

FACTORS AFFECTING LENDING INTEREST RATES IN KENYA

BY

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DECLARATIONS

Declaration by the Candidate

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DEDICATION

I dedicate this thesis to my loving wife Naomi Ngugi for her continual support.

ABSTRACT

The lending interest rates in Kenya have a great impact on the performance of the economy. There is a need to evaluate the various factors affecting lending interest rates and their impacts on the general performance of the economy. The problem of this study was the determination of the factors affecting the lending interest rates in Kenya. After the liberalization of interest rates in Kenya in 1992, there has been an upward trend in the interest rates. However, macroeconomic policies from the onset of year 2002 led to the stabilization of interest rates. The study focused on the factors that have contributed to the variation in Kenyan lending interest rates from the year 1980 to the year 2010. The specific objectives of the study were to: determine the effects of budget deficit financing on lending interest rates; secondly, to investigate the effects of international interest rates on local lending interest rates in Kenyan economy since 1980 to 2010; third, to determine the effects of inflation on lending interest rates in Kenya since 1980 to 2010; fourth, to determine the effects of demand for credit on lending rates in Kenya since 1980 to 2010 and finally, to determine the effects of supply of money on interest rates in Kenya since 1980 to 2010. Annual secondary time series data from the World Bank annual reports, IMF annual reports, annual government publications and reports and other relevant publications were used to collect data. The EVIEWS software was used to conduct descriptive analysis as well as inferential statistics. Specifically, unit roots, cointegration tests and the Error Correction Model (ECM) were carried to investigate the dynamic behavior of the model. Results of the study indicate that the impact of budget deficit on interest rates of Kenyan economy was positive and significant. In addition, findings indicate that the effect of inflation on lending interest rates in Kenya was positive. Therefore, monetary and fiscal policy initiatives that aim to reduce inflation will also reduce the lending interest rates. Results indicated that the effect of money demand/National Income (GDP) on the lending rate was negative. Therefore, an increase in the demand for real balances for transactional balances leads to a decline in the lending interest rate. Therefore, macroeconomic policy that is expansionary may lead to a reduction in lending rates. The study found that the effect of the money supply on the lending rates is negative but insignificant. The study also found that the effect of international interest rates on local lending rates is negative. However, the impact is insignificant. The study recommends that policy makers need to consider the effect of the variables under study when designing policies aimed at reducing or increasing the lending rates. For instance, it is recommended that the policy makers should pursue expansionary policies aimed at increasing the national Income /GDP in an effort to reduce the interest rate. Such policies can be achieved through fiscal policies such as reduction in taxes or increased in government spending. It is also recommended that policy makers should pursue expansionary monetary policies by enhancing the money supply in the economy. This would reduce the interest rates. Policy initiatives that wish to keep the lending interest at a low level should also take into consideration the need to reduce the budget deficit. Furthermore, policy makers should design policies aimed at reducing inflation. Such policies would be through addressing structural and non structural causes of inflation. For instance, the policy makers should enact policies to reduce the cost of doing business in Kenya and effectively reduce the effect of cost push inflation.

DEFINITION OF TERMS

Budget deficit- The practice of government spending more money than is received as revenue

Crowding out- discourage fixed private investment spending, canceling out the demand stimulus arising from the deficit.

Expansionary fiscal policy- policy measure aimed at encouraging growth in money supply in an economy.

Financial liberalization- an economic period where determination of interest rates was left to the forces of demand and supply.

Granger causality- a variable X Granger causes Y if past values of X can help explain Y .

Interest rates- An interest rate is the amount received in relation to an amount loaned

Time series data- data collected from a unit at multiple time periods.

Regulatory environment specifically includes both explicit taxation via corporate income tax or profit tax and implicit taxation via reserve requirements.

The legal and institutional environment refers to the overarching ethos under which all national institutions operate. This impacts perceptions of risk including credit risk and loan loss provisioning. Commercial laws, adequate institutional enforcement, index of corruption and level of institutional development are variables studied under this category.

Lagres – refers to the error correction term which measures the speed of adjustment to the long run.

Autocorrelation – it is the correlation between values of a process at different points in time as a function of the two times or of the time difference.

LIST OF ACRONYMS

ADL	- Autoregressive Distributed Lag Model
ANOVA	- Analysis Of Variance
CBK	- Central Bank of Kenya.
CBR	- Central Bank Rate
CQT	- Classical Quantity Theory
CRR	- Cash Reserve Ratio
DF	- Dickey Fuller Test
ECM	- Error Correction Model
ERC	- Economic Research Consortium
FY	- Fiscal Year
GDP	- Gross Domestic Product
GE	- Government Expenditure
IMF	- International Monetary Funds
NBFIs	- Non-Bank Financial Institutions
OLS	- Ordinary Least Squares Method
PBO	- Parliamentary Budget Office
PP	- Phillip Perron Test
SAPs	- Structural Adjustment Policies
SE	- Standard Error
SSR	- Sum of Squared Residuals
TSS	- Total Sum of Squares
VAR	- Vector Autoregressive Model
ERS	- Economy Recovery Strategy
INTR	- Lending Interest Rates
FDEF	- Government Fiscal Deficit
FINTR	- International Interest Rates
INF	- Inflation
Ms	- Supply for Money

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CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter contains the background information to the study, statement of the problem, general and specific objectives, hypotheses, justification, scope, assumptions and limitations of the study.

1.1 Background to the Study

According to Kenya Parliamentary Budget Office (PBO) (2011), recent movements in interest rates, inflation and exchange rates present real dangers to economic stability. This study set out to determine the major causes of growth in interest rates in Kenya from the year 2001 to the year 2012.

In a liberalized financial system, where the government finances its deficits via domestic borrowing, public sector will compete with the private sector for loans. This puts upward pressure on interest rates. The World Bank (1993) opined that in economies where financial markets are not repressed, higher deficits financed by domestic debt increase domestic real interest rates when external borrowing is not possible. However, if financial markets are integrated with world capital markets, higher domestic borrowing results in international capital inflows and higher foreign debt. Thus the impact on domestic real interest rates will not be much. Moreover, in countries where the financial markets are repressed that is, interest rate control, compulsory public debt placements, and controls on external capital flows, given a fixed nominal interest rate, fiscal deficits raise inflation, resulting in repressed even negative real interest rates (World Bank, 1993).

Kenya's experience with the financial reform process shows a widening interest rate spread following the interest rate liberalization in 1992 period. This period is characterized by high implicit costs with tight monetary policy achieved through increased reserve and cash ratios. In addition, financial institutions witnessed declining profitability, non-performing loans and distress borrowing. The Treasury bill rate increased as the government relied heavily on the domestic market to finance its fiscal deficit, while the expansionary fiscal policy resulted in increased inflation and tightening of monetary policy. The market was still dominated by commercial banks, especially with the conversion of non-bank financial institutions (NBFIs) and the sluggish development of the capital market. Finally, the period was characterized by macroeconomic and financial instability and yet to be accomplished legal reforms.

1.2 Interest Rates

An interest rate is the amount received in relation to an amount loaned, generally expressed as a ratio of shillings received per hundred shillings lent. However, a distinction should be made between specific interest rates and interest rates in general. *Specific interest rates* on a particular financial instrument for example, a mortgage or bank certificate of deposit reflect the time for which the money is on loan, the risk that the money may not be repaid, and the current supply and demand in the marketplace for funds available for lending.

The period before interest rate liberalization was characterized by financial repression with selective credit controls and fixed interest rate spreads. Variations in the interest rate spread were realized when interest rate ceilings were adjusted to protect any loss in real terms following increased inflation rates. The Central Bank of Kenya (CBK) controlled inflation by increasing the liquidity and cash ratios with no interest paid on

reserves. Such statutory requirements act as implicit costs to the banks. With a successful financial reform, the interest rate spread narrows to reflect gained efficiency in the intermediation process and reduced costs of transactions with improved market competitiveness. The widening spread in the Kenya market in the post-liberalization period indicates a combination of market inefficiency and increased costs of intermediation. The spread represents the failure to meet prerequisites for successful financial liberalization including lack of fiscal discipline, financial instability and macroeconomic instability. It also shows poor sequencing in the shift to monetary policy tools where reserve requirements continued to take priority in curbing inflationary pressure. Furthermore, the financial market remained uncompetitive and the legal framework was still weak.

1.3 Statement of the Problem

After independence in 1963, Kenya promoted a rapid economic growth through public investment, encouragement of smallholder agricultural production and incentives for private industrial investment. Gross domestic product grew at an annual average of 6.6% from 1963 to 1973. Between 1974 and 1990, however, Kenya's economic performance declined. Kenya's inward-looking policy of import substitution and rising oil prices made Kenya's manufacturing sector uncompetitive. The government began a massive intrusion into the private sector. Lack of export incentives, tight import controls and high interest rates made the domestic environment less attractive for investment.

From 1991 to 1993, Kenya had its worst economic performance since independence. Growth in GDP stagnated and agricultural production shrank at an annual rate of 3.9%. Inflation reached a record 100 percent in August 1993, and the government's

budget deficit was over 10 percent of GDP. During the same period, bilateral and multilateral donors suspended program aid to Kenya in 1991.

In 1993, the government of Kenya began a program of economic reform and liberalization. The government eliminated price controls and import licensing, removed foreign exchange controls, privatized a range of publicly owned companies, reduced the number of civil servants and introduced conservative fiscal and monetary policies. From 1994 to 1996, Kenya's real GDP growth rate averaged just over 4 percent a year.

