

**THE EFFECT OF FINANCIAL SECTOR REFORMS ON INTEREST RATES SPREAD
OF COMMERCIAL BANKS IN KENYA**

BY:

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DECLARATION

This research project is my original work and has not been presented for any award of any degree or any other academic credit in any University.

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This research project has been submitted with my approval as University supervisor.

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DEDICATION

I dedicate this project to my parents. Your time and support during this project is invaluable. Your motivation to go on is what has led to the completion of this project. I am forever grateful.

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This research project would not have been possible without the support of many people.

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ABSTRACT

Financial sector reforms involve the review or change of the financial sector. Commercial banks dominate the financial system in developing countries. Commercial banks play a vital role in the economic resource allocation of countries. They channel funds from depositors to investors continuously. A key indicator of financial performance and efficiency in the banking sector is the spread between the lending and deposit rates. One of the expected benefits of financial liberalization and deepening of the financial sector is the narrowing of the interest rate spreads. The main objective of this study was to determine the effect of financial sector reforms on interest rates spread of commercial banks in Kenya. This was achieved by checking whether the reforms affect the interest spreads positively or negatively.

Secondary data was used for this research and descriptive study was adopted. From a population of 44 commercial banks in Kenya, the study obtained data from 10 banks for the period 2004 to 2013. Regression model and descriptive statistics was used in data analysis. The study focused on three reforms; development of Real Time Gross Settlement System (RTGS), mobile banking and agency banking. These were the independent variables. The dependent variable was the annualized interest rate spread.

The regression findings show that 81.9% changes in interest rate spread among commercial bank in Kenya could be accounted by changes in value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions at 95% confidence interval. From the finding on the correlation coefficient, the study found that there was a strong positive relationship between the interest rate spread among commercial bank in Kenya and each of the independent variables. From the Analysis of Variance (ANOVA) statistics, the study found that each of the independent variable significantly influenced interest rate spread among commercial banks in Kenya. The study also revealed that the p-value for all the variable was less than 0.05, each of the independent variable was statistically influencing change in the interest rates spread.

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LIST OF ABBREVIATIONS

CBK – Central Bank of Kenya

KBA – Kenya Bankers Association

CIS – Commonwealth of Independent States

GDP – Gross Domestic Product

KNBS – Kenya National Bureau of Statistics

RTGS – Real Time Gross Settlement

MB – Mobile Banking

AB – Agency Banking

IRS – Interest Rate Spread

ANOVA – Analysis of Variance

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In recent years, financial sector reforms have attracted the attention of both policy makers and scholars. McKinnon and Shaw (1973), observed that flexibility and efficiency of the financial system is critical to the growth and development of the economy. A large number of empirical researches have been done and their evidence tends to support the McKinnon-Shaw school of thought. Commercial banks play a vital role in the economic resource allocation of countries. They channel funds from depositors to investors continuously. Fry (1995), observed that commercial banks dominate the financial system and the role of capital market is very small in developing countries. Financial sector reforms have increased the role of market forces within the economy through enhanced competition in the market that has resulted into entry of new banks.

A key indicator of financial performance and efficiency in the banking sector is the spread between the lending and deposit rates. Barajas et al (2000), observed that financial systems in developing countries typically show significantly high and persistent spreads. These high intermediation margins have persisted even though most countries have undertaken financial liberalization.

1.1.1 Financial Sector Reforms

Rangarajan (2000), defines a financial sector as the part of an overall economy that is primarily made up of money markets, banking institutions and brokers. Financial sector reforms involve the review or change of the financial sector. Tarapore (2000), highlight that most countries have a body set up by the government to review the operations of their financial sector. Existing research shows that there are various benefits of financial sector reforms. Reforms result in effective risk management systems and adequate capital provision. Reforms provide conducive public policy intervention and maintain macroeconomic stability in the economy.

Senbet (2005), highlight that financial reforms formed a major component of structural adjustment programmes deemed necessary for developing countries in the 1980s. At the top of these reforms was financial liberalization. In the pre-liberalization period, financial repression which entailed extensive government intervention within the financial sector was prevalent in most developing countries. Liberalization efforts were therefore aimed at reversing this through a variety of measures such as the moving away from direct controls on interest rates and exchange rates, establishing measures of freedom of entry into the banking sector, as well as reducing the reserve and liquidity requirements for banks. Jalan (2000), observed that the development of a financial sector necessarily involves a wide range of policy actions, and structural and institutional reforms. The appropriate sequencing and coordination are vital for the success of reforms. This is because Inappropriate sequencing of reforms could cause excessive risk taking and financial instability. According to Onoja et al (2011), reforms are measured by various indicators that highlight on how these reforms have affected various aspects of the economy.

1.1.2 Interest Rates Spread

Hanson and Rocha (1986), define interest rates spread as the difference between the rate charged to borrowers and rate paid by depositors. Boldbaatar (2006), observes that there are two approaches to measuring interest rate spreads. The ex- ante approach and the ex- post approach. The ex-ante interest rate spread is the difference between the contractual rates charged on loans and the rates paid on deposits. The ex-post spread is the difference between the average rate charged on loans and the average rate paid on deposits. The average rate charged on loans is calculated by dividing total interest income received on loans and advances by the average stock of loans and advances, while the average rate paid on deposits is calculated by dividing total interest expense by the average stock of total deposits. Demirguc-Kunt et al (1999), argue that the ex-post spread is a more encompassing and useful measure because it controls for the fact that banks with high yields and risky credits are likely to face more defaults.

According to Randall (1998), Brock and Barajas et al (2000), and Crowley (2007), interest rates spread have been found to be high in African, Latin American and the Caribbean countries. There are several explanations for persistent high spreads in these countries. High number of non performing loans, macroeconomic instability, tendency of banks to maximize profits in an oligopolistic market and high non-financial and regulatory costs are some of the reasons attributed to high interest rates spread. Interest rates spread is a major indicator of banking sector efficiency. A wide deposit-lending rate margin is not only indicative of banking sector inefficiency, but it also reflects the level of development of the economy. Quaden (2004), observed that a

more efficient banking system benefits the real economy by allowing higher expected returns for savers with a financial surplus, and lower borrowing costs for investing in new projects that need external finance. There is therefore need for objective and quantitative analysis of the factors affecting banking sector interest rate spreads in developing countries.

