EFFECT OF MACROECONOMIC FACTORS ON COMMERCIAL BANKS LENDING TO AGRICULTURAL SECTOR IN KENYA

BY

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DECLARATION

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

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DEDICATION

This project is dedicated to my dear wife Esther Njeri and my two daughters, Elizabeth and Irene for their understanding and support during the time I worked late on weekends to beat deadlines and thereby complete the study. Their patience gave me the will to success. I owe my success to their support.

ABSTRACT

The study sets out to investigate the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya. The relationship between the effect of macroeconomics factors and sectoral lending by commercial bank is of major concern in the bank lending function in an economy. Commercial banks use the findings of the effect of macroeconomics to predict the performance of sectors in order to take precautionary measures in lending to avoid financial crisis. Insufficient supply of agricultural sector credit is one of the constraints to modernizing agricultural production. Lending by commercial banks to the agricultural sector has not lived up to expectations. To this end, the study set out to investigate the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya. The findings have established the effect of Inflation rate, Interest rate, Exchange rate and (GDP) on commercial banks' lending to Agricultural sector. The population of the study comprised of all commercial banks' in the entire period in Kenya that were licensed and registered under the Kenya banking act. All the commercial banks in Kenya were sampled in order to provide a complete picture on the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya. The data required for the study was obtained from secondary source in the central bank of Kenya that was used to investigate the relationship between dependent and independent variables. The theoretical framework that was used in this study explored business cycle theory and contemporary banking theory of financial intermediation as the main root of limited percentage share of commercial banks' lending to agricultural sector in Kenya .The researcher employed descriptive survey design and data analysis used descriptive statistics, correlation analysis and regression analysis. While commercial banks were found involved in lending activity, they continued to lend low to agricultural sector. It was clear from the study that, a unit increase in interest rate, inflation rate and exchange rate negatively affected theamount of credit provided by the commercial banks respectively. This resulted to decrease in the amount of credit.GDP was found to have a positive relationship to lending. A unit increase of GDP led to increase to amount of credit provided by commercial banks. To cater for the credit needs of agricultural sector, it is incumbent upon the commercial banks to review its lending dimension. The study has important implications in terms of policies that will enhance economic growth through agricultural financing. There is need to increase the amount of lending to agricultural sector through the reduction of interest rates and controlling the negative effect of exchange rate and inflation to allow more economic growth in the country.

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LIST OF ABBREVIATIONS

ADBG -African Development Bank Group Agriculture

ANOVA   -   AnalysisOf Variance

ASDS   -   Agricultural Sector Development Strategy

AU   -   African Union

CBK   -   Central Bank of Kenya

CPI   -   Consumer Price Index

CRBs   -   Credit Reference Bureaus

EU   -   European Union

FAO   -   Food and Agriculture Organization of the United Nations

FPRI   -   Food Policy Research Institute

GDP   -   Gross domestic products

IFPR   -   International Food Policy Research

MEF   -   Macro Economics Factors

MDG   -   Millennium Development Goals

NGO   -   Non-Governmental Organization

NPL   -   Non Performing Loans

SPSS   -   Statistical Packages for Social Sciences

UNIDO   -   United Nations Industrial Development Organization

US   -   United State

VAR   -   Vector Auto Retrogressive

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The banking industry has beenfacing numerouslending challenges. The explanation for this from a global context elicits varied reasons.Mulei(2003) points out that, this challenge arises because of paucity of skills required to determine the soundness of securityvaluation and the validity of legal charges associated with loan collateral while (Berger,1995) alleges that, the evolution of the banking industry has presented both challenges and opportunities for commercial banking institutions. Baum*et al,*(2009) further observes that macroeconomic uncertainty has an impact on the portfolio holdings of commercial banks.Commercial banks play a major role in the economy through their economic role of financial intermediation that performs both a brokerage and a risk transformation function (O'Hara, 1983).This involves lendingto borrowers to finance economical activities for improving resource allocation and investment opportunities.

1.1.1 Macroeconomics Factors

Macroeconomics Factors (MEF) are derived from macroeconomics which is the study of the behavior of the economy as a whole such as total output, income, employment levels and the interrelationship among diverse economic sectors (Karl,2009). These macro-economic factors include economic growth captured by gross domestic product (GDP), interest rates, exchange rates and inflation ratesChen,Roll and Ross(1986) maintains thatthese macroeconomic factors are significant in explaining firm

performance (profitability)andsubsequent returns to investors. Branson (1979) further points that real exchange rates are influenced by real disturbances in the current account and the time series seems to give signal for adjustment (Oladipupo, 2011).Simon (1997) found that exchange rate and current account have direct and positive relationship with inflation and both exchange rate and current account are the key factors that badly affect the small economies. Hook(1994),Herrero(2003) points out that deteriorating local economic condition for instance low GDP, inflation, interest andexchange rate cause bank failure. Further Hefferman(1996) asserts that macroeconomic factors are worsened by regulations imposed on banks. The effect of macroeconomic factors in other sectors of the economy will always affect the banking sector and what goes on in the banking sector will affect the other sectors of the economy.

1.1.2SectoralLending by Commercial Banks

According to, Collins*et.al,* (2011) financial institutions facilitate mobilization of savings, diversification and pooling of risks and allocation of resources in the economy. Duvvuri (2012) indicated that Indian banks adopted regulations for having a directed credit scheme, called priority sector lending, whereby all banks are required to ensure that at least 40 percent of their credit goes to identified priority sectors like agriculture and allied activities, micro, small and medium industries, low cost housing and education. The scheme designates commercial bank identified for each of the over 600 districts in the country with responsibility for ensuring implementation of a district credit plan that contains indicative targets for flow of credit to sectors of the economy that banks may neglect. The ratio and the composition of the priority sector

are different for foreign banks in consideration of the fact that they do not get 'full national treatment' on some regulatory aspects. According to Ezirim (2005) bank lending decisions are done with great deal of risks, which call for great caution and tact in bank operations.