Interest rates were liberalized in July 1991. Financial theory predicts an increase in interest rates in a post-liberalization period in Kenya. Therefore, the changes in interest rates assumed a rising trend. Interest rate liberalization was mounted amidst increasing inflationary pressure and deteriorating economic conditions, indicating a failure to meet the prerequisite for successful financial reform. Inflationary pressure was attributed to the expansionary fiscal policy, which saw an increase in money supply. In addition, the financing of the fiscal deficit shifted to the domestic market using treasury bills. It is quite apparent that only large increases in the Central Bank Rate (CBR) may have an effect on inflation and exchange rates. The rise in the CBR presents a danger to the economy. Banks will have interest rate increases which may breach the 30 percent level. Primarily, high interest rates curb business investments and innovation. Rising interest rates increase loan defaults in the banking system and bank vulnerability. It also causes sharp contractions in growth and worsens unemployment and poverty situations.

Kenya's experience shows a rise in interest rate spread during the financial reform and subsequent financial liberalization process, which suggests the failure to meet the prerequisites for successful financial liberalization. Interest rates were liberalized amidst inflationary pressure, declining economic growth, financial instability, the failure to sustain fiscal discipline and lack of proper sequencing of the shift to use monetary policy tools.

The question is, what major factors have contributed to the growth in the interest rates in Kenya since 1980 to 2010? What policy measures should the government use so as to control the unnecessary growth in the interest rates? This study aimed to assess major factors responsible for the variation in interest rates in Kenya since 1980 to 2010.

1.4 Objectives of the Study

1.4.1 General Objectives

The broad objective of this study is to investigate factors affecting interest rates in Kenya using a time series econometric analysis.

1.4.2 Specific Objectives

This study has five specific objectives;

1. To investigate the impact of budget deficit on lending interest rates of the Kenyan economy from 1980 to 2010.
2. To investigate the effects of international interest rates on local lending interest rates in the Kenyan economy from 1980 to 2010.
3. To determine the effects of inflation on lending interest rates in the Kenyan economy from 1980 to 2010.

4. To determine the effects of demand for credit on lending interest rates in Kenyan from 1980 to 2010.
5. To determine the effects of supply of money on lending interest rates in Kenya from 1980 to 2010.

1.5 Hypotheses

This research thesis is guided by the following null hypotheses:

- Ho₁** : There is no relationship between budget deficit financing and interest rates.
- Ho₂** : There is no relationship between international interest rates and the local interest rates.
- Ho₃** : There is no relationship between inflation and the local interest rates.
- Ho₄** : There is no relationship between demand for credit and the local interest rates.
- Ho₅** : There is no relationship between supply of money and the local interest rates.

1.6 Justification

Large fiscal deficit has adverse effects on the economy because it tends to reduce national savings, which in turn reduces domestic investment and increases borrowing from abroad. Besides, a low level of national savings raises inflation and domestic interest rates, and crowds out private (sector) investment. The reduction in investment in turn affects employment as firms/businesses reduce their demand for labour and other factor inputs. All of these reduce national output; lead to trade deficits, balance of payments problems, and reduction in the overall wellbeing of the people.

The priorities of the government of Kenya is to achieve the vision 2030; improvement of the standard of living of the people; sustenance of the declining debt and attainment of stability of real interest rates in order to promote production activities in the economy. As a result, it is important to investigate the effect of government deficits on interest rate.

1.7 Scope of the Study

This study on factors affecting interest rates in Kenya is conducted using time series data running from year 1980 to year 2010. The data were obtained from World Bank publications, Kenyan government publications, International Monetary Funds (IMF) and Central Bank of Kenya (CBK) publications.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this section, a review of past relevant studies on the factors causing a variation in lending interest rates, are analyzed. Also a theoretical framework guiding this study is presented.

2.1 Budget Deficit

Gale and Orszag (2003) indicate that a projected rise in the budget deficits to GDP ratio of 1 percent results in an increase in the long term interest rates by 0.4 to 0.6 percent. In the same manner, Dai and Phillipon (2004) indicate that a 1 percent increase in the deficits increases 10 year interest rate by 41 percent. He further, indicates that expected future fiscal deficits increases current long term interest rates. Some studies did not support the view that large deficits and debt raise interest rates. Among them include, Evans (1987), who finds no link between budget deficits and interest rates. He reported that the yield interest rate on 10 year bonds declined throughout the 1980s, even as the fiscal deficits moved above 4 percent of GDP. The study of Barth et al. (1991) is consistent with the ones reported above.

They also assert that there is a feedback relationship between fiscal deficits and interest rates. Anyanwu (1998) applied regression analysis to pooled cross-section and time series data for Nigeria, Ghana and the Gambia. The results do not reveal a significant positive association between overall fiscal deficits and its foreign financing and domestic nominal deposit interest rates. However, the author reports a significant positive relation between domestic financing of the fiscal deficits and domestic

nominal deposit rates. The author concludes that the concern of economists in the sub-region should shift from the deficits itself to the manner of financing the deficit.

2.2 Interest Rates as Targets in Practice

According to Handa (2009), monetary policy acts through interest rates on spending, so that the interest rates are closer in the chain of influence on spending. Hence, they are more reliable and more appropriate indicators of the need for action than are the various measures of money supply and the monetary base. In line with this, in financially developed economies such as those of the USA, Canada and the UK, the central banks believe that interest rates are a major indicator of the performance of the economy and tend to use them as the preferred guide and operating target of monetary policy.

There are several measures of interest rates that may be considered, with the usual selection for operating purposes being of short-term nominal, rather than long-term or real rates of interest. Historically, the measure commonly used for this purpose used to be the Treasury bill rate. More recently the USA, UK and Canada have used an overnight loan rate as an operating target. These countries have well-developed markets for overnight loans among financial institutions, with this market serving as the market for the excess reserves of banks. This market for reserves is known as the Federal Funds market in the United States and the overnight loan market in Canada and the UK. Such a rate reflects the commercial banks' demand and supply conditions for reserves. The central bank's policy actions on the monetary base immediately affect the commercial banks' demand and of reserves, thereby changing the overnight interest rate and starting a chain of reactions on other interest rates, and through these on the borrowing and lending, investment and consumer spending, etc., in the

economy. A higher rate means that banks are relatively loaned up and a lower rate means that banks have relatively large free reserves, so that they can increase loans on their own volition.

2.3 Discount/bank Rate

Handa (1999) argues that in most countries, the monetary authority – normally the central bank – has the power to determine, directly or indirectly, the interest rates in the economy. Critical interest rates can be set directly by fiat, determined through instructions issued to the commercial banks, or influenced indirectly by the central bank varying the rate at which it lends to the commercial banks. In the more usual case in market-oriented economies, the market rates are influenced through the *discount rate* at which the central bank lends to the banks and other designated financial intermediaries and by the market overnight loan rate for reserves. Canada, the UK and the USA have traditionally followed this method.

The use of interest rates as the major operating instrument of monetary policy occurs because interest rates play a pivotal intermediate role by which investment and therefore aggregate demand in the economy can be influenced. Further, it is argued by some economists that the economy has numerous substitutes for M1 and M2, so that controlling these aggregates through open-market operations or the reserve requirements of commercial banks only leads to substitution away from them, without necessarily a significant impact on investment and aggregate demand. Further, in recent years, because of numerous financial innovations, the demand functions for money have proved to be unstable, so that many central banks prefer to target interest rates, and influence them through their discount rate, rather than target monetary aggregates as the main operational tool of monetary policy.

Supply System-wide measures of market structure highlight those attributes that define the industry and which cause interest rates to change over time. These factors include the level of bank concentration, market power and competition, as well as the effect of foreign ownership and state ownership. In the late 1990s, the relationship between market structure and interest rate margins was re-visited, as the push for financial liberalization among several countries in the 1990s failed to bring about the convergence of spreads between developing and industrial economies. Cross-national and regional studies were able to establish that the structure of the financial markets can affect variations in spreads. However, results produced were sometimes contradictory and differed across regions.

Martin (2010) noted that inefficient and uncompetitive financial intermediation processes partially contributed to the country's high cost of financing. Similarly, Mendoza (1997) identifies the low level of competition in the Belizean banking system as a primary reason for interest rate spreads being higher than in Barbados, a Caribbean country with a similar exchange rate regime and higher reserve requirements. Mendoza identified that Barbados' financial system was of a larger size and had a variety of non-bank financial institutions which facilitated lower spreads when compared to Belize.

Demirguc-Kunt and Huizinga (1999) noted that in relatively poor countries foreign ownership of banks is associated with higher interest spreads as foreign banks were frequently exempted from unfavourable domestic regulations and their application of superior banking techniques would allow them to earn higher margins than domestic owned banks. In contrast, a study on Latin America concluded that foreign banks

were able to charge lower spreads relative to domestic banks and indirectly influence intermediation through lowering costs of operation.

They also established a positive correlation between bank concentration and interest rate spreads, as industries with a high market concentration had less pressure to reduce intermediation costs. On the other hand, Crowley (2007) provided evidence of a negative relationship between concentration and spreads suggesting that a country with a small number of powerful banks are able to restrict the level of competition by keeping spreads artificially low.

Chirwa and Mlachila (2002) found that interest rate spreads in Malawi increased significantly after implementing financial liberalization reforms due partially to high monopoly power within the industry coupled with the high incidence of interlocking ownership and directorship in the Malawian banking system which effectively stifled competition. Their study strongly concluded that high interest rate spreads in developing countries will persist if financial sector reforms do not alter the structure within which banks operate.