1.1.3 Financial Sector Reforms and Interest Rates Spread

Banking efficiency is often characterized by the level of intermediation spreads. One of the expected benefits of financial liberalization and deepening of the financial sector is the narrowing of the interest rate spreads. Folawewo and Tennant (2008), observe that this is predicated on the understanding that liberalization enhances competition and efficiency in the financial sector. Despite the liberalization of the financial sector, high interest rates spreads is still an issue of concern in developing countries. Several arguments have been advanced for the high interest spreads in developing countries. Bain (1951), observed that high interest rate spreads may persist if financial sector reforms do not significantly alter the structure within which banks operate.

Ndung'u and Ngugi (2000), observed the need of regulatory reforms in the banking sector. They emphasize the importance of having a proper legal and regulatory framework in place. This will enhance the liberalization process by enhancing financial stability, as well as enhance the intermediation process leading to narrower interest rates spreads. This therefore implies that in order to take precautionary and mitigating measures, there is dire need to understand financial sector reforms and its

effect on the major performance indicators of commercial banks, in which interest spreads is one of them.

1.1.4 Banking Industry in Kenya

The Banking industry in Kenya is governed by the Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK). The banking sector was liberalized in 1995 and exchange controls lifted. The CBK is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system. As at December 2013 the banking sector constituted of forty four commercial banks, one mortgage finance company, five representative offices of foreign banks, twelve forex bureaus, eight deposit taking microfinance institutions and two credit reference bureaus. Commercial banks form 68% of the industry. The banks have come together under the Kenya Bankers Association (KBA), which serves as a lobby for the banking sector's interests, and also as a forum to address the issues affecting members. The performance indicators in the industry include levels of nonperforming loans, growth in assets, loans and advances, profitability, liquidity, deposit liabilities, capital and reserves.

Over the last few years, the Banking sector in Kenya has continued to grow in assets, deposits, profitability and products offering. The growth has been mainly underpinned by an industry wide branch network expansion strategy both in Kenya and in the East African community region. Automation of a large number of services has also facilitated the growth. Players in this sector have experienced increased competition over the last few years resulting from increased innovations among the players and

new entrants into the market. For example, with the growth in mobile phones in Kenya, mobile phone companies have introduced services allowing you to transfer money using a mobile phone. Commercial banks have partnered with these companies and created services that enable customers access information relating to their accounts through the mobile phones.

1.2 Research Problem

The need for stability and efficiency in the banking sector is a stimulus to reforms, leading to increased confidence in the banking sector. This has been supported by many scholars including Bonnin and Wachtel (2003), who hold that liberalizing the financial sector induces stronger competition and results in more efficient intermediation.

Many reforms have resulted in the development of the banking sector in Kenya. Mobile and internet banking has enabled banks offer convenient banking services to customers. Agency banking has also resulted to improved access of financial services by customers. Increased credit information sharing credit reference bureaus has increased banks 'knowledge about their customers. Regulatory changes like enhanced provision requirement for non performing loans, requirements to comply to the anti-money laundering act has increased banks' cover on credit and liquidity risk as well as well as enabled them to maintain the reputation of the banking industry. Ngugi and Kabubo (1998), observe that financial liberalization in Kenya was started in the 1980s. Liberalization involved decontrolling interest rates, eliminating credit limits, restructuring and privatization of banks. These reforms were expected to increase the efficiency in the banking system, often reflected by reduction of interest rates spread.

Existing research on financial sector changes suggest that structural reforms to the financial sector have been instrumental in improving the efficiency of financial intermediation. Fries et al. (2002), analyzed the performance of banks in 16 countries. He observed that even in countries where banking reforms have advanced, banking developments remained stunted. Their study however focused on impact of banking sector reforms on the expansion of banking activity, particularly loans. De.Nicolo et al (2003), did an analysis on financial systems and financial reforms in CIS (Commonwealth of Independent States) countries. In his study, he examined interest spreads in CIS countries for the period 1995 to 2002. Their study observes that interest spreads are closely linked to credit risk and regulatory requirements. Improvement on banking efficiency has negligible effects on the spreads. Their results are however based on cross country comparison of aggregate data. Chirwa and Mlachila (2004), investigated the impact of financial sector reforms on interest rates spreads in the commercial banking system in Malawi. They conclude that spreads increased significantly with reforms.

There are studies that explain the persistent high interest spreads in Kenya. Ndung'u and Ngugi (2000), theoretically derived factors likely to explain the interest rate spread and empirically estimated an interest rate spread equation using monthly time series data for the period April 1993 to June 1999. Ngugi (2001), extends the monthly time series data to December 1999. The factors considered by the former are deposits, loans, treasury bill rate and interbank rate. They find that the spread are positively related with deposits but negatively related to loans. In addition to the factors above, Ngugi (2001), incorporates excess liquidity and non-performing loans ratio as

explanatory variables and finds that a rise in non-performing loans ratio leads to a rise in spreads while excess liquidity is negatively related with spreads. Both studies are undertaken at the macro level, mainly focusing on the macro industry level variables. Nonetheless, they both ignore macroeconomic indicators such as Gross Domestic Product (GDP) and inflation. Were and Wambua (2013), assessed the determinants of interest rate spreads of commercial banks in Kenya. Their study factored in macroeconomic indicators such as GDP and inflation. They conclude that bank specific factors play a significant role in the determination of interest rates spread.

There is a clear gap in empirical work on whether financial reforms in Kenya have affected interest rates spread. This study attempted to contribute to this scanty empirical evidence by answering the question do financial sector reforms affect interest rates spread in the commercial banking system in Kenya?

1.3 Research Objective

To determine the effect of financial sector reforms on interest rates spread of commercial banks in Kenya.

1.4 Value of the study

Government and policy makers can use the findings of this study in decision making when coming up with future reforms. The study findings highlight how commercial banks respond to financial sector reforms. Kenya's financial system is dominated by commercial banks. This study finding thus highlight on how financial reforms impact the Kenyan economy.