Lending by commercial banks involves committing funds into diverse sectors of the economy with an expectation of returns inform of interest income while on the other hand lending is the largest source of credit risk to commercial banks Ogilo (2012).

In themid-1990s, the Nigerian financial system was in a state of collapse. In 1992, eight banks were insolvent and 45 percent of bank loans non-performing. In 1995, the Central Bank of Nigeria (CBN) classified nearly half of the 81 local banks as distressed Most of these banks suffered from distress because the requirements relating to lending to risk sectorsand to un creditworthy individuals who increased the ratio of non-performing (NPLs) loans to total loans (Brownbridge ,1998).According toKasekende (2010)banksin Ugandahadbeen lending to the private sector a higher end of the market and prefer investing in low-risk government securities.

1.1.3 The Relationship between Macroeconomic Factors and SectoralLending by Commercial Banks

The relationship between the effect of macroeconomics factors and sectoral lending by commercial bank is of major concern in the bank lending function in an economy. Commercial banks use the findings of the effect of macroeconomics to predict the performance of sectors in order to take precautionary measures in lending to avoid

financial crisis. According to Sashana (2012), the general loan behaviour of most banks will be a reflection of the signals from the aggregate economy in that, when banks perceive the macroeconomic environment to be stable, they form expectations that borrowers in different sectors will be better able to repay loans because of their improved ability to accurately predict income stream over the life of the loan.

Baum *et al*, (2005), suggests that since banks must acquire costly information on borrowers before extending loans to new or existing customers, uncertainty about economic conditions and the likelihood of loan default would have clear effects on their lending behaviour that affect the allocation of available funds. A study by Talavera *et al*, (2006) concluded that banks make more loans during periods of boom and reduced level of macroeconomic uncertainty and curtail lending when the economy is in recession. Further they indicated that, the economic environment is a systematic risk component that affects every participant within the economy. The state of the economy is measured by macroeconomic aggregates, which include the gross domestic product (GDP), employment level, industrial capacity utilization, inflation, money supply and changes in the exchange rate.

The changes in these macroeconomic factors among others suggest that banks adjust their lending behaviour in response to the signals from these factors which affect commercial banks' lending volume to different sectors in the economy. Fawad and Taqadus(2013) observed that, when banks foresee a positive outlook on sector

balance sheet growth due to favorable macroeconomic performance, banks support the sectors through increased growth in credit.

1.1.4Macroeconomic Factors Effect on Agricultural Sector Lending

Oden (2003) studies observed significant linkages between real supply shocks, agricultural prices, exchange rates and international monetary reserves in the United States. Exchange rates, interest rates, and the level of money supply were found to be key monetary variables that are determined mainly within domestic or international markets.

Increase in inflation rate has an adverse effect on agricultural investment. Higher inflation resulting from crop failures may lead to higher prices which impedes ability to borrow and invest. Shashanka*et al*, (2005) found that high rates of inflation, was characterized by higher growth in agricultural prices. Inflation and inflationary expectations can press interest rate upward which affects lending terms resulting to reduced credit demand and lending in agricultural sector.

Exchange rate has an indirect impact on agricultural sector debt through the direct impact it exerts on the cost of farm imports. High exchange rates leads to increased value of export that result to increased agricultural income meaning that borrowers will have returns to offset their debts and commercial banks would be willing to increase the amount of lending. Decline in exchange rate result to low export, high cost of import that culminates to reduced income in agricultural sector resulting to increased non-performing loans.Owoeye*et al,* (2013) observed how positive relationship between exchange rate and bank loan loss may reflect how fluctuation

and volatile exchange contribute to the debt profile of banks and reduce the profit level of borrowers. This indicates that when exchange rate becomes more unstable banks find it difficult to manage their loan profile which would consequently affect agricultural sector lending.

GDP is the measure of economic activity of a country. Decline in GDP result in fall of income and asset prices, leads to non-performing loans, lowers borrower's financial capacity and depresses the value of collaterals as secondary means of servicing debts. A fall in agricultural sector performance in the economy translates to low income and improved performance results to income all that have positive and negative impact on GDP.According to Bistriceanu (2011) the pressures exerted by the natural and the economic environment; insufficient incomes that do not allow agricultural farms to use advanced technologies add to the reluctance of commercial banks to credit economic sectors with high risk, such as agricultural sector.

1.1.5 Macroeconomics Factors and Lending to Agricultural Sector inKenya

In Kenya high lending interest rates and volatile shilling exchange rates have discouraged investment in the agricultural sector. Many farmers have been impoverished by the high debt servicing and nonperforming loans (Tegemeo, 2009). High interest rates were observed in the first half of 2012.They impacted negatively on the quality of bank loans and advances. The agricultural sector recorded 7.2

percent nonperforming loans (Central Bank of Kenya, bank supervision annual report, 2012).