According to Romer (1997), a higher growth rate of the nominal money stock reduces the real money stock. The rise in money growth increases expected inflation, thereby increasing the nominal interest rate. This increase in the opportunity cost of holding money, reduces the quantity of real balances that individuals want to hold.

Increases in reserve requirements are associated with a growth in interest rate spreads since banks pass on the cost of holding unloanable funds to consumers via an increase in lending rates or a reduction in deposit rates (Demigurc-Kunt and Huizinga 1997, Demigruc-Kunt, Laeven and Levine (2003) and Tennant and Folawewo 2009). However, reserve requirements relative to the size of the spread were small for the

OECS accounting for less than 10 percent of the average spread between the period 1991 to 1996. In the case of Belize, Martin (2010) estimated that 50 percent of the spread is attributable to reserve requirements, based on the zero-profit methodology.

The level of country risk was another key factor that boosted spreads as severe socio-political instability in the Solomon Islands was a key factor behind commercial banks' high spreads (Central Bank of Solomon Islands, 2007). A weak legal system contributed to the accumulation of non-performing loans in Kenya, which in turn pushed up lending rates and increased net interest margins (Ngugi, 2001).

2.2 Macro-economic Factors

Macro-economic factors such as inflation, GDP growth, interest rates on alternative financial instruments and exchange rates were employed as control variables across most studies. However, Birchwood (2004), explicitly examined the impact of macroeconomic influences on nominal and real interest spreads in the Caribbean region. He concluded that differences in interest rate spreads across the region may be due to differences in economic cycles, inflation and liquidity conditions, while the differences in the exchange rate regime affected the magnitude of the spreads. The study also found that countries with fixed exchange rates exhibited lower inflation rates and the highest real spreads.

2.3 Loanable Funds

Many economists believe government deficits influence the economy through the loanable funds market, whose existence Chartalists and other Post-Keynesians dispute. Government borrowing in this market increases the demand for loanable funds and thus (ignoring other changes) pushes up interest rates. Rising interest rates can "crowd out" (discourage) fixed private investment spending, canceling out some

or even all of the demand stimulus arising from the deficit—and perhaps hurting long-term supply-side growth. But increased deficits also raise the amount of total income received, which raises the amount of saving done by individuals and corporations and thus the supply of loanable funds, lowering interest rates. Thus, crowding out is a problem only when the economy is already close to full employment (say, at about 4% unemployment) and the scope for increasing income and saving is blocked by resource constraints (potential output). Despite a government debt that exceeded GDP in 1945, the U.S. saw the long prosperity of the 1950s and 1960s. The growth of the "supply side", it seems, was not hurt by the large deficits and debts.

A government deficit leads to increased government debt (often confusingly called the "national debt" or the "public debt"). In the U.S., the government borrows by selling bonds (T-bills, etc.) rather than getting loans from banks. The most important burden of this debt is the interest that must be paid to bond-holders, which restricts a government's ability to raise its outlays or cut taxes to attain other goals.

The budgets of the 1980s and 1990s carried increasingly worrisome deficits, compared to the 2000s years. In 2003 Kenya's revenues totaled US\$2.761 billion, while its estimated expenditures totaled US\$3.406 billion. Government budget deficit as a percentage of GDP was 4.6 percent in 2003 and 5.5 percent in 2004

According to Parkin (2000), the real interest rate is determined by the investment demand and saving supply in the global capital market. Investment demand and saving supply depend on the real interest rate.

According to Parkin (2000), a 1 percent point rise in the inflation rate leads to a one percent rise in the nominal rate. This is because the capital market and the money market are closely interconnected.

2.4 Crowding Out

Usually when economists use the term "crowding out" they are referring to the government spending using up financial and other resources that would otherwise be used by private enterprise. However, some commentators use "crowding out" to refer to government providing a service or good that would otherwise be a business opportunity for private industry. Raising interest rates slows down the economy. High interest rates means higher borrowing costs for business and individuals thus less money to spend elsewhere.

2.5 Theoretical Framework

This study is modeled on the Keynesian liquidity preference theory (General theory) advanced by Keynes. The theory postulates that, the level of interest rates in the economy would be reached by the interaction of money supply (government expenditure) and money demand (liquidity preference). Keynes challenged the loanable funds theory (Classical Quantity theory) on the grounds that the interest rate was not the reward for saving but was rather an inducement to part with liquidity. The Keynesian approach discarded certain aspects of the quantity theory ideas and developed others in a new and distinctive format. On the demand for money, it elaborated on the earlier Cambridge approach and also rearranged its presentation in terms of the motives for holding money.

This treatment in terms of motives eventually led to the modern treatment of the demand for money in terms of four motives: transactions, speculative, precautionary and buffer stock. The Keynesian emphasis on money as an asset, held as an alternative to bonds, also led to Friedman's analysis of the demand for money as an asset, thereby bringing this approach to money demand into the folds of the classical

paradigm. At the macroeconomic level, Keynesian analysis made commodity market analysis, based on consumption, investment and the multiplier, a core part of macroeconomics. The Keynesian approach also integrated the analysis of the monetary sector into the complete macroeconomic model for the economy. This contribution was based on the concept of the multiplier, which was unknown in the traditional classical period.

According to Central Bank of Kenya (2011), an analysis of the pure credit economy also emphasized the role of interest rates and financial institutions in the propagation of economic disturbances, since they control the market interest rate, reduction in which can set off an expansion of investment, loans and the money supply and lead to a cumulative increase in prices and nominal national income. This theory does not take in to consideration the changes that occur to the levels of national output and employment during the process. High inflation tends to hurt the poor disproportionately. This is especially so when inflation is driven by high food and fuel prices, as the poor spend a significant proportion of their income precisely on food and transport. A breakdown of Kenya's inflation by urban income groups shows that low income households have been hit hardest by inflation in 2011.

2.6.1 Demand and Supply of Credit

Interest rate levels are a factor of the supply and demand for credit: an increase in the demand for credit will raise interest rates, while a decrease in the demand for credit will decrease them. Conversely, an increase in the supply of credit will reduce interest rates while a decrease in the supply of credit will increase them. The supply of credit is increased by an increase in the amount of money made available to borrowers. For example, when one opens a bank account, they are lending money to the bank.

Depending on the kind of account an individual opens (a certificate of deposit will render a higher interest rate than a checking account, with which one has the ability to access the funds at any time), the bank can use that money for its business and investment activities. In other words the bank can lend out that money to other customers. The more banks can lend, the more credit there is available to the economy. As the supply of credit increases, the price of borrowing (interest) decreases.

Credit available to the economy is decreased as lenders decide to defer the re-payment of their loans. For instance, when one decides to postpone paying this month's credit card bill until next month or even later, you are not only increasing the amount of interest you will have to pay, but also decreasing the amount of credit available in the market. This in turn will increase the interest rates in the economy. According to Parkin (2000), a nominal interest is determined by the demand for money in an Economy. The demand for money depends on the nominal interest rates and the supply for money is determined by the central bank of Kenya. According to Mudida (2010), the interest regime was liberalized in 1991 and this policy left the market forces of demand and supply to determine the appropriate interest levels.

In this study, FDEF represents the ratio of overall fiscal deficits to GDP. The government budget is said to be in deficit when government spending is in excess of tax receipts.

2.6.2 International Interest Rates

According to this study, INTR refers to the international interest rate, and is proxied by the United States interest rate. International forces play an important role in influencing interest rates in the United States to the extent that foreign investors are

willing to lend money to the U.S., they supplement domestic sources of funds in the marketplace, driving interest rates down. If they were to decide to reduce or sell their holdings in the U.S. and reinvest elsewhere, more needed funds would have to come from domestic sources, which would push rates upward.

The dollar is the main currency in international trade and is used extensively in world markets. Orderly fluctuations of the dollar in foreign exchange markets are essential for domestic and international stability. Major or very volatile exchange rate movements could force the Federal Reserve to act, as well as affect interest rates and U.S. monetary policy.

Changes in the condition of the U.S. financial system will also have a significant effect on interest rates. If any large financial institution is threatened with collapse, it would not default on the funds which are owed to its depositors, as was the case in the 1930s. The federal government would take action to make good the deposits, regardless of the impact on the federal budget deficit. The Federal Reserve would open bank reserves as necessary, increasing the supply of funds in the market, and sending interest rates down, at least initially.

2.6.3 Inflation Rate

Inflation will also affect interest rate levels. The higher the rate of inflation, the more interest rates are likely to rise. This occurs because lenders will demand higher interest rates as compensation for the decrease in the purchasing power of the money they will be repaid in the future. According to monetarists (Mudida, 2010), excessive spending by government may increase inflationary inflation.

