# THE RELATIONSHIP BETWEEN INFLATION AND FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

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**A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR AWARD OF MASTERS OF BUSINESS ADMINISTRATION DEGREE, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI**

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# DECLARATION

This management research project is my original work and to the best of my knowledge, it has not been submitted for a degree in any other university.

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D61/70046/2008

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

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# DEDICATION

I dedicate this work to my mother Grace W Thuku, my sister Tabitha Wambui, my niece GraceAnn Wamucii my best friend Maureen Nyambura and all my friends for their continued moral and financial support throughout the course.

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First and foremost I thank the Almighty God for his guidance, providence and protection from the beginning of this program until now. I also thank Him for giving me good health and helping me to get finances for this course.

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# ABSTRACT

Inflation is a sustained rise in the general level of prices of goods and services in an economy over a period of time. When the price level rises, each unit of currency buys fewer goods and services; consequently, inflation is also erosion in the purchasing power of money – a loss of real value in the internal medium of exchange and unit of account in the economy. Financial performance is how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time. Line items such as revenue from operations, operating income or cash flow from operations can be used, as well as total unit sales. The objective of this study is to establish the relationship between inflation and financial performance of commercial banks in Kenya.

Secondary data was used for the study. The data that is inflation rates and financial performance (profits assets and cash flows) was collected from banks' annual reports for all the 44 commercial banks for the 10 year period 2000-2009. Data analysis of the relationship between inflation and financial performance of commercial banks was done using correlation coefficient and coefficient of determination to establish the nature and the strength of relationship while the test of significance was undertaken to analyze the magnitude of the relationship. The analysis of quantitative data was carried out using SPSS version17 (statistical package for social Science) and presented in form of tables, graphs and pie charts while contextual data was analyzed qualitatively.

On the relationship between inflation and financial performance, profits indicate a negative relationship. As inflation decrease, profits increase. The relationship between inflation and total assets indicate no clear pattern therefore a weak relationship. The total

cash flows do not indicate a clear pattern in relation to inflation indicating a weak

relationship. In conclusion, banks profits have the strongest clear pattern in relation to

inflation indicating that profits increase as inflation decreases. This means that the

independent variable, inflation, has a significant association with the dependent variable,

financial performance.

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## ABBREVIATIONS

| | |
|---|---|
| **GDP** | Gross domestic product |
| **AD** | Aggregate Demand |
| **SRAS** | Short run aggregate demand |
| **CPI** | Consumer price index |
| **PPI** | Producer price index |
| **ECI** | Employment cost index |
| **MPC** | Monetary policy committee |
| **NSE** | Nairobi stock exchange |

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study

Inflation is a sustained rise in the general level of prices of goods and services in an economy over a period of time. When the price level rises, each unit of currency buys fewer goods and services; consequently, inflation is also erosion in the purchasing power of money – a loss of real value in the internal medium of exchange and unit of account in the economy. One of the main measures of price inflation is the inflation rate, the annualized percentage change in a general price index (normally the Consumer Price Index) over time (Bateman et al, 2000).

Economists generally agree that high rates of inflation and hyperinflation are caused by an excessive growth of the money supply. Views on which factors determine low to moderate rates of inflation are more varied. Low or moderate inflation may be attributed to fluctuations in real demand for goods and services, or changes in available supplies such as during scarcities, as well as to growth in the money supply. However, the consensus view is that a long sustained period of inflation is caused by money supply growing faster than the rate of economic growth (Dwivedi, 2005).

Today, most mainstream economists favor a low steady rate of inflation. Low (as opposed to zero or negative) inflation may reduce the severity of economic recessions by enabling the labor market to adjust more quickly in a downturn, and reduce the risk that a liquidity trap prevents monetary policy from stabilizing the economy. The task of keeping the rate of inflation low and stable is usually given to monetary authorities. Generally, these monetary authorities are the central banks that control the size of the money supply through the setting of interest rates, through open market operations, and through the setting of banking reserve requirements (Lipsey, 2004).

Measuring inflation in an economy requires objective means of differentiating changes in nominal prices on a common set of goods and services, and distinguishing them from

those price shifts resulting from changes in value such as volume, quality, or performance. To measure overall inflation, the price change of a large "basket" of representative goods and services is measured. This is the purpose of a price index, which is the combined price of a "basket" of many goods and services. The combined price is the sum of the weighted average prices of items in the "basket". A weighted price is calculated by multiplying the unit price of an item to the number of those items the average consumer purchases (John & Bernanke, 2005).

Weighted pricing is a necessary means to measuring the impact of individual unit price changes on the economy's overall inflation. The Consumer Price Index, for example, uses data collected by surveying households to determine what proportion of the typical consumer's overall spending is spent on specific goods and services, and weights the average prices of those items accordingly. Those weighted average prices are combined to calculate the overall price. To better relate price changes over time, indexes typically choose a "base year" price and assign it a value of 100. Index prices in subsequent years are then expressed in relation to the base year price (Bateman et al, 2000).

Inflation measures are often modified over time, either for the relative weight of goods in the basket, or in the way in which goods and services from the present are compared with goods and services from the past. Over time adjustments are made to the type of goods and services selected in order to reflect changes in the types of goods and services purchased by 'typical consumers'. New products may be introduced, older products disappear, the quality of existing products may change, and consumer preferences can shift. Both the types of goods and services which are included in the "basket" and the weighted price used in inflation measures will be changed over time in order to keep pace with the changing marketplace (Ncebere, 2003).

Inflation numbers are often seasonally adjusted in order to differentiate expected cyclical cost shifts. For example, home heating costs are expected to rise in colder months, and seasonal adjustments are often used when measuring for inflation to compensate for cyclical spikes in energy or fuel demand. Inflation numbers may be averaged or otherwise subjected to statistical techniques in order to remove statistical noise and

volatility of individual prices. When looking at inflation economic institutions may focus only on certain kinds of prices, or special indices, such as the core inflation index which is used by central banks to formulate monetary policy (Grant, 2000).

An increase in the general level of prices implies a decrease in the purchasing power of the currency. That is, when the general level of prices rises, each monetary unit buys fewer goods and services. The effect of inflation is not distributed evenly, and as a consequence there are hidden costs to some and benefits to others from this decrease in purchasing power. For example, with inflation lenders or depositors who are paid a fixed rate of interest on loans or deposits will lose purchasing power from their interest earnings, while their borrowers benefit. Individuals or institutions with cash assets will experience a decline in the purchasing power of their holdings. Increases in payments to workers and pensioners often lag behind inflation, especially for those with fixed payments. Increases in the price level (inflation) erode the real value of money (the functional currency) and other items with an underlying monetary nature (e.g. loans and bonds). However, inflation has no effect on the real value of non-monetary items, (e.g. goods and commodities, gold, real estate). Moreover, inflation is also influenced by food prices, indicating a non-negligible role for agricultural supply constraints in inflation (Dwivedi, 2005).

According to the quantity theory of money, most exactly stated in Professor Fisher's " equation of exchange," an increase in money and bank credit beyond the needs of trade at a given price level tends to raise that price level. Such is the common conception of inflation. The equal and simultaneous movements of total purchasing power and trade would result in a stable price level. Total purchasing power has been shown to be the sum of two products, namely, the quantity of money in circulation multiplied by its efficiency (or velocity of circulation) and the quantity of bank deposits multiplied by their efficiency. If this total purchasing power remains the same but the quantity of trade declines, there will be inflation. If the quantity of trade remains the same, then inflation may be caused by increases in the quantity of money or of bank credit, or in their efficiencies. There can be gold inflation as well as paper money inflation or bank credit inflation (Smith, William & Blinder, 2006)

It is quite impossible to determine the actual volume of goods that enter into trade during a certain period in a complex country like ours. The relative increase or decrease may, however, be approximated from certain indexes. The best barometers of trade, measured in physical units and not in dollars of value, are the production of the basic materials, such as coal, iron, petroleum, copper, silver, the production of agricultural commodities, the tonnage of the railroads, the tonnage of vessels entered and cleared at lake ports and seaports, the number of building permits, and the number of shares traded on the stock exchanges. The volume of money in circulation and that of bank deposit currency, as well as the velocity of both of these, can be statistically determined with a fair degree of exactness (John & Bernanke, 2005).

Financial performance is how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. There are many different ways to measure financial performance, but all measures should be taken in aggregation. Line items such as revenue from operations, operating income or cash flow from operations can be used, as well as total unit sales. Furthermore, the analyst or investor may wish to look deeper into financial statements and seek out margin growth rates or any declining debt (Koivu, 2002).

A commercial bank is a financial intermediary that engage in the following activities; processing of payments, issuing bank drafts and bank cheques, accepting money on term deposit, lending money, safekeeping of documents and other items in safe deposit boxes, distribution or brokerage, cash management and treasury services, merchant banking and private equity financing and traditionally, large commercial banks also underwrite bonds, and make markets in currency, interest rates, and credit-related securities, but today large commercial banks usually have an investment bank arm that is involved in the mentioned activities (Sheffrin, 2003).