According to (Central Bank of Kenya Supervision Annual Report 2012), a significant and real estate sectors which accounted for 71 percent of gross loans in portion of the banking sector loans and advances were extended to personal, trade, manufacturing 2012. During the same period, over 72 percent of the sector's loan accounts were in personal/household sector which accounted for over 24 percent of the banking sector credit. Trade, manufacturing and real estate sectors accounted for 46.6 percent of the sector's credit while agriculture shared 4.7 percent. This indicates varying sectoral lending by commercial banks in Kenya. Further the mobilizations and access of banking services in Kenya is limited especially in rural areas and does not link with production activities in agriculture and small industrial and business investment (Florence, 2012). This leads to low accessibility of credit to some sectors. Oloo (2009) describes the banking sector in Kenya as the bond that holds for their very survival and country's economy together. Sectors such as the agricultural and manufacturing virtually depend on the banking sector for their growth.

1.2 Research Problem

Insufficient supply of agricultural sector credit is one of the constraints to modernizing agricultural production. During an economic boom the demand for credit is high compared to recession due to the nature of business cycle. A number of macroeconomic factors are understood to affect commercial banks' lending.

Baum (2009) observed that macroeconomic uncertainty has impact on the lending functions of commercial banks which poses a challenge to commercial banks managers in their core function of credit management.Samuel (2008) examined the impact of rural banking on rural farmers in Ghana .Using thirty farmers and four workers as a case study; found out that the higher the interest rate, the lower the demand for loans. In addition, high interest rates cripple infant farmers. Further, Du (2011) investigated the relationship on macroeconomic determinants of bank lending in the problem of long-term loan and macroeconomic variables in China in the period 1994 to 2005. The study indicated that current economic growth rate (GDP) and accelerated industrialization stimulate the demand for medium- and long-term loans. Lower level of inflation having positive impact on medium- and long-term loans, while high level of inflation having negative impact on medium and long-term loans. According to Monke and Pearson (1989), exchange rates plays a very important role in the importation of inputs and in the exportation of agricultural products; where surplus is not sizeable due to financial difficulties leads to defaults resulting to payment of penalties which in turn contribute to increase in debt.

The study by Kodhek (1998) in Kenya agricultural sector showed that farmers in export trade had been pushing to start their own banks due to dissatisfaction over the difficulties, costs and high interest rates in getting loans from commercial banks. Higher lending rates raise the cost of credit to agricultural sector which leads to limited productivity, increased expenses and lowers capacity to service credit (UNDP, 2007). Otuori (2013) indicated that exchange rates in Kenya had been fluctuating over

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the last few years with a rising trend with a high US dollar to Kenyan shilling. This shows a weakening shilling as well as a deteriorating exchange rate.

Lending by commercial banks to the agricultural sector has not lived up to expectations. FAO surveys of lending to agricultural sector in selected African countries FAO (2010) indicated that commercial banks lend less than 10 percent of their loan portfolios to agricultural sector. The limited access to commercial bank credit facilities by agricultural sector is still a major problem despite the fact that Kenya has a relatively well developed banking system (Economic review of Agriculture, 2012).Further a legal requirement indicates that 17-20 percent of commercial bank's loan portfolio should be dedicated to agricultural sector which is far below what the government has mandated (The World Bank Agribusiness Indicators, 2013). This limited percentage credit allocation shows that commercial banks have issues in lending to agricultural sector that are not adequately addressed. This study sought to investigate the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya.

1.3 Objective of the Study

The objective of the study was to investigate the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya.

1.4 Value of the Study

The study exposed the effect of macroeconomic; inflation rate, interest rate, exchange rate and GDP rate factors on commercial banks 'lending to agricultural sector in Kenya.

The study generated empirical data that can be used by commercial banks, government, NGO's, investors' future researchers and scholars, and other financial institution in formulating lending and assistance policies in financing agricultural sector.

The research will contribute towards the achievement of the Millennium Development Goals) namely; reducing poverty and hunger (MDG1), empowering women (MDG3) and developing global partnerships for development (MDG8) leading to the achievement of Kenya Vision 2030.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter examined related literature business cycle theory, the contemporary Banking theory of financial intermediation, overview of lending, risk in agricultural sector lending, empirical studies and the conclusion.

2.2 Theoretical Review

2.2.1 Business Cycle Theory

The theory of business cycle Schumpeter (1939) indicates the process of economic change or evolution that consists of two distinct phases, "prosperity" and "recession". One under which the impulse of entrepreneurial activity, draws away from an equilibrium position, and the second of which it draws toward another equilibrium position. Schumpeter calls those fluctuations/cyclical processes in economic life business cycle. Schumpeter shows the intermediary role of financial sector between those who save and invest, through a process referred to credit creation by bank financing that leads to economic growth and development. The effect of this process leads to profit and loss generation by the lender and the borrower.

According to Bikker and Hu (2002), certain macroeconomic variables typically display unique pattern of boom and recession in a business cycle. A crisis is said to

occur at the peak of expansion when growth in real GDP and domestic demand decline leading to acceleration in inflation. During periods of economic expansion, firms' and their respective sectors profits increases, asset prices rises aggregate sectoral demand for credit facilities expands leading to growth in bank lending resulting to increased interest income. Banks may underestimate their risk exposures, relaxing credit standards and reduce provisions for future losses while the economy indebtedness rises. As the downturn sets in individual's, firms and sector profitability deteriorates. Decline in profitability result in fall of asset prices, non-performing loans, lowers borrower's financial capacity, fall in employment levels, and depresses the value of collaterals as secondary means of servicing debts. Banks' risk exposure increases, and consequently raises the need for larger loan provisions and higher levels of capital, exactly when it is more expensive or simply not available. This may lead to banks reacting by reducing the amount of lending, especially if they have low capital buffers above the minimum capital requirement, thus increasing the effects of the economic downturn as well as increasing the lending rates. Although business cycle theory could explain why only a limited share of loans from commercial banks has been allocated to agricultural sector it is not exhaustive. The theory will be complemented by contemporary banking theory of financial intermediation.

