THE RELATIONSHIP BETWEEN INFLATION RATES AND LIQUIDITY OF COMMERCIAL BANKS IN KENYA

By

PATRICK NYAKIRA AUDO

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

2014

DECLARATION

I, Patrick Nyakira Audo hereby submit this research work and declare that this research project is my original work and has not been presented for an award of a degree in any University

Sign……………… ………………………… Date……………………………..

Patrick Nyakira Audo

Reg. No: D61/72996/2012

This Research Project has been submitted with my approval as University Supervisor

Dr Lishenga Josephat L.

Lecturer, Department of Finance and Accounting;

School of Business

University of Nairobi

Sign……………… ……………………… Date……………………………….

AKNOWLEDGEMENT

DEDICATION

This research project is dedicated to my family, mother, brothers, and friends for their love, patience, help, support and encouragement and their prayers which saw me through in my course.

Special appreciation goes to my wife Winfred Kavuo and my children Alicia Wambura and Lewis Audo for their perseverance, patience and unwavering support throughout my studies.

ABSTRACT

The study sought to establish the relationship between the inflation rates and the liquidity of commercial banks in Kenya. Management of a firm's short term assets and liabilities plays an important role in the success of the firm. Maintaining the optimal liquidity of a firm amid changing overall price levels is therefore an important objective of the firm. The aim of this study was to establish whether the liquidity of commercial banks is affected by the inflation.

The population of the study was comprised of all 43 commercial banks in Kenya operating in the years 2008 to 2013. For a bank to qualify it needed to have been in operation during the whole period of the study and therefore institutions that merged or were not in operation in the whole period of study were eliminated. The study involved secondary data collection of the CBK liquidity ratio and inflation rates to measure the level of overall inflation. The study used secondary data obtained from audited financial statements of the banks at the end of the years of study. The study used descriptive statistics and regression analysis to establish the relationship between the study variables.

Inflation rate was the independent variable while liquidity ratio was the dependent variable. Regression analysis found no significant relationship between inflation and liquidity ratio of commercial banks. This study concludes that inflation is not a significant macro-economic variable that influences liquidity ratio of commercial banks. With this finding in mind, the researcher recommends that managers of commercial banks need not take measures that aligns liquidity ratio with the prevailing inflation level. Instead, mangers of commercial banks should concentrate on other factors that affect the liquidity of the commercial banks.

Contents

LIST OF TABLES

LIST OF FIGURES

ABREVIATIONS

CBK   Central Bank of Kenya

MFI   Micro Finance Institutions

CPI   Consumer Price Index

GDP   Gross Domestic Product

NSE   Nairobi Securities Exchange

CPO   Central Payment Office

KNBS   Kenya National Bureau of Statistics

<div align="center">

CHAPTER ONE

</div>

1.0 INTRODUCTION

1.1 Background of the Study

Daily management of a firm's short term assets and liabilities plays an important role in the success of the firm. Firms with long term prospects and healthy balance sheet lines do not remain solvent without good liquidity management (Joseet al, 1996). Maintaining the liquidity of a firm amid changing overall price levels is therefore an important objective of the firm. Price stability at the cost of liquidity can bring problems to the firm and a tradeoff between them needs to be struck by any firm. If a firm does not care about price stability, it may not survive for a longer period while on the other hand if it does not care about liquidity, it may face the problem of insolvency. For these reasons, price stability should be given proper consideration as it may affect the liquidity of the firm. Niresh (2012) opined that liquidity is of major importance to both the internal and external analysts' because of its close relationship with day to day operations of a business. A weak liquidity position poses a threat to the solvency as well as profitability of a firm and makes it unsafe and unsound.

1.1.1 Liquidity of Commercial Banks

Liquidity is a fundamental concept in finance (Chordia et al., 2004). There are two general broad concepts of liquidity. The first is monetary liquidity, which is characterized by the availability of cash or near cash in relation to the general demand of goods and financial assets. The trends of monetary liquidity are generally associated with the general state of the economy, economic cycles and consumer confidence. The other

concept of liquidity is related to the way the transfer of cash and goods or financial securities is performed in the market in relation to trading, price, return, volatility, market depth and the interdependencies between these factors (Ivanchuk, 2004). The focus of this study is on the first concept of liquidity.

The liquidity position of a bank is very sensitive to macro-economic variable fluctuations (Eichengreen and Arteta, 2000). Bhunia (2010) refers to liquidity as the ability of a firm to meet its short term obligations. Liquidity for a bank means the ability to meet its financial obligations as they come due. Bank lending finances investments in relatively illiquid assets, but it funds its loans with mostly short term liabilities. Thus one of the main challenges to a bank is ensuring its own liquidity under all reasonable conditions. According to Greuning, and Bratanovic, (2004) banking liquidity represents the capacity of a bank to finance itself efficiently. The liquidity risk, for a bank, is the expression of the probability of losing the capacity of financing its transactions, and the probability that the bank cannot honor its obligations to its clients like withdrawal of deposits, maturity of other debt, and cover additional funding requirements for the loan portfolio and investment.

Liquidity creation" refers to the fact that banks provide illiquid loans to borrowers while giving depositors the ability to withdraw funds at par value at a moment's notice (Diamond and Dybvig, 1983). Banks also provide borrowers liquidity off the balance sheet through loan commitments and similar claims to liquid funds (Holmstrom and Tirole, 1998 ;).

1.1.2 Concept of Inflation

In economics, inflation is a sustained increase in the general price level of goods and services in an economy over a period of time. Inflation is an increase in the general price level of goods and services in the economy and not an increase in any specific product price (Tucker, 2007). When the general price level rises, each unit of currency buys fewer goods and services. Consequently, inflation reflects a reduction in the purchasing power per unit of money – a loss of real value in the medium of exchange and unit of account within the economy. A chief measure of price inflation is the inflation rate which is the annualized percentage change in a general price index normally the consumer price index (CPI) over time. CPI measures the changes of the average price s of consumer goods and services. Tucker (2007) observed that there are many measures of inflation, because there are many different price indices relating to different sectors of the economy. Two widely known indices for which inflation rates are reported in many countries are the CPI, which measures prices that affect typical consumers, and the GDP deflator, which measures prices of locally produced goods and services.

In the www.wikipedia.org, Inflation is explained as an economic concept which is an economy-wide sustained trend of increasing prices from one year to the next. The rate of inflation is important as it represents the rate at which the real value of an investment is eroded and the loss in spending power over time. Inflation also tells investors exactly how much of a return percentage their investments need to make for them to maintain their standard of living.

Inflation's effects on an economy are various and can be simultaneously positive and negative. Negative effects of inflation include an increase in the opportunity cost of

holding money, uncertainty over future inflation which may discourage investment and savings, and if inflation is rapid enough, shortages of goods as consumers begin Hoarding out of concern that prices will increase in the future. Positive effects include ensuring that central banks can adjust real interest rates (to mitigate recessions), and encouraging investment in non-monetary capital projects. Inflation leads to an economic recession.

There are several variations on inflation: Deflation which is when the general level of prices is falling. This is the opposite of inflation. Hyperinflation is unusually rapid inflation. In extreme cases, this can lead to the breakdown of a nation's monetary system. A good example is in Zimbabwe where the peak month of inflation was estimated at 6.5 sextillion percent in mid-November 2008 resulting in the depreciation of the Zimbabwean currency. Stagflation is the combination of high unemployment and economic stagnation with inflation.

1.1.3 The Link between Liquidity and Inflation in Commercial Banks
Inflation reflects a situation where the demand for goods and services exceeds their supply in the economy (Karl et al, 2002). Inflation causes many distortions in the economy. It hurts people who are retired and living on a fixed income. When overall prices rise these consumers cannot buy as much as they could previously. It also affects the repayment of loans and discourages savings due to the fact that the money is worth more presently than in the future and inflation therefore affects the liquidity of the of the Commercial Banks.

In any economy inflation is undesirable. This is because of the specific economic costs associated with inflation. First, when inflation is high, currency and non-interest-bearing

checking accounts are undesirable because they are constantly declining in purchasing power. Secondly, there are tax distortions, for example, when inflation rages, the actual value of these deductions are much less than it should actually be (Ludi and Ground, 2006). When inflation hits, some people gain and some lose for example people whose pensions are fixed in shilling terms lose. People see inflation as a breakdown of the basic government responsibility to provide a stable unit of purchasing power. Some people may not understand the relation between their own incomes and rising prices. To them, higher prices represent diminished real income.

The liquidity position of a bank is very sensitive to macro-economic variable fluctuations (Eichengreen and Arteta (2000), Hutchison and McDill (1999). The increasing inflation, high interest rates and real gross domestic product growth determine the bank's liquidity position. High inflation rate and sudden changes of inflation have a negative impact on interest rates and bank's capital. In this respect, the bank's non-performing loans will expand, collateral security values deteriorate and value of loan repayments on banks loans declines. This way, It has been found that inflation rate significantly determines bank liquidity (Heffernan; 2005).

The traditional role of a bank is lending and loans make up the bulk of their assets. In unstable economic environments interest rates charged by banks are fast overtaken by inflation and borrowers find it difficult to repay loans as real incomes fall, insider loans increase and over concentration in certain portfolios increases giving a rise to credit risk. Bank failures in Mexico were attributed to improper lending practices, lack of experience, organizational and informational systems to adequately assess credit risk in the falling economy (Gil Diaz, 1994). The same can be said about of banking crisis in

Kenya in the 1980s and in Spain in the 1990s. High inflation and high interest rates may cause economic activity to collapse, and resultantly the burden of serving debts denominated in domestic and foreign currency increases and banks' capitalization ratios fall (Gil-Diaz, 1994).

The effects of inflation on the liquidity of commercial banks can therefore not be underestimated. This study will be evaluating whether there exists a relationship between inflation rate and liquidity in all the commercial banks in Kenya.

1.1.4 Commercial Banks in Kenya

Commercial Banks in Kenya are licensed and regulated pursuant to the provisions of the Banking Act and the Regulations and Prudential Guidelines issued by Central Bank of Kenya. Commercial banks listed at the NSE are also regulated by the Capital Markets Act 2000 cap 485A (amended 2013) and Central Depository Act 4 of 2000 (amended 2013). The regulators are most importantly concerned with liquidity Management which is a critical factor that determines the level of bank performance. The regulations and prudential guidelines subject banks to certain requirements, restrictions and guidelines. The regulatory structure creates transparency between banking institutions and the individuals and corporations with whom they conduct business. Regulations and the guidelines are to ensure prudence to reduce the level of risk to which bank creditors are exposed, Systemic risk reduction to reduce the risk of disruption resulting from adverse trading conditions for banks causing multiple or bank failures and avoid misuse of banks to reduce the risk of banks being used for criminal purposes.

Currently there are forty three (43) licensed commercial banks in Kenya eleven (11) of which are listed at the Nairobi Security Exchange (NSE) (appendix 1). The study seeks to establish the relationship that exists between the inflation rates and the liquidity in all Commercial Banks in Kenya.

1.2 Research Problem

The degree of liquidity constraint depends on the real value of money, which in turn depends on the inflation rate (Silveira and Wright (2007). Inflation reduces the real value of money, and thus makes the liquidity constraint more binding. This problem can be resolved by having a financial intermediary which channels the funds from entrepreneurs with excess liquidity to those lacking liquidity. However, the use of intermediation especially when there is high inflation involves resource costs, in particular in enforcing the repayment from the borrowers. Naturally, costly intermediation is used when inflation is relatively high (liquidity problem is severe) and is not used when inflation is relatively low (liquidity problem is mild).

When there is a surplus liquidity of currency, it will enter different markets, leading to different effects. If it flows into real markets, it will lead to price increases, causing inflation. If it flows into financial market, it will increase the price of the capital, causing asset bubbles (Lingnan, 2011)

Waciira (1999), analyzed the relationship between liquidity and macro-economic indicators; an industry comparison. His study sought to find out if a relationship exists between the liquidity of quoted firms and the following macro economic variables; Interest rates, Inflation and the Nairobi Securities Exchange (NSE) 20 share index. He

specifically sought to determine the magnitude or strength of the relationship if it exists and the effect of industry categorization on the relationship described above. He concluded that there was a relatively high degree of correlation between short and long term measures of liquidity especially cash flow from operations to current liabilities and cash flow from operations to total liabilities.

