

UNIVERSITY OF NAIROBI
SCHOOL OF ECONOMICS

FACTORS THAT INFLUENCE INTEREST RATE SPREAD IN KENYA
(2000-2014)

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**A RESEARCH PAPER PRESENTED IN PARTIAL FULFILLMENT OF THE
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DECLARATION

This research paper is my original work and has not been presented for a degree award in any other university.

Student

Date

Signature-----

APPROVAL

This research paper has been submitted for examination with our approval as University supervisors.

Supervisor

Date

Signature-----

Ms Laura Barasa

DEDICATION

I dedicate this paper to my beloved family, my husband Stephen Monyenye and my friends George Rukwaro and Veronica Njeri who supported me immensely during the entire period of my studies.

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ABBREVIATIONS

CBK	Central Bank of Kenya
KBA	Kenya Bankers Association
IMF	International Monetary Fund
IRS	Interest Rate Spread
MPC	Monetary Policy Committee
CRB	Central Bank Rate
MoCT	Ministry of Commerce and Tourism
GDP	Gross Domestic Product
KNBS	Kenya National Bureau of Statistics
KCB	Kenya Commercial Bank

ABSTRACT

The financial sector in Kenya and a number of other African countries underwent liberalization in the early 90's, despite this though we still continue grappling with the issue of high interest rate spreads prompting debate on how to address it. The discussion that follows will primarily investigate factors that determine interest rate spreads taking Kenya as the case scenario. It provides an econometric analysis of the macroeconomic and industry –specific factors that influence interest rate spread. A time –series data estimation is carried out owing to its reliability in analyzing data for a broad period of time. It's also best in analyzing seasonal patterns which is variances measured and compared from year to year, trend estimation and growth especially for policy variables. The variables used in the study are the; 91-day Treasury bill rate, ratio of broad money (M2) to GDP, exchange rate volatility, inflation, bank rate and real rate of economic growth. Quarterly data for the period 2002 to 2014 for the 43commercial banks is used in the study.

The empirical results show that factors such as bank rate, Treasury bill, exchange rate volatility and inflation rate are key in determining interest rate spreads. The effect of macroeconomic factors such as real economic growth and ratio of broad money to GDP is not much significant. There is need for explore policy options meant to enhance competition in the industry. Innovations in banks operations and products, development of efficient financial markets are examples of such options. A stable exchange rate is key since inflation, exchange rate and interest rate are highly correlated.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Interest rates are a major influence to our economy through their impact on the economic growth. According to Chirwa and Mlachila (2004) interest's rates not only influence the cost of capital to investors but also affect the overall returns on the money saved. Corb (2012) on the other hand argues that interest rates are used by (CBK) to check inflation and increase economic development. This therefore means that, the underlying reason to control interest's financial institutions charge on credit and deposits is supported by the fact that the government must regulate investments and savings patterns in an economy. Moreover, researchers have established that controlling interest's rates in an economy has a profound impact on economic growth since it directly determines the rate of savings and investments (Folawewo & Tennant, 2008). Giovanni (2006) arguing on the same basis held that whenever central bank sets high interest rates this automatically influences the interest's rates charged by other financial institutions because of profit motive behind doing business.

Ordinarily, IRS can be taken as the borrowing rate less the lending rate. Each financial institution due to private enterprise policy are allowed to determine their spread however other prevailing market rates must be considered for the firm to remain competitive (Chirwa & Mlachila, 2004). When the spread is low this helps financial institution to remain competitive since it increases demand for loans. This is because the savers are deriving more value for their money while investors are able to access cheap credit to establish enterprises in the economy. This being the case, the institution that has a small spread will attract more customers and thus remain competitive. Ngugi (2001) further argues that low interest rates helps in promoting economic

growth. Kenya operates a free market economic system and therefore central bank can only give signal to other financial institutions what rates to charge. Therefore the difference within each financial institution rate may be brought about as a result of stakeholder's interests and perhaps the general trend of institutional policy regarding risk appetite and the profit goals. For instance if stakeholders want to maximise profit then the spread will be high and if customer interest are more important for any financial institution, then the spread will be lower thereby making such an institution to have a competitive edge over the others (Ngugi,2004). In contrast, according to Kenya Bankers Association (2013) report indicate that high rates spread is the key factor influencing private sector investment. Notwithstanding other factors, interest rate spread is the envisioned margin of borrowing cost and expected profitability. For banks and other financial institutions securing a margin that is in the range of average deposit and average lending is not unusual (Folawewo & Tennant, 2008). Accordingly, it is the margin that usually constitutes a big incentive for such firms to remain in the industry.

In contrast, Ngugi (2004) noted that there exists an inverse links between IRS and the efficiency of a country's financial sector. This is usually an indicator of a non-competitive environment and also noting that the magnitude of the spread is not constant but varies across different nations across the globe. In expanding and liberating an economy's financial sector, it is anticipated that one of the results of such a strategy would be the interest rate spread will eventually decrease ultimately leading most developing countries to report high rates. The banking sector in Kenya has a significant role particularly when it comes to mobilising savings and advancing credit to and from the people. As such, this study would be essential especially if thorough scrutiny is needed to apprehend the importance of the financial intermediation process and other macro-

economic environment prevailing in a nation. This paper is driven by the need to understand why high interest rate spreads continue to be a challenge and is attracting a lot of debate in both public and policy forums in Kenya. This is despite the liberalisation of the financial sector during the early 1990s which allowed for market determination of interest rates as well as high interest rate spreads. There are several studies in this area mostly in analysing interest rate spread at the micro or bank level. These studies however cannot be deemed to be sufficient considering the dynamism of the sector with time and the speeding technology (Afanasieff, Priscilla, & Marcio, 2001). This therefore means that more research still need to be done until a solution is realised and thus the motivation for this study. This study is an empirical investigation on the determinants of IRS in Kenyan context using data of a span of 15 years.

1.1.1 Interest Rates and IRS in Kenya

Folawewo and Tennant (2008) defined interest rate as the price one pays for using borrowed money. This rate is normally expressed as a percentage on an annual basis over the principle amount. The authors stated that interests are charged by lenders of finance as a way of compensation for assets usage. Additionally, interest rate can be said to be the opportunity cost of lending money instead of investing it elsewhere. While for large assets the leader can equally use such assets to generate funds instead of leasing them out (Samuelson, 1945). This means that due to such trade off interests must be charged to represent the lost opportunity of not using the funds.

Giving money out versus doing investments requires trade off whereby any decision made should be based on the cost benefit analysis of each option. Lending money therefore is not a preserve for few people. Anyone can lend money and levy interest on the outstanding loan balance or hold deposits and pay interest (Afanasieff, Priscilla & Marcio, 2001). It is however

the function of the banks to make loans and hold deposits. Banks use depositor’s money to advance credit facilities at the same time equally charge borrowers higher interest rate than what they pay depositors.