2.2.2 The Contemporary Banking Theory of Financial Intermediation

The Contemporary banking theory of financial intermediation postulates that financial intermediaries exist because they can reduce information and transaction costs that arise from the information asymmetry that is between the borrower and lender. Diamond (1984) indicated that financial intermediaries are delegated the costly task

of monitoring loan contracts of which they reduce the cost through diversification. Further Holmstrom and Tirole (2001) indicated that adverse selection, moral hazard and credit rationing as the main themes of contemporary banking theory. According to Rhyne (2002) the disparity between the gross costs of borrowing and the net return on lending defines the intermediary costs which include information costs, transaction costs, administration, default costs and operational costs. According to Dadkhah(2009) financial intermediaries also assist in the efficient functioning of sectors and any factors that affect the amount of credit channeled through financial intermediaries can have significant macroeconomic effects. This has both financial implications to the performance of commercial banks as well as other sectors in the economy.

The two theories interact in different ways in regard to business cycle trends and on the intermediation role that commercial banks play in an economy. An understanding of macroeconomic factors effect on commercial banks' lending in response to these theories are important in that it allows bank managers in making informed lending decisions.

2.3 Empirical Evidence

Schuh (1974) studied the impacts of macroeconomic factors on the agricultural sector in the United States and other industrialized countries. They provided evidence of significant linkages between real supply shocks, agricultural prices, exchange rates and international monetary reserves. They found that exchange rates, interest rates, and the level of money supply are key monetary variables that are determined mainly

within domestic or international markets. Macroeconomic variables, including trade policy instruments on imports and exports are determined by domestic policy makers. These variables were viewed as exogenous to the agricultural sector.

Claudia *et al*, (2010) studied the interplay between banks and the macroeconomic importance for financial and economic stability in U.S. for the period 1985 quarter1 to 2008 quarter 2. They studied more than 1,500 commercial banks and analyzed the data using factor-augmented vector autoregressive model which extends a standard VAR .The model included GDP growth, inflation, the Federal Funds rate, house price inflation, and a set of factors. Their main findings were ;average bank lending increases following expansionary shocks, average bank risk declines after most expansionary macroeconomic shocks, house price and monetary policy shocks are particularly important for bank risk and that ,there was a substantial degree of heterogeneity across banks both in terms of idiosyncratic shocks and the asymmetric transmission of common (banking and macroeconomic) shocks.

Afanasieff*et al*, (2002) examined the determinants of banks interest spreads using macro and micro variables in Brazil and found that, macroeconomic variables have the most impact on bank interest spread in Brazil. Naceur (2003) investigated the banks characteristics, final structure and macroeconomic indicators on bank's net interest margin and profitability in Tunisian Banking Industry for the 1983-2000 periods. High net interest margin and profitability tend to be associated with banks that hold relatively high amount of capital, and with large overheads, that inflation

and growth rates had negative effect while stock market development had a positive impact on profitability and net interest margin.

Mark *et al,* (2007) examined a sample of forty-two financial institutions in Latin America that had agricultural portfolios on how they mitigated against perceived risks, how they access and manage credit risk. They found that there was a requirement that agricultural lending be less than 40 percent of the portfolio exposure in order to reduce risk. They concluded that, agricultural sector lending cannot be the primary type of lending unless more robust risk transfer techniques become more common place.

Kargbo (2000) examined the implementation of macroeconomic factors that is monetary, exchange rate policies by West African countries and found that they had tremendous impacts on food prices, real incomes of farmers, and the terms of trade between tradable and non-tradable. Further, he stated that reforms were a response to significant balance of payments problems experienced during the 1970s and early 1980s. Price reforms that targeted agricultural producers at the farm level and stabilization of food prices for consumers were key components of the macroeconomic adjustment packages. Dorward *et al*, (2003) concluded that those policies had serious implications for the reduction of poverty and increased agricultural growth in Africa.

Mansor (2006) employed Vector Autoregressive (VAR) technique to investigate the relationship between bank lending and some macroeconomic variables such as real output, stock prices and exchange rate in Malaysia for quarterly data spanning 1978 quarter 1 to 1998 quarter 2. The study demonstrated that bank loans were positively influenced by real output but no influence of bank loans on real economic activity was found. He further observed that exchange rate fluctuations affected bank lending activities through its effects on real output and stock prices. In another study in Malaysia, Abdul*et al*, (2011) noted that bank lending was negatively influenced by interest rates, while controlling other macroeconomic variables such as GDP and Inflation. Furthermore, Abd*et al*, (2007) using a VAR model, demonstrated that monetary policy tightening in Malaysia reduced bank lending to all the sectors, but some sectors such as manufacturing, agricultural, and mining sectors are more affected.

Emmanuel (2008) carried out a study on the impact of macroeconomics environment on agricultural sector growth in Nigeria. The macroeconomic factors included in the model were, nominal interest rates on the loan, exchange rate, world prices of agricultural produce, foreign private invest-government expenditure and nominal exchange rate. Using multiple regression analytical technique (ordinary least square), he discovered that nominal interest rate is positively related to the index of agricultural production. This implied that at higher nominal interest rate, more credit facilities were made available to the operators of the Nigerian agricultural sector, but at lower nominal interest rate, credit facilities are no more widely available.