Nyambok (2010) studied the relationship between the overall inflation rates and the liquidity of companies quoted at the Nairobi Stock Exchange. Her study emphasized the relationship between stock market liquidity as measured by the bid-ask spread and the inflation rate. The main objective of this study was to investigate the relationship between the overall inflation rates and the liquidity of companies quoted at the various segments of Nairobi Security Exchange. The findings of the study indicate that overall inflation rates influence the stock market liquidity at varying degrees depending on the segment. There is however a positive relationship between overall inflation rates and market wide liquidity at the NSE which is an indication that as inflation rates go up, the overall market liquidity in terms of trading volume also goes up and vice versa. From the study she concluded that the higher the level of inflation rates, the higher the liquidity of the NSE market and vice versa for the market wide trading involving all segments. While when looking at the various segments, Commercial and Services sector and the Finance and Investment Sector replicate the market wide relationship of positive and direct relationship, the Agricultural and Industrial and Allied sectors showed an inverse relationship. The significant difference in the relationships in the different sectors can be attributed to the fact that firms in some sectors such as agriculture are mostly affected by the underlying inflation rates and not the overall inflation rates.

Macharia (2013) studied the relationship between the profitability and the liquidity of Commercial Banks in Kenya. The aim of this study was to establish whether the profitability of commercial banks is affected by the liquidity levels of the bank. The study found out that there is a positive relationship between profitability and liquidity of commercial banks in Kenya and that liquidity was found to be one of the determinants of profitability of commercial banks in Kenya over the years of study. The study applied the CBK liquidity ration and the current asset ratio to measure liquidity.

Kangogo (2012) sought to study the effectiveness of monetary policy tools in countering Inflation in Kenya. The main objective of the study was to establish the effectiveness of monetary policy tools in countering inflation in Kenya. In his study he urges that the Central Bank of Kenya's monetary committee uses monetary policy as the measures taken by the monetary authorities to influence the quantity of money with a view to achieving stable prices, full employment and economic growth. The study established that inflation and the money supply were positively correlated with each other. As money supply circulating around the economy increases inflation also increases. An increase in money supply leads to people spending the excess of their money supply over money demand.

Kenyan banks have experienced different macroeconomic conditions in the past including periods of both low and high inflation rates. A potentially important relationship between inflation rates and liquidity in the banking sector has not been studied adequately. The varying levels of inflation rates recorded in the past could have had an effect on the liquidity of the Commercial Banks in Kenya. The exact nature and

magnitude of the effect is however not known. This is a research gap that requires researchers to study to establish the effect and the relationship that may exist. By examining the relationship between inflation rates and liquidity of commercial banks in Kenya, this study seeks to provide information that is of importance to policy makers and managers in the banking sector and the general public.

A research to determine the relationship between inflation rate and liquidity should therefore be carried out in order to bridge the gap in knowledge that is lacking by first understanding the effects of inflation rates on the commercial banks liquidity for all Commercial Banks in Kenya. It will investigate the effects that are borne by banks in terms of liquidity especially during period of increasing inflation. It will also try to find out if the magnitude and direction of the liquidity of the Commercial Banks vary to the same extent as inflation rates. Thus, the proposed study seeks to determine whether there is a relationship that exists between inflation rates and liquidity of all Commercial Banks in Kenya.

1.3 Objective of the study

The objective of the study is to establish the relationship between inflation rates and liquidity of commercial banks in Kenya

1.4 Value of the Study

The findings on this research will contribute to the theory of finance since Inflation reduces the real value of money, and thus makes the liquidity constraint more binding on the Commercial Banks in Kenya.

Additionally the regulators will have evidence as to what levels of liquidity are present at some level of inflation. This will help them formulate rules and regulations that help minimize failure risk in the sector. Further the research adds to the body of knowledge in finance as well as further evidence on how Commercial Banks liquidity is managed in the face of fluctuating price levels. The research will also help distinguish whether price stability have a significant impact on the liquidity of the Commercial Banks in Kenya

The findings of the study can guide finance managers in banks to make decisions that will satisfy the stakeholders' interest with regard to the effect of inflation on the liquidity of Commercial Banks. Identification of liquidity levels that maximize profits and ensuring adequate liquidity for the bank to meet its obligations as and when they fall due may enable bank managers to review and adopt relevant strategies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter looks into the various existing literature both foreign and local studies on liquidity and inflation. It reviews studies by other scholars especially studies touching on inflation and liquidity. The chapter addresses the theoretical framework/theories relevant to the study on which the study will be build, empirical literature and chapter summary. In addition it looks at, the Significance and principles of Liquidity Management and concludes by highlighting the measures used in liquidity.

2.2 Theoretical Theories

2.2.1 Liquidity Theories

2.2.1.1 Inventory Management Model
Baumol's (1952) inventory management model and Miller and Orr's (1966) model which recognized the dynamics of cash flows are some of the earlier research efforts attempted to develop models for optimal liquidity and cash balances, given the organization's cash flows the focus was on using quantitative models that weighed the benefits and costs of holding cash (liquidity). These earlier models help financial managers understand the problem of cash management, but they rest on assumptions that do not hold in practice.

The model postulates that firms identify their optimal level of cash holdings by weighting the marginal costs and marginal benefits of holding cash. The benefits related to cash holdings are: reducing the likelihood of financial distress, allows the pursuance of

investment policy when financial constraints are met, and minimizes the costs of raising external funds or liquidating existing assets. The main cost of holding cash is the opportunity cost of the capital invested in liquid assets. Firms will therefore trade-off holding cash and investing it depending on its investment needs.

2.2.1.2 Demand for Money Model:
Miller and Orr (1966) model of demand for money by firms suggests that there are economies of scale in cash management. This would lead larger firms to hold less cash than smaller firms. It is argued that the fees incurred in obtaining funds through borrowing are uncorrelated with the size of the loan, indicating that such fees are a fixed amount. Thus, raising funds is relatively more expensive to smaller firms encouraging them to hold more cash than larger firms. Firms with more volatile cash flows face a higher probability of experiencing cash shortages due to unexpected cash flow deterioration. Thus, cash flow uncertainty should be positively related with cash holdings.

Barclay and Smith (1995), however provide evidence that firms with the highest and lowest credit risk issue more short-term debt while intermediate credit risk firms issue long-term debt. If we consider that firms with the highest credit rating have better access to borrowing, it is expected that these firms will hold less cash for precautionary reasons, which would cause debt maturity to be positively related to cash holdings.

2.2.1.3 Keynes Motives of Money Theory
The economics and finance literature analyze possible reasons for firms to hold liquid assets. Keynes (1936) identified three motives on why people demand and prefer liquidity. The transaction motive, here firms hold cash in order to satisfy the cash inflow and cash outflow needs that they have. Cash is held to carry out transactions and demand

for liquidity is for transactional motive. The demand for cash is affected by the size of the income, time gaps between the receipts of the income, and the spending patterns of the cash available. The precautionary motive of holding cash serves as an emergency fund for a firm. If expected cash inflows are not received as expected cash held on a precautionary basis could be used to satisfy short-term obligations that the cash inflow may have been bench marked for. Speculative reason for holding cash is creating the ability for a firm to take advantage of special opportunities that if acted upon quickly will favor the firm.

2.2.1.4 Theory of Corporate Liquidity

Almeida et al. (2002) proposed a theory of corporate liquidity demand that is based on the assumption that choices regarding liquidity will depend on firms' access to capital markets and the importance of future investments to the firms. The model predicts that financially constrained firms will save a positive fraction of incremental cash flows, while unconstrained firms will not.

Empirical evidence confirms that firms classified as financially constrained save a positive fraction of their cash flows, while firms classified as unconstrained do not. The cost incurred in a cash shortage is higher for firms with a larger investment opportunity set due to the expected losses that result from giving up valuable investment opportunities. Therefore, it is expected a positive relation between investment opportunity and cash holdings.

The theory further predicts that firms with better investment opportunities have greater financial distress costs because the positive Net Present Value (NPV) of these

investments disappears (almost entirely) in case of bankruptcy. In this case, firms with better investment opportunities will keep higher levels of cash to avoid financial distress. To the extent that liquid assets other than cash can be liquidated in the event of a cash shortage, they can be seen as substitutes for cash holdings. Consequently, firms with more liquid asset substitutes are expected to hold less cash.

2.2.1.5Theory of Bank Liquidity Requirements
Charles C. Florian H. and Marie H(2012) theory of Bank Liquidity Requirements states that, not only does cash mitigate the liquidity risks attendant to exogenous shocks, it also mitigates endogenous (banker-chosen) default risk. In the model, costly state verification makes debt the optimal form of outside finance (Calomiris 1991). There is a conflict of interest between the banker/owner and the depositors with respect to risk management; the banker suffers a private cost from managing risk, and does not always gain enough as the owner to offset that cost (Tirole 2010). Greater cash holdings increase the marginal gain to the banker from managing risk, and thereby encourage greater risk management.

Diamond and Dybvig (1983), physical costs of liquidation make liquidity risk (the possible need to finance early consumption) costly, which could motivate the holding of inventories of liquid assets. In Calomiris and Kahn (1991), depositors receive noisy and independent signals about the risky portfolio outcome of the bank. By holding reserves, banks insulate themselves against the liquidity risk of a small number of misinformed early withdrawals in states of the world where the outcome is actually good. Without those reserves, banks offering demandable debt contracts (which are optimal in the Calomiris-Kahn model) would unnecessarily subject themselves to physical liquidation costs when they fail to meet depositor's requests for early withdrawal

2.2.2 Inflation Theories

Monetarism Theory

Monetarists hold that "only money matters", and as such monetary policy is a more potent instrument than fiscal policy in economic stabilization. According to them, the money supply is the "dominate, though not exclusive" determinant of both the level of output and prices in the short run, and of the level of prices in the long run. The long- run level of output is not influenced by the money supply.

The monetarists emphasized the role of money in influencing the inflationary tendencies while Modern Quantity Theory led by Milton Friedman holds that "inflation is always and everywhere a monetary phenomenon that arises from a more rapid expansion in the quantity of money than in total output. The primary cause of inflation is the growth in the quantity of money. When the overall price level rises, the value of money falls, in the long run, the overall level of prices adjusts to the level at which the demand for money equals the supply.

Monetarist's earliest explanation was in the simple quantity theory of money. The monetarists applied the familiar identity of exchange equation of Fisher. The monetarists theory states that when the money supply is increased in order to grow or increase production and employment, creating an inflationary situation within an economy. Monetarists believe that increases in the money supply will only influence or increase production and employment levels in the short run and not in the long run (Yergin and Stanislaw, 1998). Accordingly, there will be a positive relationship between inflation levels and money supply.

2.2.3 Fisher Hypothesis

Fisher hypothesis (Fisher 1930), postulated that the market rate of interest comprises the expected real rate of interest and expected inflation. This hypothesis, when applied to stock markets, postulates a positive one-to-one relation between stock market liquidity and inflation.

The empirical evidence on the issue of whether the Fisher hypothesis holds in stock markets is far from conclusion. For instance, event studies, which look at the effects of inflation announcements on stock returns, report a negative relation between inflation and stock returns (Amihud 1996). Short-horizon studies that use monthly data covering what is typically 10 to 15 years also report either a negative or an insignificant relation between stock returns and inflation (e.g., Jaffe and Bandelier 1976). In contrast, the long-horizon studies (e.g., Boudoukh, Richardson and Whitelaw 1994) and studies that tests for cointegration between stock and commodity price indexes (e.g. Ely and Robinson 1997) find a positive and significant relation between stock returns and inflation but report a commodity price elasticity of less than unity. One exception is Anari and Kolari (2001), who reported the commodity price elasticity of stock returns to be above unity by analyzing six industrialized countries using a cointegrating framework.