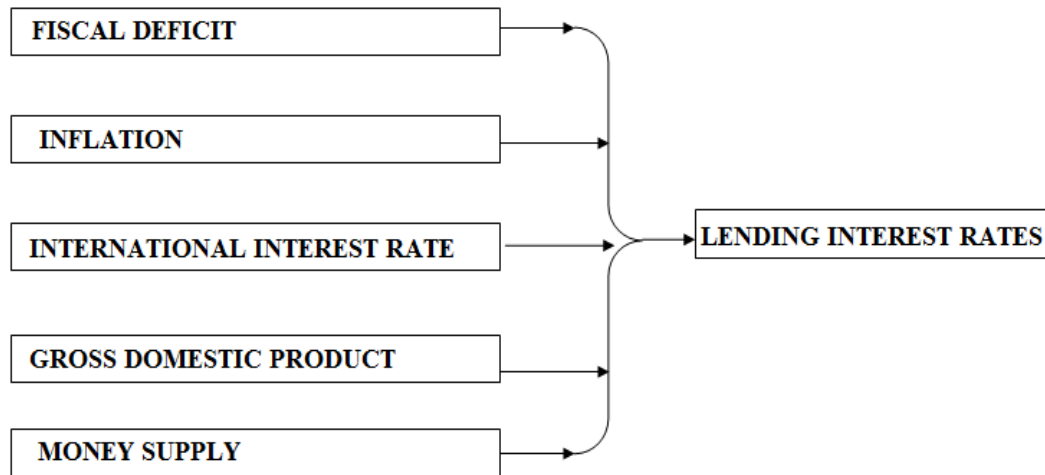
Inflationary pressures tend to raise interest rates. This is because when prices are expected to raise considerably, the lender will be reluctant to lend during this period fearing a loss of the purchasing power of the loaned amount, on maturity.

2.6.4 Budget Deficit

In government, the practice of spending more money than is received as revenue is referred as budget deficit (BD). The deficit is corrected by borrowing or minting new funds. The term usually refers to a conscious attempt to stimulate the economy by lowering tax rates or increasing government expenditures (GE). Critics of deficit financing regularly denounce it as an example of shortsighted government policy. Advocates argue that it can be used successfully in response to a recession or depression, proposing that the ideal of an annually balanced budget should give way to that of a budget balanced over the span of a business cycle. The World Bank (1993) opined that in economies where financial markets are not repressed, higher deficits financed by domestic debt increase domestic real interest rates when external borrowing is not possible.

2.6 Conceptual Framework Model

The diagram below represents the conceptual framework. It shows the independent variables and dependent variables. On the left hand side are the independent variables and on the right hand side is the dependent variable. The relationships of the variables



Independent Variables

Dependent Variable

are presented in the subsections that follow.

Conceptual Framework, Authors' research, 2012

Relevance of the Literature

This study is very important because past studies have focused more on the effects of deficits (Anyanwu, 1998). In addition, is the importance of interest rate on investment, savings, and all inter-temporal decisions (Anyanwu, 1998). Moreover, this study attempts to examine the effects of fiscal deficits on interest rates in Kenya. This literature has greatly contributed on subject on study. Various authors have contributed on the various factors reviewed by this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents a description in detail on what was done and how it was done. It comprises of the following subsections; research design, data collection, data analysis, assumptions and limitations.

3.1 Research Design

This section describes the design of the empirical research using the quantitative method, the research protocol which provided a framework for data analysis, and the data collection procedures.

This study followed a quantitative research strategy. The researcher majored on a historical research design. This helped to explore the past Kenya's data on fiscal deficits, USA interest rates, inflation, demand and supply of credit, and interest rate. The study was concerned with finding major factors contributing to changes in interest rates. Such an issue is investigated through historical research designs. The study enabled the researcher to critically analyze the secondary time series data in order to come up with appropriate conclusions.

3.2 Data and Instruments for Data Collection

The researcher used document analysis as the main tool of collecting the data. The selection of this tool was guided by the nature of data to be collected and by the objectives of the study. The researcher collected annual time series data that was availed from the Central Bank of Kenya, the Kenya Bureau of Statistics, other government publications, IMF and the World Bank publications. These sources provided records of the past fiscal deficits, USA interest rates, inflation, demand and

supply of credit, and interest rate analysis which were of great importance to the study for they provided historical performances in Kenya.

3.3 Data Analysis

Econometric approaches were employed to estimate the numerical values of the coefficients of the relationships. Also, an evaluation of the model to test the reliability of the model was necessary. The researcher used the statistical test, the econometric test and the a priori economic test. The first category made use of the coefficient of determination to determine how well the estimated relation fitted the data. The second tests played the role of determination of the statistical significance of the individual coefficients of the model. These include the standard error test, the standard normal distribution, student t-test and the confidence interval test. The a priori economic tests are associated with the signs and magnitudes of the coefficients in the model. The coefficient of skewness was used to test the normality of the data. The Jarque-Bera test statistic was used to test the null hypothesis.

3.3.1 Unit Roots and Cointegration Tests

The study used time series data and applied the Johansen Juselius multivariate cointegration technique for the data covering this period. It is a standard practice to begin the analysis by examining the time series properties of the data, since it is necessary to know whether the data is stationary or non stationary. Should the data involved be stationary, then the regression can proceed without any problem. Non-stationary data used in estimation produces inappropriate t-statistics of the estimated coefficients that have theoretically infinite variances. Unit root tests are used to test for stationarity or order of integration of each series of the variables. Two tests are involved. The Augmented Dickey Fuller (ADF) test and Phillips-Perron (PP) tests.

The two tests are used so that the deficiencies inherent in either are overcome. A problem with the ADF test is that it involves the inclusion of extra differenced terms in the testing equation. The power of the testing procedure is reduced due to the incurred loss of degrees of freedom. PP test suffer severe size distortions where autocorrelations of the error term are predominantly negative, with the actual size much greater than the nominal size (Campbell and Perron, 1991). However when the data is non stationary there would be need to check if the variables are co-integrated otherwise this may lead to spurious results being reported.

The analysis of co-integration starts with the determination of the univariate properties of the time series. The concept of co-integration requires that the set of variables should be integrated of the same order and their linear combination must be stationary. If the series do not follow the same order of integration then there can be no meaningful relationship among them. If series are integrated of the same order, we can proceed to the co-integration test.

A test for co-integration analysis means looking for a stable long run equilibrium relationships among non-stationary economic variables. If the results indicate that the absence of co-integration vector between the variable, it means that there does not exist a long run stable relationship between them. If co-integration exists, it can be presumed that a one – way or two – way Granger causality exists in at least the stationary series. However, the implementation of the co-integration method necessitates the prior check for non-stationarity of data.

In time series literature, unit root tests like Philip Peron test is widely used for testing stationarity (non- stationarity) in economic data. If variables are found to be non-

stationary at levels and they are determined to be stationary in their first differences, they are said to be integrated in order one $I(1)$.

There are two main approaches to test co-integration:

- 1) The Engle and Granger (1987) two step procedure.
- 2) The Johansen (1988) and Johansen and Juselius (1990) procedure.

To test for co-integration among macro-economic variables, this study adopted both the Engle and Granger and the procedure developed by Johansen (1988) and Johansen and Juselius (1990) since the later method is known to be superior to the regression based Engle Granger procedure due to the following reasons;

- a) In the case of Engle Granger procedure, the estimation of the long run equilibrium regression requires that the researcher places one variable on the left hand side and use the others as regressors. But in practice, it is possible to find that one regression indicates the variables are co-integrated, whereas reversing the order indicates no co-integration. This is very undesirable feature of the procedure since the test for co-integration should be invariant to the choice of the variable selected for normalization.
- b) The Engle Granger procedure does not account for the possibility of multiple co-integrating relationships and hence all possible dynamic interactions that could exist between two or more time series. If a multiple vector co-integration exists, the use of Engle Granger procedure may produce a complex linear combination of all the distinct co-integrating vectors that cannot be sensibly interpreted. In contrast, JJ method provides a unified frame work for the estimation and testing of co-integrating relations in the context of VAR error correction methods. Johansen (1988) and Johansen and Juselius (1990) procedures allow for tracing more than one co-integrating vector in the data by

the maximum likelihood estimates. The JJ procedure fully captures the underlying time series properties of the data and provides estimates of all the co-integrating vectors that exist within a set of variables. It clearly shows whether the system consists of unique co-integrating vector or a linear combination of several co-integrating vectors.

It has been argued in econometric literature that the Johansen technique is more discerning in its ability to reject a false hypothesis. There are concerns about small sample bias in estimates from Engle Granger procedure.

- c) The JJ procedure allows for testing certain restrictions suggested by economic theory, such as sign size of the elasticity estimates. Unlike Johansen procedure, the Engle Granger two step procedures do not easily accommodate dynamics in the co-integrating analysis. If the unit root test shows that all the variables are stationary, then the OLS technique is applied.

The sign of the coefficient indicates the nature of relationship between interest rate and its determinants. However, if the variables are non-stationary in their levels, the standard regression method could not be appropriate because the usual t and F tests may give misleading results (Engle and Granger, 1987). If the variables which are used in the regression method are non-stationary, then the estimated regression coefficient could be “spurious”, (Granger and Newbold, 1974). In order to avoid the shortcomings of the regression technique, as most of the macro economic variables are found to be non-stationary, the time series are treated with enthusiasm.

However many economic time series are not stationary and change over time (Nelson and Pollseer, 1982). This means that as time goes on, the mean and the variance tend to move away from any given rules. Non-stationarity is usually removed by taking

first difference of variables (Box and Jenkins, 1970). However, this also results in removing out the long run characteristics of the data, thereby making the model capable or explaining only short run effect.

Although many time series may tend to trend up and down over time in a non-stationary behavior, a group of them might drift together. If there is a tendency for some variables to hold a linear relationship over a long period of time, the co-integration analysis can be used to find out this long- run equilibrium relationship. However, even if the variables are non- stationary but are integrated in the same order, it is possible to check whether they are co- integrated or not. If the variables are co-integrated, then it indicates that the linear combinations of the variables are stable in the long run.

This study used the Augmented Dickey-Fuller test to ascertain whether the first difference of the time series are indeed stationary, (Dickey and Fuller, 1979). This helped to check the order of integration, presence of unit root and take in to account presence of autocorrelation possibility to the error term.