Management of commercial banks has also benefited from this study findings. The findings highlight how reforms affect interest rates spreads which consequently affects the efficiency of the banking sector.

Prospective investors in commercial banks may also broaden their understanding on the macroeconomic environment in which banks operate. This study sheds light on whether commercial bank interest rate spreads embed information on the effect of reforms, which consequently affects banks' efficiency, profitability and the financial intermediation process.

The theory of financial reforms has also been enriched by the findings of this study. This is because the study findings adds to existing literature the empirical evidence on the controversy surrounding the relationship between financial sector reforms and interest rates spread.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Studies have been done in relation to financial sector reforms and interest rates spread. This chapter considers literature relevant to the subject under study with the aim of outlining how other writers view the aspect of financial sector reforms and interest rates spread. The areas covered under this chapter include review of theories, empirical studies and summary of literature review.

2.2 Theoretical Review

2.2.1 McKinnon-Shaw Theory

McKinnon (1973) and Shaw (1973), analyzed the benefits of eliminating financial repression in the financial system within developing countries. This theory of financial liberalization holds that alleviating financial restrictions in the financial system, mainly by allowing market forces to determine real interest rates can exert a positive effect on growth rates as interest rates rise toward their competitive market equilibrium. According to this theory, artificial ceilings on interest rates reduce savings, capital accumulation, and discourage the efficient allocation of resources. Additionally, financial repression can lead to dualism in which firms that have access to subsidized funding will tend to choose relatively capital-intensive technologies; whereas those not favored by policy will only be able to implement high-yield projects with short maturity.

The theory points out that when real interest rates are prevented from adjusting to clear the market, other “non-market” forms of clearing have to take their place. These can include various forms of “queuing” arrangements to “ration” the available credit such as auctions, quantitative restrictions for example quotas, as well as different types of “bidding” systems which themselves may be open to nepotism or even outright corrupt practices. In essence, the manifestation of financial repression means that not only is the quantity of savings and investment low, but also means that the level of activity which does occur is of poor quality. The hypotheses of McKinnon and Shaw assumes that liberalization, which would be associated with higher real interest rates as controls on these are lifted would stimulate saving. The underlying assumption is therefore that saving is responsive to interest rates. The higher saving rates would finance a higher level of investment, leading to higher growth.

There are various arguments against the McKinnon-Shaw theory. First of all, liberalization has been linked to macroeconomic instability. Diaz-Alejandro (1985), argues that the financial reforms carried out in several Latin American countries during the 1970s, aimed at ending financial repression, often led to financial crises characterized by widespread bankruptcies, massive government interventions, nationalization of private institutions and low domestic saving. The second critic to the theory holds that in certain circumstances, financial repression may be the only choice for financing governments, for example when there is no government bond market or no efficient tax system. Stiglitz (1994), also argues in favor of government intervention in financial markets in the form of prudential regulation and supervision are convincing. The main argument is that the government is, *de facto*, the insurer of

the financial systems, and hence a financial collapse can have significant fiscal repercussions. Another argument is that financial repression is not the only cause of credit rationing. Information asymmetry, monopolistic banks and other market imperfections can lead to the same result. Stiglitz (2000), argues that if information asymmetries are endemic to financial markets and transactions, particularly in countries with poor corporate governance and low legal protections, there is no reason to think that financial liberalization, either domestic or international, will be welfare improving. The critics also argue that the relationship between saving and interest is not so obvious. High interest rates may attract more saving but could also affect investment negatively as the cost of capital increases. Additionally, a market oriented financial system may increase the quantity of investment but not necessarily its quality.

2.2.2 Term Structure of Interest Rates Theory

Cargill (1991), defines term structure of interest rates as the relationship between interest rates on various securities that are similar in all aspects except in their maturity. According to Goacher (1993), it may alternatively be defined as the spread of interest rates that are paid on the same type of assets with different terms of maturity. The term structure of interest rates is only of relevance in cases of those assets which have been fixed to maturity and pay a fixed rate of interest at specified periods. The term structure of interest rates on a particular asset may be represented diagrammatically in the yield curve. The normal yield curve approximates the relationship between yield and maturity of obligations traded in the financial system at a point in time. There are four common shapes of yield curves namely; the upward sloping, downward sloping, the humped and the flat yield curve. Three theories have

been advanced which explain the shapes of the yield curve; the expectation theory, the segmented market theory and the liquidity premium theory. These theories tend to explain why long term interest rates tend to differ from the short term interest rates.

The expectation theory holds that long-term rates of interest are equal to the mean of current short term interest rates plus short term interest rates that the market participants expect to prevail over the maturity of the long-term security. The term structure of interest rates is determined by expectations of future interest movements. Market participants are assumed to buy and sell securities with the objective of maximizing profits with available funds. It also assumes that market participants have no preference between holding a long-term security or a series of short term securities. Here, an upward sloping yield curve reflects the market expectation that the short term interest rates will rise throughout the relevant period. A flat yield curve reflects the expectation that the short term interest rates will remain constant over the relevant period. This theory argues that long term rates are a geometric average of current and expected future and short term interest rates.

According to Howells and Bain (2002), the segmented market theory holds that investors have specific investment preferences that are ultimately dictated by the nature of their liabilities. Mishkin (1999), highlight that this theory assumes credit markets are segmented, separated and distinct. Therefore, the interest rate on each bond with different maturity is determined by the supply of and demand for that bond, with no effects from expected returns on other bonds. It also assumes that bonds of different maturities are not substitutes. Some lenders or borrowers prefer short-term bonds, while others prefer long-term ones. Investors and borrowers are concerned

with specific maturities only. Interest rates are determined independently in separate markets with different maturities, without affecting other segments of the credit market. Investors and bond issuers only care about one segment of the bond market. The theory explains why yield curves are upward sloping and state that investors are risk averse, so they prefer the safety of short term bonds. Long-term bonds will have higher yields as a result of their lower demand. It does not however explain why interest rates tend to move together over time, and it also does not offer any insights as to why yield curves slope upward when interest rates are very low and slope downward when interest rates are very high.