The study on the Fisher Hypothesis provides further evidence on the long-run relation between stock returns and inflation in a cointegration frame work. It makes two contributions to the literature. First, even though it is acknowledged that the commodity price elasticity of stock prices is likely to be heterogeneous across industry groups (Boudoukh, Richarddson and Whitelaw 1994), no study according to the researchers examines the long-run relation between stock prices and goods prices using industry-

17

level stock indexes in a co integrating framework. The study found statistically significant cointegration between stock and goods indexes in both aggregate and disaggregate (industry) data. Of the seven industry groups examined, six showed positive commodity price elasticity above unity and the remaining showed elasticity Below-unity. The overall market index also showed commodity price elasticity above unity (Fisher, 1930).

Keynesian Theory

In the book entitled "The General Theory of Employment, Interest and Money" published in 1940 John Keynes introduced his view on inflation. According to Keynes, an increase in general price levels or inflation is created by an increase in the aggregate demand which is over and above the increase in aggregate supply. If a given economy is at its full employment output level, increase in government expenditure (G), private consumption (C) and private investment (I) will create an increase in aggregate demand; Leading towards an increase in general price levels. Such an inflationary situation is created due to the fact that at optimum or full employment of output with maximum utilization of scarce resources, a given economy is unable to increase its output or aggregate supply in response to an increase in aggregate demand.

Keynes intended government to play a much larger role in the economy. His vision was one of reformed capitalism, managed capitalism—capitalism saved both from socialism and from itself. Fiscal policy would enable wise managers to stabilize the economy without resorting to actual controls. The bulk of decision making would remain with the decentralized market rather than with the central planner. Keynes provided both a specific rationale for government's taking a bigger role in the economy and a more

18

general confidence in the ability of government to intervene and manage effectively. Despite Keynes's fascination with uncertainty and his speculative talents in the marketplace, Keynesians deemed "government knowledge" to be superior to that of the marketplace.

Quantity Theory of Money

The quantity theory of money is used to explain the long run determinants of the price level and the inflation rate. It postulates that the quantity of money available in the economy determines the value of money, Milton Friedman (1971). The primary cause of inflation is the growth in the quantity of money in circulation. When the overall price level rises, the value of money falls, in the long run, the overall level of prices adjusts to the level at which the demand for money equals the supply. When an increase in the money supply makes a currency more plentiful, there is an excess supply of money. The result is an increase in the price level that makes each dollar less valuable (inflation), which increases money demand and eliminates the excess supply.

Ricardo (1772-1823), the most influential of the classical economists, thought such disequilibrium effects ephemeral and unimportant in long-run equilibrium analysis. As leader of the Balloonists, Ricardo charged that inflation in Britain was solely the result of the Bank of England's irresponsible over issue of money, when in 1797, under the stress of the Napoleonic Wars; Britain left the gold standard for an inconvertible paper standard. Ricardo discouraged discussions on possible beneficial output and employment effects of monetary injection.

2.3 Determinants of Liquidity in Commercial Banks

2.3.1Bank Specific Factors

2.2.1.1 Capital Adequacy

Patheja (1994) has defined banks capital as common stock plus surplus plus undivided profits plus reserves for contingencies and other capital reserves. In addition since a bank's loan-loss reserves also serves as a buffer for absorbing losses, a broader definition of bank capital include this account. Opposing to the standard view of liquidity creation in which banks create liquidity by transforming liquid liabilities into illiquid assets, the recent theories indicate the creation of liquidity by changing asset mixes. Diamond and Rajan (2000, 2001) and Gorton and Winton (2000) showed that banks can create more or less liquidity by simply changing their funding mix on the liability side. Thakor (1996) shows that capital may also affect banks" asset portfolio composition, thereby affecting liquidity creation through a change in the asset mix.

2.2.1.2 Bank Size

According to the "too big to fail" argument, large banks would benefit from an implicit guarantee, thus decrease their cost of funding and allows them to invest in riskier assets (Iannotta et al. 2007). Therefore, "too big to fail" status of large banks could lead to moral hazard behavior and excessive risk exposure. If big banks are seeing themselves as "too big to fail", their motivation to hold liquid assets is limited. In case of a liquidity shortage, they rely on a liquidity assistance of Lender of Last Resort. Thus, large banks are likely to perform higher levels of liquidity creation that exposes them to losses associated with having to sale illiquid assets to satisfy the liquidity demands of customers. Hence, there can be positive relationship between bank size and illiquidity.

However, since small banks are likely to be focused on traditional intermediation activities and transformation activities (Rauch et al. 2008; Berger and Bouwman 2009) they do have small amount of liquidity. Hence, there can be negative relationship between bank size and illiquidity.

2.2.1.3 Loan Growth

Comptroller's Handbook (1998), states that lending is the principal business activity for most commercial banks. The loan portfolio is typically the largest asset and the predominate source of revenue. As such, it is one of the greatest sources of risk to a bank's safety and soundness. Since loans are illiquid assets, increase in the amount of loans means increase in illiquid assets in the asset portfolio of a bank. According to Pilbeam (2005), in practice the amount of liquidity held by banks is heavily influenced by loan demand that is the base for loan growth. If demand for loans is weak, then the bank tends to hold more liquid assets (i.e. short term assets), whereas if demand for loans is high they tend to hold less liquid assets since long term loans are generally more profitable. Therefore, a growth in loans and advances has negative impact on banks liquidity.

2.2.1.4 Non-Performing Loans

Non-performing loans are loans that are outstanding in both principal and interest for a long time contrary to the terms and conditions contained in the loan contract. It follows that any loan facility that is not up to date in terms of payment of both principal and interest contrary to the terms of the loan agreement, is non-performing. Therefore, the amount of non-performing loan measures the quality of bank assets. Non-performing loans can lead to efficiency problem for banking sector. It is found by a number of economists that failing banks tend to be located far from the most-efficient frontier

because banks do not optimize their portfolio decisions by lending less than demanded (Barr et al. 1994).

According to Bloem and Gorter (2001), though issues relating to non-performing loans may affect all sectors, the most serious impact is on financial institutions such as commercial banks and mortgage financing institutions which tend to have large loan portfolios. Besides, the large bad loans portfolios will affect the ability of banks to provide credit. Huge non-performing loans could result in loss of confidence on the part of depositors and foreign investors who may start a run on banks, leading to liquidity problems. Therefore, the amount of non-performing loans has a negative impact on banks liquidity.

2.3.2 Macroeconomic Factors

2.3.2.1 GDP Growth

Macroeconomic context is likely to affect bank activities and investment decisions as the profile of bank liquidity (Pana et al. 2009). For example, the demand for differentiated financial products is higher during economic boom and may improve bank ability to expand its loan and securities portfolios at a higher rate. Similarly, economic downturns are exacerbated by the reduction in bank credit supply. Based on these arguments, we can expect banks to increase their transformation activities and their illiquidity during economic booms. According to the theory of bank liquidity and financial fragility, the relationship between banks" liquidity preference and the business cycle is fundamental to explain the inherent instability of the capitalist system as an endogenous market process (Minsky 1982). In periods of economic expansion, which are characterized by high degree of confidence of the economic units about their profitability, there is a rise in the

22

level of investment. During this expansion, economic units decrease their liquidity preference, preferring more risky capital assets with higher return. In this environment, economic units are more likely to hold less liquid capital assets and to incur short-term debt with higher interest rates (Painceira 2010).

2.3.2.2 Liquidity Premium Paid by Borrowers

Liquidity premium is the amount of interest rate paid by borrowers that force liquidity holders to part it. Pilbeam (2005,) stated that according to the liquidity preference theory, lenders need high interest rate which includes the liquidity premium in order to lend. The basic idea underlining this theory is that lenders of funds prefer to lend short, while borrowers generally prefer to borrow long. Hence borrowers are prepared to pay a liquidity premium to lenders to induce them to lend long. The size of liquidity premium increases with the time to maturity. Therefore, as they got higher premium, lenders give up their liquid money.

According to Keynes (1964), liquidity preference theory, in The General Theory, consists in the statement that "the rate of interest at any time, being the reward for parting with liquidity, is a measure of the unwillingness of those who possess money to part with their liquid control over it. The rate of interest is the price which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash. Hence, higher interest rate margin/higher liquidity premium will force banks to lend more and reduce their holding of liquid assets. Interest rate margin is the difference between the gross cost paid by a borrower to a bank and the net return received by a depositor (Brock and Suarez 2000).

2.3.2.3 Short Term/Money Market Interest Rate

Interest rate is the price that has to be paid by a borrower of money to a lender of money

in return for the use of the funds. Short term/money market interest rate is the rate paid on

money market instruments. Money market instruments are securities that when issued

have a year or less to maturity, which includes Treasury bills, commercial papers,

bankers" acceptances, certificates of deposit, repurchase agreements and Eurocurrency

deposits. Treasury bills are the most important since they provide the basis for all other

domestic short term interest rates. The money market is important because many of these

instruments are held by banks as part of their eligible reserves, that is, they may be used

(are eligible) as collateral if bank wishes to raise funds from central bank because they

are short maturing and have less default risk. Therefore, the higher short term interest rate

induces banks to invest more in the short term instruments and enhance their liquidity

position (Pilbeam 2005). According to the NBE investments in the Treasury bill are

considered as liquid assets to the banks.

2.3.2.4 The Rate of Inflation

A growing theoretical 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

(Huybens and Smith 1998, 1999). 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/long term investment. In turn, the amount of liquid or short term assets held by economic agents including banks will rise with the rise in inflation.

2.4 Empirical Studies

Several studies have been conducted on inflation rates and liquidity. The empirical evidence on the issue of whether the Fisher hypothesis holds in stock markets is far from conclusion. For instance, event studies, which look at the effects of inflation announcements on stock returns, report a negative relation between inflation and stock returns (Amihud 1986). Short-horizon studies that use monthly data covering what is typically 10 to 15 years also report either a negative or an insignificant relation between stock returns and inflation (Jaffe and Bandelier 1976). In contrast, the long-horizon studies (e.g., Boudoukh, Richardson and Whitelaw 1994) and studies that tests for cointegration between stock and commodity price indexes (e.g. Ely and Robinson 1997) find a positive and significant relation between stock returns and inflation but report a commodity price elasticity of less than unity. One exception is Anari and Kolari (2001), who reported the commodity price elasticity of stock returns to be above unity by analyzing six industrialized countries using a cointegrating framework.

Empirical studies of the Quantity Theory of Money (QTM) have focused directly on the relationship between the rate of change of the money stock and inflation. In monetary economics, the quantity theory of money is the theory that money supply has a direct,

proportional relationship with the price level. The theory was challenged by Keynesian economics, but updated and reinvigorated by the monetary school of economics. While mainstream economists agree that the quantity theory holds true in the long run, there is still disagreement about its applicability in the short run. Critics of the theory argue that money velocity is not stable and, in the short-run, prices are sticky, so the direct relationship between money supply and price level.

Longworth (2010) Bernanke (2008) noted that liquidity was an instrumental factor during the recent financial crisis. As uncertainty led funding sources to evaporate, many banks quickly found themselves short on cash to cover their obligations as they came due. In extreme cases, banks in some countries failed or were forced into mergers. As a result, in the interest of broader financial stability, substantial amounts of liquidity were provided by authorities in many countries, including Canada and the United States. Since liquid assets such as cash and government securities generally have a relatively low return, holding them imposes an opportunity cost on a bank.

Holmstrom and Tirole (1998) provide a theory of liquidity in a model in which intermediaries have borrowing frictions. They do not assume incomplete markets. In their model, a government has an advantage over private markets as it can enforce repayments of borrowed funds while the private lenders cannot. They show that availability of government provided liquidity leads to a Pareto improvement when there is aggregate uncertainty. The role of the government is to correct an inefficiency arising because of an externality associated with private information and possibility of hidden trades. However, in contrast with Holmstrom and Tirole (1998) and Allen and Gale (2004), a liquidity

requirement improves upon a market allocation even when there is no aggregate uncertainty.