The null hypothesis to be tested is $p < 1$ i.e. there is no unit root.

The important finding of the co-integration analysis is “the Granger representation theorem”, which states that if a set of variables are co- integrated in order one I, there exists a valid error correction representation of data. Once the variables are found to be co- integrated, the ‘Granger (1987) representation theorem’ should be invoked to construct an error correction model (ECM). Once the variables included in the VAR model are found co- integrated, the next step is to specify and estimate an error correction model (ECM) including the error correction term to investigate the dynamic behavior of the model. The correspondence between co-integration and error

correction model is formularized in the Granger representation theorem (1987). The size of the error correction term indicates the speed of adjustment of any disequilibrium towards a long run equilibrium state.

3.4 Hypothesis Testing

Two tailed F test at 95% level of significance was adopted to test the significance of the set of variables. Similarly a two tailed t-test at various levels of significances (starting from 95% to 90%) were applied to test individually the significance of the impact of the variables on local lending interest rates.

3.5 Model Specification

This study used a multivariate regression model to examine the effects of independent variables on the lending interest rates. As argued by Bhalla (1995) and Deepak *et al* (2002), given that most interest rates are highly correlated, the (domestic) lending rate was used as a statistical proxy for the nominal interest rates. Thus, the econometric model expressed interest rates (INT) as a function of fiscal deficits (FDEF), International Interest Rates (INTR), inflation rate (INF) Gross Domestic Product (GDP) and Money Supply (Ms). Thus, the model was specified as:

$$\text{INT} = (\text{FDEF}, \text{INTR}, \text{INF}, \text{GDP}, \text{Ms}) \dots\dots\dots (1)$$

Inflation was also expected to have a lasting effect on lending interest rates. Thus, inflation rate (INF) was included as an important explanatory variable in the model.

Moreover, international interest rate, INTR (Proxied) by the United States interest rate) was expected to influence the domestic rate; therefore it was included in the interest rate model. Other predictor variables that were included were; money supply (Ms) and GDP

The model in a non- linear form will be as follows;

$$INT = \alpha + \beta_1 FDEF + \beta_2 INTR + \beta_3 INF + \beta_4 GDP + \beta_5 Ms + \mu \dots \dots \dots (2)$$

Where:

INT = Lending Interest rate

FDEF = Government fiscal Deficit

INTR = International Interest Rate

INF = Inflation

GDP = Gross Domestic Product (demand for money)

Ms = Supply of money

μ = Error term

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = beta coefficients

α = constant

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This chapter contains the descriptive results, unit root tests, cointegration tests, long results and error correction model.

4.1 Descriptive Results

The lending interest rate in Kenya was modelled against several determinants that included budget deficit, foreign interest rate, inflation, money supply and demand for money. Table 4.1 shows the skewness in that the distribution of the variables was normal. All the skewness coefficients were between +2 and -2. However, the kurtosis coefficients indicate that all the variables had a leptokurtic distribution. The observation was because the kurtosis was beyond -3 and +3 rule of the thumb which implies lack of normality. Since skewness and Kurtosis coefficient were not conclusive on whether the data was normal or not, the Jacque Bera test offered a more conclusive test on normality.

The Jarque-Bera test statistic tested the null hypothesis that the distribution of the variables was not significantly different from normal. The resultant p values from the test were higher than the conventional p value of 0.05 (for three variables FDEF, GDP and INF) which indicates that there was a high probability that the null hypothesis was true. It therefore implies that the three variables (FDEF, GDP and INF) were normally distributed while FINTR, INTR and Ms were not normally distributed. The lack of normality implies that the data had extreme values/outliers and hence the need to transform the variables into log forms. However, since the majority of the variables were proportions, ratios or percentages (for instance, FDEF, FINTR, INTR) it may not

be plausible to conduct logs as such logs would be negative. In addition, the log of negative numbers (FDEF) is undefined. For those two reasons, the variables were not converted into their log forms.

Table 4.5: Descriptive Results

Statistic	FDEF	FINTR	GDP	INF	INTR	Ms
Mean	-3.08	8.43	756542814.90	55.99	18.85	302960.00
Median	-3.16	8.27	465250740.00	45.59	15.83	196485.00
Maximum	1.76	18.87	2551161000.00	180.09	36.24	1277533.00
Minimum	-8.60	3.25	53910002.00	4.98	10.58	16136.00
Std. Dev.	2.27	3.48	733686940.45	51.54	6.99	331629.55
Skewness	-0.15	1.01	0.98	1.01	1.12	1.36
Kurtosis	3.01	4.37	2.95	3.10	3.05	4.17
Jarque-Bera	0.12	7.67	4.98	5.24	6.45	11.30
Probability	0.94	0.02	0.08	0.07	0.04	0.00
Observations	31	31	31	31	31	31

Source: Eviews Computation, 2012

Figure 4.1 summarizes a graphical illustration of the lending interest rate from the year 1980 to year 2010 indicated that there was a gradual rise in the lending interest from 1980 to early 1990's. However, there was a sharp rise in lending rates from the year 1991 to the year 1995 with the highest interest rate (36.24 percent) being recorded in the year 1995. The surge in interest rates was as a result of macroeconomic problems associated with excessive growth of money supply and the Goldenberg scandal.

The lending rates started declining after 1995. The government was keen to grow the economy under the ERS, the government reduced cash reserve ratios (CRR) sharply leading to a fall in interest rates and rate spreads. Due to the reduction of CRR, lending rates fell from about 18.45 percent in 2002 to close at 12.53 percent in 2004.

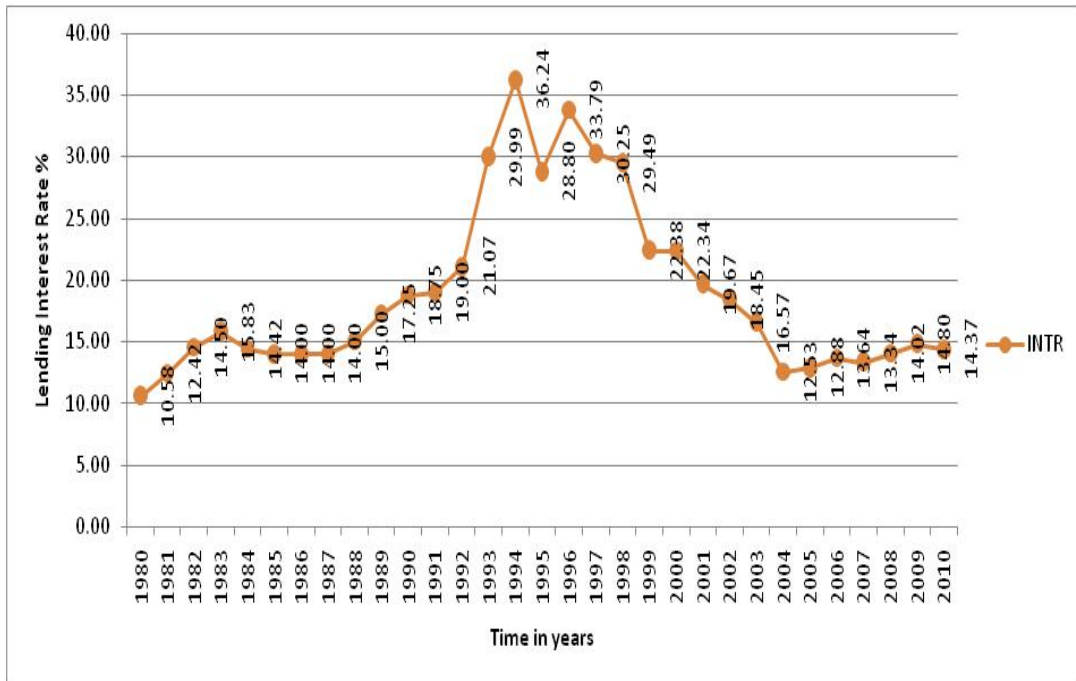


Figure 4.7: Graph of Lending Interest Rate (%) from 1980 to 2010

Source: The Central Bank of Kenya, 2012

Figure 4.2 is a graphical illustration for GDP as a proxy for the demand for money balances for transactional purposes. It indicated that the National Income has gradually risen from the year 1980 to the year 2010.

