide the **name of the bank**? ___________________________________________

4. Usually, how long does it take from your office to your main bank (i.e. most frequented branch)? [ ] Hour(s) [ ] Minutes

5. Which of the following do you use ATMs for? (multiple answers allowed)
- Withdrawal
- Deposit
- Remittances (local money transfer)
- Others

6. Usually, how long does it take for you to access an ATM from your office? [ ] Hour(s) [ ] Minutes

7. Generally, how would you rate access to banking infrastructure (i.e. branches, ATMs and online)?
- Very Easy
- Easy
- Somewhat easy
- Indifferent
- Somewhat difficult
- Difficult
- Very difficult

8. How do you perceive SME-specific products offered by your main bank?

<table>
<thead>
<tr>
<th>Item</th>
<th>Rating (1 = strongly disagree, 7 = strongly agree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Very useful</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>ii. Easily accessible (in terms of application)</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>iii. Helps in procuring cheaper loans (i.e. lending interest rates are reduced)</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>

9. How do you perceive SME-specific products offered by all other banks?

<table>
<thead>
<tr>
<th>Item</th>
<th>Rating (1 = strongly disagree, 7 = strongly agree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Very useful</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>ii. Easily accessible (in terms of application)</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>iii. Helps in procuring cheaper loans (i.e. lending interest rates are reduced)</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>

10. Does your establishment need bank loans now? Yes No

**If No, kindly answer the following questions with reference to the last loan application you made.**
11. Could you kindly specify what you need bank loans for?
   - Working capital
   - Investment
   - Consumption

12. If you selected Investment loan in C11 above, would you kindly specify the purpose;
   - Purchase of fixed assets
   - Lease of land
   - Lease of machinery and equipment
   - Building of factory
   - Building of offices
   - Other

13. How much money do (or did) you need to borrow from banks? (Amounts in new Ghana Cedis)
   - Less than GH₵20,000
   - GH₵ 21,000 – GH₵ 40,000
   - GH₵ 41,000 – GH₵ 60,000
   - GH₵ 61,000 – GH₵ 100,000
   - GH₵ 100,000 – GH₵ 500,000
   - GH₵ 500,000 – GH₵ 1 million
   - more than GH₵ 1 million

14. How long would (or did) it take you to repay the loan? □ Year(s) □ Months

15. At what lending interest rate are you willing to borrow the loan amount in C13 above? □ %

(If loan agreement has already been signed, please specify the interest rate agreed upon)

16. At what interest rate do you think banks will charge you for the loan amount specified in C13 above? □ %

17. Kindly provide information relating to recent loan applications;

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of loan applications</th>
<th>Number of approved applications</th>
<th>Number of rejected applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18. What were the reasons given by banks for unsuccessful or rejected loan applications? (multiple answers allowed)

<table>
<thead>
<tr>
<th>Reason</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Absence of audited financial statements</td>
<td>Loan maturity period is too long</td>
</tr>
<tr>
<td>Absence of unaudited financial statements</td>
<td>Short duration as bank’s customer</td>
</tr>
<tr>
<td>Liquidity of collateral</td>
<td>Small size of firm</td>
</tr>
<tr>
<td>Value of collateral</td>
<td>Perceived default risk of borrower</td>
</tr>
<tr>
<td>Uninsured collateral</td>
<td>High portion of present capital from loans</td>
</tr>
<tr>
<td>Inadequate proof of potential success of project</td>
<td>Type of industry</td>
</tr>
<tr>
<td>Default history</td>
<td>Other(s)</td>
</tr>
</tbody>
</table>

19. If any of your answers in C18 were about collateral kindly specify the asset.
   1. ___________________________
   2. ___________________________
   3. ___________________________
   4. ___________________________

20. In your opinion, which of the following factors are necessary for successful loan applications? (multiple answers allowed)

<table>
<thead>
<tr>
<th>Factor</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Audited financial statements</td>
<td>Small portion of present capital from loans</td>
</tr>
<tr>
<td>Unaudited financial statements</td>
<td>Short loan maturity period</td>
</tr>
<tr>
<td>Liquidity of collateral</td>
<td>Longer duration as bank’s customer</td>
</tr>
<tr>
<td>Value of collateral</td>
<td>Size of firm (number of employees)</td>
</tr>
<tr>
<td>Insured collateral</td>
<td>Size of present capital</td>
</tr>
<tr>
<td>Proof of potential success of project</td>
<td>Foreign or domestic ownership of company</td>
</tr>
<tr>
<td>No history of defaults</td>
<td>Gender of owner(s)</td>
</tr>
<tr>
<td>Perceived default risk of borrower</td>
<td>Academic qualification of owner(s) or top management</td>
</tr>
<tr>
<td>Type of industry</td>
<td>Other(s)</td>
</tr>
</tbody>
</table>

