

**EFFECT OF MACROECONOMIC VARIABLES ON AVERAGE FINANCIAL
PERFORMANCE OF DEPOSIT TAKING SAVINGS AND CREDIT COOPERATIVE
SOCIETIES IN NAIROBI, KENYA**

BY

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DECLARATION

This Dissertation is my original work and has not been previously published or submitted elsewhere for the award of the degree of Master of Science (Finance and Investment) and has not been presented in any other University.

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ABSTRACT

The purpose of the study was to examine the effect of macroeconomic variables on average financial performance of Deposit Taking Savings and Credit Cooperatives in Nairobi Kenya. The study sought to establish the effect of interest rate, inflation rate and money supply on the average financial performance of Deposit Taking SACCOs (DTSS) in Nairobi, Kenya. The study was based on the international Fisher effect theory, classical theory of inflation and Baumol-Tobin Approach to transaction demand for money. The study used a descriptive design. Target population was 35 DTS registered by SASRA to operate up to December 2017 in Kenya. The sample size for this study comprised of 15 DTS operating in Nairobi Kenya, which were licenced to operate FOSA by SASRA. These are the DTSS whose data was available for the period of study. Quarterly data was collected for 20 years (1997 – 2016). Analysis was conducted using the vector error correction time series model. The results show that there was no statistically significant relationship between return on assets and lagged values of either themselves or of other variables at the 5% level of significance. The effect of lagged values of money supply on return on assets was however significant at the 10% level. On money supply, there was a statistically significant relationship between this variable's lagged values and itself (p value = 0.013). The lags of all other variables did not have a significant relationship with money supply. Pertaining the interest rates, it is evident that only the error correction term (p value = 0.000) impacted current interest rate significantly. Finally, Inflation rates had a statistically significant relationship with the error correction term (p value = 0.001), lagged values of itself (p value = 0.041), and lagged interest rates (p value = 0.017). Since the influence of money supply on returns on assets is significant at the 10% level, the conclusion is that the fluctuations in money supply have the highest prediction ability for variability in the financial performance of deposit taking SACCOs. It is therefore recommended that money supply targeting interventions should be incorporated in monetary policies of the Central Bank due to their ability to influence performance of financial services firms.

Key words: Macroeconomic variables, Financial Performance, Deposit Taking Saccos, Inflation rate, Interest rate, GDP, Money Supply.

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DEDICATION

This dissertation is dedicated to my family for the love, support both emotional and financial, and encouragement throughout my studies as i juggled between studies, work and family. For that, I say thank you.

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ABBREVIATIONS AND ACRONYMS

CAK	Cooperative Alliance of Kenya
CBK	Central Bank of Kenya
ECCOS	Ethics Commission for Cooperative Societies
GDP	Gross Domestic Product
KRA	Kenya Revenue authority
KUSCCO	Kenya Union of Saving and Credit Cooperative Society
ROA	Returns on Assets
ROE	Return on Equity
ROI	Return on Investment
SACCOs	Savings and Credit Cooperative Organizations
SASRA	SACCO Societies Regulatory Authority
DTS	Deposit Taking SACCOs
VEC	Vector error correction model

OPERATIONAL DEFINITION OF TERMS

Exchange rate	Price for which the currency of a country can be exchanged for another country's currency (Domingue, 2014)
Financial performance	Subjective measure of how well a firm can use assets from its primary mode of business and generate revenues (Saunders & Cornett, 2014)
Fluctuation	Change or variation in a quantity over time (Maeno, 2011)
Inflation rate	The rate at which the general level of prices for goods and services is rising and, consequently, the purchasing power of currency is falling (Dayan, 2015)
Money Supply:	The total amount of money in circulation or in existence in a country (Romer, 2012)
Interest Rate	The amount charged, expressed as a percentage of principal, by a lender to a borrower for the use of assets (Crispoldi, 2015)
SACCO	A type of a co-operative whose objective is to pool savings for the members and in turn provide them with credit facilities (Ndungo & Tobias, 2017)

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The economic performance in a country is judged by the stability in macroeconomic variables which include foreign exchange rate, rate of inflation, consumer price index, Money Supply, stock market index and interest rates. It is the expectation of policy makers at both the macro and micro levels in an economy that these variables would remain stable and favourable to sustain business growth. Moreover, it is the wish of potential and existing investors that these macroeconomic elements remain favourable so as not to threaten the returns of their securities (Romer, 2012). Changes in the Monetary policy in Variables such as interest rate and Money Supply may end up affecting financial performance of sectors in the economy dealing with finances, savings and credit cooperative organizations (SACCOs) included. The state of a country's economy affects the performance of its organizations.

The Central Bank of Kenya is responsible for formulating monetary policy to achieve and maintain price stability. The Central Bank also promotes financial stability, an effective and efficient payment, clearing and settlement system. The Central Bank also formulates and implements foreign exchange policies, holds and manages foreign exchange reserves, issues currency and is the banker for, adviser to and fiscal agent to the government. The Central Bank has several tools that it can use to counter changes in the market and influence price stability. Monetary policy decisions are made by the Monetary Policy Committee (MPC). (<https://www.centralbank.go.ke>).