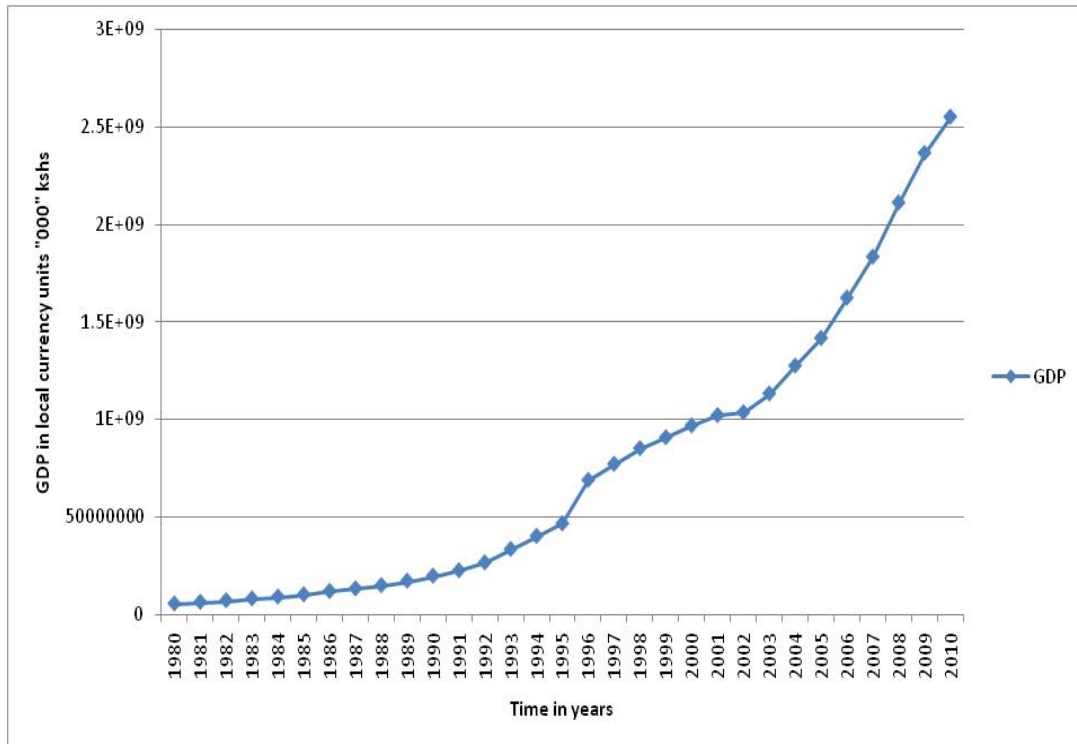


Figure 4.8: GDP in “000” Ksh. from 1980 to 2010

Source: The Central Bank of Kenya, 2012

Figure 4.3 is a graphical illustration for supply of money (Ms). The graph indicated that the money supply **Ms** has gradually risen from the year 1980 to the year 2010. The highest expansion in money supply was witnessed after the change of political regimes in year 2002. The new political regime pursued expansionary growth policies through policies such as ERS and SRA and vision 2030.

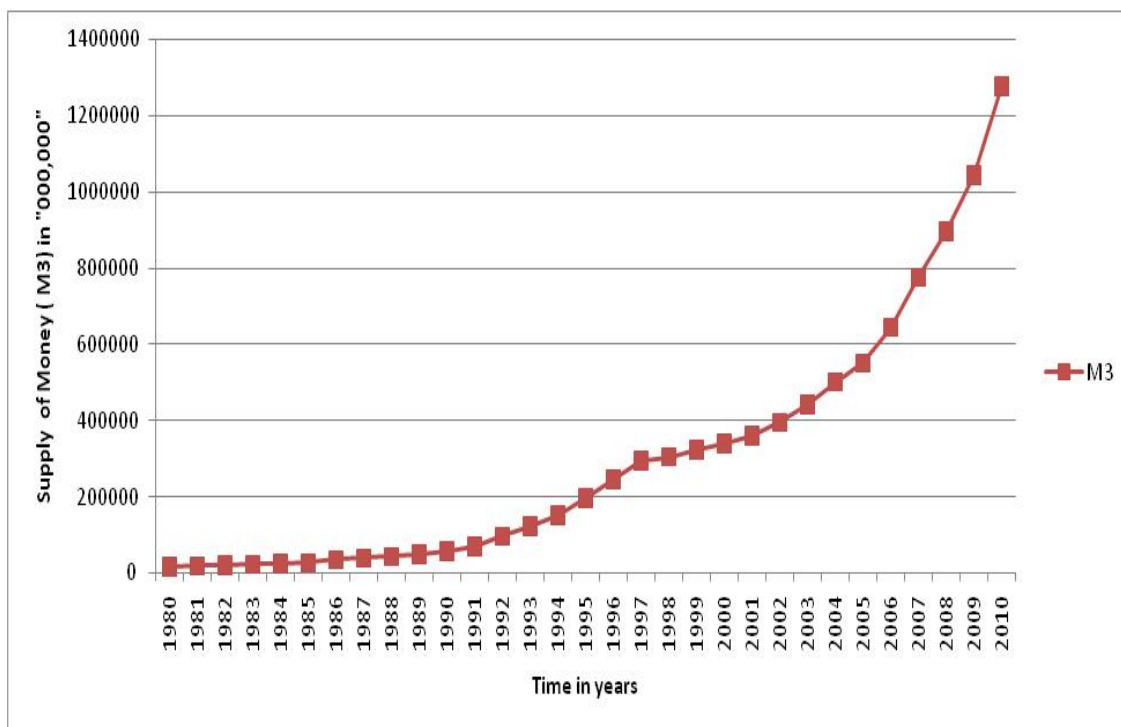


Figure 4.9: Graph of money supply in “000000” kshs from 1980 to 2010

Source: The Central Bank of Kenya, 2012

Figure 4.4 is a graphical illustration for government fiscal deficit. The graph indicates that fiscal deficit has gradually declined from the year 1980 to the year 2010. The highest negative budget deficit was in the year 1986. The highest surplus budget deficit was in the year 1999.

The structural adjustment programmes (SAPs) in the late 1980s by IMF and World Bank which advocated for trade liberalizations, currency devaluation, privatization of state owned enterprises, removal of price controls, cost sharing and a broadening tax base may have been responsible for the increase in the budget deficit in the year 1986. Besides external factors, Kenya’s external indebtedness can be partly attributed to internal factors. These mainly are over reliance on primary exports which face low and fluctuating prices yet the market share is saturated and shrinking with no value addition hence deteriorating terms of trade. Corruption and local mismanagement of

aid and loans by Kenya has also contributed to the debt escalation seeing that allocation was being done on white elephant projects. Following the 1977 coffee boom, the initial response was to expand public expenditure and since revenue from taxation did not rise as fast, the government resorted to foreign borrowing. When commodity price later fell, expenditure was not reduced accordingly and previous borrowing was supplemented with new borrowing to maintain expenditure levels. The budget deficit had declined from the year 2002 onwards as a result of strict macroeconomic policies and the desire to reduce the high public indebtedness.

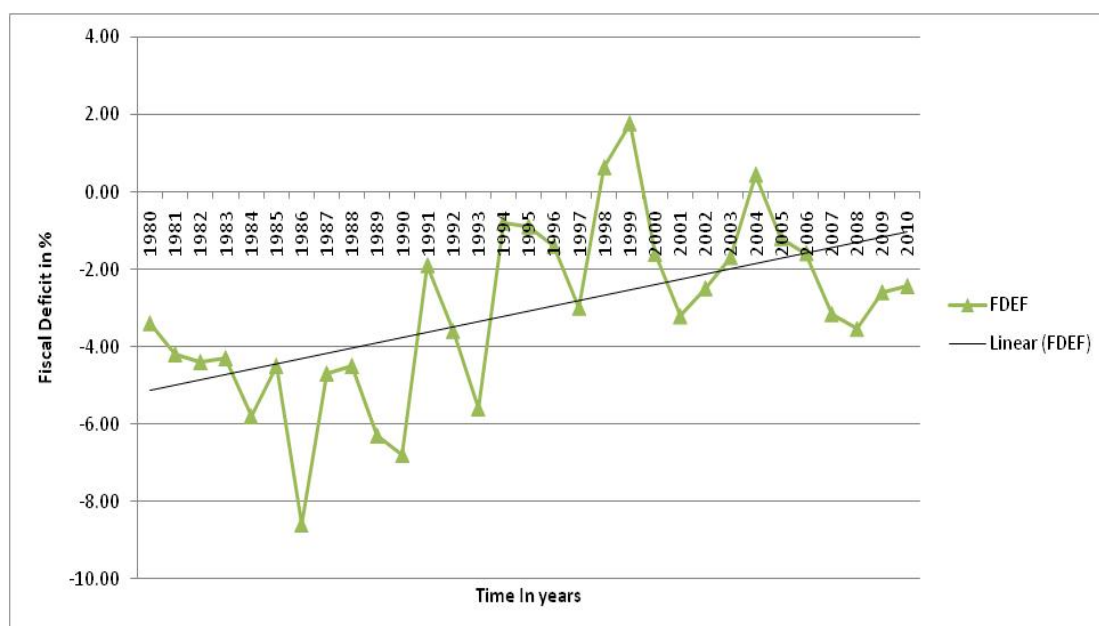


Figure 4.10: Graph of Budget Deficit (%) from 1980 to 2010

Source: The Central Bank of Kenya, 2012

Figure 4.5 is a graphical illustration for foreign interest rate. The US lending rate was taken as a proxy. The graph indicated that the foreign interest rate has gradually declined from the year 1980 to the year 2010.