Waciira (1999) said that from liquidity point of view, inflation is likely to result in an erosion of the real value of any financial claims outstanding as opposed to the nominal value of such claims which may remain unaffected. Therefore a firm may find it with receivables whose real value is diminished, thus inflation harms lenders and benefits borrowers. This defect is to some extent remedied by indexing interest payments to the prevailing rate of inflation; however this arrangement is more typical of long-term borrowing arrangements between lenders and lending institutions and is not common in short-term credit arrangements especially amongst non-financial institutions.

Ochieng' (2006) studied the relationship between working capital of firms listed in NSE and economic activities in Kenya. The objective was to examine how the changes in economic activities affect changes in working capital by firms listed in NSE.The liquidity position of the 50 small firms included in this study as measured by the current and quick ratios increased slightly during economic expansions and decreased during economic slowdown. However the liquidity positions reacted differently to different economic indications.

Kotler (2000) asserts that a major circumstance provoking price increases and share returns is cost inflation. Rising cost unmatched by productivity gains squeeze profit margins and lead companies to regular rounds of price increases. Companies often raise their prices by more than the cost increase in anticipation of further inflation or government price controls in a practice called anticipatory pricing. Another factor leading

to price increases is over-demand. When a company cannot supply all of its customers, it can raise its prices or ration supplies to customers. The price can be increased in the following ways; delayed quotation pricing, escalator clauses and reduction of discount.

Kangogo (2012) studied the Effectiveness of Monetary Policy Tools in Countering Inflation in Kenya. The study employed correlational research design and used time series empirical data on the variables to describe and examine the effectiveness of monetary policy tools in countering inflation in Kenya by establishing correlation coefficients between the inflation and the monetary policy tools. The study established that inflation and the money supply were positively correlated with each other. An increase in money supply leads to people spending the excess of their money supply over money demand. The study recommends that the policy makers need to keenly consider the levels of money supply in Kenya so as to ensure a stable retail price levels. The study however did not directly link liquidity in the economy and the monetary policy of the government.

Nyambok (2010) studied the relationship between the overall inflation rates and the liquidity of companies quoted at the Nairobi Stock Exchange. Her study emphasized the relationship between stock market liquidity as measured by the bid-ask spread and the inflation rate. The findings of the study indicate that overall inflation rates influence the stock market liquidity at varying degrees depending on the segment. There is however a positive relationship between overall inflation rates and market wide liquidity at the NSE which is an indication that as inflation rates go up, the overall market liquidity in terms of trading volume also goes up and vice versa.

From the study she concluded that the higher the level of inflation rates, the higher the liquidity and vice versa for the market wide trading involving all segments. While when looking at the various segments, Commercial and Services sector and the finance and investment sector replicate the market wide relationship of positive and direct relationship while the Agricultural and Industrial and Allied sectors are showing an inverse relationship. The significant difference in the relationships in the different sectors can be attributed to the fact that firms in some sectors such as agriculture are mostly affected by the underlying inflation rates and not the overall inflation rates.

2.5 Summary of Literature Review.

This research will examine the relationship between inflation rates and liquidity of Commercial Banks in Kenya. Banks in Kenya are required to maintain a certain level of liquidity as set by the CBK prudential guidelines. These guidelines are meant to ensure that the entire financial system is stable. From review of literature there is a relationship with between liquidity indicators and inflation indicators on the short term to long term. Review indicated that there was a correlation between inflation rates and liquidity in some segments of the security exchange market. The two variables are positively correlated and also reinforced each other. At the same time, estimation results provided some evidence that the relationship between liquid assets and inflation rates depended on the bank's business model and the risk of funding market difficulties.

It would be interesting to execute a qualitative research in order to answer how the banks managers observe the relationship of liquidity in their respective banks and inflation

rates, i.e. if they observe a dilemma between these two financial indicators or they think they are interdependent.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introductions

This chapter discusses the research design and methodology of the study; it highlights a full description of the research design, the research variables and provides a broad view of the description and selection of the sample and population. The research instruments, data collection techniques and data analysis procedure have also been pointed out.

3.2 Research Design

A descriptive research design was used in this study. A descriptive research describes the characteristics of objects, people, groups, organizations, or environments, and tries to "paint a picture" of a given situation (Zikmund, Babin, Carr and Griffin, 2010). In this case, the relationship between inflation rate and liquidity of all commercial banks in Kenya was determined. The dependent variable is liquidity as measured through banks liquidity ratio while the independent variable is inflation as measured through annualized overall inflation rate.

3.4 Population

The population of interest in this study was composed of all commercial banks in Kenya between years 2008 and 2013 (Appendix I) fulfilling the data collection criteria. The banks Liquidity ratio as a variable was obtained from audited financial statements of the banks from the Central Bank of Kenya Supervisory Department. The annualized overall rate of inflation was obtained from the Kenya National Bureau of Statistics (KNBS). The

period covered is considered adequate to obtain the necessary information considering the data analysis involved.

3.5 Sample and Sampling Procedure

This study used census survey of all commercial banks in Kenya. For an individual bank to qualify it must have operated throughout the set period of study. Given the population of the subjects of study all the commercial banks in Kenya were studied. Due to the manageable number of commercial banks in Kenya sampling was not necessary.

3.6 Data Collection

The study employed secondary data collection. The study of liquidity ratio variable was deduced from the audited financial statements of the commercial banks in Kenya obtained from the financial periods 2008 to 2013. Data was collected from the commercial banks which were in operation in the period and this ensured completeness and consistency of the study elements. The data regarding inflation was obtained from the Central Bank of Kenya monthly economic reviews and Kenya National Bureau of Statistics (KNBS). The month on month overall inflation rate was preferred over underlying inflation rate because of full representation of the whole economy. The collected data was captured and presented in form of tables.

3.7 Data Analysis

The data was extracted from the audited financial statements of all commercial banks in Kenya. The research was quantitative in nature. The data was analyzed through descriptive statistics. The analysis was on the inflation rates versus liquidity ratios of Commercial Banks in Kenya. The banks were analyzed in the three categories: large, medium and small banks

based on the CBK classification criterion. Regression analysis was used to establish the nature and if any relationship exists between the study variables. Calculations were carried out for coefficient of correlation (r) to establish the nature and strength of the relationship and Coefficient of determination (r^2) analyzed to understand the extent to which the model explains the relationship. To achieve the objectives of this study, a model was developed using liquidity as the dependent variable and inflation as the independent variable. The data analysis was followed by data interpretation of the results of the analysis.

3.1.1 Model Specification

To analyze the relationship between inflation rates and liquidity of all commercial banks in Kenya, regression analysis technique and correlation was used to establish whether a relationship exists or not and the extent of such a relationship. The estimated regression model that was used to examine the effect of inflation on liquidity is as below;

Liquidity Ratio (Y) = β_0+ βX+ε

Where

Y = Liquidity Ratio.

β_0= Represents the factor affecting liquidity when inflation rate is zero.

X = inflation rate.

ε = Random error term

β = Coefficients of the variable

The various variables were extracted from the published financial statements and other relevant publications by CBK and KNBS for the period being studied. Of interest will be the published Statement of Financial Position.

The variables are to be computed as follows:-

Y = Represents the liquidity of the bank which is the dependent variable and it is measured by the banks liquidity ratio. Liquidity ratio is given by the percentage of net liquid assets as a proportion of net deposit liabilities. Net liquid assets comprise of notes and coins (local and foreign), balances with CBK, balances with domestic commercial banks, balances with banks abroad, balances with financial institutions, balances with mortgage firms, balances with building societies, short term portion of loans, treasury bills treasury bonds and bills, certificates of deposit and government bearer bonds and foreign currency bearer certificates. Net deposit liabilities comprise of deposits from customers, deposit from other sources and balances due to banks, other financial institutions, mortgage finance companies and building societies.

Liquidity Ratio(Y) =   <u>Net Liquid Assets</u>   x   100%

                                   Net Deposit Liabilities

X= inflation rate. It is measured as annualized percentage change in a general price index normally the consumer price index (CPI).

Ɛ = Represents a random error term and takes care of all other factors that affect liquidity which are not in the model.

β = these represent beta values which provide the change in the dependent variable associated with a unit change in the independent variable. These values will be estimated.

CHAPTER FOUR

4.0 DATA ANALYSIS, RESULTS AND DISCUSSION

4.1   Introduction

This chapter looks at data analysis and findings, summary of findings and interpretations. Specifically, it gives a breakdown of the liquidity ratios of commercial banks, the inflation trends since 2008 to 2013. It finally provides an analysis of the relationship between liquidity ratio and inflation rate for commercial banks overally and also on the basis of size.

4.2   Data Analysis and Findings

4.2.1   Findings on Liquidity Ratio of Commercial Banks
The study sought to determine the relationship between liquidity ratio and inflation rate. In order to determine this relationship, data on liquidity ratio was collected. The data covers a period of six years from 2008 to 2013. The data is tabulated in appendix II.

4.2.2   Analysis of Liquidity Ratio of Small Banks
Central Bank of Kenya defines small banks as those banks with a market share index of less than 1%. The findings of liquidity ratio of these banks are tabulated below.

1 table 4.2.1 average liquidity ratio of small banks

Year	2008	2009	2010	2011	2012	2013
Average Liquidity Ratio (%)	48.31	62.61	49.95	48.61	48.78	43.40
Standard Deviation (%)	19.66	92.30	25.13	35.53	20.68	19.07
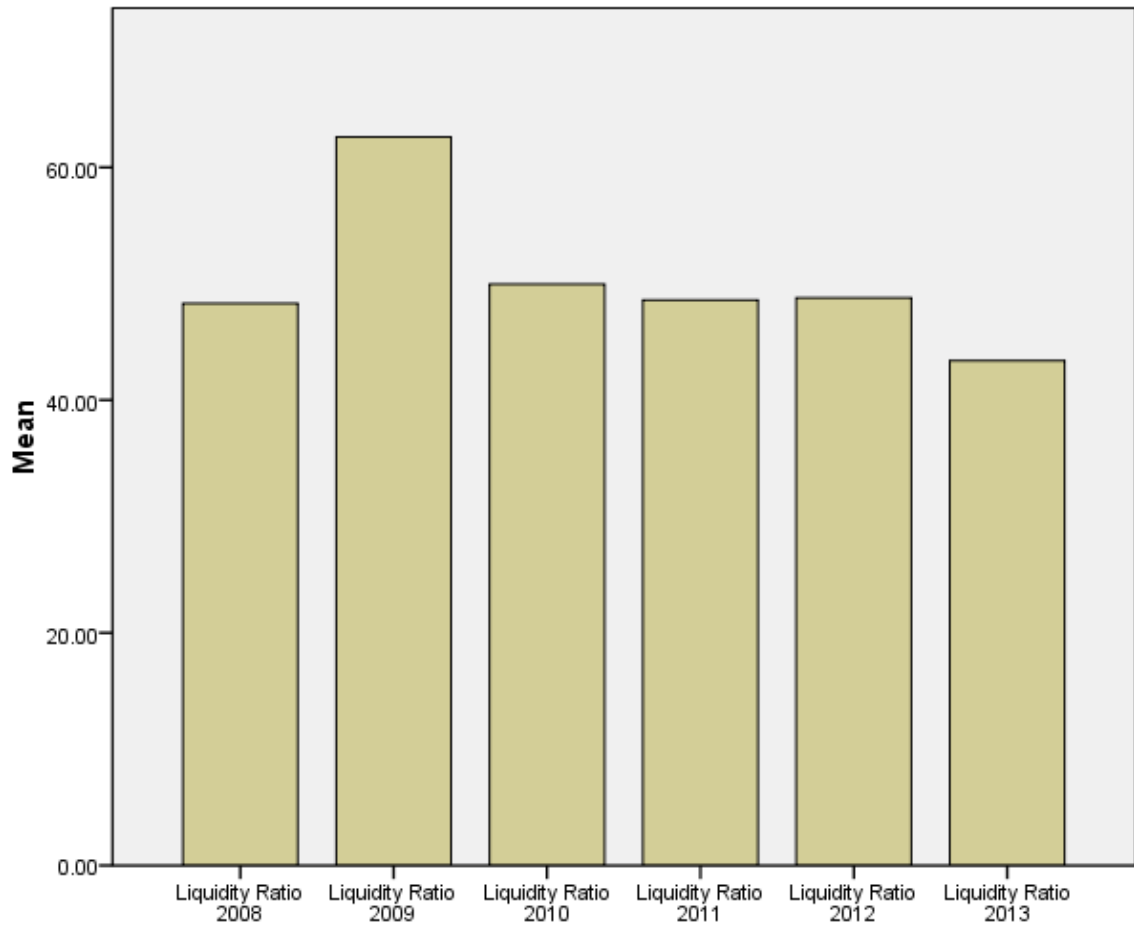
4.2.3   Liquidity Ratio of Medium Size Banks

According to Central Bank of Kenya, medium size banks are those whose market share

index are more than 1% but less than 5%. The liquidity ratio of this class of banks is

summarsed in the table below.