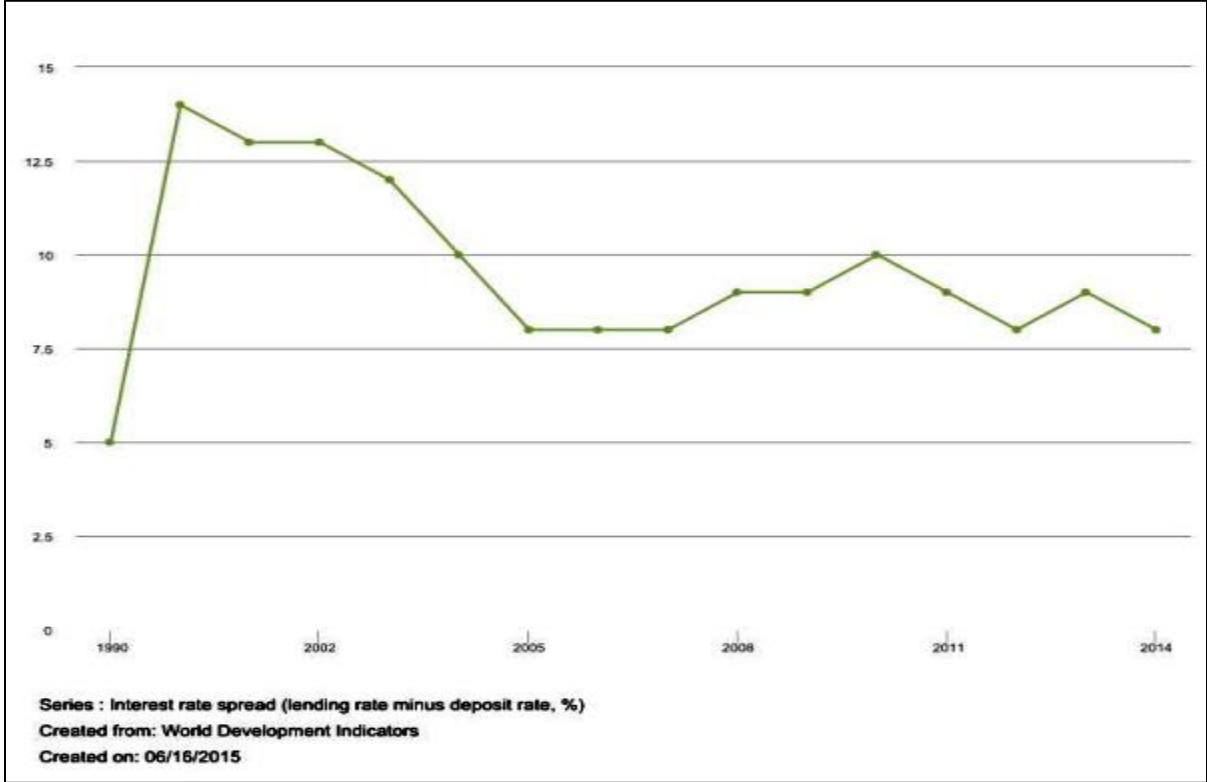


Figure 1.1: Interest Rates and IRS in Kenya

Interest rates in Kenya are reported by the (CBK). It is the responsibility of CBK to publish the Central Bank Rate (CBR) which they charge other financial institutions borrowing money from them. This rate is often reviewed on at least every two months by the Monetary Policy Committee (MPC) [CBK Act section 36(4)]. According to the international journal of business and social science interest rate patterns in Kenya as shown in the above table, averaged at 14.62%. This significant change occurred during 1991 up to 2014 reaching peak of 84.69% in July 1993 and a record low of 0.83% in September of 2003 with the benchmark interest rate recorded at 8.5%. However, in December 1990, the interest rates shoot to 16.68% which spilled

over to 17.29% in January 1991 but remained stable in 1991 and 1992. Consequently, in March 1993 the interest's rates again increased to 24.94% from 17.85% in February 1993. Though this did not last because there was also a drastic increase to 45.81% in April 1993. Furthermore, in July 1993 the interest rate went to 84.60%, however this follows a decline reaching a ceiling of 23.37% in September 1994. It was noted that the rates fluctuated within the range of 16.72% and 27.15 between November 1998 and October 1994. Though in 2003 and 2004, the rates further witnessed a decline as low as 0.83% in September 2003 however the rates also moved up to 8.04% in December the same year. Moreover, from January 2005 to the present time, interest rates have not been steady but fluctuating between 6% and 9%. CBK (2005) outlined that the stability of interest rates within the range of 8% and 9% is vital component to stimulate growth and economic stability in a nation. This in turn supports the appetite for more investment in the economy by the investors and entrepreneurs.

According to Afanasieff, Priscilla and Marcio (2001) rates are clear indicator which influences economic activity in a country. Additionally, Randall (1998) in his working paper established that rates facilitate the formation of capital. Besides, rates positively or negatively impacts individual investments decisions. Other researchers have noted that interest rates can influence job creation, corporate profits as well as monetary policy (Ngugi, 2004). What this means is that many decisions especially to do with saving and investments are majorly influenced by the prevailing interest rate among other factors. For instance an individual deciding on whether to invest in a greenhouse which is to be financed by the bank will consider the returns of the greenhouse versus the cost of the monies, if the difference is small then the individual may forego the investment decision. If many people end up with similar decisions then the economy

will slow down giving rise to unemployment.

Arguably, Dougall and Gaumnitz (1975) held that interest rates determine the flow of money in the economy. This therefore means that wherever interest rates are high this can assist in curbing inflation because appetite to borrow will be suppressed and the economic activities will slow down.

Conversely, low interest rates can stimulate the economy by increasing borrowing from financial institutions for reinvestments. However, this can lead to inflation as it will result in too much cash following over few goods and services in an economy. In an inert cell, wherever interest rates are high then loan products become too expensive and people shy away from taking credit facilities. This is because of servicing loans and the number of purchases of real assets simply goes down. Alternatively, when interest rates are low, people will take more loans because it becomes cheaper to service principal and interest repayment of loan facility. Overall, the effects of a lower interest rate have beneficial effects to the consumers. For instance, at low interest rates, most people will take up loans from financial institutions to purchase new cars and acquire other investment goods (Mwega, 2012). Ultimately this will increase the demand of investment goods in the economy which will lead to an increase or growth in the economy in terms of GDP and employment. This state of affairs bodes well for investors because after taking the loan they will be expected to pay a lower amount in servicing the loan. Moreover, the consumers at lower interest rates will be left with higher disposable income to spend on other goods and services hence consumers will achieve greater utility and improved welfare as opposed to when the interest rates are high because consumers will be compelled to make some sacrifices in order to forego some goods and services. Therefore, this means that at low interest rates the market can

be stimulated because of increased propensity to spend by the consumers. According to Ahokposi (2013) low interest rates on the other hand are disadvantageous to lenders, who are foregoing return on the loans they give out. At low interest rates banks equally will be forced to adjust the rates they pay depositors downwards in order to maintain steady profits. However, this action may meet resistance from depositors who may prefer not to save but to invest their money elsewhere where the returns can be high thereby causing liquidity problems at the banks until they adjust the rates upwards to attract depositors.

The growth and development of any economy is highly driven by the level of Interest rate spreads. Grenade (2007) while investigating factors influencing rates spread taking a case of Caribbean Banks found that there exist a crucial relationship between economic growth and the efficiency of bank intermediation. Furthermore, Quaden (2004) highlighted that wherever banks become more efficient it is only the real economy which will benefit. This is necessitated by higher expected returns which accrue in the saving segment with a financial surplus, and lowering the cost of borrowing funds. Therefore, a shoot in interest rate spread discourages potential savers because of definite low returns expected on their deposits and consequently availing little funds for potential borrowers. According to Valverde (2004) it is only a fraction of the savings which banks mobilise which can go into investments. This is due to the associated cost incurred during intermediation between the borrowers and the lenders. Other authors who have discussed the issue include Boldbatar (2006); Mahebo(2014) and Levine (2003).They state that whenever the intermediation cost increase due to inefficiency in the banks, the fraction of savings 'costs' also goes up. As such, lending, economic growth and investment will slow down. However, Ngugi (2001) explained that Interest rate spread is demarcated by market micro

structures, banks features and the policy environment. Due to this situation, risk averse banks will prefer small spread as opposed to big spread which mainly characterises big banks. Macroeconomic variables which include monetary and fiscal policies undertakings influence actual spread which integrates the pure spread. The major reason behind differences in spread in countries across the world is attributed to the nature and efficiency of the financial sectors in different countries (Jayaraman & Sharma, 2003). Intermediation costs such as costs on deposit mobilization are common in weak financial sectors.