The Banking industry in Kenya is governed by the Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central

Bank of Kenya (CBK). The banking sector was liberalized in 1995 and exchange controls lifted. Kenya's financial system is among the largest and more developed in sub- Saharan Africa, with a large banking sector. The banks, non-banking finance institutions, microfinance institutions and building societies are supervised by the central bank of Kenya (James, 2010).

With 44 licensed commercial banks, Kenya's banking industry over the last two decades has been characterized as having too many banks but with too few branches. It should be noted that the six largest banks in terms of asset size control close to 70% of the market, while the mid-sized banks control much of the rest. However, the banking landscape has gradually changed over the last decade, with most large-size and mid-tier banks aggressively increasing their capital base and extending their branch networks across the country; while a few have expanded regionally. In particular, over the last three years there has been a concerted push by Kenyan commercial banks into the rural areas and lower income urban areas in an attempt to reach the previously 'unbanked' population. Over the same period, banks have also increased their focus on developing banking products for small and medium sized enterprises (SME's) as well as the retail end of the market. This move has been spurred by increased competition among banks which has compelled them on an endeavor to grow their market shares and source for lower cost deposits from the SME and retail market segments (Richard, 2010).

## 1.2 Statement of the Problem

Inflation can have positive and negative effects on an economy. Negative effects of inflation include loss in stability in the real value of money and other monetary items over time; uncertainty about future inflation may discourage investment and saving, and high inflation may lead to shortages of goods if consumers begin hoarding out of concern that prices will increase in the future. Positive effects include a mitigation of economic recessions, and debt relief by reducing the real level of debt. The effect of inflation on the Kenyan economy has been experienced by various sectors in the economy including the

banking sector. Huybens and Smith (1999) argue that an increase in the rate of inflation could have at first negative consequences on financial sector performance through credit market frictions before affecting economic growth. In fact, market frictions entail the rationing of credit, which reduce intermediary activity and capital formation. The reduction of capital investment impacts negatively both on long-term economic growth and equity market activity. However, Azariadis and Smith (1996) emphasize the importance of threshold level of inflation in the relationship between inflation and financial sector performance.

The impact of inflation on growth, output and productivity has been one of the main issues examined in macroeconomics. Theoretical models in the money and growth literature analyze the impact of inflation on growth focusing on the effects of inflation on the steady state equilibrium of capital per output. There are three possible results regarding the impact of inflation on output and growth: money is neutral and supernatural in an optimal control frame work considering real money balances (M/P) in the utility function. The assumption that money as substitute to capital, established the positive impact of inflation on growth; this result being known as the Tobin effect. The negative impact of inflation on growth, also known as the anti-Tobin effect, is associated mainly with cash in advance models which consider money as complementary to capital (Tobin 1999).An increase in the general level of prices implies a decrease in the purchasing power of the currency. That is, when the general level of prices rises, each monetary unit buys fewer goods and services. The effect of inflation is not distributed evenly in the economy, and as a consequence there are hidden costs to some and benefits to others from this decrease in the purchasing power of money.

In Kenya, the effect of inflation on the financial performance of commercial banks has not been adequately researched. The research aims at determining the relationship increase in the price levels (inflation) play on the real value of money and other items with an underlying monetary value- loans and bonds.

## 1.3 Objective of the study

The objective of this study is to establish the relationship between inflation and financial performance of commercial banks in Kenya.

## 1.4 Importance of the Study

The commercial banks management, especially the top level management will use the study to understand how inflation affects the financial performance of the commercial banks and set up strategies in handling its effects. They will also understand the causes and effects of inflation and positively manage the consequences for better performance of the commercial banks.

The government and its agencies will be assisted by this study to understand the ideal level of inflation that will have maximum stimulation of the best financial performance of commercial banks that will in turn stimulate economic growth.

The researchers and scholars will use the study to get more information about the relationship between inflation levels and financial performance of commercial banks in Kenya. This will assist them in their scholarly works.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

This chapter involves review of recent literary works in relation to relationship between inflation rates and the financial performance of commercial banks. Researches from different authors will be compared to understand what their researches yielded, and their success. In this chapter, reviews are made on; what is inflation, theories of inflation, inflation and financial performance of commercial banks, various measures of inflation and financial performance and the empirical evidence on inflation and financial performance.

## 2.2 Inflation

According to Andrew (2005) in economics, inflation is a rise in the general level of prices of goods and services in an economy over a period of time. When the price level rises, each unit of currency buys fewer goods and services; consequently, inflation is also erosion in the purchasing power of money – a loss of real value in the internal medium of exchange and unit of account in the economy. A chief measure of price inflation is the inflation rate, the annualized percentage change in a general price index (normally the Consumer Price Index) over time. Inflation's effects on an economy are manifold and can be simultaneously positive and negative. Negative effects of inflation include a decrease in the real value of money and other monetary items over time; uncertainty about future inflation may discourage investment and saving, or may lead to reductions in investment of productive capital and increase savings in non-producing assets. e.g. selling stocks and buying gold. This can reduce overall economic productivity rates, as the capital required to retool companies becomes more elusive or expensive. High inflation may lead to shortages of goods if consumers begin hoarding out of concern that prices will increase in the future. Positive effects include a mitigation of economic recessions, and debt relief by

reducing the real level of debt. High rates of inflation and hyperinflation can be caused by an excessive growth of the money supply. Views on which factors determine low to moderate rates of inflation are more varied. Low or moderate inflation may be attributed to fluctuations in real demand for goods and services, or changes in available supplies such as during scarcities, as well as to growth in the money supply. However, the consensus view is that a long sustained period of inflation is caused by money supply growing faster than the rate of economic growth (Fulvio, 2009).

According to Robert (1997) today most mainstream economists favor a low steady rate of inflation. Low (as opposed to zero or negative) inflation may reduce the severity of economic recessions by enabling the labor market to adjust more quickly in a downturn, and reduce the risk that a liquidity trap prevents monetary policy from stabilizing the economy. The task of keeping the rate of inflation low and stable is usually given to monetary authorities. Generally, these monetary authorities are the central banks that control the size of the money supply through the setting of interest rates, through open market operations, and through the setting of banking reserve requirements.

According to Fulvio et al. (2009) in physical cosmology, cosmic inflation, cosmological inflation or just inflation is the theorized extremely rapid exponential expansion of the early universe by a factor of at least 1078 in volume, driven by a negative-pressure vacuum energy density.  The inflationary epoch comprises the first part of the electroweak epoch following the grand unification epoch. It lasted from 10−36 seconds after the Big Bang to sometime between 10−33 and 10−32 seconds. Following the inflationary period, the universe continues to expand. The term "inflation" is also used to refer to the hypothesis that inflation occurred, to the theory of inflation, or to the inflationary epoch. As a direct consequence of this expansion, the entire observable universe originated in a small causally connected region.

According to Turner (1998) Inflation from the global point of view is often called eternal inflation. On a global constant-time slice, regions with inflation have an exponentially growing volume, while regions which are not inflating don't. This means that the volume of the inflating part of the universe in the global picture is always unimaginably larger

than the part that has stopped inflating. If the probability of different regions is counted by volume, one should expect that inflation will never end, or applying boundary conditions that we exist to observe it, that inflation will end as late as possible. Weighting by volume is unnatural in the local point of view where inflation is not eternal—it eventually ends as seen by any single observer. This picture gives a meaning to the probability distribution on the entropic landscape, and naively seems more compatible with the holographic principle. The theory of inflation in any picture explains why the temperatures and curvatures of different regions are so nearly equal, and it predicts that the total curvature of a space-slice at constant global time is zero. This prediction means that the total ordinary matter, dark matter, and residual vacuum energy in the universe have to add up to the critical density, a prediction which is very accurately confirmed. More strikingly, inflation allows physicists to calculate the minute differences in temperature of different regions from quantum fluctuations during the inflationary era, and these quantitative predictions have also been confirmed.

## 2.2 Theories of Inflation

According to Greenspan (2002) one theory of inflation is called monetarism. This theory says that inflation is always present and that it is a monetary problem. This theory also says that the amount of money that exists will determine the amount of money that people spend. The idea is that the price of items will go up only if the supply of the items is lower than the demand for the items. The price of items will also go down if the demand for the items is higher than the supply of the items. This theory also says that since the amount of spending is determined by the amount of money in circulation the demand for items can be determined by calculating the amount of money in existence. Because of this theory, one could assume that if the amount of money in circulation goes up so does the amount of spending and so does the demand for consumer goods. Using this theory, the only reason that prices would go up is if the amount of money in circulation goes up.

Another theory of inflation is called the rational expectations theory. This theory says that inflation has to be looked at as a long-term projection and not just due to the here and now. Although it is a lot like monetarism the rational expectations theory believes that the monetarism theory reacts too quickly to what is occurring now and that what happens down the road is more important. One reason that the rational expectations theory wants to avoid reacting too quickly to slight changes in inflation is that when people react too quickly they often cause drastic changes in inflation simply by trying to avoid them. The Austrian theory of economics says that as people will spend more money as they get more money to spend. This is kind of a spend that one earns philosophy. The lifestyle and spending habits of people are equal to their disposable income. This theory is different from the others because it doesn't believe that the production of goods will increase in order to meet an increase in demand. This theory believes that these kinds of changes in the economy don't happen as quickly as some of the other theories believe they do. And this theory also believes that the distribution of goods and money will not always seek to achieve some sort of balance. The Marxist theory of economics says that the value of money is determined by the relationship between those that produce the goods and those that buy the goods. This theory says that it is the value of the labor required to produce the goods and not the price of the goods themselves that determines the real cost of the goods. This theory also says that the only important factor in the cost of goods is how the cost of labor goes up and down compared to the demand for the product (John, 1993).