The liquidity premium theory states that interest rate on a long term bond will equal an average of short-term interest rates expected to occur over the life of the long-term bond, plus a premium that responds to supply and demand conditions for that bond. This theory modifies the expectation hypothesis theory by assuming that investors are risk averse; therefore they will demand a premium for long term bonds because of interest rate risk. Howells and Bain (2002), observes that investors require a liquidity premium to induce them to lock up their funds for long term maturity. Van Botha and Skeritt (2003), highlight that this implies investors must be paid an extra return in the form of an interest rate premium to encourage them to invest in long term securities and compensate them for the increased risk. The theory also assumes that bonds of different maturities are perfect substitutes, meaning that the expected return on one bond does not influence the expected return on a bond of different maturity. This theory allows investors to prefer short-term bonds because these bonds bear less interest rate risk. As such, if investors were to hold bonds of longer maturities, they must be offered a liquidity premium to induce them to do so.

2.3 Determinants of Interest Rate Spread

As financial repression has been most commonly associated with government fixing of interest rates and its adverse consequences on the financial sector as well as on the economy, financial liberalization in turn, has come to be most commonly associated with freeing of interest rates. Financial systems in developing countries typically show significantly high and persistent spreads despite financial liberalization. Brownbridge and Kirkpatrick (2000), note that liberalization of interest rates and removal of credit controls may allow those banks with moral hazard (due to implicit or explicit safety nets or deposit insurance) and those that are not constrained by prudential regulations, to invest in risky assets in order to maintain larger market shares. This may reduce the quality of assets that, in turn, may result in a higher proportion of nonperforming loans and provision for doubtful debts. Banks tend to offset the cost of screening and monitoring due to bad loans and/or the cost of forgone interest revenue by charging higher lending rates. These responses are likely to widen the spread between lending and deposit rates.

2.4 Empirical Review

Development of financial system has great contribution to economic development through mobilizing and allocating resources in the efficient way for a nation. Some studies have suggested that financial sector reforms and financial liberalization leads to financial deepening and that deregulation has a contribution to financial markets efficiency. McKinnon (1973), and Shaw (1973), argued that financial liberalization leads to financial deepening and promotes economic growth. Financial repression characterized by interest rate administration, selective credit control, high reserve requirements, and restriction on foreign financial transactions would shallow financial

system and distort economic growth. Kapur (1976), modeled that a higher required reserve ratio would reduce the ratio of loans to money and lower the rate of economic growth. Fry (1982), observed that competitive forces can maintain the money market equilibrium, credit market equilibrium and normal level of profits in the financial system. The imposition of ceilings on interest rates (both lending and deposit) is likely to encourage monopoly or oligopoly in the financial market. Goldsmith (1969), empirically analyzed the financial structure and economic growth of 35 countries over the period 1860 to 1963 using different measures of financial development. He found that as the size of the financial sector enlarges relative to the size of the economy, the country develops.

Levine et al (2000), examined influences of financial sector development on economic growth. They also analysed the impact of legal and accounting systems on the level of financial development by using pooled cross country and time series data of 74 countries for the period 1960 to 1995. They found financial sector development positively associated with economic growth. Barnard and Thomsen (2002), discussed the importance of the financial sector reforms relative to other reforms in situation of less monetization and credit constraints to the small and medium enterprises in Russia. They argued that failure to accelerate financial sector reforms could pose potentially serious threat to macroeconomic stability. Some studies are against adoption of financial liberalization. Stiglitz (1996), criticized financial liberalization and suggested for government interventions to make the market function better and improve the performance of the economy. Fama (1980), analyzed frictionless competitive market by applying Modigliani-Miller theorem. He concluded that financial structure was irrelevant. However, Fama (1985), stressed on the importance

of the financial intermediaries (commercial banks in particular). Townsend (2002), suggested an alternative safety net strategy, an optimal allocation of risk bearing as a bench mark to evaluate the financial sector reforms. He argues that safety net policies are useful in both crisis periods as well as in the long run.

According to Burkett and Dutt (1991), in a closed economy, financial liberalization increases excess supply of savings and loans. This results to a fall in equilibrium interest rate, on one hand, and increases the marginal propensity to save while reducing aggregate consumption on the other. This in turn results into a fall in aggregate output and reduced profit rate ultimately discouraging entrepreneur for further investment. In an open economy, financial liberalization often leads to over-valuation of real exchange rate. This further reinforces a squeeze in aggregate demand and cause financial instability. If banks have been involved in positive maturity transformation, liberalization could cause them large losses due to a rise in short term deposit rates, and fixed long-term loans. As the banks make loss, they are less interested to make new loans. Thus, financial liberalization may cause banking system increasingly fragile.

Various studies have been done to explain the factors influencing bank interest rates spread. Gambacorta (2004), studies factors explaining cross-sectional differences in bank interest rates of Italian banks by considering both micro and macroeconomic factors. The variables considered include; loan and deposit demand, operating cost, credit risk and interest rate volatility, monetary policy through changes in policy rates and reserve requirements, the structure of the industry. Results showed that interest rates on short term lending of liquid and well capitalized banks react less to monetary

policy shocks. Banks that predominantly lend for long term do not change their interest rates more frequently as those whose lending is largely for short term. Bank size was found to be irrelevant in influencing interest rate margins. Grenade (2007), estimates the determinants of commercial banks interest rate spreads in the Eastern Caribbean Currency Union using annual panel data of commercial banks. The spread is found to increase with an increase in the regulated savings deposit rate, real GDP growth, reserve requirements, provision for loan losses and operating costs as well as with increase in market power.