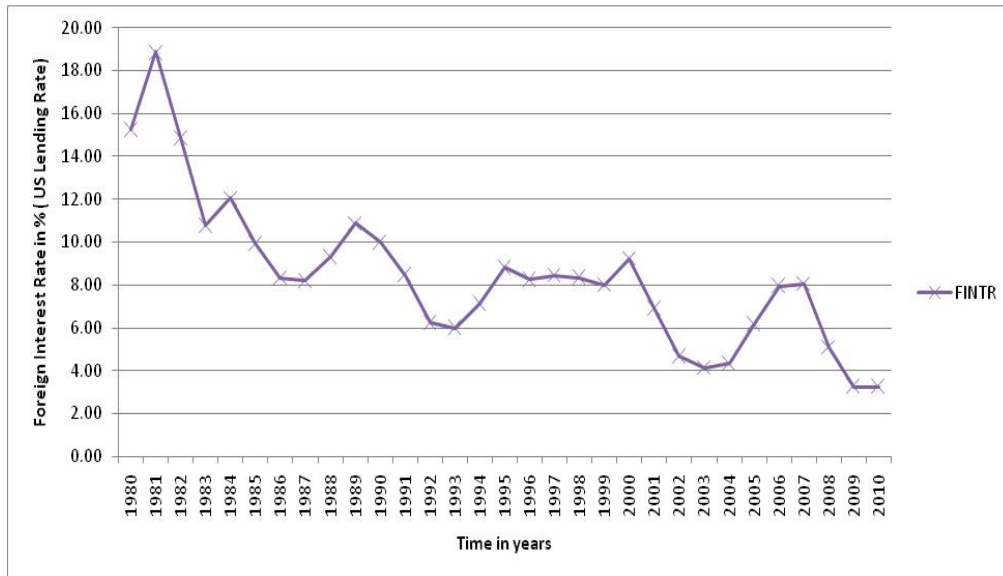


Figure 4.11: Graph of foreign interest rates in % from 1980 to 2010

Source: The Central Bank of Kenya, 2012

Figure 4.5 is a graphical illustration of inflation rates. The inflation rates have gradually increased from the year 1980 to the year 2010. The year 2005 was taken to be the base year and the inflation index base was set at a100.

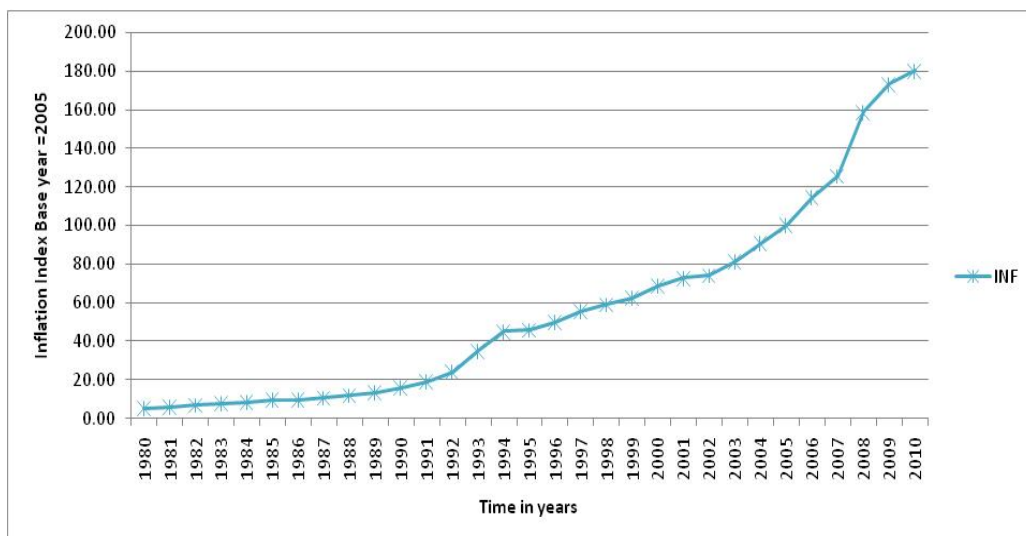


Figure 4.12: Graph of Inflation Index from the year 1980 to the year 2010

Source: The Central Bank of Kenya, 2012

4.2 Unit Root Tests

Prior to testing for a causal relationship and cointegration between the time series, the first step is to check the stationarity of the variables used in the model. The aim is to verify whether the series had a stationary trend, and, if non-stationary, to establish orders of integration. The study used both Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests to test for stationarity. The test results of the unit roots are presented in table 4.2 below;

Table 4.6: Unit Root Tests in the Levels

Variable name	ADF test	PP test	1% Level	5% Level	10% Level	Comment
INTR	-1.490	-1.490	-3.666	-	-	Non
FINTR	-1.825	-1.825	-3.666	-	-	Non
GDP	7.770	7.770	-3.666	-	-	Stationary
INF	4.616	4.616	-3.666	-	-	Stationary
Ms	12.506	12.506	-3.666	-	-	Stationary
FDEF	-2.82	-2.82	-3.666	-	-	Non

Source: Eviews computation, 2012

Results in table 4. 2 indicate that INTR, FINTR and FDEF are non stationary (i.e presence of unit roots) at 1%, 5% and 10% levels of significance. However, GDP, INF and Ms are stationary (i.e. has no unit roots) at 1%, 5% and 10% level of significance. This calls for first differencing of the non stationary variables. Table 4.3 displays the unit root tests after first differencing. The results show that the variables INTR, FINTR and FDEF become stationary (unit roots disappear) on first differencing.

Table 4.7: Unit Root Tests-First Differencing

Variable name	ADF test	PP test	1% Level	5% Level	10% Level	Comment
DINTR	-5.14	-5.14	-3.675	-	-	Stationary
DFINTR	-5.17	-5.17	-3.675	-	-	Stationary
DFDEF	-6.999	-6.999	-3.675	-	-	Stationary

Source: Eviews Computation, 2012

4.3 Co-Integration Tests

After ascertaining the stationarity properties of the series, co integration analysis was done. The first step was to generate the residuals from the long run equation of the non-stationary variables. Then stationarity of the residual was tested using the ADF. The results indicate that the lagged residual is non stationary (i.e. no unit roots). The Engle Granger (EG) test (Table 4.4) of co integration shows that the lagged residuals were non stationary at 1%, 5% and 10% levels which imply that all the variables do not converge to an equilibrium in the long run (i.e. are not co integrated).

Table 4.8: Engle-Granger Co-Integration test

ADF Test Statistic	-2.367246	1% Critical Value*	-3.6852
		5% Critical Value	-2.9705
		10% Critical Value	-2.6242

*MacKinnon critical values for rejection of hypothesis of a unit root.

Source: Eviews computation

Consequently, the Johansen cointegration test was conducted since it is more accurate and superior to Engle Granger test of cointegration. Table 4.5 indicates that the null hypothesis of no cointegration was rejected at 5% (1%) significance level. The likelihood ratio statistic for the null hypothesis of the existence of at most 1 cointegration equation was not larger than the z critical values at 5% and a 1% level. This implies that at least one cointegrating equation exists. This further implies that all the variables converge to an equilibrium in the longrun (i.e are co integrated).

Table 4.5: Engle-Granger Co-Integration test

Date: 06/19/12 Time: 16:05
Sample: 1980 2010
Included observations: 30
Test assumption: Linear deterministic trend in the data
Series: FDEF FINTR GDP INF INTR Ms
Lags interval: No lags

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
		Value	Value	
0.947088	147.0576	94.15	103.18	None **
0.611621	58.88395	68.52	76.07	At most 1
0.395828	30.51072	47.21	54.46	At most 2
0.238369	15.39385	29.68	35.65	At most 3
0.213010	7.225052	15.41	20.04	At most 4
0.001295	0.038869	3.76	6.65	At most 5

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
L.R. test indicates 1 cointegrating equation(s) at 5% significance level

Source: *Eviews Computation, 2012*

4.4 Long Run Results

Table 4.6 presents the long run results. An R squared of 0.759 indicated that the overall goodness of fit of the model was satisfactory. This implies that 75.9% of the variances in lending interest rate (dependent variable) are explained by the variances in fiscal deficit (FDEF), inflation (INF), foreign interest rate (INTR), money supply (MS) and demand for money (GDP) (independent variables). The f statistic of 4.252 (p value 0.006) indicated that the independent variables have good joint explanatory power.

The relationship between lending rates and inflation is positive and significant. This was supported by a regression coefficient of 0.650 (p value of 0.018). This implies that an increase in inflation by one unit leads to an increase in lending rates by 0.65 units. The findings are consistent with theory and expectations. The findings agree with Mudida (2010), who argues that Inflationary pressures tend to raise interest rates. This is because when prices are expected to raise considerably, the lender will be

reluctant to lend during this period fearing a loss of the purchasing power of the loaned amount, on maturity.

The relationship between lending rates and GDP is negative and significant. The findings are supported by a regression coefficient of 0.0000000437 (p value = 0.0305). The findings concur with Parkin (2000), who asserted that the nominal interest is determined by the demand for money in an economy. Hence an increase in national income (GDP) by one unit leads to a decline in interest rates by 0.0000000437.

The relationship between foreign interest rate and interest is negative but insignificant. However, the relationship between lending rates and budget deficit is positive and significant. This finding is supported by a regression coefficient of 1.27 (p value = 0.03). The finding implies that an increase in budgetary deficit by one unit leads to an increase in lending rates by 1.267 units. The findings agree with those in The World Bank (1993) which opined that in economies where financial markets are not repressed, higher deficits financed by domestic debt increase domestic real interest rates when external borrowing is not possible.

The relationship between lending rates and money supply is negative but insignificant.

Table 4.6: Long Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28.33539	6.141066	4.614083	0.0001
INF	0.650751	0.257101	2.531108	0.0180
GDP	-4.37E-08	1.90E-08	-2.294040	0.0305
FINTR	-0.533299	0.428173	-1.245523	0.2245
FDEF	1.267987	0.550987	2.301302	0.0300
Ms	-1.48E-05	2.74E-05	-0.541301	0.5931
R-squared	0.759601	Mean dependent var		18.85065
Adjusted R-squared	0.651521	S.D. dependent var		6.989909
S.E. of regression	5.628847	Akaike info criterion		6.465672

Sum squared resid	792.0979	Schwarz criterion	6.743217
Log likelihood	-94.21791	F-statistic	4.252423
Durbin-Watson stat	0.946612	Prob(F-statistic)	0.006186

Source: Eviews computation, 2012

4.5 Short Run Results/Error Correction Model

Since the variables in the model linking lending rates to the determinants are co integrated, and then an error-correction model can be specified to link the short-run and the long-run relationships. Residuals from the co integrating regression are used to generate an error correction term (lagged residuals) which is then inserted into the short-run model. The estimates of the error-correction model are given in table 4.6;

The short run results in table 4.6 indicate that the goodness of fit for the short run model is satisfactory. This was supported by an r squared of 0.239. This implies that 23.9% of variation in short run lending rates is explained by the short run determinants.