Classical Theory of Inflation says that money is the asset which is utilized by people to purchase goods and services on a regular basis. Money is the mode of exchange in every economy at the present day. Inflation occurs in an economy when the overall price level increases and the demand of goods and service increases. The classical theory of inflation owes its genesis to certain factors. Inflation is determined by the quantity theory of money. This theory which is contained in the classical theory of inflation is employed to explain the most important and long run determinants of inflation rate and price level. Inflation is a phenomenon which takes the whole economy into its grasp. It spreads across the whole of the economy. It is such a phenomenon which impacts the whole of the economy and is concerned about the value of the mode of exchange in an economy that is, it concerns itself with money. With the rise in the supply of money the price rate

rises and the value of money falls that is devaluation of money takes place. The supply of money is controlled by the government through a policy of open market. Open market is a powerful tool of controlling the supply of money. The demand of money actually depends on a lot of factors. These factors include interest rates, average level of prices in the economy. Every economy endeavors to reach equilibrium where the demand and supply of the money becomes equal. Marx defined inflation in terms of its cause; as depreciation of the currency: high prices caused by an over-issue of inconvertible paper money (Keynes, 1923).

## 2.3 Inflation and financial performance

Observers of extreme inflation have never had much doubt that inflation was bad for the economy. Keynes, as usual, gave the most eloquent statement, "As the inflation proceeds and the real value of the ingles; and the process of wealth-getting degenerates into a gamble and a lottery. The emphasis on information and the financial system has returned to the literature today, but inflation and growth relationships have looked very different overtime. In the high-growth, low-inflation 1960s, the traditional view that inflation was destructive no longer seemed so compelling. It was the Golden Age of the Phillips Curve, in which inflation and growth were positively related in the short run. Even in the long run, Tobin and Sidrausky suggested a positive effect on growth from higher inflation. When inflation was high, wealth would be reallocated away from money and into physical capital. Similarly, some development theories suggested that inflation was as good a way as any to mobilize resources for capital accumulation. There was little in the early experience of developing countries to contradict this view. Israel's economy, for example, grew at around 10 percent per annum between 1948 and 1973, with an inflation rate of around 6 percent to 7 per-cents per annum. Both of these figures were double the Organization for Economic Cooperation and Development (OECD) numbers for the same period. The higher, largely anticipated inflation was a price considered well worth paying, especially as widespread indexation of wages, exchange rates, and savings minimized the distortionary costs of inflation. Israel was no exception—several growing

economies in Latin America and Asia seemed to be following the same strategy (Robert 2007).

## 2.4 Inflation and financial performance of commercial banks

Evidence indicates that there is a significant, and economically important, negative relationship between inflation and financial development. This correlation emerges essentially independently of the time period considered, the empirical procedure employed, or the set of variables that appear in the conditioning information set. It is also not sensitive to inclusion or exclusion of countries that have experienced extraordinarily high rates of inflation. Recent empirical work shows that deterioration in financial sector performance has large, negative implications for economic growth. Theory further predicts that the inflation-finance relationship may exhibit strong non-linearity. For example, informational frictions may become binding only when inflation exceeds certain thresholds. When inflation passes these thresholds, some theories suggest that we will observe a corresponding collapse in financial system performance with adverse effects on resource allocation and economic activity. Finally, the negative relationship between inflation and financial sector performance emerges even after controlling for simultaneity and omitted variable biases. Thus, a preponderance of evidence indicates that sustained inflation and financial sector performance display a strongly negative association. In low-inflation countries, the data indicate that more inflation is not matched by greater nominal equity returns. In high inflation economies, however, nominal stock returns move essentially one-for-one with marginal increases in inflation rates. In terms of banking and stock market development, bank lending activity, bank liability issues, stock market size and liquidity display strong negative correlations with inflation, but only for countries with low-to-moderate rates of inflation. As inflation rises, the marginal impact of additional inflation on banking and stock market development diminishes rapidly. The data suggest that for economies with annual inflation rates above about 15 percent, there is a large discrete drop in financial sector development relative to countries with inflation rates below this threshold. Since financial sector development is strongly

linked with long-run economic performance, our findings are consistent with the view that as inflation – even predictable inflation – passes certain critical values, there will be negative implications for long-run economic performance. (Richard, 2010).

## 2.5 Measures of Inflation

Inflation is usually estimated by calculating the inflation rate of a price index, usually the Consumer Price Index. The Consumer Price Index measures prices of a selection of goods and services purchased by a "typical consumer". The inflation rate is the percentage rate of change of a price index over time. For instance, in January 2007, the U.S. Consumer Price Index was 202.416, and in January 2008 it was 211.080. The resulting inflation rate for the CPI in this one year period is 4.28%, meaning the general level of prices for typical consumers rose by approximately four percent in 2007. Other widely used price indices for calculating price inflation include the following: Producer price indices (PPIs) which measures average changes in prices received by domestic producers for their output. This differs from the CPI in that price subsidization, profits, and taxes may cause the amount received by the producer to differ from what the consumer paid. There is also typically a delay between an increase in the PPI and any eventual increase in the CPI. Producer price index measures the pressure being put on producers by the costs of their raw materials. This could be "passed on" to consumers, or it could be absorbed by profits, or offset by increasing productivity (Collins, 1995).

In India and the United States, an earlier version of the PPI was called the Wholesale Price Index. Commodity price indices, which measure the price of a selection of commodities. In the present commodity price indices are weighted by the relative importance of the components to the "all in" cost of an employee. Core price indices: because food and oil prices can change quickly due to changes in supply and demand conditions in the food and oil markets, it can be difficult to detect the long run trend in price levels when those prices are included. Therefore most statistical agencies also report a measure of 'core inflation', which removes the most volatile components (such as

food and oil) from a broad price index like the CPI. Because core inflation is less affected by short run supply and demand conditions in specific markets, central banks rely on it to better measure the inflationary impact of current monetary policy (Swan, 1956).

Other common measures of inflation are: GDP deflator is a measure of the price of all the goods and services included in Gross Domestic Product (GDP). The US Commerce Department publishes a deflator series for US GDP, defined as its nominal GDP measure divided by its real GDP measure. Regional inflation The Bureau of Labor Statistics breaks down CPI-U calculations down to different regions of the US. Historical inflation before collecting consistent econometric data became standard for governments, and for the purpose of comparing absolute, rather than relative standards of living, various economists have calculated imputed inflation figures. Most inflation data before the early 20th century is imputed based on the known costs of goods, rather than compiled at the time. It is also used to adjust for the differences in real standard of living for the presence of technology. Asset price inflation is an undue increase in the prices of real or financial assets, such as stock (equity) and real estate. While there is no widely accepted index of this type, some central bankers have suggested that it would be better to aim at stabilizing a wider general price level inflation measure that includes some asset prices, instead of stabilizing CPI or core inflation only. The reason is that by raising interest rates when stock prices or real estate prices rise, and lowering them when these asset prices fall, central banks might be more successful in avoiding bubbles and crashes in asset prices (Bateman et al, 2000).

Measuring inflation in an economy requires objective means of differentiating changes in nominal prices on a common set of goods and services, and distinguishing them from those price shifts resulting from changes in value such as volume, quality, or performance. To measure overall inflation, the price change of a large "basket" of representative goods and services is measured. This is the purpose of a price index, which is the combined price of a "basket" of many goods and services. The combined price is the sum of the weighted average prices of items in the "basket". A weighted price is calculated by multiplying the unit price of an item to the number of those items the average consumer purchases. Weighted pricing is a necessary means to measuring the

impact of individual unit price changes on the economy's overall inflation. The Consumer Price Index, for example, uses data collected by surveying households to determine what proportion of the typical consumer's overall spending is spent on specific goods and services, and weights the average prices of those items accordingly. Those weighted average prices are combined to calculate the overall price. To better relate price changes over time, indexes typically choose a "base year" price and assign it a value of 100. Index prices in subsequent years are then expressed in relation to the base year price (Oliver, 2000).

Inflation measures are often modified over time, either for the relative weight of goods in the basket, or in the way in which goods and services from the present are compared with goods and services from the past. Over time adjustments are made to the type of goods and services selected in order to reflect changes in the sorts of goods and services purchased by 'typical consumers'. New products may be introduced, older products disappear, the quality of existing products may change, and consumer preferences can shift. Both the sorts of goods and services which are included in the "basket" and the weighted price used in inflation measures will be changed over time in order to keep pace with the changing marketplace. Inflation numbers are often seasonally adjusted in order to differentiate expected cyclical cost shifts. For example, home heating costs are expected to rise in colder months, and seasonal adjustments are often used when measuring for inflation to compensate for cyclical spikes in energy or fuel demand. Inflation numbers may be averaged or otherwise subjected to statistical techniques in order to remove statistical noise and volatility of individual prices. When looking at inflation economic institutions may focus only on certain kinds of prices, or special indices, such as the core inflation index which is used by central banks to formulate monetary policy (Robert, 2007).