1.1.2 Banking Industry in Kenya

Kenya Banks are regulated by the Banking Act, The Companies Act and the CBK Act as well as the prudential guidelines outlined by the CBK. The banking sector in Kenya was liberalised in the year 1995 and this became the beginning of lifting the exchange controls. CBK is entrusted with responsibility to formulate and implement monetary policy and fostering solvency, liquidity as well as proper functioning of the banking operations. Besides, CBK is also vested with responsibility of publishing information on interests rates and the prudential guidelines which ensures that banks follows some procedure and policies in administering their duties to the public. However, for banks to be able to talk in one voice, they have formulated a union body called Kenya Bankers Association (KBA) to address their concerns and represent them speak on their behalf to the regulator, the government and the general public. According to CBK report (2013) as at 31st December 2012, the total number of commercial banks were 43 banking institutions and one licenced mortgage finance company together with the regulator CBK overseeing their operations and checking compliance to policies and procedures. In Kenya the banking industry has seen immerse growth due to advancement in technology, creativity and

innovation. In the past, the sector majorly consisted of foreign banks such as Barclays Bank and Stanchart Bank which have located their businesses in major towns with their preferred choice of customers being the government and institutional investors. These banks were powerful and dominant and made new entry to the market difficult and this affected greatly the small scale enterprises (Ngugi, 2004). However, in 2003, the government through the regulator CBK reduced the base lending rate. These changes had an adverse effect on the major banks, hence they had to change strategy in order to counteract the impact of the regulation. By then small banks such as Equity and Family bank as well as micro finance institution took advantage of stringent rules the big banks were exposing to customers and opened up their door to small savers in the county. They extended banking operation hours for the convenience of the customers, waived opening account maintenance levies, gave loans to micro customers through group lending systems (Ndung'u, 2000). This new trend made it impossible for the big banks to remain rigid on how they were doing their business but to follow the small banks strategy. According to Chenn (2011) the inflation Kenyan economy experienced was due to globalization and other internal pressures. This has led to changes in interest rates hence affecting the banking business in the economy as people drift away from taking loan facilities. As a result there has been changes in interest rates spread which the banks offer to their customer from time and again with any responsive change in macroeconomic variables bringing instability in the financial sector. However, each financial institution fight to acquire market size and become a market leader and pricing has been one key area of winning customers hence necessitating different spread offered in the market. The government of Kenya on the other hand through the Ministry of Finance have been taking precautionary steps to assist the banking sector and protect the general public from overexploitation from the profit motive objectives of the banking sector.

According to Chenn (2011) found that other things held constant, banks would prefer small spread if only they can get loans cheaply from CBK to maximise on their revenue out from numbers and spread their business risks to the public as opposed to dealing with few customers where the concentration risk is high in case of default. There is also a conflicting objectives between the shareholders' interests and the banks profit motives, shareholders want banks to offer cheap loans while banks want to increase their bottom line. However, because of this variation in interests, banking sector have seen very turf competition within themselves which has even scaled the approach banks do business where more emphasis is in operational efficiency and effectiveness in their processes as a way of gaining competitive advantage. Kenyan Banks have resorted to product development, branding and improvement in information technology as the best practices of staying relevant in the competitive market.

1.1.3 Factors that Influence Interest Rate Spread

Findings from KBA have established that inefficiencies in the banking sector is a great trigger to the interest rates spread (KBA, 2013). This means that banks that will withstand the stringent rules and economic shocks are those who leverage on efficiency processes as a way of boosting productivity. Interest rates spread by banks is largely as a result of their urge to maximise profits in a oligopolistic markets. Conversely, other findings argue to the contrary citing that interest rates spread is due to changes in macroeconomic variables, tough regulatory framework and changes in institutional environment (Barajas & Steneirand, 1998; Grenade, 2007). However, because of stalemates on real factors that cause interest rates spread other scholars have proposed that this debate require an objective, empirical analysis of the factors that influence banks interest rate spreads. Additionally, Ndung'u and Ngugi (2000) indicated that some of the specific

factors determining Internal Rate of Spread (IRS) are to do with bank size which means the assets portfolio, the percentage of Portfolio at Risk (PAR) other words referred as non-performing loans to the overall loan book, the liquidity risk and the operating inefficiency which is ratio of banks operating costs versus earning assets (Janda & Zetek, 2013). In contrast, the findings by Janda and Zetek (2013) found that the macroeconomic factors were less significant in influencing the IRS in an economy. However, macroeconomic variables such as GDP and inflation were less significant in influencing IRS. Similarly, some policy measures like policy on the prevailing rates as an indicator of monetary policy was found to be positive but had a weak influence. On average the findings established that, large banks such as Equity Bank, KCB Bank, Standard chartered Bank and Barclays Bank and Co-operative Bank have greater spreads compared to small banks like Paramount Bank, I&M Bank, Family Bank, Jamii Bora Bank and Credit Bank. This could be attributed to the loan book size of large banks with respect to small banks.

1.2 Statement of the Problem

Low interest rates offered on deposits are an obstacle to savings mobilization. As such, financial institutions must offer competitive rates so that they can attract deposits from investors and the general public to boost their liquidity (MoCT, 2013). Similarly, when interests rates increase this affects negatively the amount of loan intake in the economy by people shying away from taking loans to purchase investment assets (Pelrine, 2005). For instance, an interest rate of 5% on deposits while the one offered on loans is 16 % is considered low on deposits and high on loans. IRS has been observed by Ngugi (2004) to be rather punitive in Kenya as well as other developing nations as compared to low rates prevailing in developed nations. The main reason

for this disparity has been noted has been high intermediation costs prevailing in developing nations revealing the weaknesses and inadequacies of such financial sectors (KBA, 2013). This has been happening despite various financial reforms aimed at narrowing but the result has been stagnant. It has been expected that the gap between lending and deposit will narrow further as banks take their products closer and closer to the customers through numerous branches and new technologies emerging. This has not been the case however, and the question remains why the IRS remains high in Kenya even when the CBK lowers the CBR. The CBK desire is for commercial banks to pass benefits of lower CBR rates to their customers by lowering the lending rates to increase borrowing for investment and raising deposit rates to attract savings (Fin Access survey, 2009).

Considering the foregoing, there is need to empirically test the factors that would account for the tendency of commercial banks to persist in charging high lending rates against low deposits rates. The study that follows examines the factors that contributed to high interest rate spread. Considering the dynamism in this sector, there is need for constant investigation of these factors with time. Based on the findings extracted from the CBK on commercial banks disclosure statements. The paper put to focus how trends in IRS has been witnessed in the county form 2004 to 2014 by use of time series data. The study will be quite useful for policy makers on sending light on recommended steps to take to achieve 6% IRS as per Kenya medium term plan and the Vision 2030.

1.3 Research Objective

The general objective of this study is to find out factors which causes high interest rate spread in Kenya.