Mannasoo (2012), investigates the role of the recent global financial crisis on interest spreads in Estonia. The approach follows works of Ho and Saunders (1981), in which the spread is decomposed into a pure spread and the remaining component that is explained by market structure, regulation and idiosyncratic bank factors. The pure spread is explained by the degree of bank risk aversion and the market structure of the banking sector. The volatility of money market interest rates is found to have a long-run impact on the spread. Credit risk was found to play a minimal role while higher bank liquidity was associated with lower interest margin. Beck et al (2010), examined developments in Kenya's financial sector with a specific focus on stability, efficiency and outreach, and use interest rate spreads as a proxy for the efficiency of financial intermediation. They base their analysis on ex post constructed spreads and decompose the spreads into different components based on a set of factors such as overhead costs, loan loss provisions and taxes. Folawewol and Tennant (2008), use dynamic panel data to examine the determinants of interest rate spread in 33 Sub-Saharan African (SSA) countries focusing on macroeconomic variables. Their results show that interest rate spread is influenced by the extent of the crowding out effect of government borrowing, public sector deficits, discount rate, inflation, level of money

supply, reserve requirement, level of economic development and population size. Ahokpossi (2013), using a sample of 456 banks in 41 SSA countries examined that bank-specific factors such as credit risk, liquidity risk and bank equity are important determinants of interest margins. However, such spreads are insensitive to economic growth. Chirwa and Mlachila (2004), investigated the impact of financial sector reforms on interest rate spreads in the commercial banking system in Malawi. They used monthly panel data from five Malawian commercial banks for the period 1989 to 1999. Their analysis shows that spreads increased significantly following reforms, and results from panel regression suggest that the observed high spreads can be attributed to high monopoly power, high reserve requirements, high central bank discount rates, and high inflation.

2.5 Summary of Literature Review

Financial sector reforms are crucial for the development of an economy. A number of empirical studies on the factors impacting interest rates spread have been done. However, the studies consider similar or more or less related explanatory variables. There are few empirical studies on the impact of financial sector reforms on interest rate spreads with respect to African countries, particularly at the bank level. Considering the fact that a number of African countries like Kenya are still grappling with the challenge of high interest rates spreads, further empirical research needs to be carried on this area.

This study went beyond the earlier studies by assessing the contribution of financial sector reforms to the behavior of Kenyan commercial banks interest rate spreads. Additionally, the study covered a more recent period ranging from 2004 to 2013.

During this period, there has been significant changes both in the policy and macroeconomic environment, and several reforms have taken place.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the methodology that was undertaken with the aim of collecting and analyzing data in order to establish the effect of financial sector reforms on interest rates spreads of commercial banks in Kenya. This section covers the research design, population and sample size, and data collection methods and procedures as well as data analysis.

3.2 Research Design

Research design refers to the method used to carry out a research. Descriptive study was adopted. A descriptive study is one in which information is collected without changing the environment, that is nothing is manipulated. This design was adopted since it was deemed to be the best method of collecting information that will demonstrate relationships between variables. According to Mugenda and Mugenda (1999), descriptive research design is systematic and empirical into which the researcher does not have direct control of the independent variable as their manifestation had already occurred. It describes what's in existence in respect to conditions/variables found in a given situation.

3.3 Population

The research population was the 44 commercial banks in Kenya.

3.4 Sample

Mugenda and Mugenda (2003), recommended a sample size of 10% or more. In line with this, the study obtained data from 10 commercial banks in Kenya from 2004 to 2013. Stratified random sampling technique was adopted to select the sample. The population was divided into two strata; big banks and small banks based on the total assets of each bank. Random sample was selected from each stratum and then the two samples were combined to form the overall sample. The sample has more statistical precision since it represents both the big and small banks.

3.5 Data Collection

Quantitative data was collected. Secondary data used to calculate interest rate spread was collected from the annual statements of the sampled commercial banks. This study focused on the following reforms; development of Real Time Gross Settlement System (RTGS), mobile banking and agency banking. Value transacted through Real time Gross Settlement System, values of amount transacted through mobile banking, and values of amount transacted through agency banking were obtained from Central Bank of Kenya annual reports, Central Bank of Kenya bank supervisory reports and statistics issued by Kenya National Bureau of Statistics (KNBS).

3.6 Data Analysis

Mugenda and Mugenda (2003), describes data analysis as the process of bringing order, structure and meaning to the mass information collected. Data analysis used in

this study involved descriptive statistics by use of Statistical Package for Social Sciences (SPSS). Regression model was used to assess the effect of financial sector reforms on interest rate spreads of commercial banks in Kenya. The model was specified as follows:

$$IRS = \beta_0 + \beta_1 \ln RTGS + \beta_2 \ln MB + \beta_3 \ln AB + u$$

Where,

IRS = Interest Rate Spread

RTGS = Value of Real Time Gross Settlement transactions

MB = Value of Mobile Banking transactions

AB = Value of Agency Banking transactions

u = Stochastic Error Terms

$\beta_0, \beta_1, \beta_2, \beta_3$, are the respective parameters.

3.6.1 Description of Variables

IRS = Interest Rate Spread. This was the dependent variable. The ex-post approach was used to measure the annualized interest rate spread.

Interest rate spread was computed as follows:-

$$= \frac{\text{Interest Received on Loans and advances}}{\text{Loans and advances}} - \frac{\text{Interest Expense}}{\text{Total Deposits}}$$

The independent variables were the measures of reforms. This study focused on the following reforms; development of Real Time Gross Settlement System (RTGS), mobile banking and agency banking.

RTGS = Real Time Gross Settlement. RTGS was developed in 2005. It was aimed at facilitating interbank financial data transfer, reduce the long queues in the banking hall as well as reduce the cost of offering financial services to customers.

RTGS was measured using the actual values obtained from Central Bank of Kenya on the Value transacted through Real time Gross Settlement System. The study used the natural log of Value transacted through Real time Gross Settlement System.

MB = Mobile Banking. Mobile banking was initially launched in 2007 with the M-Pesa service. This service allows users to deposit, withdraw and transfer money easily with mobile device at a low cost.

Mobile banking was measured using the values of amount transacted through mobile banking obtained from Central Bank of Kenya. The study used the natural log of amount transacted through mobile banking.

AB = Agency Banking. Agency banking commissioned in 2010 is intended to enable commercial banks provide banking services in a more cost effective way to majority of customers. The number of transactions conducted through agents has increased over time since this reform has resulted in improved access to financial services by customers.

Agency Banking was measured using the values of amount transacted through agency banking obtained from Central Bank of Kenya. The study used the natural log of amount transacted through agency banking.