Most inflation indices are calculated from weighted averages of selected price changes. This necessarily introduces distortion, and can lead to legitimate disputes about what the true inflation rate is. This problem can be overcome by including all available price changes in the calculation, and then choosing the median value. Inflation is an increase in the general level of prices, or, alternatively, it is a decrease in the value of money. To say

that prices have gone up means that a given number of dollars buys less, or that the value of money has gone down. An economy without money, using only barter, could have no inflation. The opposite of inflation is deflation, a decrease in the general level of prices or a rise in the value of money. People consider the rate of inflation important because it affects their planning. The Department of Labor provides a simple, common-sense way to measure inflation, the Consumer Price Index or CPI. The Labor Department has surveyed the purchasing patterns of consumers to determine a group of about 400 items that buyers typically use (Beck et al, 2006).

In summary, Inflation has been defined as a process of continuously rising prices, or equivalently, of a continuously falling value of money. Various indexes have been devised to measure different aspects of inflation. The CPI measures inflation as experienced by consumers in their day-to-day living expenses; the Producer Price Index (PPI) measures inflation at earlier stages of the production and marketing process; the Employment Cost Index (ECI) measures it in the labor market; the Bureau of Labor Statistics' International Price Program measures it for imports and exports; and the Gross Domestic Product Deflator (GDP-Deflator) measures combine the experience with inflation of governments (Federal, State and local), businesses, and consumers. Finally, there are specialized measures, such as measures of interest rates and measures of consumers' and business executives' inflation expectations. The "best" measure of inflation for a given application depends on the intended use of the data. The CPI is generally the best measure for adjusting payments to consumers when the intent is to allow consumers to purchase, at today's prices, a market basket of goods and services equivalent to one that they could purchase in an earlier period. It is also the best measure to use to translate retail sales and hourly or weekly earnings into real or inflation-free dollars (Robert, 2007).

## 2.6 Measures of Financial performance

According to Oliver (2000), there are different ways of measuring financial performance, they include; Long-Term Earnings Growth which include what's left of a firm's revenues

after it pays all of its expenses, costs, and taxes. Companies whose earnings grow faster than those of their industry peers usually see better price performance for their stocks. Projected earnings growth is an estimate of a company's expected long-term growth in earnings, derived from all polled analysts' estimates. When reported for a mutual fund, it shows the weighted average of the projected growth in earnings for each stock in the fund's portfolio. At Morningstar, this measure helps determine the growth score for each stock and the overall growth orientation of the fund.

Historical earnings growth shows the rate of increase in a company's earnings per share, based on up to four periodic time periods. When reported for a mutual fund, it shows the weighted average of the growth in earnings for each stock in the fund's portfolio. At Morningstar, this measure helps determine the growth score for each stock and the overall growth orientation of the fund. Sales growth shows the rate of increase in a company's sales per share, based on up to four periodic time periods, and is considered the best gauge of how rapidly a company's core business is growing. When reported for a mutual fund, it shows the weighted average of the sales-growth rates for each stock in the fund's portfolio. At Morningstar, this measure helps determine the growth score for each stock and the overall growth orientation of the fund. Cash flow tells you how much cash a business is actually generating its earnings before depreciation, amortization, and noncash charges. Sometimes called cash earnings, it's considered a gauge of liquidity and solvency. Cash-flow growth shows the rate of increase in a company's cash flow per share, based on up to four time periods. When reported for a mutual fund, it shows the weighted average of the growth in cash flow for each stock in the fund's portfolio. At Morningstar, this measure helps determine the growth score for each stock and the overall growth orientation of the fund (Beck et al, 2006).

According to Robert (2007) Book value is, in theory, what would be left over for shareholders if a company shut down its operations, paid off all its creditors, collected from all its debtors, and liquidated itself. In practice, however, the value of assets and liabilities can change substantially from when they are first recorded. Book value growth shows the rate of increase in a company's book value per share, based on up to four periodic time periods. When reported for a mutual fund, it shows the weighted average of

the growth rates in book value for each stock in the fund's portfolio. At Morningstar, this measure helps determine our growth score for each stock and the overall growth orientation of the fund.

## 2.7 Empirical Evidence on Inflation and Financial Performance

Empirical work lends support to the theories. The size and profitability of the banking sector are negatively associated with inflation. Further support comes from survey data, which seem consistent with the notion that banks may ration credit as inflation rises. Economists who studied these data found that as inflation grew, firms found it more difficult to obtain external funding. Another of the theories predictions raises a different concern. The theories predict that the variability of rates of return on assets may increase as inflation rises. Such volatility may increase the probability of banking crises, which have a long lasting negative impact on real economic activity. We also find strong support for this prediction in our data. We find that higher inflation is associated with greater volatility of returns on a wide variety of assets and on returns for banks themselves. Many interesting questions remain. Perhaps the most pressing is the question of the exact rate at which inflation becomes destructive. The theories suggest that at extremely low rates, inflation is actually beneficial and can lead to expanded economic activity. However, at some critical point, fortunes reverse and further inflation begins to adversely affect the banking sector, investment, and real economic activity. Although our results suggest that the critical point lies at a fairly modest inflation rate, somewhere around 5 percent, more research is needed to pinpoint the exact point (Robert, 2009).

The impact of inflation on real rates is most evident at the extreme. The economies in our highest –inflation quartile experienced real money market rates and real treasury bill rates of around zero percent on average during the time period studied. The real time deposits rates for the high inflation countries was approximately 3 percent. Negative real interest rates provide little incentive for saving, as savers actually lose purchasing power. Perhaps most importantly, we find that inflation has a dramatic negative impact on profitability of

banks. Various measures of bank profitability net interest margins, net profits, rate of return on equity, and value added by the banking sector all decline in real terms as inflation rises, after controlling for other variables.

One way inflation might affect economic growth through the banking sector is by reducing the overall amount of credit that is available to businesses. Higher inflation can decrease the real rate of return on assets. Lower real rates of return discourage saving but encourage borrowing. At this point, new borrowers entering the market are likely to be of lesser quality and are more likely to default their loans. Banks may react to the combined effects of lower real returns on their loans and the influx of riskier borrowers by rationing credit. That is if banks find it difficult to differentiate between good and bad borrowers, they may refuse to make loans or they may at least restrict the quantity of loans made. Simply charging a higher nominal rate on loans merely makes the problem worse because it causes low risk borrowers to exit market. And in those countries with government imposed usury laws or interest rates ceilings, increasing the nominal interest rate may not be possible. Whatever the cause, when financial intermediaries ration credit in this way, the result is lower investment in the economy. With lower investment, the present and future productivity of the economy tends to suffer. This, in turn, lowers real economic activity. But the effect of inflation on the financial sector appears to have important thresholds. Only when inflation rises above some critical level does rationing occur. At very low rates of inflation, inflation does not cause credit rationing. This implies that beneath some threshold, higher inflation might actually lead to increased real economic activity (Bruce, 2008).

There is now a substantial body of evidence indicating that sustained and, therefore, likely predictable high rates of inflation can have adverse consequences either for an economy's long-run rate of real growth or for its long-run level of real activity. This finding raises an obvious question. By what mechanisms can a perfectly understood and permanent increase in the inflation rate affect long-run real output? A growing survey literature describes mechanisms whereby even predictable increases in the rate of inflation interfere with the ability of the financial sector to allocate resources effectively. More specifically, recent theories emphasize the importance of informational

asymmetries in credit markets and demonstrate how increases in the rate of inflation adversely affect credit market frictions with negative repercussions for financial sector (both banks and equity market) performance and therefore long-run real activity. The common feature of these theories is that there is an informational friction whose severity is endogenous. Given this feature, an increase in the rate of inflation drives down the real rate of return not just on money, but on assets in general. The implied reduction in real returns exacerbates credit market frictions. Since these market frictions lead to the rationing of credit, credit rationing becomes more severe as inflation rises. As a result, the financial sector makes fewer loans, resource allocation is less efficient, and intermediary activity diminishes with adverse implications for capital investment. The reduction in capital formation negatively influences both long-run economic performance and equity market activity, where claims to capital ownership are traded (Huybens & Smith, 1999).

Recent empirical work shows that deterioration in financial sector performance has large, negative implications for economic growth. Theory further predicts that the inflation–finance relationship may exhibit strong nonlinearities. For example, informational frictions may become binding only when inflation exceeds certain thresholds. When inflation passes these thresholds, some theories suggest that we will observe a corresponding collapse in financial system performance with adverse effects on resource allocation and economic activity. Since previous empirical work highlights the impact of financial sector development on economic growth. The evidence indicates that there is a significant, and economically important, negative relationship between inflation and financial development. This correlation emerges essentially independently of the time period considered, the empirical procedure employed, or the set of variables that appear in the conditioning information set. It is also not sensitive to inclusion or exclusion of countries that have experienced extraordinarily high rates of inflation. Finally, the negative relationship between inflation and financial sector performance emerges even after controlling for simultaneity and omitted variable biases. Thus, a preponderance of evidence indicates that sustained inflation and financial sector performance display a strongly negative association (Owens, 2006).