The specific objectives are:

1. To determine factors that influence IRS
2. To offer policy recommendations.

1.4 Justification and Significance of the Study

Considering that similar studies in Kenya, (Ngugi,2001 and Ngugi,2004),were carried out when financial liberalization effects were not yet fully felt and technological innovations in the financial sector in Kenya was still low, there is need to establish the correct position on IRS determinants using recent data. Furthermore, the sector has a dynamic environment with new factors coming in such as the mobile phone banking, agent banking, an increased spread of bank branches and change in government in the last decade. The political climate prevailing in a country can immensely contribute to stability of the macroeconomics variables and in turn affect how financial institutions respond. In addition, given the global financial crisis that has persisted since the end of the decade ending 2010, there is need to broaden the range of variables and lengthen the duration of study data to include the most recent data. An analysis into the determinants of IRS may be useful for informing banks to adjust their interest rates downwards as a basis of increase volumes which in turn will compensate high spread and still reach their targeted profits figures. Consequently, this necessitates carrying out of the study to establish the link between the level and magnitude of IRS and the determining factors contributing to the current debate on the optimal interest rate management policy framework. The study will also provide a body of knowledge on the interest rate spread as well as provide a basis for conducting further research on optimal interest rate spread.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Kenya experiences a wide range in the IRS. Observing the IRS in the Kenyan banking sector reveals that Kenya has the highest interest rate spread (Hanson & Rocha, 1986). IRS in Kenya increased to 13 percent during the month of December 2011 up from 10.3 percent witnessed in the previous year (December 2010). This happened after the average lending rate went from 13 percent to 20 percent in the same period (CBK, 2011). International Monetary Fund International financial statistics rank Kenya as *number* 40 out of 170 countries in terms of high IRS. (IMF, 2005). The following chapter will examine theories relating to IRS spread. It also summarizes the information from other researchers in the same field of the study.

2.2 Theoretical Framework

This study shall be supported by several theories such as classical, liquidity preference, loanable and the theory of rational expectations of interest rate. However for this study we will discuss the classical theory of interest rate in detail since it is original and broader in explaining interest rate and has less criticism. It is also widely accepted without much reserve. The others we will take an overview.

2.2.1 Classical Theory of Interest Rate

Interest rate is the bridge between savings and investment. In this definition investment is taken to be the demand for investible resources while savings in their supply. The rate of interest results due to the interaction between investment and savings. In real terms, it's a compensation

for prolific use of capital. Basically, rate of interest can also be termed as the marginal productivity of physical capital. Physical capital is bought by using monetary funds. Moreover, the interest rate is the yearly rate of return which investors put in the physical capital (Tanzi, 1980). Keynes noted that the theory essentially originates from the general equilibrium theory which states that optimal interest rate can be got at the point when demand and supply of capital intersect. Keynes argued that interest rates significantly influence the marginal propensity to save. In conclusion, Keynes stated that the rate of interest prevailing in an economy is derived at the intersection of demand and supply of investment and savings. Simply put investment can be described as the demand whereas savings is the supply for investable resources. And interest rate is the price of investable resources where savings and investments are equal. It is the point of equilibrium where the amount of investment in an economy equal to the amount of savings in the same economy. Alternatively, other proponents of this theory besides Keynes are Marshall. According to Marshall interest rates is considered as the price for the use of capital and it can be established in an economy due to the interaction between aggregate demand and aggregate supply of capital. Additionally, Caplan (2000) stated that in order to arrive at equilibrium rate of interests the demand for capital in an economy must be equal to the supply of capital in the same economy.

Therefore, investment decisions will generate demand for capital, while the savings potential of the community will result in capital supply. (Fredman, 1991). For cases where the savings are more than what has been invested in an economy then interest's rates will come down until they reach equilibrium. On contrary, when savings in an economy is less then interest rates will go up until it reaches equilibrium levels that means according to Fredman then savings and investments

in an economy and are self-stabilisation (Gorder, 2009).

One of the classical implications for this theory is that every bank can set their own liquidity position. Banks which have higher liquidity position will charge less interest rates on their loans to customers but pay less interest on savings to discourage savings but encourage borrowings (Ngugi, 2004). Contrarily, those banks which are less liquid will resort to high interest charges both on deposits and loans in order to make profits and to attract institutional investors to change their liquidity position. This will definitely led to high cost of doing business for such banks. But if such liquid banks charge the same rate as other banks which are less liquid then the general trend will be a low interest rate prevailing in the economy. And because of that then IRS should not be charged equally. High liquid banks ought to charge comparatively lower values as opposed to less liquid banks (Rochon & Vernengo, 2001). One shortcoming of the classical theory of interest rates is it has failed to account for factors outside demand and supply which may influence IRS either negatively or positively.

2.2.2 Liquidity Preference Theory

The theory of Liquidity preference states that economic units prefer holding liquid cash as more than investing. In application liquidity preference theory describes two types of premiums at spot rate and forward rate. In essence, these rates are used by commercial banks to compensate for the scarce liquid resources. People need to hold part of their wealth in liquid cash for daily transactions and for emergencies. This is how we can explain the society preference for liquidity. The liquidity theory has a major shortcoming in its assumption that income remains stable which

is basically short-term. In addition, it only considers supply and demand for money are just like in classical theory (Gorder, 2009).

2.2.3 Loanable Funds Theory

This theory of Loanable funds originated from Swedish economist Knut Wicksell (1851-1926). It's based on the assumption that the rates prevailing in an economy depends on the supply of funds as well as the demand for credit. In addition, the theory states that there is an inverse relationship between interest rates prevailing in an economy and the funds. In case of any change in supply and demand of funds available for loans then the resultant rate will definitely depend on the real magnitude of changed in both demand and supply movement of loanable funds. The theory traces the demand for loanable funds from economic units such as domestic business, foreign borrowers as well as governments. However, the supply is deemed to originate from local savings, release of money balances, and creation of money by the foreign lending institutions and banking system. Though these factors influence only long-term interest rates, the short term interest rates are due to financial and monetary conditions which are prevailing in an economy (Gorder, 2009).

2.2.4 Rational Expectations Theory

According to Gorder (2009) rational expectation theory is basically explained by the idea of information availability. What it means is that human beings are considered to be rational in decision making and as such they will create their expectations after searching and considering all the alternatives and information available. This theory believes that the best approach to estimate future rates is looking at the spot rate and various other changes as a result of

unpredicted economic changes. The suggestion according to the proponents of this theory is that the theory can be included with the theory to have a clear grasp of all the necessary information from the economy. The major challenge with this theory is the problem of collecting information and understanding how the public used it information.

2.3 Empirical Literature

Past empirical studies that examine what influences interest rate spreads in banks uses variables such as defaulting loans, administrative and operational costs, returns on assets, balance sheet structure, the size of the bank. Secondly, the studies have used factors which are specific to banking sector. These include the level of competition, the level of bank concentration and what the regulator requires.

The studies by Barajas, et al (1999), examined the interest rates spread from the view that it creates competitiveness in the banking sector. In their approach they adopted a single equation as well as multiple variant models in establishing what really affects the IRS. The researcher used the below variables (i) one is the market power indicator for each specific banks examined for deposits and loans which directly related to the responsiveness in demand (ii) secondly, bank specific rates (iii) thirdly, the reserve ratio (iv) fourthly, is cost function variables (v) the fifth variable is non- performing loans (vi) industrial production index. In their analysis they used quarterly data spanning for a period of 15 years (1974-1988) together with the monthly data beginning from May 1992 to August 1996. Additionally, they also considered a panel of data for exactly 22 banks ranging from March 1991 to August 1996 which involves time series and cross sectional analysis. The findings showed that during the period 1974 up to 1996, the IRS for the state owned banks was recorded as 24.6 percent. Underlying factors for this spread was financial

taxation, increased operating costs and the concept of loan quality which stood at 28.07, 35.24 percent respectively.

In addition, Gavin (2010) performed a similar study. The study focussed on commercial banks in Kenya and the research design was descriptive and quantitative with a sample of 15 banks in the country. This sample was carefully chosen and it represented 85% of all disbursements for the period 2002 and 2009. The study relied so much on the various publication from the survey, the various development indicators as well as CBK annual reports on trends of IRS in the country. He found that bank market share, banks overall overhead, the expected return on assets, liquidity positions of a bank all influence positively the intermediary efficiency and ultimately impact IRS.