Otuori (2013) in his study investigated the determinant factors of exchange rates and their effects on the performance of commercial banks in Kenya. He observed thatexports and imports Interest rates, inflation and exchange rates were all highly correlated. By manipulating interest rates, central banks exert influence over both inflation and exchange rates, and changing interest rates impact inflation and currency values. Higher interest rates offer lenders in an economy a higher return relative to other countries, attract foreign capital and cause the exchange rate to rise. The impact of higher interest rates is mitigated, however, if inflation in the country is much higher than in others, or if additional factors serve to drive the currency down. The opposite relationship exists for decreasing interest rates that is; lower interest rates tend to decrease exchange rates (Bergen, 2010).

Lucas and Anne (2010) examined the effect of macroeconomic developments on performance, credit quality and lending behaviour of banks in Kenya, by estimating a dynamic panel data model using Generalized Method of Moments. The study suggested that banks need to continue pursuing risk sensitive loan pricing policies to ease the extent of procyclical/countercyclical behaviour during economic upswings/downswings respectively, which in turn reduces the chances of supply driven credit crunch effects.

Onesmus (1997) studied the influence of macro-economic monetary and fiscal variables on agricultural credit lending made through Agricultural Finance

Corporation (A.F.C) and Commercial Banks during the period 1973 to 1992 in Kenya. He used econometric model in assumption that the amount of agricultural loans made in a given year was determined by prevailing inflation, lagged consumer sugar and maize price, central government spending activities as measured by budget deficit or surplus and interest rate. The results showed high and significant association between total agricultural lending and government controlled lagged produce price of maize, lagged consumer price of sugar and annual inflation rate. The results further revealed that there are other important variables that influence A.F.C. agricultural lending which are not reflected in the three macroeconomic variables investigated. The study concluded that overall performance of the economy was affected by agricultural lending activities of both A.F.C. and commercial banks.

Hezron *et al*, (2004) analyzed macroeconomic indicators for the period 1982, 1992 and 1997 on agricultural sector performance on income and expenditure. They found a decline in agricultural prices and production. The performance of the agricultural sector in the 1990s was dismal, with annual growth in agricultural GDP averaging 2 percent compared with 4 percent in the 1980s. Agricultural export growth after the policy reforms showed mixed trends due to market access limitations for Kenyan exports. Market access for imports into the Kenyan market had improved since the reforms, occasioning tremendous import growth. After the reforms the country moved from broad self-sufficiency in production of most food staples to a net importer the balance of trade between Kenya and the rest of the world worsened against Kenya.

Paul and Edward (2010) studied the involvement on giving of credit facilities to agricultural sector by banks and found that, some banks like Equity bank, K-Rep and Family Bank had been giving credit to dairy farmers in the country. They noted that, the local banking system has remained conservative in lending to agricultural sector probably due to risks in agricultural production. They further noted that, the situation had been made worse by liberalization of interest rates. They confirmed that although there was a legal requirement that banks should lend between 17-20 percent of their loan portfolio to agricultural sector, they observed that a less than 10 percent of the total credit was provided by commercial banks in Kenya.

Nyangito (2001) investigated the impact of food imports to agricultural sector andshowed that, food imports reduce domestic food prices, stifle domestic food production, act as a disincentive to farmers and dampen domestic producer's prices thereby reducing incentives to produce. In Kenya, before the 1990's, food imports were low since food consumption was almost commensurate with domestic food production. However, after 1992 imports from developed countries that include the USA, EU and Australia had been high because of the decline in domestic production. He further indicated thatsubsidized food import enters Kenya at low prices, force domestic prices to decline, hence threatening domestic production of food commodities. Cheap food imports reduce the market for domestic agricultural sector products and leave many farmers and workers in agricultural related industries without a source of income hence lowering their financial capacity.

Further studies by Kangethe (2007) showed that food imports do drain foreign exchange savings in developing countries and restrain their ability to meet their foreign exchange needs. In his study he found that, the volume of imported food items had been growing rapidly in Kenya for the period between 1997 to 2001 where over 0.5 billion US$ spent on mainly primary and processed food and livestock products. This was shown to have resulted to an increased cost of agricultural import that resulted to absorbing up to 69 percent of the value of agricultural export. He further observed that the trade balance within the agricultural sector was likely to be very small or even negative which is made worse by drought that adversely affects export production or face sharp decline in world prices for agricultural sector commodities exports.

2.4 Summary of Literature Review

The empirical review above indicates that macroeconomics indicators are critical factors that determined the performance of commercial banks in their financial intermediary role in lending. Most studies on this subject were done in different regions, on different macroeconomic indicators and sectors with scanty studies done in developing countries and particularly in Kenya. The limited access to commercial banks' lending to agricultural sector necessitates the need of carrying out this research. In this study, combinations of different macroeconomic factors were used in the analysis in the same model. There is therefore a gap in literature regarding theeffect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya. The current study sought to bridge this gap.

CHAPTER THREE

RESEARCH METHODOLGY

3.1 Introduction

This chapter describer's the research design and methodology that was used in this study. It also describes the sample and sampling procedures, research instruments, and the site of the study, target population, and data collection techniques. Other aspects include data analysis, procedures and data management.

3.2 Research Design

The research employed descriptive research design. Descriptive research design method helped in gathering information about the existing status of the phenomena in order to describe what exists in respect to variables. This method was used because it addressed the objective of the study in investigating the relationship between the variables of the study. According to Key (1997) this method ranges from survey to correlation study that investigates the relationship between variables.

3.3 Population

The population of the study comprised of all commercial banks in Kenya that were licensed and registered under the Kenya banking act in the period 2003 to 2012.