## 2.8 Summary of Literature Review

Inflation is a rise in the general level of prices of goods and services in an economy over a period of time. When the price level rises, each unit of currency buys fewer goods and services; consequently, inflation is also erosion in the purchasing power of money – a loss of real value in the internal medium of exchange and unit of account in the economy. A chief measure of price inflation is the inflation rate, the annualized percentage change in a general price index (normally the Consumer Price Index) over time. Inflation's effects on an economy are manifold and can be simultaneously positive and negative. Negative effects of inflation include a decrease in the real value of money and other monetary items over time; uncertainty about future inflation may discourage investment and saving, or may lead to reductions in investment of productive capital and increase savings in non-producing assets. E.g. selling stocks and buying gold. This can reduce overall economic productivity rates, as the capital required to retool companies becomes more elusive or expensive. High inflation may lead to shortages of goods if consumers begin hoarding out of concern that prices will increase in the future

The CPI measures inflation as experienced by consumers in their day-to-day living expenses; the Producer Price Index (PPI) measures inflation at earlier stages of the production and marketing process; the Employment Cost Index (ECI) measures it in the labor market; the Bureau of Labor Statistics' International Price Program measures it for imports and exports; and the Gross Domestic Product Deflator (GDP-Deflator) measures combine the experience with inflation of governments (Federal, State and local), businesses, and consumers.

# CHAPTER THREE

# RESEARCH DESIGN AND METHODOLOGY

## 3.1 Introduction

This chapter involves the methods used by the researcher to collect data. These methods included research design, target population, sampling design, data collection instruments, data collection procedures and data analysis procedures.

## 3.2 Research Design

The research was an empirical study carried out as a survey of all the 44 commercial banks registered and operating in Kenya as at $31^{st}$ December 2009. This is deemed appropriate because the study will involve an in depth study of the relationship between inflation and financial performance of commercial banks in Kenya.

## 3.3 Population

A target population of the study was comprised of all 44 registered commercial banks in Kenya which were in operation as at $31^{st}$ December 2009 listed by the Central Bank of Kenya. These organizations are involved in providing financial services to their clients. The entire population was chosen. An appendix of the list is provided.

## 3.4 Data collection

Secondary data was used for the study. The data that is inflation rates and financial performance (profits assets and cash flows) was collected from banks' annual reports for all the 44 commercial banks for the 10 year period 2000-2009.

## 3.5 Data Analysis

The study used simple regression technique for analyzing data. Regression analysis is used when a researcher is interested in finding out whether an independent variable predicts a given dependent variable. Simple regression attempts to determine whether a group of variables together predict a given dependent variable the collected data was edited for consistency, accuracy, uniformity and completeness and tabulated before analysis was carried out. Given that this was a descriptive design analysis of the relationship between inflation and financial performance of commercial banks, data was analyzed using correlation tables and scatter graphs for easier interpretation.

The regression analysis model to be used in analyzing the data is as below;

$$Y_i = b_o + b_1 X_i + E_i, \qquad i = 1, \ldots, n.$$

Where

$Y_i$ = is financial performance of the banking sector (dependent variable).

$X_i$ = Inflation (independent variable).

$b_o$ = constant term.

$E_i$ = error term

Given that this was a descriptive design, data analysis of the relationship between inflation and financial performance of commercial banks was done using correlation coefficient and coefficient of determination to establish the nature and the strength of relationship while the test of significance was undertaken to analyze the magnitude of the relationship. The analysis of quantitative data was carried out using SPSS version17 (statistical package for social Science) and presented inform of tables, graphs and pie charts while contextual data was analyzed qualitatively.

# CHAPTER FOUR

# DATA ANALYSIS AND FINDINGS

## 4.1 Introduction

This chapter contains the detailed data analysis and findings of the study. The data was analyzed, summarized and presented in form of tables and scatter graphs,

## 4.2 Regression Results

Inflation was regressed against financial performance measured by the three variables namely assets, profits and cash flows for a period of ten years.

Regression analysis was conducted using SPSS Version 17. Correlation tests were also estimated using the same package. The results obtained are presented and discussed below. This section restricts itself to the overall model results.

**Table1: Descriptive table of profit (millions) by banks from (2000-2009).**

### Descriptive Statistics

| | N | Minimu | Maximu | Mean | | Std. |
|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Std. Error | Statistic |
| Profit for 2000 | 49 | -1631.00 | 3119.00 | 59.3265 | 109.3485 | 765.440 |
| Profit for 2001 | 49 | -1631.00 | 4678.00 | 95.7959 | 131.7566 | 922.296 |
| Profit for 2002 | 50 | -1582.00 | 3119.00 | 126.9400 | 95.7092 | 676.766 |
| Profit for 2003 | 43 | -78.00 | 2400.00 | 262.4930 | 76.7707 | 503.419 |
| Profit for 2004 | 43 | -122.00 | 2500.00 | 302.1849 | 82.6592 | 542.033 |
| Profit for 2005 | 43 | -85.70 | 5401.50 | 437.3047 | 151.4753 | 993.290 |
| Profit for 2006 | 44 | -65.00 | 6624.00 | 604.1591 | 181.6832 | 1205.15 |
| Profit for 2007 | 44 | -65.00 | 7079.00 | 725.5227 | 210.2677 | 1394.76 |
| Profit for 2008 | 44 | -472.00 | 8016.00 | 1001.36 | 265.6323 | 1762.01 |
| Profit for 2009 | 45 | 741.75 | 3471109 | 164255 | 80674.06 | 541178 |

Source: Central Bank of Kenya, 2010

Year 2003 had the lowest standard deviation which means that most banks in this year

their profits did not differ so much as compared to 2009 which had a big difference

(541178).

**Table2: Descriptive table of Assets (millions) by banks from (2000-2009).**

Descriptive Statistics

|  | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Assets for 2000 | 49 | 576.00 | 70893.00 | 8259.2653 | 15019.19384 |
| Assets for 2001 | 42 | 720.00 | 74178.00 | 9538.2381 | 16381.91231 |
| Assets for 2002 | 48 | 750.00 | 86027.00 | 9500.5417 | 16985.06863 |
| Assets for 2003 | 37 | 404.00 | 97001.00 | 10714.46 | 18664.53849 |
| Assets for 2004 | 35 | 2391.00 | 107530.00 | 15447.54 | 22957.51620 |
| Assets for 2005 | 43 | -85.70 | 5401.50 | 437.3047 | 993.28989 |
| Assets for 2006 | 42 | 527.00 | 118021.00 | 16869.29 | 25462.64330 |
| Assets for 2007 | 36 | 744.00 | 157928.00 | 24147.14 | 34649.65073 |
| Assets for 2008 | 45 | .00 | 174712.00 | 26903.20 | 40846.33077 |
| Assets for 2009 | 45 | 491.00 | 172384.00 | 30080.16 | 42970.65757 |

Source: Central Bank of Kenya, 2010

In the year 2005 had the lowest standard deviation (993.290) which means that most

banks in this year reported assets did not differ so much as compared to 2009 which had a

big difference (42970.65757).

**Table 3: Coefficients for Assets (2000-2009)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 3610.998 | 2158.677 | | 1.673 | .155 |
| | Assets for 2008 | 1.694 | .324 | 1.729 | 5.233 | .003 |
| | Assets for 2007 | -1.515 | 1.102 | -1.342 | -1.375 | .228 |
| | Assets for 2005 | 10.782 | 12.142 | .330 | .888 | .415 |
| | Assets for 2000 | 2.142 | 1.774 | .863 | 1.207 | .281 |
| | Assets for 2001 | -3.488 | 1.412 | -1.485 | -2.471 | .056 |
| | Assets for 2002 | -.989 | .433 | -.488 | -2.282 | .071 |
| | Assets for 2003 | .025 | .439 | .013 | .056 | .958 |
| | Assets for 2004 | 2.290 | 1.200 | 1.378 | 1.909 | .115 |

Data Source: Central Bank of Kenya, 2010

Dependent Variable: Assets for 2009

Regression Equation:

Asset for 2009=3610.998(Constant)+1.729*Assets(2008)-1.342* Assets(2007)+0.330

*Assets(2005)+.863* Assets(2000)-1.485* Assets(2001)-.488* Assets(2002)+0.13*

Assets(2003)+1.378* Assets(2004)+2158.677(Std.Error)

Excluded variable. In the equation: Assets for 2006 which did not meet the tolerance

value of 0.00 i.e 5.987E-05<0.00


**Excluded Variables**

| Model | | Beta In | t | Sig. | Partial Correlation | Collinearity Statistics Tolerance |
|---|---|---|---|---|---|---|
| 1 | Assets for 2006 | 1.574(a) | 1.036 | .359 | .460 | 5.987E-05 |

a)  Predictors in the Model: (Constant), Assets for 2004, Assets for 2008, Assets for