Deposit taking Savings and credit cooperative societies (DTS) is part of the larger SACCO sub-sector in Kenya which comprises of the deposit taking and the non- deposit Savings and Credit Cooperative Organizations. Non-deposit taking SACCO societies are

composed of those SACCOs whose business is limited to mobilization of deposits (non-withdrawable) for purposes of lending to members. The DTS offer basic banking services and (demand deposits, payment services and quasi banking services known as ATMs) and Front Office Savings Activity (FOSA)(Kenya Financial Stability Report,2010). The SACCOs also known as Federation of cooperatives in French speaking countries are financial institutions that provide savings and credit services to their members. Membership is based on the principle of a common bond such as a common workplace, community or producers of a particular commodity. SACCOs do not target a specific income group but they generally serve the lower income markets. (WOCCU,2011).

The state Department in Kenya has seen the cooperatives being devolved to the County governments in the recent past where each county has a County Commissioner of Cooperatives. The cooperative industry in Kenya was rated the seventh largest in the world and the fastest growing in Africa (MOCD, 2017). The SACCO industry is part of the cooperative industry in Kenya, which has imparted on lives of many disadvantaged Kenyans over the years. SACCOs in Kenya may be categorised into financial and non-financial cooperatives. The primary purpose of the SACCO is to encourage savings among members from which they can borrow at affordable terms decided by themselves collectively or through the elected directors. The SACCO generates income which it uses to meet related costs. Any income that remains after these costs is paid out to members as dividends and interest based on their shares or deposits. The importance of SACCOs to households in Kenya has been confirmed by independent reports including Fin Access Household Surveys undertaken by Central Bank of Kenya (CBK) and National Bureau of Statistics. The 2016 report indicated that amongst the formal financial service providers, SACCOs are popular with households not only for credit but also for saving (SASRA,2017).

1.1.1 Macroeconomic Variables

Macroeconomics is the study of the economy as a whole (Romer, 2012). It focuses on the behaviour of an entire economy, which can be regional, national or international. Macroeconomic variables are variables pertinent to a broad economy at regional or national level and affect a large population (Khalid et al, 2012). These variables include; interest rates, economic output, employment and unemployment, population, inflation, foreign exchange rates, money supply, government budget balances and finance, international trade balances and finance, and productivity (Muchiri, 2012). These macroeconomic variables play a major role in determining the financial performance of various players of the economy. These variables are controlled by the Central Bank of Kenya through the Monetary Policy Committee which meets at least once every two months. The major macroeconomic variables are presented below.

Inflation is the sustained or persistent increase in the general prices of goods and services in the long run (Panic, 2015). This is brought about by the increase in earning which is not proportionate with the increase in the production of goods and services. Due to the case of more money chasing few goods general prices of goods and services are increase leading to significant reduction in disposable income and the purchasing power of the low-income earners bracket of population who comprise the majority and this ultimately leads to low level of savings and high rate of loan defaults (Cukierman, 2015).

Interest rate is the price paid in the money market for use of money or loans. Interest rate is the cost of borrowing money. Corb (2012) quoted by (Maigua & Mooni, 2016) argued that interest rate is the economic tool used by Central Bank of Kenya to control inflation and to boost economic development. Cowley (2007) defines interest rate as the price the borrower pays for the use of money borrowed from the lender or financial institution. It is expressed as a percentage of the amount borrowed (principal) charged by a lender to the borrower for

lending money. To the SACCOs who are the lenders, interest rate is a return or a source of revenue while to the borrower it is a cost. The interest rate is usually charged per month or per annum and is directly proportional to the risk levels of the borrower. Amount borrowed should be invested in activities that generate more return than the lending rate to make economic sense. The government has a role in fine tuning interest rates. The Kenyan Banking Amendment Bill (2016) became an act of parliament and therefore law in 2016. Amongst other provisions the law states that the maximum interest rate chargeable for credit facility in Kenya should not be more than four percent the base rate set and published by the Central Bank of Kenya. In Africa, at least twenty countries have at one point introduced interest rate caps (Wasike, 2016).

Gross Domestic Product (GDP) is the market value of all finished goods and services in a country within a specified period, mostly one year. GDP is the most commonly used macroeconomic indicator used to measure economic activity within an economy (Mwangi, 2013). Picardo (2016) defines GDP as the total value of goods and services produced within a country's borders in a specific time. GDP per capita is often considered as an indicator of a country's growth rate. GDP per capita is obtained by dividing the GDP by the total population of a country (Picardo, 2016). GDP per capita has a close relation with the trend in living standards over time. GDP fluctuates due to the business cycle, rising when the economy is booming. During periods of declining GDP growth rate, the demand for credit falls which in turn negatively affects profitability of a SACCO. On the other hand, a growing economy is expressed by a positive and increasing GDP and leads to growth in profitability (Instopedia).