21. In your opinion, which of the following points are most difficult to satisfy when applying for loans? (multiple answers allowed)

<table>
<thead>
<tr>
<th>Point</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Audited financial statements</td>
<td>Short loan maturity period</td>
</tr>
<tr>
<td>Unaudited financial statements</td>
<td>Longer duration as bank’s customer</td>
</tr>
<tr>
<td>Liquidity of collateral</td>
<td>Size of firm (number of employees)</td>
</tr>
<tr>
<td>Value of collateral</td>
<td>Size of present capital</td>
</tr>
<tr>
<td>Insured collateral</td>
<td>Gender of owner(s)</td>
</tr>
<tr>
<td>Proof of potential success of project</td>
<td>Foreign or domestic ownership of company</td>
</tr>
<tr>
<td>No history of defaults</td>
<td>Academic qualification of owner(s) or top management</td>
</tr>
</tbody>
</table>
22. How many times have you defaulted on loan repayment? □ Never □ 1 time □ 2 times □ 3 times □ 4 times □ 5 times □ more than 5

23. Do you have an open line of credit with a bank? □ Yes □ No *(If No, skip to C25)*

24. Up to how much money can you withdraw using your line of credit? □ Less than GH₵20,000 □ GH₵ 21,000 – GH₵ 40,000 □ GH₵ 41,000 – GH₵ 60,000 □ GH₵ 61,000 – GH₵ 100,000 □ GH₵ 100,000 – GH₵ 500,000 □ GH₵ 500,000 – GH₵ 1 million □ more than GH₵ 1 million

25. From your establishment’s experience, how would you rate the ease of extending maturity periods of loan agreements? □ Very Easy □ Easy □ Somewhat easy □ Indifferent □ Somewhat difficult □ Difficult □ Very difficult

26. Overall, how would you rate the ease of accessing finance from banks in Ghana? □ Very Easy □ Easy □ Somewhat easy □ Indifferent □ Somewhat difficult □ Difficult □ Very difficult

27. Which of these monetary policy variables do you think account for higher bank lending interest rates? □ Monetary Policy Rate (or Prime Rate) □ Inflation
□ Treasury Bill rate (representing government borrowing)

28. Which of these variables related to the banking industry do you think account for higher bank lending interest rates? □ Presence of Oligopoly (i.e. dominance of the banking industry by a few large banks) □ High operating cost of banks □ Perceived risk of lending to SMEs (i.e. perception of SMEs as having high risk of default) □ Transaction costs (i.e. the cost of screening and monitoring SME clients)

29. From the list below, please select the top 5 challenges facing your business. *(Kindly insert the corresponding alphabets in the following boxes)*

   a. Cost of raw materials  g. Taxation
   b. Cost of labour h. Local competition
   c. Cost of fuel prices i. Competition from foreign products
   d. Access to finance j. Inflation
   e. Bribery and corruption k. Supply of utility (electricity, water, and gas)
   f. Land, permits and licenses l. Level of infrastructure development

30. From the list of challenges enumerated above, kindly insert the top 5 challenges facing your business. *(1=smallest top 5 challenge and 5=biggest top 5 challenge)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Ranking of top 5 challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>2007 – 2011</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

31. If you selected option (d) in question C29 or C30, would you kindly specify which of the following you were referring to; *(multiple answers allowed)*

   □ Availability I believe banks have funds but are not interested in lending to SMEs like us.
   □ Affordability The cost of credit is high. Lending interest rates are expensive.

Thank you very much for your cooperation.
### Options for Part (A) Question (7 and 8)