2001, Assets for 2002, Assets for 2005, Assets for 2003, Assets for 2000, Assets for 2007

b)  Dependent Variable: Assets for 2009

Significant Variables are:

Assets for 2008, Assets for 2001, and Assets for 2008 since p-value<0.05

Hence the final equation to determine the assets for different banks in year 2009

Asset for 2009=      1.729*Assets (2008))-1.485* Assets (2001)

**Table4: Coefficients for Profits (2000-2009)**

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1010.254 | 15230.914 | | .066 | .948 |
| | Profit for 2008 | -29.168 | 45.962 | -.265 | -.635 | .532 |
| | Profit for 2007 | 25.674 | 43.866 | .196 | .585 | .564 |
| | Profit for 2005 | 219.742 | 198.276 | 1.188 | 1.108 | .279 |
| | Profit for 2006 | 126.346 | 113.705 | .836 | 1.111 | .277 |
| | Profit for 2000 | -138.524 | 203.594 | -.578 | -.680 | .503 |
| | Profit for 2001 | -90.614 | 147.898 | -.466 | -.613 | .546 |
| | Profit for 2002 | -124.254 | 196.855 | -.453 | -.631 | .534 |
| | Profit for 2003 | 913.481 | 271.371 | 2.485 | 3.366 | .003 |
| | Profit for 2004 | -886.594 | 264.894 | -2.599 | -3.347 | .003 |

a. Dependent Variable: Profit for 2009

Data Source: Central Bank of Kenya, 2010

Profits for 2009=1010.254(constant)-.265*profit 2008+196*profit 2007+1.1885*profit 2005+.836*profit 2006-.578*profit 2000-.466*profit 2001-.453*profit 2002+2.485*profit 2003-2.599*profit 2004+15230.914(Error)

Significant Variables are: Profits for 2003 and 2004 since their p-value<0.05.

Hence the final equation to determine profits for different banks in year 2009

Profits for 2009=2.485*profit 2003-2.599*profit 2004
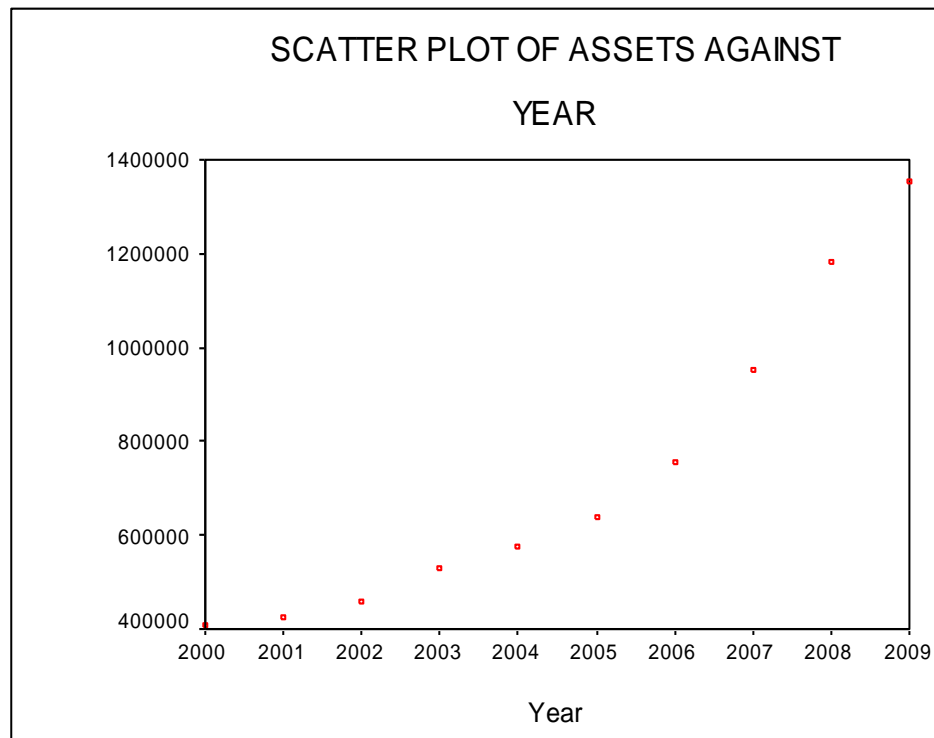
**Table 5: Total assets of banks (2000-2009)**

Descriptive Statistics of total Assets (2000-2009)

| | N | Range | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| Total Assests | 10 | 944552 | 408947 | 1353499 | 727652.50 | 331280.070 |
| Valid N (listwise) | 10 | | | | | |

Data Source: Central Bank of Kenya, 2010

Average of the assets within (2000-2009) is 727652 and the difference between highest and lowest is the range=944552.

**Graph 1: Scatter graph of assets against year.**



Data Source: Central Bank of Kenya, 2010

30

Figure above shows the relationship between the assets and years i.e. as we move from one year to the next, assets of the banks increase which is a positive relationship. This means banks increased their asset base every year from year 2000 to year 2009. This is a clear indication of better financial performance.

**Table 6: Descriptive Statistics of total profits (2000-2009)**

|  | N | Range | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| Total Profits | 10 | 46127 | 2799 | 48926 | 21116.40 | 16827.255 |
| Valid N (listwise) | 10 |  |  |  |  |  |

Source: Central Bank of Kenya, 2010

Average of the profits between years (2000-2009) is 21116.40 and the difference between highest and lowest is the range=16827.255. This means therefore the banks have constantly made profits in the years indicated showing a constant growth in profits.

**Graph 2: Scatter graph of profits against year.**



SCATTER PLOT OF PROFITS AGAINST YEAR
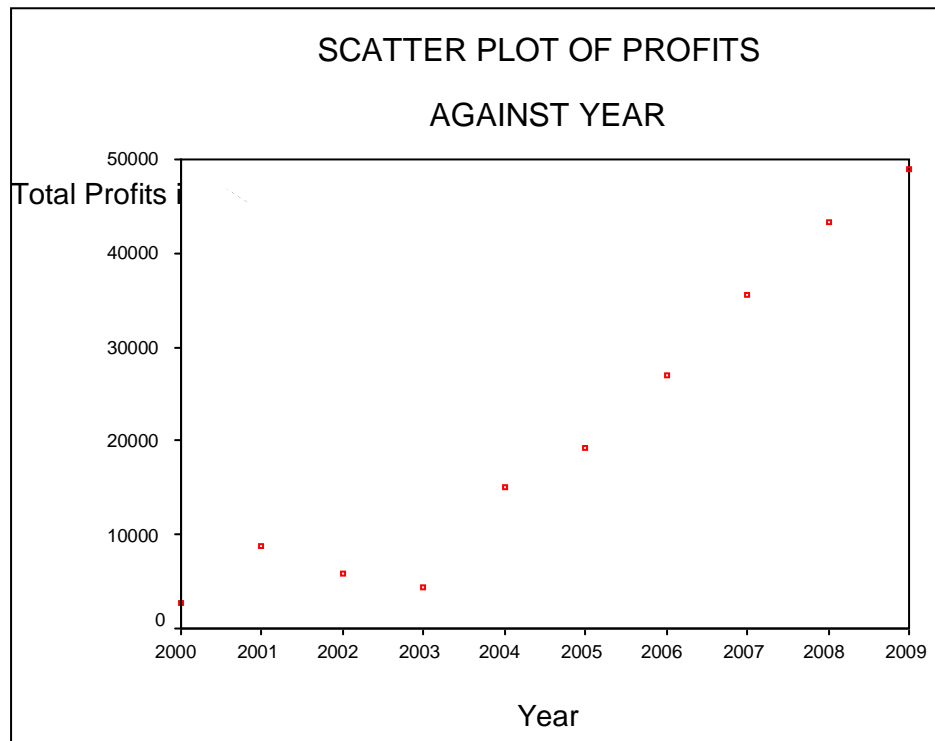
Data Source: Central Bank of Kenya, 2010

Figure above shows the relationship between the profits and years. In the years 2000 to 2001, the profits increased but decreased between years 2001 to 2003. Thereafter, the profits increased steadily. This depicts a positive growth in the financial performance of the commercial banks in Kenya for the said years.

**Table7: Table of Correlations; profits, assets and cash flows**

| | | Total Profits | Total Assests | Total Cash flow |
|---|---|---|---|---|
| Pearson Correlation | Total Profits | 1.000 | .977 | .981 |
| | Total Assests | .977 | 1.000 | .989 |
| | Total Cash flow | .981 | .989 | 1.000 |
| Sig. (1-tailed) | Total Profits | . | .000 | .000 |
| | Total Assests | .000 | . | .000 |
| | Total Cash flow | .000 | .000 | . |
| N | Total Profits | 10 | 10 | 10 |
| | Total Assests | 10 | 10 | 10 |
| | Total Cash flow | 10 | 10 | 10 |

Source: Central Bank of Kenya, 2010

Figure shows that total assets, cash flow and profits in the banks have a strong correlation of $>.9$ which is significant with p-value$<0.05$. This means growth of one measure of financial performance correlates with the other measures. Therefore, assets, cash flow and profits increase relatively in the same manner for the banks.