According to Tredoux & Durrheim (2002), Analysis of Variance (ANOVA) is used to test for differences between the means of more than two groups, and can be used in designs with more than one independent variable. In this study, ANOVA was used to test the mean score differences between financial sector reforms and interest rate spreads of commercial banks in Kenya in order to test for significance at 95% confidence level and 5% level of significance.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter deals with data analysis, data presentation and interpretation of study findings on the relationship between financial sector reforms and interest rate spreads of commercial banks in Kenya. The study was conducted on 10 commercial banks in Kenya. Secondary data for the period of 2004 to 2013 was used in the analysis. Regression analysis was used to analysis the data.

4.2 Data Presentation

Regression analysis gave the following table results: The Model Summary and ANOVA tables gave the goodness of fit measures and the measures of significance for the entire model. The coefficients table gave information on the independent variable.

The established regression equation was as follows:

$$\text{IRS} = 0.413 + 0.212\text{RTGS} + 0.128\text{AB} + 0.238\text{MB}$$

From the above regression equation it was revealed that holding value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions to a constant zero, interest rate spread among commercial banks in Kenya would stand at 0.413. A unit increase in value of real time gross

settlement transactions would lead to increase in interest rate spread among commercial banks in Kenya by a factors of 0.212. A unit increase in value of agency banking transactions would lead to increase in interest rate spread among commercial banks in Kenya by a factor of 0.128. A unit increase in value of mobile banking transactions would lead to increase in interest rate spread among commercial banks in Kenya by a factor of 0.238. The study also revealed that the p-value for all the variable were less than 0.05, an indication that value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions were statistically influencing change in the interest rates spread.

Table 4.2.1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.911 ^a	0.829	0.819	0.01238

R-squared is the statistical measure of how close the data is to the fitted regression line. It gives the percentage of the response variable variation that is explained by a linear model. The findings of the study indicate that R squared has a value of 0.829. Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. The adjusted R-squared compares the explanatory power of regression model that contain different numbers of predictors. From the findings of this study, the value of adjusted R squared is 0.819, an indication that there is a variation of 81.9% on the interest rate spread among commercial bank in Kenya due to changes in the independent variables which are value of real time gross settlement transactions, value of mobile banking

transactions and value of agency banking transactions at 95% confidence interval. This shows that 81.9% changes in interest rate spread among commercial bank in Kenya could be accounted by changes in value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions. R is the correlation coefficient which shows the relationship between the study variable. From the findings shown in the table above, R has a value of 0.911. This indicates that there is a strong relationship between the interest rate spread among commercial bank in Kenya and value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions.

Table 4.2.2 Analysis of Variance (ANOVA^b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.724	2	0.362	2.806	.018 ^a
	Residual	0.903	7	0.129		
	Total	1.627				

From the ANOVA statistics in table above, the processed data, which is the population parameters, had a significance level of 0.018 which shows that the data is ideal for making a conclusion on the population's parameter as the value of significance (p-value) is less than 5%. The calculated was greater than the critical value ($1.833 < 2.806$) an indication that an indication that value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions were statistically influencing change in the interest rates spread.

Table 4.2.3 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	Constant	.413	.265		1.698	.014
	Real Time Gross Settlement	.212	.191	.251	1.820	.032
	Agency Banking	.128	.190	.010	1.034	.014
	Mobile Banking	.238	.010	.116	2.346	.041

The standardized coefficients are the estimates resulting from the analysis of the independent variables. They define how many standard deviations a dependent variable will change per standard deviation increase in the predictor variable. Standardizing the coefficients enabled the determination of which independent variable had a greater effect on the dependent variable. From the findings, it was discovered that the value of real time gross settlement transactions had the greatest effect on interest rate spread. This was depicted by standardized beta coefficient of .251 from the above table. The second variable that affected interest rate spread is the value of mobile banking transactions, shown by standardized beta coefficient of .116. Value of agency banking transactions, given by standardized beta coefficient value of .010 had the least effect on the spreads compared to the other independent variables. This implied that there was a 25.1% increase in interest rate spread from each unit increase in value of real time gross settlement transactions, 1% increase in interest rate spread from each unit increase in value of agency banking transactions, and 11.6% increase in interest rate spread from each unit increase in value of mobile banking transactions.

From the p-value, it was evident that all the above factors do indeed affect the interest rate spread. The most significant factor to consider was the value of mobile banking transactions given by 0.041, then the value of real time gross settlement transactions given by 0.032 and finally value of agency banking transactions given by 0.014. All these variables affected interest rates spread positively.

4.3 Summary and Interpretation of Findings

The study sought to determine the effect of financial sector reforms on interest rates spread of commercial banks in Kenya. The established regression equation was:

$$IRS = 0.413 + 0.212RTGS + 0.128AB + 0.238MB$$

The study revealed that a unit increase in each of the independent variables; value of real time gross settlement transactions, value of agency banking transactions and value of mobile banking transactions would lead to increase in interest rate spread among commercial banks. The above equation revealed that holding value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions to a constant zero, interest rate spread among commercial banks in Kenya would stand at 0.413. A unit increase in value of real time gross settlement transactions would lead to increase in interest rate spread among commercial banks in Kenya by a factors of 0.212. A unit increase in value of agency banking transactions would lead to increase in interest rate spread among commercial banks in Kenya by a factor of 0.128. A unit increase in value of mobile banking transactions would lead to increase in interest rate spread among commercial banks in Kenya by a factor of 0.238.

The study established that 81.9% variation on interest rate spread among commercial banks in Kenya are due to changes in the independent variables which were value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions at 95% confidence interval. From the finding on the correlation coefficient, the study found that there was a strong positive relationship between the interest rate spread among commercial bank in Kenya and each of the independent variables. This is shown by a correlation coefficient value of 0.911. From the Analysis of Variance (ANOVA) statistics, the study found that value of real time gross settlement transactions, value of mobile banking transactions, and value of agency banking transactions were significantly influencing interest rate spread among commercial banks in Kenya. The study revealed that the value of real time gross settlement transactions had the greatest effect on interest rate spread. The second variable that affected interest rate spread is the value of mobile banking transactions. Value of agency banking transactions had the least effect on the spreads compared to the other independent variables. The study also revealed that the p-value for all the variables were less than 0.05, an indication that value of real time gross settlement transactions, value of agency banking transactions and value of mobile banking transactions statistically influence interest rates spread of commercial banks in Kenya.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary and Discussions

The study sought to establish the relationship between financial sector reforms and interest rate spreads of commercial banks in Kenya. Literature from different writers was reviewed and their findings stated as regards to the above study. Data was collected from secondary sources. These secondary sources included the annual financial statements from the sampled commercial banks, Central Bank of Kenya annual reports, Central Bank of Kenya bank supervisory reports and statistics issued by Kenya National Bureau of Statistics (KNBS). From the data collected and analysed, the following discussions, conclusion and recommendations were made. Data analysis was done through regression analysis and the findings used to draw conclusions on the objective set out by the study.