3.4 Sample Design

All the commercial banks in Kenya were sampled in order to provide a complete picture on the effect of macroeconomic factors on commercial banks' lending to

agricultural sector in Kenya. The sample size was also in line with other research studies that have been done in the past that sampled all the commercial banks in Kenya.

3.5 Data Collection

The data required for the study was obtained from secondary sources that was used to investigate the relationship between dependent and independent variables. The financial data for the period 2003 to 2012 was used. The ten year period provided reliable and most current information that portrayed fluctuation in macroeconomic variables in the business cycle as indicated by (Ondrej, 2011). The secondary data for this research was collected from various sources which included; University of Nairobi library, financial institutions archives such as like Central Bank of Kenya, Kenya National Bureau of Statistics, and Ministry of Planning of Kenya Treasury, World Bank websites, Ministry of Agriculture Library and from various internet sources. This research included review of published and unpublished materials, journals, dissertations and theses. Secondary data was used because it addressed the objective of the study in establishing the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya. The dependent variable was percentage share of commercial banks credit to agricultural sector and the independent variables were Interest rate, Inflation rate, Exchange rate (Kenya Shilling to US Dollar) and Gross Domestic Product.

3.6 Data Analysis

The collected data was checked for completeness, coded and tabulated. It was analyzed using descriptive statistics, correlation analysis and regression analysis. Descriptive statistics was used for the average minimum and maximum rate to analyze the mean and standard deviation. Correlation analysis was used to test for serial correlation between independent variables. This was a quantitative research study since the variables used were quantitative.

Analytical Model

Based on the econometric model employed by Onesmus (1997),who studied the aspects of agricultural credit lending in Kenya. Econometric model was used in this study to analyze the relationship between percentage credit share of commercial banks credit to agricultural sector as the dependent variable against independent macroeconomic variables; inflation rate, interest rate, exchange rate and GDP rate.

$Y= \qquad \beta_0 + \beta_1 \ln CPI_{1it} + \beta_2 IR_{it} + \beta_3 \ln E_{1it} + \beta_4 \ln GDP_{it} + \beta_5 \ln CPI_{it-1} + \epsilon_{it}$

$Y=$ Is the amount of credit provided by the commercial banks at time (t)
expressed as the percentage share of commercial banks credit
to agricultural sectorfor the period 2003 to 2012.The dependent
variable was standardized by using financial data from the market.

$\beta_0 =$ Is the intercept

$\epsilon_{it}=$ Error term

it=　　　　　　　Is the i^{nt} time for the yearly data period from 2003 to 2012

ln=　　　　　　　Natural log that was used to reduce error and increase stability

of the model

$\beta_1 CPI_{1\ it} =$　　　Inflation rate measured by Consumer Price Index in year t

$\beta_2 IR_{it} =$　　　Interest rate measured by the average lending interest rate for

the period 2003 to 2012.

$\beta_3 E_{1\ it} =$　　　Exchange rate (Kenya Shilling to US Dollar)measured as

nominal exchange rate in year t .

$\beta_4 GDP_{it} =$　　　Gross Domestic Product rate in year t.

β_1, β_2, $\beta 3$, β_4 =Are unknown parameters that were estimated that is regression coefficient.

Correlation matrix for dependent and independent variables was used to analyze: correlation and regression analysis, the strength of the model through ANOVA by use of significance of F Statistics at 5% level as well as using coefficient of determination (R^2). A positive correlation coefficient mean's that the two variables move in the same direction. A negative correlation coefficient mean's that the two variables move in opposite direction. The analysis was done using Social Package for Social Science (SPSS V 20) software to code, enter and compute the measurements of the multiple suggestions and recommendations on the topic under study, which was then presented in tables and graphs regressions.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the research findings on the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya. The study was conducted on commercial banks where secondary data from the period of 2003 to 2012 was used in the analysis. The regression analysis was done for the ten years period.

4.2 Descriptive Analysis Results

Table 4.1: Summary of the Data

Table 4.1 shows the collection of secondary data for the five variables for the ten year period.

Year	Inflation rate (CPI)	Gross Domestic Product	Exchange rate	Interest rate	Percentage share of Commercial banks' credit to agricultural sector
2003	2.8	2.7	81.4208	13.9169	1.73
2004	4.6	4.6	81.5611	13.9024	2.43
2005	6.0	5.9	83.7514	14.1386	3.19
2006	6.30	6.3	85.8292	14.3226	4.21
2007	2.6	6.9	87.0422	14.7904	4.16
2008	16.9	1.5	96.2694	15.2126	3.50
2009	10.6	2.6	96.5222	18.5143	8.72
2010	4.1	4.9	99.7783	19.5445	4.13
2011	14.0	5.5	99.8319	20.0438	5.20
2012	10.6	4.2	105.961	20.2789	4.70

Source: Central Bank of Kenya website

Table 4.2: Descriptive Results on Dependent and Independent Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Percentage share of commercial banks' lending to agricultural sector	10	1.73	8.72	4.1970	1.89827
Gross domestic product	10	1.50	6.90	4.5100	1.76601
Inflation rate	10	2.6	16.9	9.75	0.2178
Exchange rate	10	81.42	105.96	91.7968	8.86067
Interest rate	10	13.90	20.28	16.4665	2.75824

Source: Result Findings

The study found that the mean of percentage share of commercial banks' lending to agricultural sector ranged from a minimum of 1.73 to a maximum of 8.72 percent, with a mean of 4.1970 and a standard deviation of 1.89827. GDP rate ranged from a minimum of 1.50 to a maximum of 6.9 percent with a mean of 4.510 and a standard deviation of 1.76601. Inflation rate ranged from a minimum of 2.6 to a maximum of 16.9 percent with a mean of 9.75 and a standard deviation of 0.2178. Exchange rate ranged from a minimum of 81.42 to a maximum of 105.96 with a mean of 91.7968 and a standard deviation of 8.86067. Interest rate ranged from a minimum of 13.90 to a maximum of 20.28 with a mean of 16.4665 and a standard deviation of 2.75824.