The author also found evidence that capital adequacy ratio, the treasury bills rates as well as discount rate have both significant impacts on the type of interest rate spreads operated by each financial institution. However, the study had one limitation there was lack of evidence to help support the view that market share of deposits as well as cash reserves and inflation rates could positively influence IRS of commercial banks more than the other macroeconomic factors.

These findings further established the spread are in two categories. The first one supported by the ability for banks to mobilise funds cheaply from the public and secondly is due to high rate of non-operating costs known as overheads. In conclusion the author noticed that Interest Rate Spreads (IRS) is influenced by the ability to mobilize funds at a low cost and this is associated with large banks through market share of the assets portfolio each bank was keeping.

Ngugi (2013) on the other hand investigated the impact of inefficiency in financial

intermediaries. He collected data from 43 financial institutions which are operating in Kenya. The data was analysed by using descriptive and regression analysis. The result established that the difference between the rate of lending money and the deposit rates represent efficiency of the intermediation process. For example, wherever markets are perfect competition then the wedge will be thinner but if the markets are imperfect then there will be a thicker wedge which simply represents inefficiency in the overall market operations. Overall, ineffectiveness in the commercial banks in the intermediation is when the financial sector is suppressed. As such wherever banks operate in a controlled policy system then this will result in high administrative costs therefore the interest rates will prevail which does not reflect the true costs of capital. Such a policy regime will only hamper the growth of various financial systems in relation to diversity and expansion financial assets and the ultimate result will be non-price competition within the rival banks.

Were and Wambua (2013) also conducted a study on factors determining interest rates spread in Kenya. They sampled 44 banks in Kenya. The analysis report found that those factors which were individually specific to one given bank significantly impacted the determination of IRS in each bank. These specific factors included the size of bank which was seen in terms of its assets portfolio, credit risk profile, liquidity risk, cost of operation and return on average assets. The study however, found that the impact of macroeconomic variables was less significant in determining the interest rates spread within the financial institution. Similarly, it was also found that policy rates has also positive but weak impact on the IRS. In conclusion, the authors held that big banks on average were found have higher spreads compared to small banks.

One of the studies outside Kenya is by Beck and Hesse (2006) on impact of interest rate spread. While looking at Ugandan Banks, the duo examined factors that influence IRS and the margins. The study found that foreign banks that were in Uganda had lower interest rates spread as opposed to the indigenous banks. However, the findings never realised a robust relationship between interest spread, privatization, Entry of foreign banks, structure of the market and banking efficiency. Additionally, the authors also never found any significant association between IRS and the macroeconomic factors like GDP.

Besides, Bank-level characteristics, such as the size of the bank, operational costs, and composition and structure of loan portfolio, explained a large proportion of cross-bank, cross-time variation in spreads and margins. On the other hand, Nampewo (2013) studies the factor influencing interest rate spread of the Ugandan banking sector using time series data and the study reveals the following; bank rate positively affect interest rate spread. The same relationship is reflected by Treasury bill rate and non-performing loans. However, there is a negative relationship between interest rate spread with M2/GDP ratio and real GDP on the other hand. This investigation however, it was undertaken at macro level, hence concealing micro and bank-specific characteristics.

Brock and Franken (2003) also did a study on interest rate spread in Chile using a two-step procedure. Results of their study showed the following; that concentration in the industry, variables on monetary policy, business cycle variables influenced interest rate spreads differently and this depended on whether the spreads are computed from balance sheet data or from disaggregated loan and deposit data. In other studies they concluded that individual bank characteristics are often not highly correlated with the interest rate spreads because they are

principally determined at the industry level.

Gambacorta (2004) also studied Italian banks using both micro and macroeconomic factors. He considered the following variables: Demand for loans and that of deposit, cost of operating, credit risk, volatility of interest rate, changes in policy rates and reserve requirements which is through their influence on monetary policy, the structure and components of the industry. Results showed that interest rates on short term lending of liquid and well capitalized banks react less to monetary policy shocks. The size of the Bank was found to be irrelevant in affecting interest rate margins while there was a positive relationship between lending rates with real GDP and inflation. The effect of increasing real economic activity was that it made projects that would otherwise appear unattainable become profitable when discounted to the present. He noted that when economic activities were more/increased a spill over effect was experienced on the demand for credit. On the other hand, an increase in real GDP and inflation were found to have a negative relationship with deposit rates. That means that, when the economy is vigorous and doing well, it pushes up demand for deposits and therefore banks have no inducement to increase deposit rates. When it comes to operational cost and credit risk, an increase in the cost of financial intermediation these lead to higher lending rates as banks attempt to recover the costs. These include costs incurred when assessing the risk profile of their borrowers, to monitoring of the various projects for which loans have been advanced and expanding their of branch network. On the other hand, an increase in the volatility of the money market interest rate pushes up both deposit and lending rates.

In studying interest rate spread in Brazil, Afanasieff et al. (2002) uses the two-step approach of

Ho and Saunders (1981). These authors here defined the spread based on the lending and deposit rates as posted by banks. This was unique as compared to most studies that define the interest rate margin based on interest income and interest expense. Like many other studies these authors found the spread to be much higher for larger banks. According to Afanasieff et al. (2002) they found that the size of banks determined the level of operating costs. Other factors which they found influence IRS are bank leverage, the so called non- interest bearing assets as well as operating assets. However, the authors found an inverse relationship between IRS and the interest bearing funds. Another author who examines the determinants of IRS is Grenade (2007) with commercial banks taking a case of eastern Caribbean Currency Union. The study established that IRS was high when the market power was high and vice versa, reserve requirements as well as various provisions on loans. Likewise, based on individual bank specific data for a panel of 22 banks, a study by Siddiqui (2012) shows that administrative costs, defaulted loans ratio and return on assets had a significant influence on interest spreads in Pakistan. Demircuc-Kunt and Huizinga (1998) investigated interest spreads by covering commercial banks from 80 countries across the world. His study used cross-country data. The study established that macroeconomic variables, regulatory requirements on deposits positively influence profitability and interest margins. Besides, when the interest margins were high is associated with high profitability with commercial banks.

2.4 Literature Overview

The general overview in the literature indicate that over the last previous twenty years there has been remarkable changes in the general trend on IRS tools and techniques. This was in addition to the discovery and use of time series data which accurately can support the research findings on the determinants of IRS. However, for nations without better infrastructure to keep data for time serious then the best option was the use of accounting framework. In summarising the above literature, we see that there are several empirical studies on the determination of interest rate margins and spreads, which focus on different set of factors (some are specific to bank, others are industry related as well as macroeconomic factors).the methodologies used also vary (time series and panel data methods), depending on the type of data, frequency and coverage (panel of banks, countries or country-specific analyses).

Nevertheless, there is still need for continued analysis of these determinants so as to take account of the changing environment in the financial sector. With the current status, not much research has been done in this area. There is still inadequate empirical studies on determinants of interest rates spread to other African counties especially when considering the macro levels. Another challenge in African context is availability of data. Data to assist the computation of spread is not available and some may be unreliable hence giving misleading results.

The study that is currently being undertaken will go beyond the previous studies. This study will factor in both the industry specific factors as well as the macroeconomic variables. The study shall use time series data. Additionally, this study shall cover recent period 2000 to 2014 where Kenyan banks have seen significant changes and therefore it would be relevant to examine if

those changes had significant impact to the spread.