**Table8: Table of Coefficients; profits, assets and cash flows**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1. | (Constant) | -11745.354 | 3743.387 | | -3.138 | .016 |
| | Total Assests | .016 | .025 | .314 | .636 | .545 |
| | Total Cash flow | .158 | .116 | .670 | 1.360 | .216 |

Data Source: Central Bank of Kenya, 2010

a) Dependent Variable: Total Profits

Equation

Total Profit in a year=-11745.354(Constant) + .016*assets+.158*cash flow+3743.387(Error)

**Graph 3: Scatter graph of cash flow against year.**



SCATTER PLOT OF CASH FLOW

AGAINST YEAR
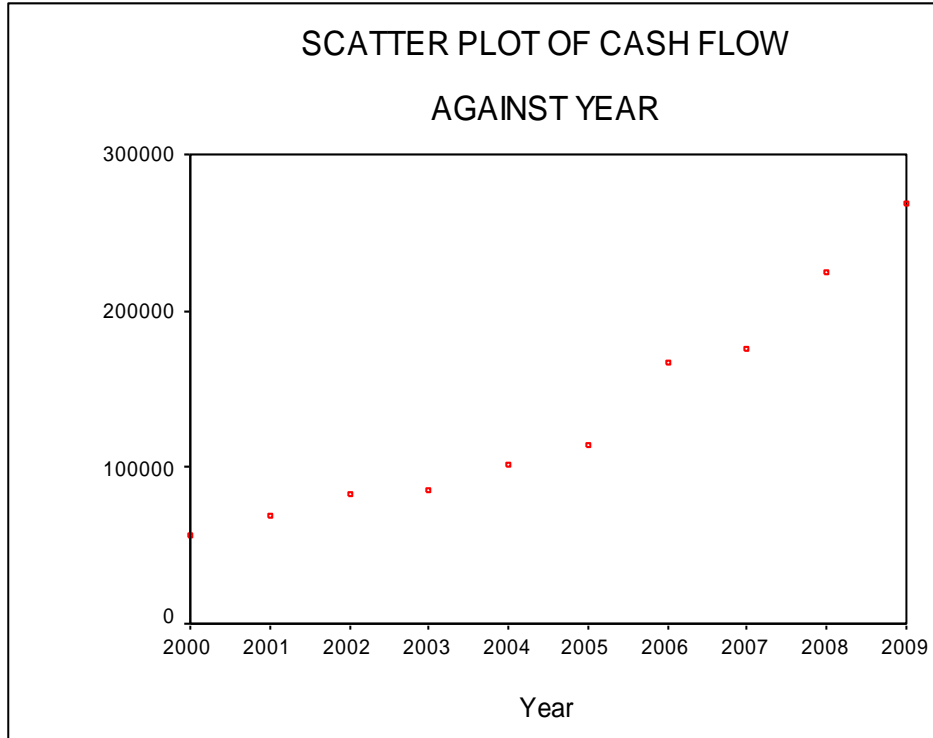
Data Source: Central Bank of Kenya, 2010

The above graph indicates that cash flows reported by banks from the year 2000 have risen steadily through to the year 2009. This indicates a positive financial performance by the banks for the period.

**Graph 4: Scatter graph of profits against inflation rates.**
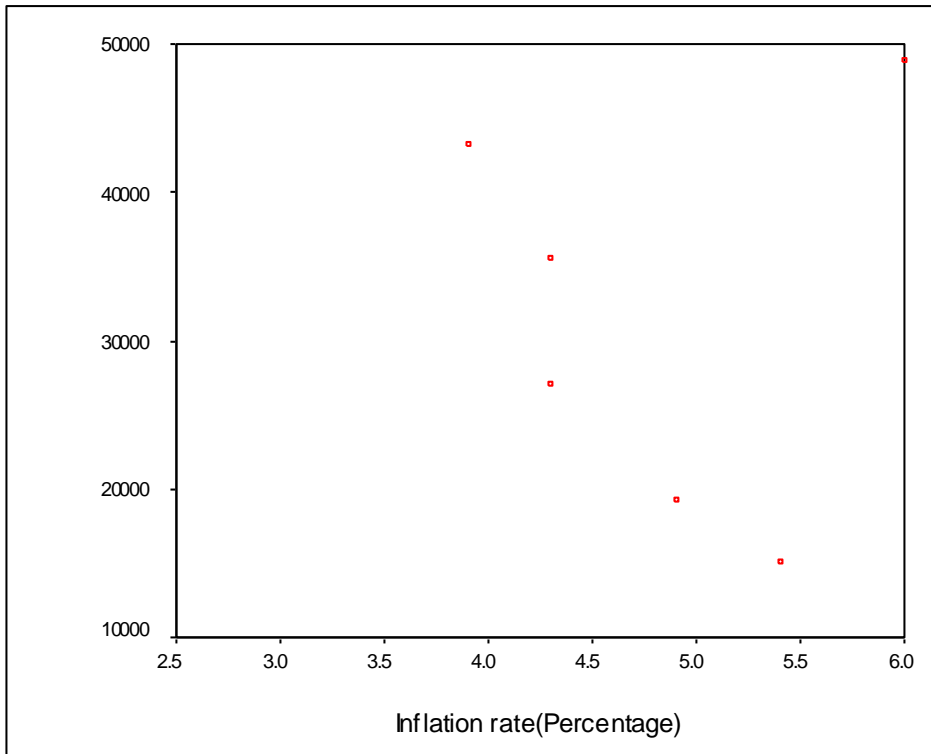


Data Source: Central Bank of Kenya, 2010

Profits increases as inflation decreases. The graph indicates that the banks profits decreased as the inflation levels increased. This therefore means that the banks financial performance is negatively affected by rise in the inflation.
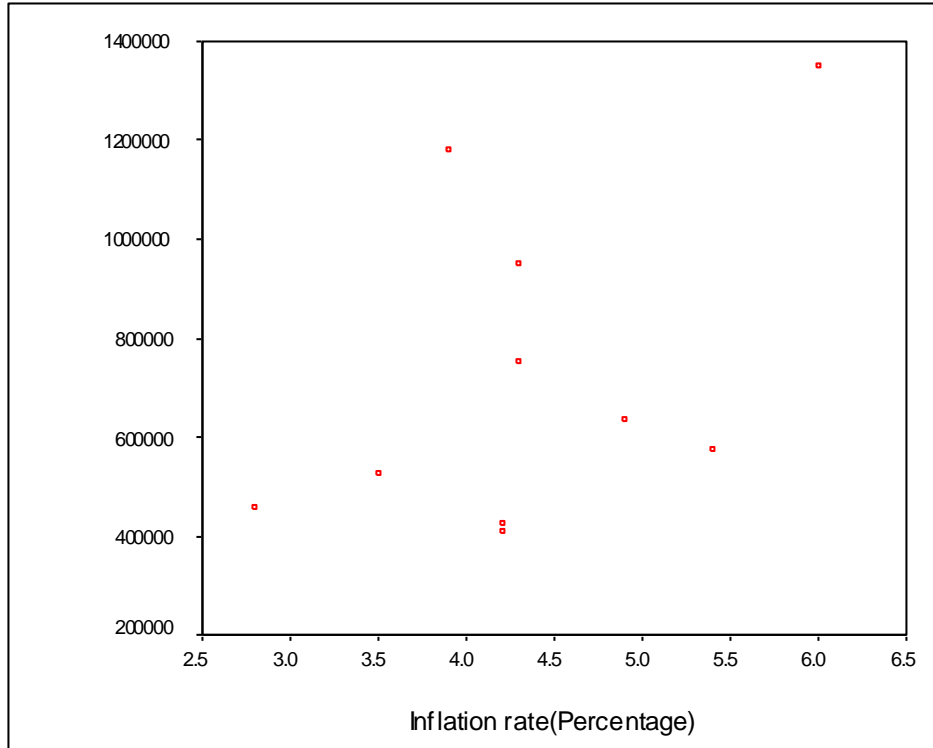
**Table9: Table of correlation; bank performance (profits) and inflation rate**

| | | Bank Performance | Inflation rate(Percentage) |
|---|---|---|---|
| | Pearson Correlation | 1 | .507 |
| | Sig. (2-tailed) | . | .135 |
| | N | 10 | 10 |
| | Pearson Correlation | .507 | 1 |
| | Sig. (2-tailed) | .135 | . |
| | N | 10 | 10 |

Data Source: Central Bank of Kenya, 2010

From the table we have a relationship(r=.507) between profits and inflation which is not significant (p-value=0.135) which is greater than 0.05. This indicates that the banks profits decreased as the inflation levels increased. This therefore means that the banks financial performance is negatively affected by rise in the inflation.