2table 4.2.2 Average liquidity ratio of medium size banks

Year	2008	2009	2010	2011	2012	2013
Average Liquidity Ratio (%)	40.72	44.14	48.18	42.65	44.24	42.61
Standard Deviation (%)	15.40	13.38	14.87	14.52	15.00	13.81

2figure 4.2.2 average liquidity ratios of medium size banks
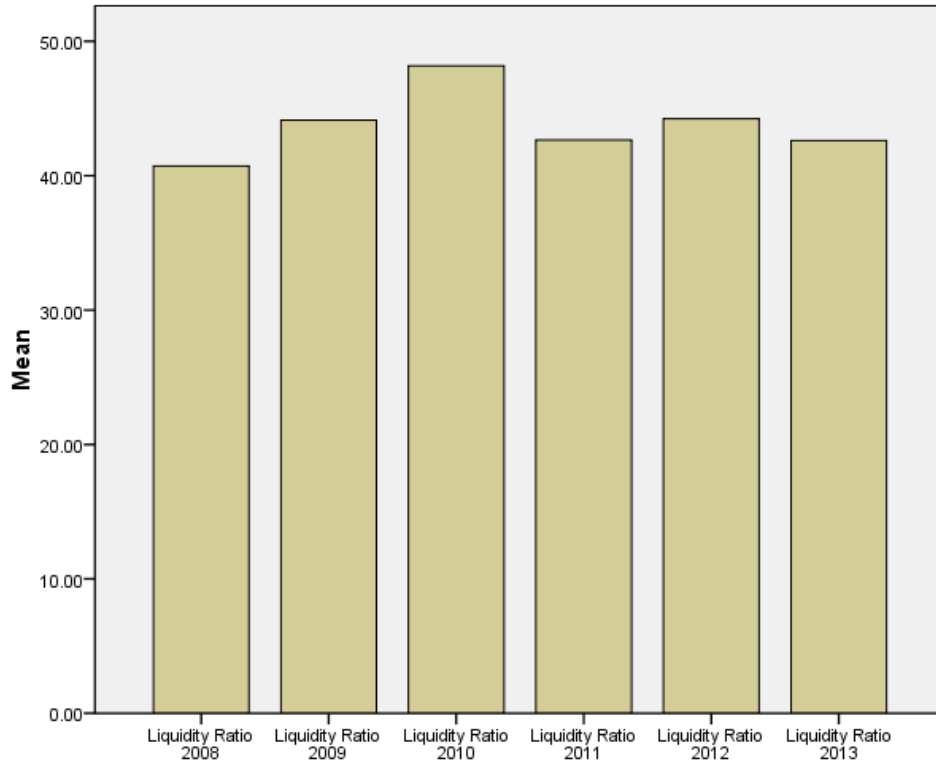
4.2.4   Liquidity Ratio of Large Banks

Central Bank of Kenya defines a large size bank as that which has market share index of

greater than 5%. The liquidity ratio of this category of banks is tabulated below.

3table 4.2.3 Average liquidity ratio for small banks

Year	2008	2009	2010	2011	2012	2013
Average Liquidity Ratio (%)	39.03	41.30	42.75	34.92	41.41	41.30
Standard Deviation (%)	10.28	12.25	8.93	4.78	4.91	12.33
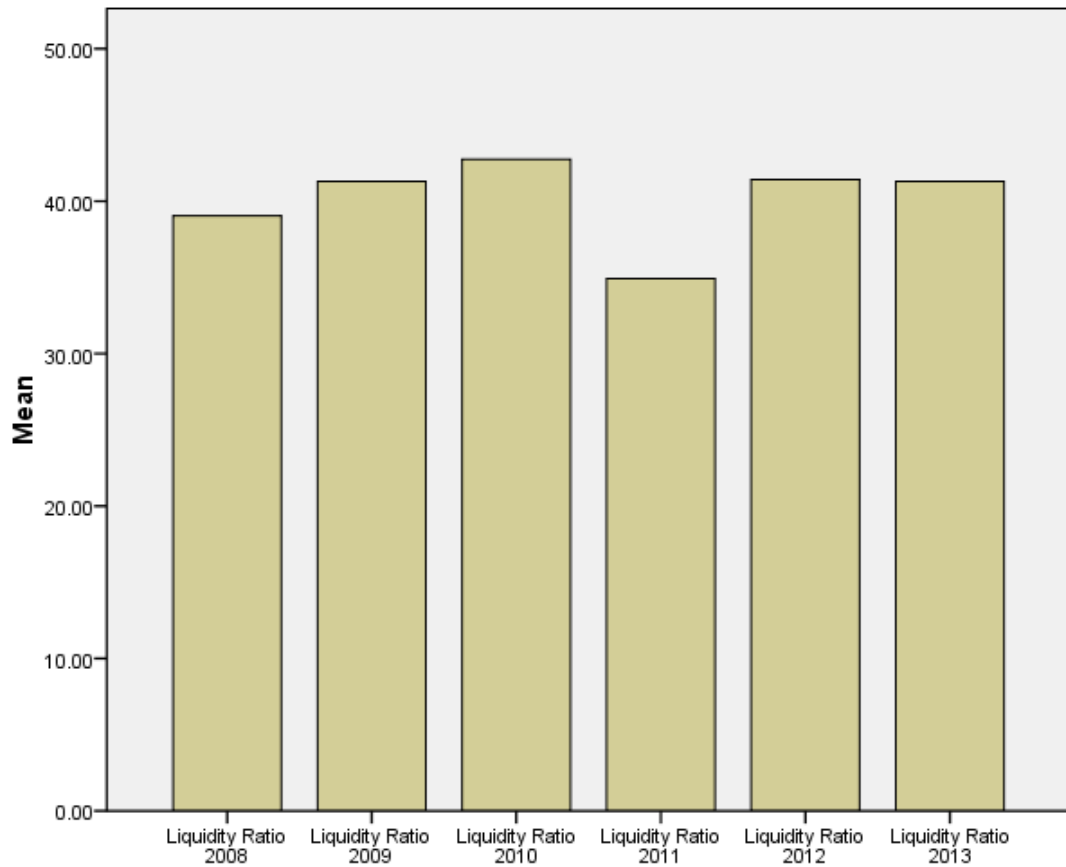
4.2.5 Analysis of Liquidity Ratio of All Banks

The liquidity ratio of all commercial banks is analyzed in the table below.

4table 4.2.4 Average liquidity ratio for all banks

Year	2008	2009	2010	2011	2012	2013
Average Liquidity Ratio (%)	44.23	53.18	48.32	44.66	46.19	43.35
Standard Deviation (%)	17.35	66.61	20.28	27.21	17.17	16.50

4figure 4.2.4 Average liquidity ratios of all banks
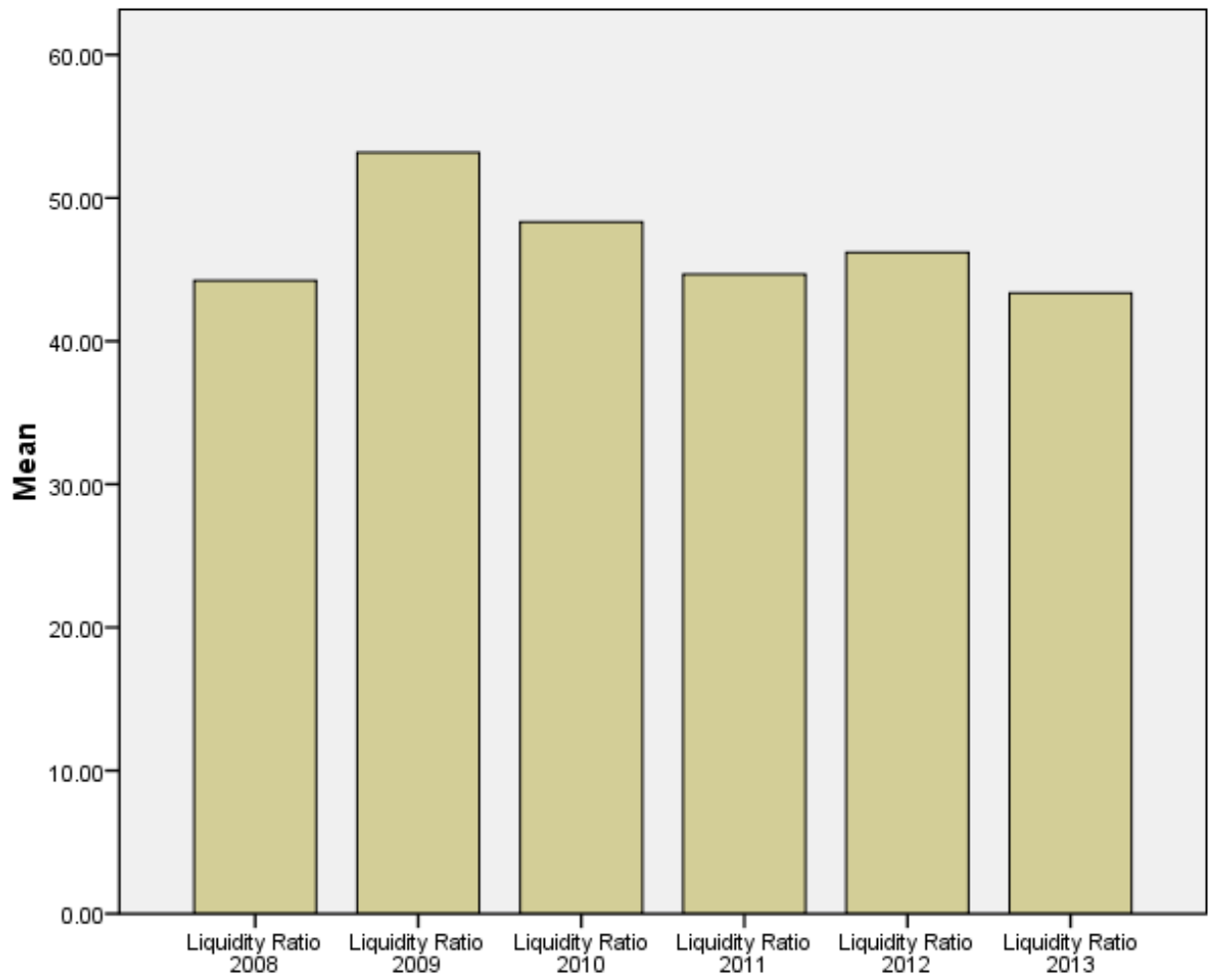
4.2.6   Comparison of Liquidity Ratio among different Classes of Commercial Banks