<table>
<thead>
<tr>
<th>Codes for MAJOR DIVISION of industries:</th>
<th>Codes for MANUFACTURING subdivision:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[01] Agriculture, hunting and forestry</td>
<td>[01] Food products and beverages</td>
</tr>
<tr>
<td>[02] Fishing</td>
<td>[02] Tobacco products</td>
</tr>
<tr>
<td>[03] Mining and quarrying</td>
<td>[03] Textiles</td>
</tr>
<tr>
<td>[04] Manufacturing</td>
<td>[04] Wearing apparel; dressing and dyeing of fur</td>
</tr>
<tr>
<td>[05] Electricity, gas and water supply</td>
<td>[05] Tanning and dressing of leather; manufacture of luggage, handbags, saddler, harness and footwear</td>
</tr>
<tr>
<td>[06] Construction</td>
<td>[06] Wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials</td>
</tr>
<tr>
<td>[08] Hotels and restaurants</td>
<td>[08] Publishing, printing and reproduction</td>
</tr>
<tr>
<td>[09] Transport, storage and communications</td>
<td>[09] Coke, refined petroleum products and nuclear fuel</td>
</tr>
<tr>
<td>[12] Public administration and defence; compulsory social security</td>
<td>[12] Other non-metallic mineral products</td>
</tr>
<tr>
<td></td>
<td>[18] Radio, television and communication equipment and apparatus</td>
</tr>
<tr>
<td></td>
<td>[19] Medical, precision and optical instruments, watches and clocks</td>
</tr>
<tr>
<td></td>
<td>[21] Other transport equipment</td>
</tr>
<tr>
<td></td>
<td>[22] Furniture; manufacturing</td>
</tr>
<tr>
<td></td>
<td>[23] Recycling</td>
</tr>
</tbody>
</table>
Appendix 10: Results of the linear regression model (Chapter 7)

```
. svy linearized : regress c26 a2a a3 a5b1 a7 a9 a10 a12 a13 b3 b6 c11 c13 c22 c1a c1b c2 c7 c16
(running regress on estimation sample)

Survey: Linear regression

Number of strata = 1
Number of PSUs  = 106
Population size  = 106
Design df        = 105
F(  18,  88)     = 8.33
Prob > F         = 0.0000
R-squared        = 0.4284

<table>
<thead>
<tr>
<th></th>
<th>Linearized</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef. Std. Err. t</td>
</tr>
<tr>
<td>c26</td>
<td></td>
</tr>
<tr>
<td>a2a</td>
<td>-.0873815  .0302709 -2.89 0.005 - .1474032 -.0273598</td>
</tr>
<tr>
<td>a3</td>
<td>-.2398103  .1284434 -1.87 0.065  -.4944898 .0148693</td>
</tr>
<tr>
<td>a5b1</td>
<td>-.0029488  .0114174 -0.26 0.797  -.0255874 .0196899</td>
</tr>
<tr>
<td>a7</td>
<td>.1049363  .0560053  1.87 0.064  -.0061139 .2159845</td>
</tr>
<tr>
<td>a8</td>
<td>.67022    .5191010  1.30 0.195  -.3485706 1.6891111</td>
</tr>
<tr>
<td>a10</td>
<td>-.2179112  .1577276 -1.38 0.170 -.5307358 .0947535</td>
</tr>
<tr>
<td>a12</td>
<td>.2251813  .3858833  0.58 0.561  -.359954   .9930166</td>
</tr>
<tr>
<td>a13</td>
<td>-.5511066 1.395454  -0.39 0.694  -.3138035 2.1582183</td>
</tr>
<tr>
<td>b3</td>
<td>.2153316  .1455974  1.48 0.142  -.0733612 .5040244</td>
</tr>
<tr>
<td>b6</td>
<td>.238147   .1395403  1.71 0.091  -.0385356 .5148295</td>
</tr>
<tr>
<td>c11</td>
<td>-.1019516  .3442382 -0.30 0.768  -.7845125 .5806092</td>
</tr>
<tr>
<td>c13</td>
<td>-.4570455  .0989159 -4.62 0.000  -.6531774 -.2609136</td>
</tr>
<tr>
<td>c22</td>
<td>-.0483513  .2365544 -0.20 0.838  -.5173949 .4206923</td>
</tr>
<tr>
<td>c1a</td>
<td>-.4596632  .3327278 -1.38 0.170  -.1194011 .2000746</td>
</tr>
<tr>
<td>c1b</td>
<td>.0988715  .1452209  0.68 0.497  -.1890748 .3868177</td>
</tr>
<tr>
<td>c2</td>
<td>-.4441999  .2774213 -1.60 0.112  -.9942743 .1058763</td>
</tr>
<tr>
<td>c7</td>
<td>-.0879491  .1211806 -0.73 0.470  -.3282278 .1523295</td>
</tr>
<tr>
<td>c16</td>
<td>-.0373184  .0249722 -1.49 0.138  -.0886337 .0121969</td>
</tr>
<tr>
<td>_cons</td>
<td>8.039332  3.116939  2.58 0.011  1.859017 14.21965</td>
</tr>
</tbody>
</table>

. linktest
(running regress on estimation sample)

Survey: Linear regression

Number of strata = 1
Number of PSUs  = 106
Population size  = 106
Design df        = 105
F(  2,  104)     = 65.29
Prob > F         = 0.0000
R-squared        = 0.4287

<table>
<thead>
<tr>
<th></th>
<th>Linearized</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef. Std. Err. t</td>
</tr>
<tr>
<td>c26</td>
<td></td>
</tr>
<tr>
<td>_hat</td>
<td>1.110355  .4382541 2.53 0.013 .2413782 1.979332</td>
</tr>
<tr>
<td>_hatsq</td>
<td>-.0191283  .074983 -.26 0.799 -.1678058 .1295493</td>
</tr>
<tr>
<td>_cons</td>
<td>-.1306545  .5272572 -0.25 0.805 -.1176108 .9147991</td>
</tr>
</tbody>
</table>

. ovtest

Ramsey RESET test using powers of the fitted values of c26
Ho: model has no omitted variables
F(3, 84) = 0.06
Prob > F = 0.9827

240