**Graph 5: Scatter graph of assets against inflation rates.**



Data Source: Central Bank of Kenya, 2010

Total Assets does not relate with inflation since there is no clear pattern in the scatter plot. This depicts that the bank assets do not have a clear relationship between the two variables therefore indicating other factors influence growth in bank assets.
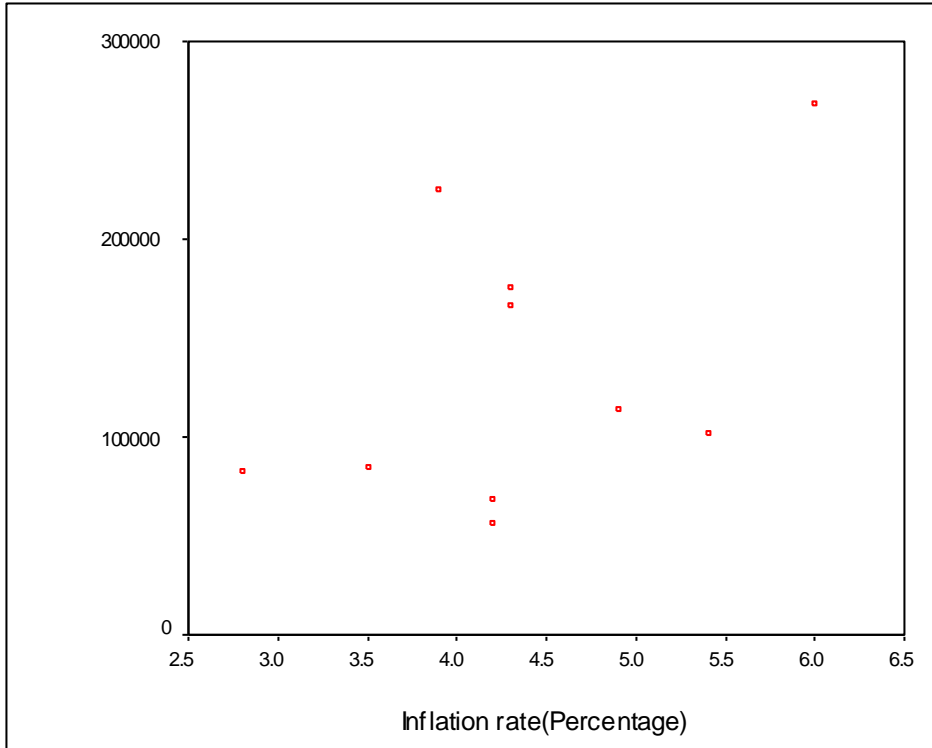
**Table10: Table of correlation; bank performance (assets) and inflation rate**

| | | Total Assests | Inflation rate(Perc entage) |
|---|---|---|---|
| | Pearson Correlation | 1 | .474 |
| | Sig. (2-tailed) | . | .166 |
| | N | 10 | 10 |
| | Pearson Correlation | .474 | 1 |
| | Sig. (2-tailed) | .166 | . |
| | N | 10 | 10 |

Data Source: Central Bank of Kenya, 2010

From the table we have a very weak positive relationship(r=.474) between assets and inflation since it is below 0.5 which is not significant (p-value=0.166) which is greater than 0.05. This correlation do not depict a clear relationship between assets and inflation rates therefore indicating there are other factors that influence growth or change in bank assets other than inflation rates.

**Graph 6: Scatter graph of cash flows against inflation rates.**



Data Source: Central Bank of Kenya, 2010

Total Cash flows does not relate with inflation since there is no clear pattern in the scatter plot. . This correlation do not depict a clear relationship between cash flows and inflation rates therefore indicating there are other factors that influence growth or change in bank cash flows other than inflation rates.

**Table11: Table of correlation; bank performance (cash flow) and inflation rate**

| | | Inflation rate(Perc entage) | Total Cash flow |
|---|---|---|---|
| | Pearson Correlation | 1 | .469 |
| | Sig. (2-tailed) | . | .172 |
| | N | 10 | 10 |
| | Pearson Correlation | .469 | 1 |
| | Sig. (2-tailed) | .172 | . |
| | N | 10 | 10 |

Data Source: Central Bank of Kenya, 2010

From the table we have a very weak positive relationship(r=.469) between cash flow and inflation since it is below 0.5 which is not significant (p-value=0.172) which is greater than 0.05. This indicates that there is no clear correlation between banks cash flows and inflation rates.

Dependent Variable: Bank Performance

$Ý=β+X*\text{inflation} +\text{Error}$

Bank performance=-19508.717(constant) + 0.507*inflation rate + 24910.677(error).

This is the equation.

# CHAPTER FIVE

# SUMMARY, DISCUSSIONS AND CONCLUSIONS

## 5.1. Summary of findings and conclusions

## 5.1.1 Summary of findings

The study set out to investigate the relationship between inflation and financial performance of commercial banks in Kenya. Financial performance was measured in terms of profits, assets and cash flows. Inflation was regressed against the three variables for a period of ten years. For the period researched, total assets, cash flows and profits increased with time. Total cash flows and total assets do not relate with inflation since there is no clear pattern in the scatter plot. Profits for the period increased as inflation decreased. The total bank assets, profits and cash flows increased year on year from year 2000 to year 2009 showing financial performance of the banks have increased with time. On the relationship between inflation and financial performance, profits indicate a negative relationship. As inflation decreases, profits increase. The relationship is 0.0507 between profits and inflation which is significant.

## 5.1.2 Conclusion

Data was collected and findings indicated that on the overall model summary, in terms of profits the year 2003 had the lowest standard deviation compared to 2009 which had a huge difference. For assets, year 2005 had the lowest standard deviation compared to

2009.The total bank assets, profits and cash flows increased year on year from year 2000 to year 2009 showing financial performance of the banks have increased with time.

Total Cash flows do not relate with inflation since there is no clear pattern in the scatter plot. . This correlation do not depict a clear relationship between cash flows and inflation rates therefore indicating there are other factors that influence growth or change in bank cash flows other than inflation rates.

Total Assets does not relate with inflation since there is no clear pattern in the scatter plot. This depicts that the bank assets do not have a clear relationship between the two variables therefore indicating other factors influence growth in bank assets.

Profits increases as inflation decreases. The graph indicates that the banks profits decreased as the inflation levels increased. This therefore means that the banks financial performance is negatively affected by rise in the inflation.

The relationship between inflation and total assets indicate no clear pattern therefore a weak relationship. This relationship may be explained through the purchase of assets by the bank management to hedge against inflation.

The total cash flows do not indicate a clear pattern in relation to inflation indicating a weak positive relationship. This may be due to factors like rapid branch expansion that can distort the relationship between the two variables.

In conclusion, banks profits have the strongest clear pattern in relation to inflation indicating that profits increase as inflation decreases. This means that the independent variable, inflation, has a significant association with the dependent variable, financial performance.

## 5.3 Limitations of The study

The study was largely successful however some problems noted include; the fact that inflation levels are measured by the central bank and which has since changed the method in year 2010 to a more reliable measure. This may have significant influence on the results of the research.

Research done only covered commercial banks but other financial institutions are of great importance and the relationship of the inflation on their financial performance would be of great use.

The research was done for a period of ten years but a longer period of time would give a clear indication of the relationship between inflation and financial performance of commercial banks in Kenya.

Three variables namely; assets, profits and cash flows were used to measure financial performance. More variables should be considered to give a clear indication of the relationship of inflation and financial performance of commercial banks in Kenya.

## 5.4 Recommendation for Further Research

The study mainly focused on the relationship between inflation and financial performance of the commercial banks in Kenya. The study did not consider relationship between inflation and other measures of financial performance of commercial banks, which include growth in customers, investment and bank branch expansion. I therefore suggest that a further research can be conducted in this area to give a clear and expansive

indication on the relationship between inflation and financial performance of the commercial banks in Kenya.

A longer duration more than ten years should also be considered to give a wider range of research to enable better analysis of the relationship between inflation and financial performance of commercial banks in Kenya.

Other financial institutions should be considered since the relationship of inflation and financial performance of commercial banks in Kenya is of significance.

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# APPENDICES

## *Appendix A: List of Commercial Banks in Kenya*

1. African Banking Cooperation
2. Bank of Africa
3. Bank Of Baroda
4. Bank Of India
5. Barclays Bank
6. CFC Stanbic Bank
7. Charterhouse Bank
8. Chase Bank
9. City Bank N.A
10. City Finance Bank Ltd
11. Commercial Bank of Kenya
12. Consolidated Bank
13. Cooperative Bank
14. Credit Bank
15. Development Bank of Kenya
16. Diamond Trust Bank
17. Dubai Bank(K)
18. Eco Bank
19. Equatorial Commercial
20. Equity Banks ltd
21. Family Bank
22. Fidelity Commercial Bank
23. Fina Bank
24. First Community Bank
25. Giro Commercial Bank
26. Guardian Bank
27. Gulf African Bank
28. Habib Bank
29. Habib Bank AG Zurich
30. Housing Finance Co. of Kenya
31. I&M
32. Imperial Bank
33. K-Rep Bank Ltd
34. Kenya Commercial Bank
35. Middle East Bank(K)  Ltd
36. National Bank
37. National Industrial Credit
38. Oriental Commercial Bank
39. Paramount Universal Bank
40. Prime Bank
41. Savings and Loan Ltd
42. Southern Credit Banking Corporation Ltd

43. Standard Chartered Bank
44. Transnational Bank
45. Victorial Commercial Bank