The liquidity ratio of small, medium size and large commercial banks is compared in the line graph below.
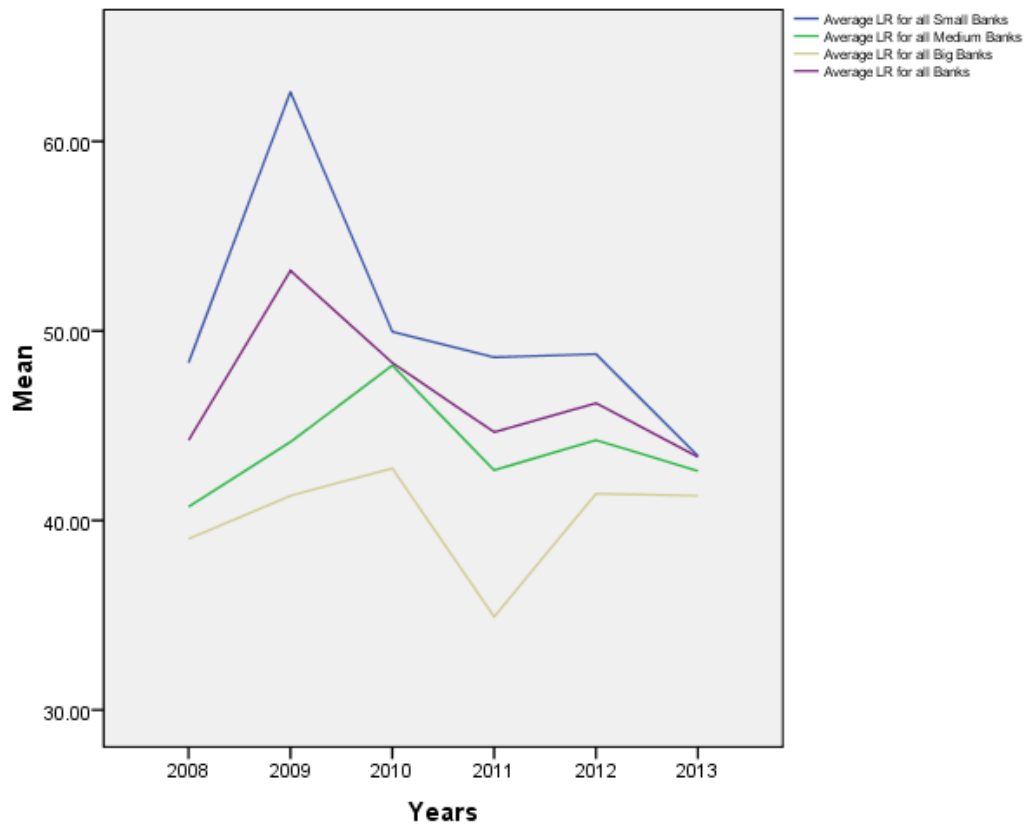
4.2.7   Analysis of Inflation Rate

The inflation rate from the year 2008 to 2013 is summarized as follows.

5 Table 4.2.5 Average inflation rates (2008-2013)

Year	2008	2009	2010	2011	2012	2013
Average Rate of Inflation (%)	26.19	10.08	3.87	13.98	8.81	5.72

4.2.8   Comparison between Liquidity ratio and Inflation Rate

The liquidity ratio of commercial banks and Inflation rate is compared in the line graph below.

6figure 4.2.6 comparison between liquidity ratio and inflation rate
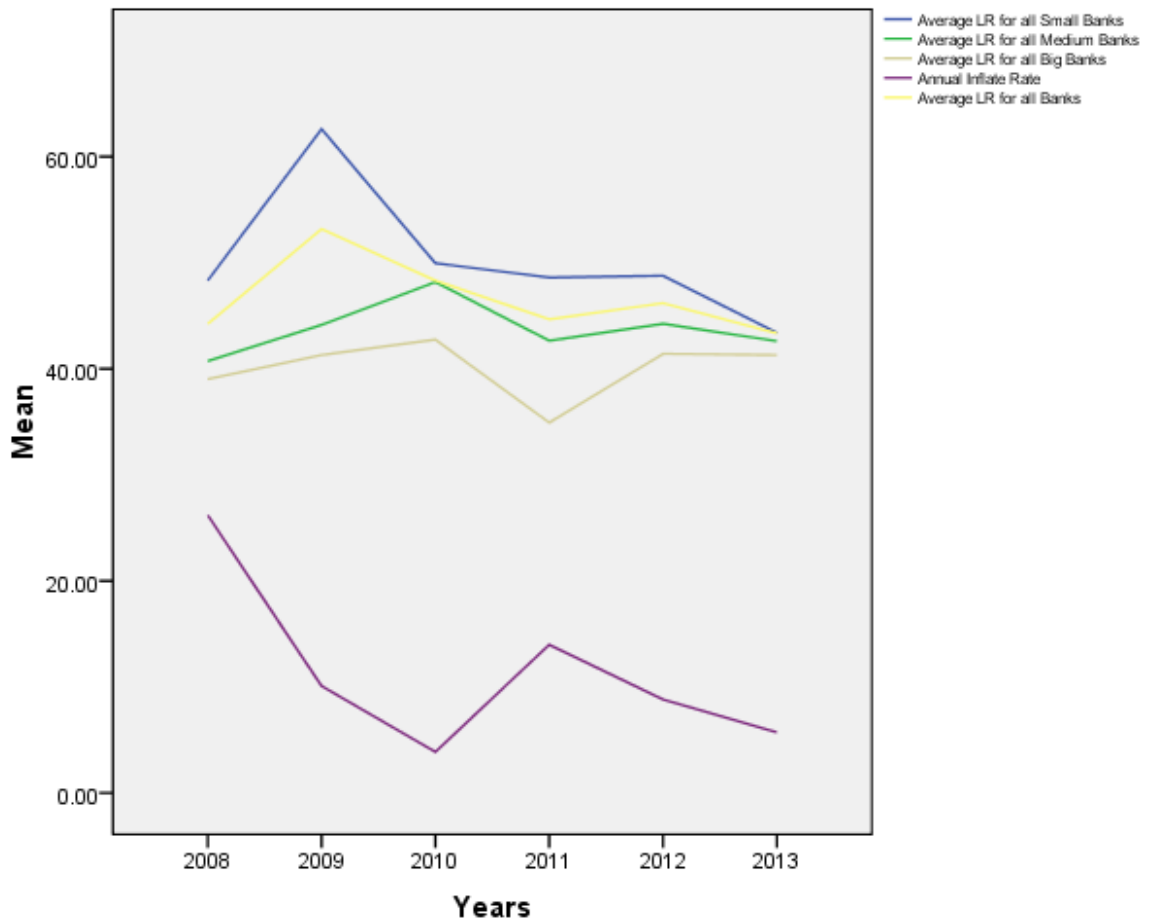
4.3   Results of Regression Analysis

The study sought to determine the relationship between liquidity ratio of commercial

banks and inflation rate. In this study, Liquidity ratio (L) is the dependent variable while

inflation (I) rate is the independent variable. β_0, and β_1 are the parameters of the model.

The results of regression analysis are summarized in the table below.

4.3.1 Regression Results of Small Banks

6 table 4.2.1 coefficience of small banks

Model	Unstandardized Coefficients		Sig (p-value)
	Beta (β)	Standard Error	
Constant	50.43	5.46	0.001
Independent Variable	-0.013	0.40	0.976

7Table 4.3.2 Model summary for small banks

R-Square	Adjusted R-Square	F	Sig
0.00	-0.25	0.001	0.976

8Table 4.3.3 coefficience of medium size banks

Model	Unstandardized Coefficients		Sig (p-value)
	Beta (β)	Standard Error	
Constant	46.46	1.398	0.000
Independent Variable	-0.24	0.103	0.083

9table 4.3.4 model summary of medium size banks

R-Square	Adjusted R-Square	F	Sig
0.569	0.461	5.28	0.083

4.3.3 Regression Analysis of Large Banks
10 table 4.3.5 coefficience of large banks

Model	Unstandardized Coefficients		Sig (p-value)
	Beta (β)	Standard Error	
Constant	42.278	2.005	0.000
Independent Variable	-0.189	0.147	0.270

11table 4.3.6 model summary of large banks

R-Square	Adjusted R-Square	F	Sig
0.291	0.113	1.638	0.270

4.3.4 Regression Analysis for All Banks
12table 4.3.7 regression analysis for all banks

Model	Unstandardized Coefficients		Sig (p-value)
	Beta (β)	Standard Error	
Constant	45.440	2.547	0.000
Independent Variable	-0.193	0.187	0.327

13table 4.3.8 model summary for all banks

R-Square	Adjusted R-Square	F	Sig
0.096	0.006	1.064	0.327

4.4   Summary of Findings and Interpretation

4.4.1   Liquidity Ratios of Commercial Banks

The purpose of the study was to determine the relationship between liquidity ratio of commercial banks and inflation rate. Liquidity ratio is given by the percentage of net liquid assets as a proportion of net deposit liabilities. The study found that commercial

banks registered the highest liquidity ratio of 53.18% in 2009 and the lowest liquidity ratio of 43.35% in 2013. The year 2008 and 2011 each registered a liquidity ratio of 44.23% and 44.66% respectively. The year 2012 registered an average liquidity ratio of 46.19%.

In terms of bank size, the year 2009 registered the highest liquidity ratio of 62.61% in the category of small banks followed by the year 2010 with an average of 49.95%. The years 2011 and 2012 registered an average of 48.61 and 48.78% respectively. The liquidity ratio for year 2013 was an average of 43.40%. Medium size banks recorded the highest average liquidity ratio of 48.18% in 2010 followed by 44.24% in 2012. The lowest liquidity ratio of 42.61% was recorded in 2013. The year 2011 registered a liquidity ratio of 42.65%. Large size banks had liquidity ratio of 42.75% in 2010 and the lowest ratio of 34.92% in 2011. The years 2009, 2012 and 2013 had a liquidity ratio of 41.30%, 41.41% and 41.30% respectively.

Generally, small banks have consistently registered a higher liquidity ratio compared medium and large size banks. In the year 2008, liquidity ratio of small banks averaged 48.31% compared to the industry average of 44.23%. 2009 registered 62.61% compared to the industry average of 53.18% while 2012 and 2013 registered a ratio of 48.78% and 43.40% compared to the industry average of 46.19% and 43.35% respectively.

Inflation rate was found to be highest in 2008 averaging 26.19% followed by 2011 at an average of 13.98%. It was lowest in 2010 at 3.87%. The average inflation rate for the years 2009, 2012 and 2013 were found to average 10.08%, 8.81% and 5.72% respectively.

4.4.2 Regression Analysis

The purpose of the study was to determine the relationship between liquidity ratio and inflation rate of commercial banks. Regression analysis was used to determine this relationship. The study found a βeta value of -0.193 implying there is a negative relationship between inflation rate and liquidity ratio of commercial banks. It implies that if inflation rate increases by 1%, liquidity ratio of the banking industry decreases by an average value of 0.19%. However, on conducting a t-test on the results, the relationship was found to be insignificant at 5% level of significance since the p-value is 0.327 which is greater than 0.05, the level of significance. The model registered an R-square of 0.096 implying that only 9.6% of the changes in liquidity ratio can be explained by changes in inflation rate.

Small banks registered a negative relationship with a βeta value of -0.013 implying that an increase in the rate of inflation by 1% will result into a reduction of liquidity ratio by 0.013%. The relationship was found to be insignificant at 5% level of significance since the p-value of 0.976 is greater than 0.05 which is the significance level. The model had an R-square of 0.00 implying that no changes in liquidity ratio are attributable to changes in inflation rate.

Medium Size banks recorded a βeta value of -0.24 implying a negative relationship between inflation rate and liquidity ratio for banks under this category. As inflation increases by 1%, the liquidity ratio of medium size banks reduces by 0.24%. The relationship is insignificant at 5% level of significance since the p-value of 0.083 is greater than the level of significance of 0.05. The model has an R-square of 0.461

implying that 46.1% of the changes in liquidity ratio are attributable to changes in inflation.

Large banks replicated about a similar trend as that of small and medium size banks. The βeta value for large banks was found to be -0.189 implying that the relationship between inflation and liquidity ratio for large banks is negative. An increase in inflation by 1% results into a decrease in liquidity ratio by 0.189% and vice versa. The relationship was also found to be insignificant at 5% level of significance sine the p-value of 0.27 is greater than the level of significance of 0.05. The model had an R-square of 0.291 implying that 29.1% of the changes in liquidity ratio of large banks is attributable to changes in inflation.