It is in this period within which the CBK introduced the central bank rate (CBR). This rate is determined by the Monetary Policy Committee (MPC) and is currently used by Banks as the central policy rate to signal the monetary policy stance. The sample size ($n=60$) is also relatively high which makes the results of this study more accurate.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

The main objective of this study was to examine factors that cause high interest rate spread in Kenya. The choice of our independent variable will primarily be guided by the determinants from previous studies. However, this analysis shall cover the entire banking sector. This approach therefore support the use of actual interest rate in determining the spread. Using this method it allows for better understanding of the efficiency of financial intermediation thereby covering the entire macroeconomic implications interest rate may pose to the nation. This section aims at establishing the process and means at which the data will be collected and presented.

3.2 Model Specification

This gives the relationship in the model of the dependent and the independent variables

$$IRS = f\left(TB, \frac{M2}{GDP}, XRV, IFL, YGR, BR\right) \dots \dots \dots 3.1$$

The empirical estimation model reads as follows;

$$IRS_t = \beta_0 + \beta_1 TBR_t + \beta_2 \frac{M2}{GDP_t} + \beta_3 XRV_t + \beta_4 IFL_t + \beta_5 YGR_t + \beta_6 BR_t + \varepsilon_t \dots \dots \dots 3.2$$

Where IRS= interest rate spread; TBR=Treasury bill rate; M2/GDP= broad money to GDP ratio; XRV=exchange rate volatility; IFL=inflation; YGR=real rate of economic growth; and BR=bank rate.

3.3 Definition and Measurement of Variables

In this study, (IRS) is the dependent variable. The independent variables are all other factors which have been listed in the model like the Treasury bill rate, GDP ratio, IFL = inflation etc. therefore in this study the dependant variable is taken as weighted average rate which the commercial banks levy on loans and the rate that banks pay on depositors. Simply, the difference

between the two is what constitute the Interest Rate Spread (IRS). The details of all independent variables are specified in the model.

The 91-day Treasury bill rate is considered as the monetary policy instrument a rate which is given by Central Bank meaning that Treasury bill pegged at lower levels which influence lower IRS. As such, Treasury bill positively influence the spread. The second variable is *M2/GDP*; this refers to ratio of M2 is can be equated to broad money to GDP. In cases where we have got strong and developed financial systems then there will be efficient resource allocation. Secondly, if the growth in M2 is realised then there will be an increase in level of intermediation given an array of financial assets (Sikorski, 1996). This gives a negative relationship of M2 and GDP to the IRS. Alternatively, other variables like *Exchange Rate Volatility (XRTV)*. This variable is considered as a proxy variable for the sake of establishing macroeconomic instability. To determine this proxy variable you take the standard deviation for at least three preceding years (Folawewo and Tennant, 2011).

The net result is a positive relationship in exchange rate volatility (XRTV) and interest rate spread.

This is because most commercial banks to vary interest rates to assist them absorb the shock low business as a result of macroeconomic factors. This can be explained by the action of commercial banks which normally increase interest rates wherever there is unfavourable macroeconomic situation prevailing in a county. Inflation (IFL) rate is also another independent variable which measures the rate of change of consumer price index (CPI). In essence this index measures the cost of doing business (Demirgüç-Kunt & Huizinga, 1998; Tennant and Folawewo, n.d.). Thus, the effect of π on IRS is expected to be positive.

Real rate of economic growth (YGR) as the next variable is determined or measured as the exact change in real GDP. However, the effect of YGR on IRS is expected to be negative: the argument is that economic growth reduces risks of loan default and this in turn reduces interest rate spread by reducing lending rate. Alternatively, growth in real income could suggest existence of potential for increasing demand for financial services, as per Patrick's (1966) demand-following phenomenon, that would increase interest rate spread by increasing lending rates. Bank Rate (discount rate) is the rate which commercial banks borrow money from Central Banks and this figure is positively related with the rate of spread.

3.4 Data Type and Data Source

The research study uses quarterly data generated from the year 2000 to 2014 making a sample size of $n=60$. The data for analysis was mainly obtained from Central Bank of Kenya (CBK) the IMF's International Financial Statistics and Kenya National Bureau of Statistics (KNBS). The secondary data collected from the CBK was from website, CBK Bank Supervision Annual Reports on the commercial banks. Data from KNBS was obtained from the Economic Survey Publication. Justification of this data collection source was due to most of these variables in study are readily available in CBK's bank supervision report and the KNBS.

3.5 Estimation Procedure

Equation (3.2) was estimated using Ordinary Least Squares (OLS) method owing to its simplicity, convenience and its successful use in similar and most other previous econometric studies (Gujarati, 2004). Estimation of the model was preceded by exploration of time series properties of the data by using a battery of methods: graphical and descriptive statistics; unit root tests, and order of cointegration of the model variables. Both Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) methods have been used to test for stationarity in variables. These two

approaches were used due to the fact that they could incorporate to control for higher-order serial correlation in the series. The use of ADF test implicitly gave parametric correlation for higher orders if the given series would follow the autoregressive process and, nonparametric statistical method is used in the Phillip-Perron method in order to take care of serial correlation in the error terms without adding the lagged difference terms (Gujarat, 2004). Cointegration test was carried out by using the now very popular Engle-Granger method and also Johansen test. Ultimately an error correction model (ECM) was estimated using one-period-lagged residual obtained from the estimation of equation.

CHAPTER FOUR: DATA ANALYSIS

4.1 Descriptive Statistics

While estimating the variables, key descriptive statistics were carried out in levels and presented in table 4.1 below. According to skewness and kurtosis the inflation rate and broad money to GDP ratio are normally distributed. While applying the Jarque-Bera statistics; inflation, broad money to GDP ratio, Treasury bill rate and rate of GDP growth. To address the normality problem the study converted interest rate spread, bank rate and exchange rate volatility into natural logarithmic (ln) form (Murkhejee, White & Wuyts, 2003; and Stock & Watson, 2003).

Table 4.1: Descriptive Statistics

	IRS	IFL	BR	M2_GDP	TBR	XRTV	YGR
Mean	10.95433	8.325500	7.209500	1.528504	8.033278	1.697354	4.710000
Median	10.36167	6.996667	7.356667	1.477885	8.111667	1.290064	5.100000
Maximum	16.04000	16.83333	21.86667	2.201698	19.35333	7.749517	11.50000
Minimum	8.536667	2.000000	0.473333	1.096648	1.183333	0.068929	-2.500000
Std. Dev.	1.893436	3.982419	4.084258	0.276877	3.635865	1.570383	2.822410
Skewness	0.935808	0.485814	1.123851	0.641224	0.419365	2.021591	-0.384449
Kurtosis	2.870472	2.261351	6.144941	2.592999	3.996720	7.073262	2.939975
Jarque-Bera	8.799312	3.724162	37.35704	4.525808	4.242298	82.34697	1.487017
Probability	0.012282	0.155349	0.000000	0.104048	0.119894	0.000000	0.475443
Sum	657.2600	499.5300	432.5700	91.71022	481.9967	101.8412	282.6000
Sum Sq. Dev.	211.5208	935.7200	984.1885	4.523001	779.9511	145.5000	469.9940
Observations	60	60	60	60	60	60	60

The matrix of correlation for the variables in the estimation model was conducted and it suggests that the IRS is positively correlated with Treasury bill rate as well as bank rate however this correlation was below 50 per cent (Table 4.2). The correlation between IRS and the rest of the variables, including broad money to GDP ratio (M2/GDP), exchange rate volatility, inflation and Rate of economic growth were found to be weak giving negative results (Table 4.2).