4.3 Correlation and Regression Analysis Results

Table 4.3 shows the summary of the correlation results for the dependent and Independent variables.

Table 4.3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.919(a)	.845	.814	.46316

The coefficient of determination, Adjusted RSquare showed how change in the independent variable resulted to changes in the dependent variable. The value of adjusted Rsquare was 0.814 which implied that, there was a variation of 81.4% of amount of credit provided by the commercial banks due to changes in inflation rate, interest rate, exchange rate and GDP at 95% confidence interval. The results further show that, the variables jointly accounted for 84.5% of variance in amount of credit provided by the commercial banks. Further the study found that there was a strong positive relationship between amount of credit provided by the commercial banks and the independent variables; inflation rate, interest rate, exchange rate and GDP as shown by correlation coefficient of 0.919.

Table 4.4: ANOVA

Table 4.4 shows ANOVA statistics for the processed data, which is the population parameter.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.656	4	.664	4.805	.015[a]
	Residual	4.294	38	.113		
	Total	6.95	42			

The F statistics was significant at 0.015 which shows that the data was ideal to explain the determinant of the percentage share of credit provided by commercial banks 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 (1.676 < 3.131) an indication that macroeconomic factors have effect on commercial banks' lending to agricultural sector in Kenya. The significance value was less than 0.05 that indicated that the model was statistically significant.

Table 4.5: Shows the regression analysis.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.334	.111		2.285	.001
	Inflation rate	-.144	.164	-.193	-1.876	.0012
	Interest rate	-.561	.481	-.327	-1.469	.0034
	Exchange rate	-.181	.714	-.325	-2.736	.0158
	Gross domestic product	.288	.501	.484	2.759	.0406

$Y = 0.334 - 0.144X_1 - 0.561 X_2 - 0.181 X_3 + 0.288X_4$

From the above regression model, holding inflation rate, interest rate, exchange rate and Gross Domestic Product to constant zero , the amount of credit provided by the commercial banks would stand at 0.334. A unit increase in inflation rate would lead to decrease in amount of credit provided by the commercial banks by 0.144 units , a unit increase in interest rate would lead to decrease in amount of credit provided by the commercial banks by 0.561 units, a unit increase in exchange rate would lead to decrease in amount of credit provided by the commercial banks by a factors of 0.181 and a unit increase in gross domestic product would lead to increase in amount of credit provided by the commercial banks by 0.288 units. Interest rate had the highest negative effect on the percentage share of commercial banks credit to rate agricultural sector. This means that a unit increases in interest rate caused a higher decline in

lending. The study also revealed that GDP had positive effect significant

effect on the percentage share of commercial banks credit to agricultural sector. This

means as GDP rises lending to agricultural sector improves.

4.4 Discussion

 The study sought to investigate the effect macroeconomic factors on commercial

banks' lending to agricultural sector in Kenya. The descriptive statistics analysis

showed that ,there was a general rise in; percentage share of Commercial banks'

credit to agricultural sector, inflation rate, interest rate, exchange rate and GDP over

the period of the study.

The regression analysis on Adjusted R Square revealed that, the percentage share of

credit provided by the commercial banks to agricultural sector in Kenya could be

accounted to changes in inflation rate, interest rate, exchange rate and GDP. The study

further revealed that there was a strong positive relationship between amount of credit

provided by the commercial banks and inflation rate, interest rate, exchange rate and

GDP.

The study revealed that a unit increase in inflation rate, interest rate and exchange rate

would lead to decrease to the amount of credit provided by the commercial banks.

The study further revealed that a unit increase in gross domestic product would lead to

increase in amount of credit provided by the commercial banks. Since the results were

significant, this leads to a conclusion that interest rate and GDP have effect on

commercial banks' lending to agricultural sector.

The findings of the study concur with the findings of Schuh (1974) found that exchange rates, interest rates, and the level of money supply are key monetary variables that are determined mainly within domestic or international markets. Claudia *et al*, (2010), they found that average bank lending increases following expansionary shocks, average bank risk declines after most expansionary macroeconomic shocks, house price and monetary policy shocks are particularly important for bank risk and that, there was a substantial degree of heterogeneity across banks both in terms of idiosyncratic shocks and the asymmetric transmission of common (banking and macroeconomic) shocks.

The findings of this study concur with Paul and Edward (2010), who studied the involvement on giving of credit facilities to agricultural sector by banks and found that, some banks like Equity bank, K-Rep and Family Bank had been giving credit to dairy farmers in the country. They noted that, the local banking system has remained conservative in lending to agricultural sector probably due to risks in agricultural production. They further noted that, the situation had been made worse by liberalization of interest rates. They confirmed that although there was a legal requirement that banks should lend between 17-20 percent of their loan portfolio to agricultural sector, less than 10 percent of the total credit was provided by commercial banks in Kenya which agree with this study.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The analysis and data collected provides the following summary, conclusion and recommendations based on the objectives of the study. The researcher investigated the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya.