In general, the study found an insignificant negative relationship between inflation rate and liquidity ratio of commercial banks regardless of the bank size. The study further fund that at an inflation rate of 0%, the average liquidity ratio for the industry was 45.44%, 50.43% for Small banks, 46.46 for medium size banks and 42.28% for the large banks. The regression equation for each case is summarized below.

$Y = 45.44 - 0.193X + \varepsilon$ ………..Industry Equation

$Y = 50.43 - 0.013X + \varepsilon$ ………..Equation for Small Size Banks

$Y = 46.46 - 0.24X + \varepsilon$ ………….Equation for medium size banks

$Y = 42.28 - 0.189X + \varepsilon$ …………Equation for Large Banks

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

This chapter provides a summary, conclusions of the study and recommendations, limitations of the study and suggestions for further research.

5.2   Summary of the Study

The purpose of this study was to determine the relationship between inflation rate and liquidity of commercial banks in Kenya. Turker (2007) defines inflation as an increase in the general price level of goods and services in the economy and not an increase in any specific product price (Tucker, 2007). Bhunia (2010) refers to liquidity as the ability of a firm to meet its short term obligations. Heffernan (2005) observes that high inflation rate and sudden changes of inflation have a negative impact on interest rates and bank's capital. In this respect, the bank's non-performing loans will expand, collateral security values deteriorate and value of loan repayments on banks loans declines.

In this study, descriptive research design was used. The population of the study comprised all commercial banks in Kenya. Census survey was used in the study. Secondary data was collected from Central Bank Supervision reports while regression analysis was used to determine the relationship between inflation rate and liquidity ratio.

The study found that small banks had a higher liquidity ratio than the industry average. In the year 2008, liquidity ratio of small banks averaged 48.31% compared to the industry average of 44.23%. 2009 registered 62.61% compared to the industry average of 53.18% while 2012 and 2013 registered a ratio of 48.78% and 43.40% compared to the industry average of 46.19% and 43.35% respectively. Inflation was found to be highest in 2008

averaging 26.19% followed by 2011 at an average of 13.98%. It was lowest in 2010 at 3.87%. Regression analysis found an insignificant negative relationship between inflation rate and liquidity ratio of commercial banks regardless of the bank size.

5.3   Conclusions and Recommendations

5.3.1   Conclusions

The study sought to determine the relationship between inflation rate and liquidity ratio of commercial banks in Kenya. Inflation rate was the independent variable while liquidity ratio was the dependent variable. Regression analysis found no significant relationship between inflation and liquidity ratio of commercial banks. This study concludes that inflation is not a significant macro-economic variable that influences liquidity ratio of commercial banks.

5.3.2   Recommendations

The study was carried out to determine the relationship between inflation rate and liquidity ratio of commercial banks. The study found no significant relationship between inflation and liquidity ratio. With this finding in mind, the researcher recommends that managers of commercial banks need not take measures that aligns liquidity ratio with the prevailing inflation level. Instead, mangers of commercial banks should concentrate on other factors that affect the liquidity of the commercial banks.

5.3.3   Limitations of the Study

The researcher acknowledges that inflation is not the only macroeconomic variable that affects liquidity ratio of commercial banks. Due to time and resource constraints the study did not focus on other macro-economic variables alongside inflation. Had this been

done, may be the results would be different. Moreover, the researcher had no control over the method used to determine inflation rate since data on the same was borrowed from Kenya National Bureau of Statistics

5.3.4   Suggestions for Further Research

The study sought to determine the relationship between inflation rate and liquidity ratio of commercial banks in Kenya. The study found no significant relationship between inflation and liquidity ratio. The researcher however acknowledges that inflation is not the only macro-economic factor that affects liquidity of commercial banks. Consequently, it is the researcher's recommendation that further research be carried out to determine the relationship between liquidity ratio and other macro-economic variables such as GDP growth, wage bill among other macro-economic variables.

References

Allen, G. & Gale, D., 2004, Financial Intermediaries and Markets, conometrica, 72(4), 1023-1061

Almeida, H., Campello, M., & Weisbach, M. (2002). Corporate demand for liquidity, Working Paper 2002-11, New York University

Amihud,Yakov. & Mendelson, H. (1986).Asset Pricing and the bid- ask Spread. Journal of Financial Economics 17, 223-249

Atrill, P., & McLaney E. (2008). Accounting and Finance for Non-Specialist, Edinburgh, Pearson Education limited.

Anari, A., & Kolari, A. (2001). Stock prices and Inflation. Journal of Financial Research, 24,587-602.

Barr, R., Seiford, L., & Siems, T. (1994). Forecasting Banking Failure: A Non-Parametric Frontier estimation Approach, Researches Economiques de Lovain, Vol. 60, pp.417-429.

Barry, E. & C. Arteta (2000). Banking Crises in Emerging Markets Presumptions and Evidence, Mimeo, Berkeley. University of California

Baumol, W. (1952).The Transactions Demand for Cash: Inventory Theoretic Approach. The Quarterly Journal of Economics. 66(4-11) 545-556.

Barclay, M., & Smith, C. Jr. (1995). The maturity structure of corporate debt, Journal of Finance, 50, 609–631.

Berger, A.N., & Bouwman, C. (2009).Bank liquidity creation, Review of Financial Studies, Vol. 22, No.9, pp.3779-3837.

Bernanke, B. S. (2008). Liquidity Provision by the Federal Reserve, Risk Transfer Mechanisms and Financial Stability Workshop, Basel, Switzerland.

Beaver, W.H. (1966). Financial Ratios as Predictors of Failure, Journal of Accounting Research 4, 71-111.

Bloem, M.A,. & Gorter, N.C.(2001). Treatment of Non-Performing Loans in Macroeconomic Statistics, International Monetary Fund, Working Paper 2001-209.

Boudoukh, J., Richardson, M., & Whitelaw, R.F. (1994). Industry Returns and the Fisher Effect. Journal of Finance 49/5, 1595-1616.

Bhunia, A. (2010). A trend analysis of liquidity management efficiency in selected private sector Indian steel industry, International Journal of Research in Commerce and Management, 1(5-9), 9-21.

Brock, P., & Suarez, R.(2000).Understanding the behavior of bank spreads in Latin America, Journal of Development Economics, Vol. 63, pp.113–134.

Chandra, P. (2001). Financial management theory and practice, New Delhi, Tata McGraw Hill Publishing company Limited.

Central Bank of Kenya Act 2012, Chapter 491: Revised Edition 2012 [2010], Published by the National Council for Law Reporting, www.kenyalaw.org

Charles C., Florian H., & Marie H. (2012). Theory of Bank Liquidity Requirements, Columbia University, Graduate School of Business Press.

Calomiris, C. W., and L. Schweikart (1991). The Panic of 1857: Origins, Transmission, and Containment, Journal of Economic History, 807-834.

Chordia,T., Roll R., & Subrahmanyam A. (2000). "Commonality in Liquidity". Journal of Financial Economics 56, 3-28.

Chordia, T., Roll, R., & Subrahmanyam,A.(2004). Order Imbalance, Liquidity, and Market Returns. Journal of Financial Economics 72:485–518.

Charles, R. W. (1945).Nature and Significance of Bank Liquidity USA, NBER Publishers.

Comptroller's Handbook (1998). Loan portfolio management, Comptroller of the Currency Administrator of National Banks, USA.

Diamond, D., & Dybvig. P (1983). Bank Runs, Deposit Insurance, and Liquidity, Journal of Political Economy 91, 401-419.

Diamond, D. W., & Rajan, R. G.(2000).Theory of bank capital. Journal of Finance, Vol. 100, No. 55, pp. 2431-2465.

Diamond, D. W., & Rajan, R. G(2001). Liquidity risk, liquidity creation, and financial fragility: A theory of banking", Journal of Political Economy, Vol. 109, No. 2, pp.287-327.

Ely, D., & Robinson, K. (1997).Are stocks a hedge against inflation? International evidence using a long run approach, Journal of International money and Finance, February (1997), 16,141-167

Farragher, E.D., Kleiman, R.T., & Sahu, A.P.(1999).Current Capital Investment Practices. The Engineering Economist 44(2), 137-150

Gilbert, E., & Reichert, A. (1995). The Practice of Financial Management among large United States Corporations. Financial Management Association 5, 16-23.

Gil-Diaz, F.(1994).The Origin of Mexico's 1994 Financial Crisis, The Cato Journal, vol.17, No.3, http://www.cato.org/pubs/journal/cj , on 28 November 2008.

Gorton, G.,& Winton, A.(2000). Liquidity provision, bank capital, and the macro economy", University of Minnesota, Working Paper.

Greuning, H., & Bratanovic. S, (2004). Analysis and risk management banking, Bucharest, Irecson Publishing House.

Heffernan, S. (2005). Modern banking: John Wiley and Sons Ltd, West Sussex.

Holmstrom, B., & J. Tirole, (1998). Private and Public Supply of Liquidity, Journal of Political Economy, Vol. 106.

Hutchison, M., & McDill, K., (1999). Are all banking crises alike? The Japanese experience in international comparison. Journal of Japanese and International Economics, 13, pp155-180

Huybens, E., & Smith, B. (1998). Financial Market Frictions, Monetary Policy, and Capital Accumulation in a Small Open Economy, Journal of Economic Theory, Vol. 81, pp.353-400.

Huybens, E., & Smith, B. (1999). Inflation, financial markets, and long-run real activity, Journal of Monetary Economics, Vol. 43, pp.283-315

Iannotta, G., Nocera, G., & Sironi, A. (2007). Ownership Structure, Risk and Performance in the European Banking Industry", Journal of Banking & Finance, Vol. 31, pp. 2127-2149

Ivanchuk, N. (2004). Evaluating the Liquidity of Stocks Using Transaction Data. Published MA thesis. University of Konstanz.

Jaffe, J. F., & Mandelker, G (1976). "The Fisher Effect for Risky Assets: An Empirical Investigation". Journal of Finance 31, 447-458.

Jordi G., & Mark G. (1999), Inflation dynamics: A structural econometric analysis Journal of Monetary Economics, Volume 44, Issue 2, Pages 195-222

Jose et al, (1996). Liquidity management, operating performance, and corporate value: Evidence from Japan and Taiwan ,Journal of Multinational Financial Management, Volume 12, Issue 2, Pages 159-169

Kangogo,J. (2012). Effectiveness of monetary policy tools in countering Inflation in Kenya. Unpublished MBA Thesis, University of Nairobi.Karl et al, (2002). Principles of Economics, 6/e. Prentice Hall Publishing.

Keige (1991). Business failure prediction using discriminate analysis. Unpublished MBA Thesis, University of Nairobi.

Keynes, J. M. (1964). The General Theory of Employment, Interest and Money, Harcourt, Brace Jovanovich, New York.

Keynes, J. (1936). The General Theory of Employment, Interest and Money. United Kingdom: Palgrave Macmillan

Kotler, J. (2006). Inflation: Targeting its Role in the Global Economy. McGraw- Hill, New York.

Largay, J.A., & Stickney, C.P. (1980), "Cash Flows, Ratio Analysis and the W.T. Grant Company Bankruptcy," Financial Analysts Journal 36, 51-54.

Lingnan University. (2011). Journal of Banking, Finance and Economics Vol. 3 2011/2012 Academic Year Issue Article 5)

Longworth, D. (2010). Bank of Canada Liquidity Facilities: Past, Present, and Future, Remarks by David Longworth C.D. Howe Institute.

Ludi, K. L., & Ground, M. (2006): Investigating the Bank-Lending channel in South Africa: A VAR Approach, Working Paper No. 2006-04, Department of Economics, University of Pretoria, South Africa.