However, none of the variables show significance in influencing the short run lending rates. The error correction term (Lagres) measures the speed of adjustment to the long run equilibrium in the dynamic model. The error term is negative (-0.0000623) and statistically insignificant at the 5% level. This result implies that there is a gradual adjustment (convergence) to the long run equilibrium. The coefficient of (-0.0000623) indicates that 0.00623% of the disequilibria in lending rates achieved in one period are corrected in the subsequent period.

Table 4.7: Error Correction Model/Short Run Results

Dependent Variable: DINTR
Method: Least Squares
Date: 06/19/12 Time: 16:37
Sample(adjusted): 1982 2010
Included observations: 29 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.182279	1.299136	-0.140308	0.8897
GDP	-1.05E-08	1.33E-08	-0.788522	0.4388
INF	0.152939	0.157519	0.970922	0.3421
M3	-1.12E-06	1.60E-05	-0.069768	0.9450
FDEF	-0.173859	0.287763	-0.604174	0.5519
FINTR	-0.162623	0.372394	-0.436697	0.6666
LAGRES	-6.23E-05	4.30E-05	-1.447725	0.1618
R-squared	0.239011	Mean dependent var		0.067241
Adjusted R-squared	0.031469	S.D. dependent var		3.347991
S.E. of regression	3.294891	Akaike info criterion		5.429128
Sum squared resid	238.8387	Schwarz criterion		5.759165
Log likelihood	-71.72236	F-statistic		1.151627
Durbin-Watson stat	2.497238	Prob(F-statistic)		0.366742

Source: Eviews computation, 2012

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The chapter outlines the summary of the findings, the conclusions and the recommendations of the study.

5.1 Summary for Findings

Descriptive findings indicated that there was a gradual rise in the lending interest from 1980 to early 1990s. However, there was a sharp rise in lending rates from the year 1991 to the year 1995 with the highest interest rate (36.24 percent) being recorded in the year 1995. The surge in interest rates was as results of macroeconomic problems associated with excessive growth of money supply and the Goldenberg scandal.

The National Income (GDP) has gradually risen from the year 1980 to the year 2010. The money supply M_s has gradually risen from the year 1980 to the year 2010 and the highest expansion in money supply was witnessed after the change of political regimes in year 2002. The new political regime pursued expansionary growth policies through policies such as ERS and SRA and vision 2030.

The fiscal deficit has gradually declined from the year 1980 to the year 2010. The highest negative budget deficit was in the year 1986. The highest surplus budget deficit was in the year 1999. The structural adjustment programmes (SAPs) in the late 1980s by IMF and World Bank which advocated for trade liberalizations, currency devaluation, privatization of state owned enterprises, removal of price controls, cost sharing and a broadening tax base may have been responsible for the

increase in the budget in the year 1986. Descriptive results also revealed that the foreign interest rate has gradually declined from the year 1980 to the year 2010.

Unit root tests indicated that international interest rates, international interest rates and government fiscal deficit are non stationary (i.e presence of unit roots) at 1%, 5% and 10% levels of significance but become stationary after first differencing. However, GDP, inflation and supply for money are stationary (i.e. has no unit roots) at levels and required no differencing. Cointegration tests conducted through the Engle Granger method indicated that the variables were not cointegrated since the lagged residuals had unit roots. Consequently, the Johansen cointegration test was conducted since it is more accurate and superior to Engle Granger test of cointegration. The Johansen cointegration test indicated that there was at least one cointegrating equation.

The relationship between lending rates and inflation is positive and significant. This was supported by a regression coefficient of 0.650 (p value of 0.018). This implies that an increase in inflation by one unit leads to an increase in lending rates by 0.65 units. The findings are consistent with theory and expectations.

The relationship between lending rates and GDP is negative and significant. The findings are supported by a regression coefficient of 0.000000437 (p value =0.0305). The finding confirms the notion of contractionary policy where an increase in interest rate leads to a decline in national income and an expansionary policy consisting of declining interest rates leads to increased national income. Hence an increase in national income (GDP) by one unit leads to a decline in interest rates by 0.000000437.

The relationship between lending rates and budget deficit is positive and significant. This finding is supported by a regression coefficient of 1.27 (p value =0.03). The finding implies that an increase in budgetary deficit by one unit leads to an increase in lending rates by 1.267 units.

Money supply has no influence on lending interest rates. Similarly foreign interest rate has no influence on lending interest. Error correction modeling results indicated that the error correction term (Lagres) which measures the speed of adjustment to the long run equilibrium in the dynamic model was negative (-0.0000623) and statistically insignificant at the 5% level. This result implies that there is a gradual adjustment (convergence) to the long run equilibrium. The coefficient of -0.0000623 indicates that 0.00623% of the disequilibria in lending rates achieved in one period are corrected in the subsequent period.

5.2 Conclusions

It is concluded from the study that the impact of budget deficit on interest rates of Kenyan economy was positive and significant. Therefore, policy initiatives that wish to keep the lending interest at a low level should also take into consideration the need to reduce the budget deficit. Furthermore the effect of inflation on lending interest rates in Kenya was positive. Therefore, monetary and fiscal policy initiatives that aim to reduce inflation will also reduce the lending interest rates. Moreover the effect of international interest rates on local lending rates was negative. However, the impact was insignificant.

The study also concludes that the effect of money demand/National Income (GDP) on the lending rate is negative. Therefore, an increase in the demand for money balances

for transactional balances lead to a decline in the lending interest rate. Therefore, macroeconomic policy that is expansionary may lead to a reduction in lending rates. Finally the effect of the money supply on the lending rates is negative but insignificant.

5.3 Recommendations

The study recommends that policy makers need to consider the effect of the variables under study when designing policies aimed at reducing or increasing the lending rates. For instance, it is recommended that the policy makers should pursue expansionary policies aimed at increasing the national Income /GDP in an effort to reduce the interest rate. Such policies can be achieved through fiscal policies such as reduction in taxes or increases in government spending. It is also recommended that policy makers should pursue expansionary monetary policies by enhancing the money supply in the economy. This would reduce the interest rates.

Further, policy makers should design policies aimed at reducing inflation. Such policies would be through addressing structural and non structural causes of inflation. For instance, the policy makers should enact policies to reduce the cost of doing business in Kenya and effectively reduce the effect of cost push inflation.

5.4 Areas for Further Research

The study results are limited because they did not consider the granger causality of some of the variables. For instance, is the relationship between interest rates and GDP, Money Supply, Inflation, Foreign Interest Rate, Budget Deficit uni-directional or bi-directional?. Would granger causality tests indicate a relationship running from the predictor variables to the dependent variable? Consequently, further studies on granger causality are recommended. Future studies may also conduct a cross country

comparison of the factors affecting interest rates and check whether different countries face different factors. For instance, the East African Community would be good base for comparison.

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APPENDIX

APPENDIX I: DATA

YEAR	GDP	MS	FDEF	INTR	INF	INT
1980	53910002	16136	-3.40	15.27	4.98	10.58
1981	62016000	18276	-4.20	18.87	5.56	12.42
1982	70247800	21369	-4.40	14.86	6.71	14.50
1983	79592200	22425	-4.30	10.79	7.47	15.83
1984	89242600	25293	-5.80	12.04	8.24	14.42
1985	100811600	26898	-4.50	9.93	9.32	14.00
1986	117460200	35693	-8.60	8.33	9.55	14.00
1987	131155800	39666	-4.70	8.20	10.38	14.00
1988	148283780	42855	-4.50	9.32	11.65	15.00
1989	170404100	48392	-6.30	10.87	13.26	17.25
1990	196433610	58099	-6.80	10.01	15.61	18.75
1991	224230069	69470	-1.90	8.46	18.75	19.00
1992	264471872	96579	-3.60	6.25	23.87	21.07
1993	333611292	123653	-5.60	6.00	34.85	29.99
1994	400657837	152314	-0.80	7.14	44.89	36.24
1995	465250740	196485	-0.90	8.83	45.59	28.80
1996	687998000	246246	-1.40	8.27	49.63	33.79
1997	770313000	295974	-3.00	8.44	55.27	30.25
1998	850808200	304650	0.63	8.35	58.98	29.49
1999	906927630	324415	1.76	7.99	62.37	22.38
2000	967836930	340337	-1.61	9.23	68.59	22.34
2001	1020221000	359533	-3.22	6.92	72.53	19.67
2002	1035373000	395087	-2.50	4.68	73.95	18.45
2003	1131782000	441657	-1.69	4.12	81.21	16.57
2004	1274329000	501155	0.44	4.34	90.65	12.53
2005	1415725000	550812	-1.20	6.19	100.00	12.88
2006	1622434000	644295	-1.59	7.96	114.45	13.64
2007	1833513000	775880	-3.16	8.05	125.62	13.34
2008	2111173000	896520	-3.55	5.09	158.59	14.02
2009	2365453000	1044063	-2.60	3.25	173.23	14.80
2010	2551161000	1277533	-2.44	3.25	180.09	14.37