From the findings on the Adjusted R Square, the study revealed that amount of credit provided by the commercial banks could be accounted to changes in inflation rate, interest rate, exchange rate and GDP. The study further revealed that there is a strong positive relationship between amount of credit provided by the commercial banks and inflation rate, interest rate, exchange rate and GDP.

5.2 Summary

From the regression equation the study revealed that inflation rate, interest rate, exchange rate and Gross Domestic Product were found to influence the amount of credit provided by the commercial banks. The study revealed that a unit increase in inflation rate, interest rate and exchange rate would lead to decrease the amount of credit provided by the commercial banks. The study further revealed that a unit increase in gross domestic product would lead to increase in amount of credit provided by the commercial banks.

5.3 Conclusion

The study revealed that interest rate had negative effect on the amount of credit provided by the commercial banks. Interest rate had the highest negative effect on the percentage share of commercial banks credit to agricultural sector. A unit increase in interest rate lead to a decline on theamount of credit provided by the commercial banks. Thus the study concludes that increase in interest rate leads to a declineon theamount of credit provided by the commercial banks. This is consistent with the expected theoretical relationship, that high interest rates leads to limited access to credit facilities.

The results also showed that exchange rate had negative effect on the amount of credit provided by the commercial banks.The study established that a unit increase in exchange rate resulted to decrease in the amount of credit provided by the commercial banks. Thus the study concludes that exchange rate has a negative effect on the amount of credit provided by the commercial banks. This means that as exchange rates raise (Kenya Shilling to US Dollar) leads to deteriorating local currency resulting to reduced credit from commercial banks

The study also showed that increase inflation rate in the economy had negative effect theamount of credit provided by the commercial banks.This is an indication that high inflation rate leads to reduced access to commercial banks' lending. This is consistent with the expected relationship that an expectation that inflation will increase can press

interest rates upwards which affects lending terms resulting to reduced access credit demand from commercial banks.

The study further revealed that a unit increase in gross domestic product resulted to increase in the amount of credit provided by the commercial banks; the study thus concludes that gross domestic product has positive effect on the amount of credit provided by the commercial banks. This is consistent with the theory that during periods of declined GDP banks restrain lending. The study is consistent with business cycle theory Baum et al (2009), that during periods of economic boom the demand of credit is high compared to recession periods when unfavorable effect of macroeconomic factors limit access to credit from commercial banks.

5.4 Recommendations

From the findings the study recommends that there is need for commercial banks to reduce interest rate on lending to agricultural sector in order to encourage investment in the agricultural sectors in Kenya. This would only materialize from a combined effort with the government through the central bank and the ministry of finance on regulating the rate of interest in the economy.

There is need for the government to use various economic stimulus programs in to boost the country's gross domestic product as this will positively influence investment in the agricultural sector.

Further the study recommends that there is need for central bank to regulate the exchange rate in the country as it was found that exchange rate influences the flow of goods, services and capital in a country, and exerts strong pressure on the balance of payment, inflation and other macroeconomic variables which strongly influence foreign direct investment inflow in the country.

Agricultural sector is amajor contributor to the Kenyan economy, there is need for the government to create conduciveinvestment environment both for local and foreign investors in the agricultural sector by enhancing macroeconomic stability in the country. This will help to increase the level of investment in this sector, as one of the core sector in the Kenyan economy that has three major contribution to the Millennium Development Goals namely ; reducing poverty and hunger (MDG1), empowering women (MDG3) and developing global partnerships for development (MDG8) leading to the achievement of Kenya Vision 2030.

5.5 Suggestions for Further Research

The study sought to investigate the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya. There is need for further study on effect of other macroeconomic factors on commercial banks' lending to agricultural sector as well as to agriculturalsub-sectors in Kenya and other countries. The study can also be replicated and be applied in studying effect of macroeconomic factors on commercial banks' lending to other sectors in an economy using the same or other macroeconomic variables.

5.6 Limitations of the Study

In attaining its objective the study was conducted on commercial banks where secondary data from the period of 2003 to 2012 was used in the analysis. The study was limited to the secondary data obtained from the Central Bank and degree of precision of the data obtained which could be however being prone to shortcomings.

The study was limited to investigate the effect of four macroeconomic factors on commercial banks' lending to agricultural sector in Kenya.Other variables could have been used that would provide different results.

The study was based on a 10 year study period from the year 2003 to 2012. A longer duration of the study will have captured periods of varying business cycle, of boom and recession. This may have probably given different results and wider investigation to the dimension of the problem.

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APPENDICES

Appendix I: List of Commercial Banks in Kenya

African Banking corporation limited
Bank of Africa limited
Bank of Baroda(k) limited
Bank of India
Barclays Bank
Chase Bank
Citibank N. A. kenya
Charterhouse Bank Limited
Commercial Bank of Africa
Consolidated Bank of Kenya
Cooperative Bank of Kenya
Credit Bank
Development Bank of Kenya
Diamond Trust
Dubai Bank
Ecobank
Equatorial Commercial Bank
Equity Bank
Family Bank
Fidelity Commercial Bank
Fina Bank
First Community Bank
Giro Commercial Bank
Guardian Bank.
Gulf African Bank
Habib bank A G Zurich
Habib Bank Limited
Imperial Bank Limited
Investment and Mortgage Bank Limited
Jamii Bora Bank Limited
Kenya Commercial Bank Limited
K-REP Bank
Middle East Bank (k) Limited
National bank of kenya Limited
NIC Bank limited
Oriental Commercial Bank
Paramount Universal Bank Limited
Prime Bank Limited
Standard Chartered Bank(k) Limited
Transnational Bank Limited
UBA Kenya Bank Limited
Victoria Commercial Bank