Macharia,T.(2013). The Relationship between Profitability and Liquidity of Commercial Banks in Kenya. Unpublished MBA project, University of Nairobi

Miller, M., & Orr, D. (1966). A model of the demand for money by firms, Quarterly Journal of Economics, 80, 413-435

Milton, F. (1971). A Theoretical Framework for Monetary Analysis (p. 1 - 3) Published in 1971 by Urban Ministries Inc. Research Press(UMI)

Meigs, R., & Meigs, W.B. (1999).Accounting: The Basis of Business Decisions. McGraw-Hill New York.

Minsky, H. (1982). Can "It" Happen Again; Instability and Finance, New York. M.E. Sharpe.

Niresh, J. A. (2012). Trade-off between liquidity and profitability, A Study of selected Manufacturing Firms in Sri Lanka. University of Jaffna

Nyambok, C. (2010). The Relationship between Inflation Rates and Liquidity of Companies Quoted at the Nairobi Stock Exchange. Unpublished MBA project, University of Nairobi

Ochieng, J. (2006). Changes in working capital of firms listed at the NSE in response to changes in Economic activity, Unpublished MBA-Thesis, University of Nairobi.

Painceira, J. (2010).The Role of Banks in the Korean Financial Crisis of 1997: An Interpretation Based on the Financial Instability Hypothesis, research on money and finance, Department of Economics, School of Oriental and African Studies.

Pana, E., Park, J., & Query, T. (2009). The impact of mergers on liquidity creation, Working Paper.

Patheja, A. (1994). Financial Management of Commercial Banks, South Asia Publications: Delhi

Pilbeam, K. (2005) Finance and Financial markets, 2nd ed., Palgrave Macmillan: New York.

Rauch, C., Steffen, S., Hackethal, A., & Tyrell, M. (2008). Determinants of bank liquidity creation - evidence from savings banks", Working Paper: Germen

Ricardo, D. (1817) On the Principles of Political Economy and Taxation. Piero Sraffa (Ed.) Works and Correspondence of David Ricardo, Volume I, Cambridge University Press, 1951,

Schwartz, A.J. (1995). Coping with Financial Fragility: A global Perspective. Journal of Financial Services Research 9,445-451.

Schwarz, K. (2010). Mind the gap: disentangling credit and liquidity in risk spreads. Department of Finance, the Wharton School. University of Pennsylvania, Philadelphia.

Sloman, J., & Kevin, H. (2007). Economics for business. Prentice Hall, Financial Times.

Stolowy, H., & Lebas J. M. (2006). Financial Accounting and Reporting, A Global Perspective. London, Cengage Learning EMEA

Tamari, M. (1966), Financial Ratio as a means of forecasting bankruptcy. Management International Review 4, 15-21.

Thakor, A.V. (1996). Capital requirements, monetary policy, and aggregate bank lending: theory and empirical evidence, Journal of Finance, Vol. 51, pp.279-324.

Tucker, I. B. (2007). Economics for Today's World. Thomson Southeastern

Tirole, J. (2010). Overcoming Adverse Selection: How Public Intervention Can Restore Market Functioning, American Economic Review, forthcoming.

Waciira, W. (1999).The Relationship between Liquidity and Macro Economic Factors-an Inter Industry Comparison. Unpublished MBA Project, University of Nairobi.

Yergin, A., & Stanislaw, S. (1998). Economic policy; Markets; Privatization; Deregulation; Economic history; Competition, International;

Zikmund, W. G,, Babin, B. J., Carr C. J., & Griffin, M. (2010). Business Research Methods, South Western, Cengage Learning, 8th Edition.

Appendix 1: List of Commercial Banks in Kenya

1) African Banking Corporation Ltd.
2) Bank of Africa
3) Bank of Baroda
4) Bank of India
5) Barclays Bank Kenya
6) CfC Stanbic Holdings
7) Chase Bank Kenya
8) Citibank
9) Commercial Bank of Africa
10) Consolidated Bank of Kenya
11) Cooperative Bank of Kenya
12) Credit Bank
13) Development Bank of Kenya
14) Diamond Trust Bank
15) Dubai Bank Kenya
16) Ecobank Kenya
17) Equatorial Commercial Bank
18) Equity Bank
19) Oriental Commercial Bank
20) Paramount Universal Bank
21) Prime Bank (Kenya)
22) Standard Chartered Kenya
23) Trans National Bank Kenya
24) United Bank for Africa
25) Victoria Commercial Bank
26) Family Bank
27) Fidelity Commercial Bank Limited
28) Fina Bank ltd
29) First Community Bank
30) Giro Commercial Bank
31) Guaranty Trust Bank Kenya
32) Guardian Bank
33) Gulf African Bank
34) Habib Bank
35) Habib Bank AG Zurich
36) I&M Bank
37) Imperial Bank Kenya
38) Jamii Bora Bank
39) Kenya Commercial Bank
40) K-Rep Bank
41) Middle East Bank Kenya
42) National Bank of Kenya
43) NIC Bank

Appendix II   Raw data: Liquidity of Commercial Banks

		CBK Liquidity Ratio (%)					
	Year	2008	2009	2010	2011	2012	2013
	Bank Name						
1	African Banking Corporation Ltd	43.50	44.30	40.95	34.64	42.50	38.0
2	Bank of Africa (K) ltd	35.50	42.70	42.00	26.10	25.60	34.5
3	Bank of Baroda	51.40	62.60	65.10	49.20	55.80	60.60
4	Bank of India	73.00	73.90	80.60	78.50	65.90	75.20
5	Barclays Bank Kenya Ltd	29.80	42.10	54.10	42.05	46.80	42.00
6	CFC Stanbic Holdings	33.20	65.50	36.80	37.80	46.40	67.90
7	Citi Bank	72.00	65.00	69.00	63.00	82.00	63.00
8	Chase Bank Ltd	22.00	35.80	42.40	47.20	38.00	40.50
9	Consolidated Bank of Kenya Ltd	21.00	29.00	32.90	27.60	47.40	27.5
10	Commercial Bank of Africa	42.70	39.10	44.71	44.95	47.62	41.12
11	Cooperative Bank of Kenya Ltd	33.10	34.90	39.40	27.20	35.8	32.6
12	Credit Bank Ltd	50.20	53.20	55.60	41.30	48.90	36.7
13	Development Bank of Kenya Ltd	29.00	29.00	40.00	36.00	45.90	38.6
14	Diamond Trust Bank Ltd	41.30	33.60	35.80	35.70	38.00	32.6
15	Dubai Bank Kenya	48.00	22.80	49.5	33.9	24.1	21.5
16	Ecobank Kenya Ltd	35.00	38.00	58.00	41.00	40.01	31.8
17	Equatorial Commercial Bank Ltd	44.02	36.34	39.10	36.50	35.66	34.61
18	Equity Bank Ltd	47.00	32.00	40.00	37.00	46.00	34
18	Family Bank Ltd	37.95	37.30	44.96	28.2	38.60	36.5
19	Fidelity Commercial Bank Ltd	29.90	32.90	32.70	30.60	34.3	42.6
20	Fina Bank Ltd	29.00	45.00	48.00	48.00	29.00	00.00
21	First Community Bank	73.00	32.00	40.00	48.00	40.1	28.7
22	Giro Commercial Bank Ltd	37.12	45.59	43.80	43.70	55.05	50.5
24	Guardian Bank	32.90	31.80	39.10	28.00	38.60	33.40
25	Guarantee Trust Bank Kenya	-	-	-	-	44.00	65.00
26	Gulf African Bank	59.00	28.05	28.90	38.00	29.00	33.80
27	Habib Bank	88.72	86.85	86.53	77.90	63.0	63.00
28	Habib Bank AG Zurich	73.90	74.50	78.80	73.40	86.3	82.4
29	I&M Bank Ltd	24.83	43.68	43.47	38.37	35.46	34.02
30	Imperial Bank Ltd	33.00	34.60	28.80	33.60	39.30	33.8
31	Jamii Bora Bank	-	-	27.00	146	62	42.4
32	Kenya Commercial Bank Ltd	31.60	28.10	30.70	31.30	35.90	33.3
33	K-Rep Bank Ltd	26.00	31.00	30.00	29.00	27.9	31.1
34	Middle East Bank (K) Ltd	49.65	45.10	42.40	32.29	40.89	23.00
35	National Bank of Kenya Ltd	31.00	35.00	41.00	34.00	30.00	42.00
36	NIC Bank Ltd	30.12	30.24	30.38	27.41	35.38	28.54
37	Oriental Commercial Bank Ltd	58.00	43.00	42.00	44.00	45.00	44.00
38	Paramount Universal Bank	59.00	51.00	60.00	58.00	66.00	63.00
49	Prime Bank Ltd	40.80	46.40	48.80	42.30	47.50	42.40
40	Standard Chartered Bank (K) Ltd	58.00	45.00	55.00	34.00	39.00	38.00
41	Trans-National Bank Ltd	82.00	66.00	77.00	67.00	60.4	49.6
42	United Bank for Africa	-	459.00	134.80	191.8	112.8	96.6
43	Victoria Commercial Bank Ltd	32.40	28.00	30.00	36.00	38.40	30.80
	Annual Average	**37.00**	**39.80**	**44.50**	**37.00**	**41.90**	**38.60**

Source; CBK Supervision Department; Annual Reports

Appendix III: Month- on -Month Overall Inflation Rates

Month/Year	Month –on- month inflation rates (%)					
	2008	**2009**	**2010**	**2011**	**2012**	**2013**
January	18.2	21.9	4.7	5.42	8.31	3.67
February	19.1	14.6	5.18	6.54	16.69	4.45
March	21.8	14.6	3.97	9.19	15.61	4.11
April	26.6	12.4	3.66	12.05	13.06	4.14
May	31.5	9.6	3.88	12.95	12.22	4.05
June	29.3	8.6	3.49	14.49	10.05	4.91
July	26.5	8.4	3.57	15.53	7.74	6.02
August	27.6	7.3	3.22	16.67	6.09	6.67
September	28.2	6.7	3.21	17.32	5.32	8.29
October	28.4	6.6	3.18	18.91	4.14	7.76
November	29.4	5.0	3.84	19.72	3.25	7.36
December	27.7	5.3	4.51	18.93	3.20	7.15
Total	**314.3**	**121**	**46.41**	**167.72**	**105.68**	**68.58**
Average	**26.19**	**10.08**	**3.87**	**13.98**	**8.81**	**5.715**

Source: Kenya Nation Bureau of Statistics

Appendix IV: Classification of Commercial Banks by Size

Large Banks
1. Kenya Commercial Bank Ltd
2. Standard Chartered Bank Ltd
3. Barclays Bank of Kenya Ltd
4. Co-operative Bank of Kenya Ltd
5. CFC Stanbic Bank Ltd
6. Equity Bank Ltd
Medium Banks
1. Bank of India
2. Bank of Baroda Ltd
3. Commercial Bank of Africa Ltd
4. Prime Bank Ltd
5. National Bank of Kenya Ltd
6. Citibank N.A.
7. Bank of Africa Kenya Ltd
8. Chase Bank Ltd
9. Imperial Bank Ltd
10. NIC Bank Ltd
11. Guaranty Trust Bank Ltd
12. I&M Bank Ltd
13. Diamond Trust Bank Kenya Ltd
14. Family Bank Ltd
15. Ecobank Ltd
Small Banks
1. Habib Bank Ltd
2. Oriental Commercial Bank Ltd
3. Habib A.G. Zurich
4. Middle East Bank Ltd
5. Dubai Bank Ltd
6. Consolidated Bank of Kenya Ltd
7. Credit Bank Ltd
8. Trans - National Bank Ltd
9. African Banking Corporation Ltd
10. Giro Commercial Bank Ltd
11. Equatorial Bank Ltd
12. Paramount Universal Bank Ltd
13. Jamii Bora Bank Ltd
14. Victoria Commercial Bank Ltd
15. Guardian Bank Ltd
16. Development Bank of Kenya Ltd

17. Fidelity Commercial Bank Ltd
18. Charterhouse Bank Ltd
19. K-Rep Bank Ltd
20. Gulf African Bank Ltd
21. First Community Bank Ltd
22. UBA Bank Ltd

Source; CBK Supervision Department; Annual Reports -2013