Regression analysis established the following equation:

$$\text{IRS} = 0.413 + 0.212\text{RTGS} + 0.128\text{AB} + 0.238\text{MB}$$

Regression revealed that holding value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions to a constant zero, interest rate spread among commercial banks in Kenya would stand at 0.413. A unit increase in value of real time gross settlement transactions would lead to increase in interest rate spread among commercial banks in Kenya by a factors of

0.212. A unit increase in value of agency banking transactions would lead to increase in interest rate spread among commercial banks in Kenya by a factor of 0.128. A unit increase in value of mobile banking transactions would lead to increase in interest rate spread among commercial banks in Kenya by a factor of 0.238. The study also revealed that the p-value for all the variable were less than 0.05, an indication that value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions were statistically influencing change in the interest rates spread.

From the findings on the Adjusted R squared the study established that there was variation of 81.9% on the interest rate spread among commercial bank in Kenya due to change the independent variable which were value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions at 95% confidence interval. This is an indication that 81.9% changes in interest rate spread among commercial bank in Kenya could be accounted by changes in value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions. From the finding on the correlation coefficient, the study found that there was a strong positive relationship between the interest rate spread among commercial bank in Kenya and value of real time gross settlement transactions, value of agency banking transactions as well as value of mobile banking transactions. From the Analysis of Variance (ANOVA) statistics, the study found that value of real time gross settlement transactions, value of mobile banking transactions, and value of agency banking transactions were significantly influencing interest rate spread among commercial banks in Kenya.

The findings of this study are in contrary to the study findings of McKinnon (1973), and Shaw (1973). They analyzed the benefits of eliminating financial repression, characterized by interest rate administration in the financial system within developing countries. They concluded that alleviating financial restrictions in the financial system, mainly by allowing market forces to determine real interest rates can exert a positive effect on growth rates as interest rates rise toward their competitive market equilibrium, and in turn reduce the level of interest rates spreads. This is in line with the findings of Brownbridge and Kirkpatrick (2000). They found that liberalization of interest rates and removal of credit controls may allow those banks with moral hazard (due to implicit or explicit safety nets or deposit insurance) and those that are not constrained by prudential regulations, to invest in risky assets in order to maintain larger market shares. This is because liberalization which is associated with higher real interest rates as credit controls are lifted would stimulate saving. They observed that savings are related to interest rates and that higher saving rates would finance a higher level of investment, leading to economic growth.

The positive relationship between the independent variables and interest rates spread concur with the study findings of Barajas et al (1999), as well as the findings of Chirwa and Mlachila (2004). Barajas et al (1999), investigated Interest Spreads in Banking in Colombia. They investigated the trends in the pre-liberalization period (1974–1988), and the post-liberalization (1991–1996). They discovered that the banking system was more competitive in the post liberalization period. Interest rates spread was positively related to changes in loan quality, and considerably more so in the post-liberalization period, thus contributing to a widening of the spread. Interest rates spread was found to increase with liberalization in the banking sector. Chirwa and Mlachila (2004), investigated the impact of financial sector reforms on interest

rate spreads in the commercial banking system in Malawi. They used monthly panel data from five Malawian commercial banks for the period 1989 to 1999. Their analysis shows that spreads increased significantly following reforms, and results from panel regression suggest that the observed high spreads can be attributed to high monopoly power, high reserve requirements, high central bank discount rates, and high inflation.

5.2 Conclusion

The objective of the study was to determine the effect of financial sector reforms on interest rate spreads of commercial banks in Kenya. The study focused on three reforms in the banking sector; development of Real Time Gross Settlement System (RTGS), mobile banking and agency banking. The findings of the study confirmed that there exists a strong positive relationship between interest rates spreads of commercial banks in Kenya and value of real time gross settlement transactions, value of agency banking transactions as well value of mobile banking transactions. This implies that financial sector reforms result in increased level of interest rates spread among commercial banks.

Following financial liberalization, there has been new entrants in the commercial banking activities and licensing of non bank financial institution in deposit taking activities. Kharkate (1992), Sundararajan and Balino (1991), established that increased freedom of entry into the financial sector resulted in indiscriminate bidding for funds which can raise interest rates to exceedingly high levels. The reason for the upward trend of interest rates spread despite reforms could therefore be attributed to increased non financial costs as a result of reforms, as well as increased provision for

doubtful debts to cater for the potential loss that may result from adoption of reforms. Since interest spreads is a measure of bank efficiency, this is a clear indication that the efficiency in delivery of financial services to depositors and borrowers has not improved much following financial liberalization. Lucas (1988), also concluded that the relationship between financial reforms and bank performance is insignificant. Measures therefore need to be taken to reduce the level of interest rates spread since it is a key measure of bank performance.

In as much as financial sector reforms have not resulted in reduction of interest rates spread, they should still be pursued since they result in the general development of the economy. Impact of banking sector reforms to the fiscal and monetary stability of many transitional economies was assessed by Feldman and Wagner (2002), and they observed that the success of reforms significantly contributes to the fiscal and monetary stability. Brownbridge and Gockel (1996), examined necessity of banking sector reforms in Ghana and evaluated its impact. They concluded that while the reforms have brought about improvements in the banking system, banks are now more prudently managed and supervised. Financial sector reforms should therefore be encouraged in the banking sector.