Table 4.2: Correlation Matrix of the Variables

	<i>BR</i>	<i>TBR</i>	<i>M2/GDP</i>	<i>XRTV</i>	<i>IFL</i>	<i>YGR</i>	<i>IRS</i>
BR	1						
TBR	0.90312	1					
M2/GDP	0.087126	-0.06361	1				
XRTV	0.341019	0.264941	-0.10185	1			
IFL	0.133745	0.08753	-0.01735	0.66225	1		
YGR	-0.20654	-0.2332	0.022856	0.051989	-0.10455	1	
IRS	0.312607	0.453668	-0.52467	-0.09181	-0.27503	-0.30953	1

4.2 Unit Root Tests

To get the unit root of the model each variable was subjected to stationarity test. The stationarity results obtained by using both Augmented-Dickey Fuller (ADF) and Phillips-Perron (PP) methods are presented in table 4.2 below. All variables are found to be stationary at the 1%, 5% and 10% levels of significance except for interest rate spread and broad money to FDP ratio. To address the non-stationarity problem, unit root test was performed on the variables in first difference. The results are presented in table 4.3 below. It was noted that all the variables tested

were stationary at the 1%, 5% and 10% levels of significance. This means that the variables are integrated of order one i.e. I(1) such that a linear combination between them could be integrated of order zero, I(0), implying existence of a long-run relationship among them such that simple regression would not give spurious results.

Table 4.3: ADF and PP Summary results (Variables in Level)

Variables	ADF Statistic	Prob.*	PP Statistic	Prob.*
IRS	-2.375	0.153	-2.370	0.155
BR	-3.776***	0.005	-2.720*	0.077
TBR	-3.328**	0.018	-2.748*	0.072
M2/GDP	-1.942	0.311	-2.015	0.280
XRTV	-3.759***	0.005	-3.898***	0.003
IFL	-3.987***	0.003	-2.804*	0.064
YGR	-4.003***	0.003	-4.125***	0.002

Notes : (i) ADF is Augmented Dickey Fuller and PP is Phillips-Perron

(ii) The asterisk ***, **, and * indicate significance at the 1%, 5% and 10% levels

Table 4.4: ADF and PP Summary results (Variables in First Difference)

Variables	ADF Statistic	Prob.*	PP Statistic	Prob.*
IRS	-2.375	0.153	-2.370	0.155
BR	-3.776***	0.005	-2.720*	0.077
TBR	-3.328**	0.018	-2.748*	0.072

M2/GDP	-1.942	0.311	-2.015	0.280
XRTV	-3.759***	0.005	-3.898***	0.003
IFL	-3.987***	0.003	-2.804*	0.064
YGR	-4.003***	0.003	-4.125***	0.002

Notes : (i) ADF is Augmented Dickey Fuller and PP is Phillips-Perron

(ii) The asterisk ***, **, and * indicate significance at the 1%, 5% and 10% levels

4.3 Cointegration Tests

Since, the model variables the tests revealed that they were integrated of order one, there is a likelihood of existence of a cointegrating relationships which increases the model reliability. In order to test cointegration the researcher used the Engle and Granger (1987) two-step procedure for instance if a long run relationship exists between the variables of the model. The dependent variable of the model; interest rate spread; was regressed on the independent variables of the model in levels. Regression results are presented in table 4.4. The error term from the regression in table 4.4 was tested for stationarity. The cointegration test results are presented in table 4.5. The ADF and PP test indicate that the residuals are stationary. This implies that the variables under investigation are co integrated, thus a long run relationship exists between the dependent variable. This suggested a need to obtain short run dynamics with the use of Error Correction Model (ECM).

4.4 Error Correction Model (ECM) Results

Special methods of analysis are usually required whenever time series data is found non-stationary and the most appropriate models are dynamic models with error correction terms. In addition whenever variables are co-integrated, ECM can be specified to link the short run and the

long run relationship. ECM investigates the presence of equilibrium or disequilibrium between short run dynamics and long run equilibrium values of the same, even after co-integration is confirmed. This dynamic system works in a way that the differences of the current situation is put on long run relationship through the short run dynamics. Thereafter a residual from the established information from the co-integration regression used to produce an error correction term and this is inserted on short run model Table 6 shows the results of ECM.

Table 4.5: Estimation of the cointegration equation by OLS

Dependent Variable: IRS

Method: Least Squares

Variable	Coefficient	Std. Error	Prob.
C	16.57586	1.217351	0.0000***
IFL	-0.159139	0.056556	0.0069***
BR	-0.012152	0.103198	0.9067
M2_GDP	-3.398828	0.637918	0.0000***
TBR	0.219833	0.112027	0.0550*
XRTV	-0.013518	0.154698	0.9307
YGR	-0.160704	0.061213	0.0113**
R-squared	0.611312	Akaike info criterion	3.386211
Adjusted R-squared	0.567310	F-statistic	13.89270
S.E. of regression	1.245487	Prob (F-statistic)	0.000000

Log likelihood -94.58632 Durbin-Watson stat 0.470859

Arch (F-statistic) 17.765 (0.000)

Jarque-Bera 3.577 (0.167)

Ramsey reset F-statistic 3.824 (0.056)

Breusch-Godfrey Serial Correlation F-statistic 39.785 (0.000)

The asterisk ***, **, and * indicate significance at the 1%, 5% and 10% levels

Table 4.6: Cointegration Test Results

Variables	ADF Statistic	Prob.*	PP Statistic	Prob.*
Residual	-4.5979	0.0004***	-3.1177	0.0306**

The asterisk ***, and ** indicate significance at the 1% and 5% levels

Table 4.7: Error Correction Model Estimation results

Dependent Variable: D_IRS

Method: Least Squares

Variable	Coefficient	Std. Error	Prob.*
C	-0.100795	0.061482	0.1073
D_BR	0.050197	0.047449	0.2951
D_IFL	0.058219	0.035437	0.1066
D_M2_GDP	-0.602812	0.493485	0.2275
D_TBR	-0.024542	0.053341	0.6474
D_XRTV	-0.022736	0.059719	0.7050
D_YGR	-0.048614	0.026660	0.0741
ECT(-1)	-0.265434	0.055185	0.0000

R-squared	0.408654	Mean dependent var	-0.107175
Adjusted R-squared	0.327488	S.D. dependent var	0.571613
S.E. of regression	0.468762	Akaike info criterion	1.448030
Log likelihood	-34.71689	F-statistic	5.034839
Durbin-Watson stat	2.046141	Prob(F-statistic)	0.000217
Arch (F-statistic) 0.875 (0.354)			
Jargue-Bera 6.767 (0.034)			
Ramsey reset F-statistic 0.044 (0.836)			
Breusch-Godfrey Serial Correlation F-statistic 0.407 (0.668)			

The asterisk ***, **, and * indicate significance at the 1%, 5% and 10% levels

Diagnostic test results interpretation for Long Run Model: The long run model results are presented in table 4.4. The regression results show an adjusted R-squared of 0.56. This infers that in the long run model 56 per cent of the variations in the dependent variable are explained by the independent variables. The F-statistic of 13.89 with probability value of 0.0000 in the long run model indicates that the long run model is highly significant. The Durbin Watson (DW) statistic is 0.4 which is less than 2, suggesting absence of an autocorrelation problem in the long run model.

The Ramsey RESET test statistic which test for model specification gives F-statistics of 3.824 with a probability value of 0.056 suggests some variables were omitted in the long run model that was estimated. However, this is expected due to exclusion of the bank specific variables in the model of analysis. The Jarque-Bera statistics that test for normality of the residual for the estimated long-run model is 3.577 with a probability value of 0.167. This indicates that the model is normally distributed.

The Auto Regressive Conditional Heteroscedasticity (ARCH) which tests for stability of the

residuals yielded F-statistics of 17.765 with a probability value of 0.000 confirming that the model is stable. Test for serial correlation among variables in the model using Breusch-Godfrey Serial Correlation LM test was also conducted. The results indicate F-statistics of 39.785 with probability value of 0.000. This confirms no serial correlation among the variables in the model.