5.3 Limitations of the Study

Data was collected from Central Bank of Kenya and individual banks publications. Accuracy of information from these secondary sources could not be verified which may cause deviation from the reality if the information is inaccurate.

The study focused on only three reforms in establishing the relationship between financial sector reforms and interest rate spreads of commercial banks in Kenya. The findings of the study could not therefore be generalized to all the reforms affecting commercial banks in Kenya.

The study used a sample size of ten commercial banks only. From such a sample size, it is difficult to give a real significant relationship between the variables from the data collected.

The regression model used in this study is based on various assumptions which may be unrealistic in the real world. For example, the model assumes constant linear relationship between the dependent and independent variable. This relationship can however change over time.

The study was based on a 10 year study period from the year 2004 to 2013. This short period did not capture periods of various economic significances such as booms and recessions, and therefore did not give a broader dimension to the problem.

The time period used to undertake this research was also constraint by the due date of this research.

5.4 Recommendations

5.4.1 Policy Recommendations

The study found out that there exists a positive relationship between interest rate spread among commercial bank in Kenya, and the independent variables which were value of real time gross settlement transactions, value of agency banking transactions,

and value of mobile banking transactions. Based on this finding, the study has come up with several policy recommendations.

The study recommends the licensing of more institutions including the non banking financial institutions to undertake agency and mobile banking activities. This is because the reason for the upward trend of interest rates spread despite reforms could be attributed to increase in non financial costs as a result of reforms, as well as increased provision for doubtful debts to cater for the potential loss that may result from adoption of reforms. Licensing of more institutions increases competition by encouraging new entrants thus reducing the cost transferred to the consumer and as a result reducing the level of interest rates spread.

The study recommends that there should be appropriate planning before reform developments are carried out. This is because success of reforms significantly contributes to the fiscal and monetary stability. The Central bank of Kenya should supervise the reform process and ensure a successful follow up on implementation of reforms rolled out. Commercial banks as well as the general public should be enlightened on the benefits of the financial sector reforms so that they would offer full support in the implementation process since the reforms contribute to the economic growth of any country.

The study recommends that there should be efforts to ensure macroeconomic stabilization. Though the financial reforms affect the financial sector, external factors as well do have effect on the financial sector. As long as the macroeconomic situation is unstable, the institutional environment is minimally supportive and monetary policy

instruments are minimally developed, financial sector reforms is not likely to lead to much improvement in the efficiency of banks.

The study also recommends that the fight against inflation should continue. This will consequently result in reduction of cost in offering banking services to customers.

5.5 Suggestions for Further Studies

A study focusing on all reforms can be conducted in order to establish the relationship between financial sector reforms and interest rate spreads of commercial banks in Kenya. Analysis of all the reforms adopted in the banking industry will give more reliable conclusion on the effect of financial sector reforms and interest rate spreads of commercial banks in Kenya.

A study focusing on the whole banking sector can be conducted in order to establish the relationship between financial sector reforms and interest rate spreads of commercial banks in Kenya. This will ensure the whole population is presented in the study and as such the findings will give more significant relationship between the variables from the data collected.

A similar study covering a longer duration can be conducted. A longer duration of the study will capture periods of various economic significances such as booms and recessions, and as such giving a broader dimension to the problem.

A study can be done on the effect of financial sector reforms on financial performance of commercial banks. The findings can then be compared with this study finding to identify how financial sector reforms impact the banking sector.

The study focused on commercial banks in Kenya. A study on the effects of reforms on interest rates spread can be conducted through a survey of the Micro Finance Institutions. This will allow for comparison of findings to come up with recommendations that are applicable to all the players in the lending business in Kenya.

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APPENDIX

APPENDIX 1: COMMERCIAL BANKS IN KENYA.

Below is the list of commercial banks in Kenya.

1. ABC Bank (Kenya)
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays Bank Kenya
6. CfC Stanbic Holdings
7. Chase Bank Kenya
8. Charterhuse Bank Limited
9. Citibank
10. Commercial Bank of Africa
11. Consolidated Bank of Kenya
12. Cooperative Bank of Kenya
13. Credit Bank
14. Development Bank of Kenya
15. Diamond Trust Bank
16. Dubai Bank Kenya
17. Ecobank Kenya
18. Equatorial Commercial Bank
19. Equity Bank
20. Family Bank

21. Fidelity Commercial Bank Limited
22. First Community Bank
23. Giro Commercial Bank
24. Guaranty Trust Bank Kenya
25. Guardian Bank
26. Gulf African Bank
27. Habib Bank
28. Habib Bank AG Zurich
29. Housing Finance Company of Kenya
30. I&M Bank
31. Imperial Bank Kenya
32. Jamii Bora Bank
33. Kenya Commercial Bank
34. K-Rep Bank
35. Middle East Bank Kenya
36. National Bank of Kenya
37. NIC Bank
38. Oriental Commercial Bank
39. Paramount Universal Bank
40. Prime Bank (Kenya)
41. Standard Chartered Kenya
42. Trans National Bank Kenya
43. United Bank for Africa
44. Victoria Commercial Bank

APPENDIX 2: LIST OF SAMPLED BANKS

1. Citibank
2. Chase Bank Kenya
3. Cooperative Bank of Kenya
4. Consolidated Bank of Kenya
5. Diamond Trust Bank
6. Equity Bank
7. Family Bank
8. Kenya Commercial Bank
9. K-Rep Bank
10. NIC Bank

APPENDIX 3: SPSS OUTPUT

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.911 ^a	.829	.819	.01238

a. Predictors: (Constant), value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.413	.265		1.698	.014
	Real Time Gross Settlement	.212	.191	.251	1.820	.032
	Agency Banking	.128	.190	.010	1.034	.014
	Mobile Banking	.238	.010	.116	2.346	.041

a. Dependent Variable: Interest Rate Spread.

ANOVA^b

Model		Sum of Squares	d.f	Mean Square	F	Sig.
1	Regression	0.724	2	0.362	2.806	.018 ^a
	Residual	0.903	7	0.129		
	Total	1.627	9			

a. Predictors: (Constant), value of real time gross settlement transactions, value of mobile banking transactions and value of agency banking transactions.

b. Dependent Variable: Interest Rate Spread.