Diagnostic test results interpretation for the Short Run Model: The short run model (error correction model) results are presented in table 4.6. The adjusted R-squared of 0.32 infer that 32 per cent of the variation in the dependent variable of the short run model is explained by the independent variables. The F-statistic of 5.03 with probability value of 0.0002 in the short run model indicates that the short run model is highly significant. The Durbin Watson (DW) statistic is 2.0, suggesting absence of an autocorrelation problem in the short run model. The Ramsey RESET test F-statistics is 0.044 with a probability value of 0.836. This implies that some variables were omitted in the model that was estimated. The Jarque-Bera statistics of the estimated short-run model is 6.767 with a probability value of 0.034. This indicates that the model is normally distributed.

The Auto Regressive Conditional heteroscedasticity (ARCH) yielded F-statistics of 0.875 with a probability value of 0.354 confirming that the model is stable. Test for serial correlation among variables in the model using Breusch-Godfrey Serial Correlation LM test was also conducted. The results indicate F-statistics of 0.407 with probability value of 0.668. This confirms no serial correlation among the variables in the model.

Discussions of the Long-run and Short -run model Results: The long run model results and the short run model (ECM) results are presented in tables 4.4 and 4.6 respectively. The section below

discusses the results obtained from their regression analysis. Bank Rate (discount rate): The sign on inflation rate is negative and positive for the two models respectively. This indicates that a unit increase in the bank rate has the effect of increasing the interest rate spread in the short run while decreasing it in the long run. This confirms that higher discount rate would imply additional costs incurred by banks which are passed onto customers by charging higher spreads.

Bank rate for a long time has been considered as the benchmark rate that prevails in an economy. Therefore, lowering this bank rate has been known to be associated with signalling effect. Thus, researchers have argued that if the government intervene in such scenario by introducing soft measures this would have little effects on the IRS

91-day- Treasury bill rate: The coefficient of the Treasury bill rate (TBR) is both positive and negative in the long run and in the short run respectively. This implies that a unit increase in the Treasury bill rate would lead to 0.22 percent increase and 0.22 percent decrease in the interest rate spread in the long-run and short-run respectively, *ceteris paribus*. This means that an increase in the Treasury bill rate increases the interest rate spread in the long run while in the short run it decreases the spread.

The ratio of M2 (broad money) to GDP (M2/GDP):The coefficient of the ratio of M2 (broad money) to GDP (M2/GDP) has a negative impact on the interest rate spread as expected although insignificant at all levels. The results indicate that a unit increase in ratio of M2 (broad money) to GDP would lead to a 3.40 and 0.60 percent decrease in the interest rate spread in the long-run and short-run, respectively holding all other factors constant. This implies that the level of financial development can be instrumental in reducing the interest rate spread.

Exchange Rate Volatility (XRTV): The effect of exchange rate volatilities (XRTV) is negative in both long run and short run models. This relationship is contrary to the expected. The results therefore indicate that a unit increase in volatilities in the exchange rate would lead to a 0.01 and 0.02 percent decrease in the interest rate spread in the long-run and short-run, respectively. Implying that exchange rate volatilities in Kenya decrease the interest rate spread both in the short- run and long- run.

It is worthy to note that the following three variables are highly correlated they are; exchange rate, inflation and interest rates. For instance both inflation and exchange rates are greatly influenced by the actions of Central Banks when manipulating interest rates, this in turn changes interest rates impact on inflation and currency values. When interest rates are high in Kenya for instance lenders in an economy derive a higher return relative to other countries. Therefore, foreign capital is usually attracted by offering higher interest rates which in turn causes the exchange rate to rise. To mitigate on the impact of higher interest rates inflation in the country should be much higher than in others, or if additional factors serve to drive the currency down. When interest rates are decreased the opposite of the above scenario will be experienced—i.e., exchange rates tend to decrease with lower interest rates.

Inflation (IFL) Rate: The sign on inflation rate is negative and positive for the two models respectively. This implies that a unit increase in inflation would lead to decrease of 0.16 percent and an increase of 0.05 per cent in the interest spread holding all other factors constant. The results here showed that banks charge higher risk premium in the short run and in the long run a

lower risk premium is charged as inflation increases.

Inflation as an increase in the general level of prices of goods and services in an economy over a period of time can be said to have an effect on Lending Interest Rate. This implies that that each unit of currency buys fewer goods and services whenever the general price level rises, Subsequently, inflation also reflects erosion in the purchasing power of money, thus a loss of real value in the internal medium of exchange and unit of account within the economy.

When the rates are low this has the effect of putting more borrowing power in the hands of consumers and when consumers spend more, the economy grows thereby creating natural inflation. Central Bank reacts to this by raising interest rates and consequently this slows the amount of cash entering the economy. This is because it realises that the economy is growing too fast that demand may eventually outpace supply.

Real rate of economic growth (YGR): The sign on real rate of economic growth is negative in both models. This implies that a unit increase in inflation would lead to decrease of 0.16 percent and 0.05 per cent in the interest spread holding all other factors constant both in the long run and short run respectively. This indicates that as real rate of economic growth increases banks charge higher risk premium in the both in the short run and in the long run. Thus banks do not base their interest rates GDP growth. This finding rejoins established literature that economic growth is expected to be negatively correlated to interest rate spread. The coefficient of the one-period lagged error correction term $ECT_{(-1)}$ is negative as expected. This implies that the error correction term in the model is significant at the 1 percent level and correctly signed. The error

correction term coefficient of -0.265 means that in each period, the interest rate spread adjusts by 0.265 percent between the current level and the long run equilibrium level.

CHAPTER FIVE: CONCLUSION AND POLICY RECOMMENDATION

The study examined the determinants of IRS for 15 years in Kenya taking 2000-2014. Based on the availability of data the study found out that factors like Treasury bill rate, broad money to GDP ratio, exchange rate volatility, inflation, real rate of economic growth and bank rate. The analysis followed a general-to-specific estimation of an Error Correction Model (ECM) by using quarterly data for the period 2000 quarter 1– 2014 quarter 4.

The results obtained from the study revealed that interest rate spread in Kenya was most significantly determined by the rate of economic growth. Additionally, the level of financial development as measured by M2/GDP and Treasury bill rate were also found to be significant in determining interest rate spread in the long run. The effect on interest rate spread from inflation, real exchange rate volatility and bank rate were found to be inconsistent with theory. The results suggested that although bank rate was insignificant at all levels, but it had a positive correlation meaning that in Kenyan context this variable was not major but still had less significant impact on the spread as opposed to what is perceived in other literatures from developed nations.

This study results leads to several policy implications for instance; Promote transparency in the financial sector: The government should promote transparency in charging of lending interest rates by commercial banks. Make Interest rate determination more transparent. The rates prevailing in a country should also be competitive and responsive to policy interest rate changes will ensure that the interest rate channel transmission of monetary policy becomes more effective.

Eliminate monetization of budget deficit: The government has been financing the budget deficit through domestic borrowing by issuing treasury bills. This makes the government to remain in perpetual debt especially when it issues new bills to pay the maturing bills. The government should eliminate monetization of budget deficit. In addition, investment in Treasury bills creates shortage for loanable funds and therefore bank managers can only make more loans by charging more interest on loans that would compensate for the high cost of borrowed funds. For this reason, the treasury bills should only be used as monetary policy instrument and not to raise funds to finance budget deficit.

Financial intermediation is basically used depending on the level of financial development. This means that if the financial intermediation is increased then bank efficiency would go up and ultimately this will reduce the spread (the ratio of M2 and GDP). However, the study also revealed that financial intermediation can be moved upwards if savings and deposits rates are pushed upwards by the commercial banks.

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