Money supply is the entire stock of currency and other liquid instruments circulating in a country's economy at a particular time, Money supply is also known as money stock and includes safe assets like coins, cash and balances held in checking and saving accounts that

businesses and individuals can use to make payments or hold cash in short term investments. Money supply has an impact on price level, inflation and business cycle. The money supply data is collected, recorded and published periodically by the central bank. Money supply is measured and classified as M_0 , M_1 , M_2 and M_3 according to the types and size the account is kept. M_0 and M_1 , also known as narrow money includes coins and notes in circulation and other money equivalents that can be converted easily to cash. M_2 includes M_1 and in addition short term time deposits in banks and certain money market funds.

M_3 includes M_2 and in addition long term deposits. M_3 is a category of money supply which includes all funds in M_3 , individual holdings in accounts, savings, bonds, treasury bills with maturity of less than one year, commercial papers and bankers acceptances. The central bank of a country is the main source of money supply in the country. The other major source of money supply being the banking system of the country. Banks create money supply in the process of borrowing and lending money to the public. Money created by the commercial banks is called credit money while money created by the central bank is called high power money. The high-power money and the credit money constitute the most common measure of money supply of a country.

Foreign Exchange Rate is the rate of exchange of one currency for another or the conversion of one currency into another currency. Foreign exchange levels are related with other major economic variables including growth, income, current account balances, consumption and trade. Changes in foreign exchange rates have a powerful effect on imports and exports of the countries concerned through effects on relative prices of goods. Exchange rates are considered an important conditioning variable for counter- inflationary policy. This stems from the basic make-up model of pricing and the view that nominal wages tend to adjust to price changes (Langat & Nyandema, 2013).

1.1.2 Financial Performance of SACCOs

Financial performance is a measure of how well a firm uses assets from its primary mode of business to generate revenues. The common indicators of financial performance are Return on Assets (ROA), Return on Investment (ROI), value added and profitability margin (Almazari, 2011). ROA measures the profit aspect and those related to assets employed to generate the profit. When broken down, it consists profitability ratio and asset turnover ratio. Return on Equity (ROE) measures a firm's efficiency in generating profits from every unit of shareholders' equity.

The most common measures of financial performance are profitability ratio, liquidity ratio, leverage and efficiency ratio (Mwaura,2005). The ratios can be computed directly from financial statement information. Balance sheet and income statement items are used to compute ratios to analyze financial statements. These ratios are liquidity ratio, current ratio, quick ratio, efficiency ratio, profitability ratio and leverage ratio. The profitability ratio involves net margin, earnings before income and tax(EBIT), ROA and ROE.The advantage ratio involves debt, equity, debt: asset ratio (Johnston, 2017). These ratios are used to assess the ability of a business to generate earnings in comparison with all its expenses and other relevant costs during a specific time period. Financial performance of any organization shows how well or poor an organization is performing in the industry and over a period (Horne, 2005).

Cole (2004) measured financial performance using return on investment, operating income, earnings before interest and taxes, and net asset value. There are two major reasons as to why organizations should have financial performance measurement. The first one is to produce financial statements at the right time. Secondly, financial statements should be analyzed to produce information about the performance of the organization, which must be used to improve that performance (Johnson & Scholes, 2007) Richard et al (2009) measured

financial performance using ROA and ROE. Njoroge (2008) used ROA and ROE to examine determinants of financial performance in SACCOs in Nairobi.

One measure of financial performance should not be taken on its own. Instead, a thorough assessment of a firm's performance should take into account many different measures since there are several factors that determine the performance of an organization. Performance of the SACCO subsector is based on the financial data and information extracted from audited financial statements and reports (SASRA, 2012). It is a legal requirement that audited accounts of a SACCO to be registered with the commissioner of Cooperative Development before presentation to members at the annual general meeting (SASRA, 2012).

1.1.3 Savings and Credit Cooperative Societies (SACCOs)

A Savings and Credit Cooperative Society(SACCO) is a financial institution owned and controlled by its members, which is operated for the purposes of promoting thrift, providing credit at low interest rates and providing other financial services to its members (Makori,2013). A SACCO is an autonomous association of persons united voluntarily to meet their common economic cultural needs and aspirations through a jointly owned and democratically controlled enterprise (International Cooperative Alliance ICA, 2005). The key idea behind a SACCO is to pull resources, eliminate the intermediaries and to achieve a common goal or interest (Ministry of Cooperative Development and Marketing, 2007).

Globally SACCOs began when a group of people known as Rochdale Pioneers in Rochdale village, in England formed the first Co-operative Society when Britain was undergoing industrial revolution in 1844. The Rochdale Pioneers was composed of a group of working-class people who came together to change the unfair society they were living in,

after being fed up with dishonest and corrupt shopkeepers selling poor quality products at high prices.

For this reason, they decided to take matters into their own hands and pooled the few resources they had and got enough money to open their own shop and pledged to only sell quality, unadulterated products, sharing the profits fairly with their customers. Rochdale pioneers decided to draw up some principles, which guided the operations of co-operative societies (Holyake, 2014). The seven principles known as Co-operative principles are currently used all over the world.

The seven Co-operative Principles are open and voluntary membership; democratic member control; member economic participation; autonomy and independence; education, training and information; cooperation among co-operators and concern for community (Holyoake, 2014).

In India, the cooperative movement originated from agriculture and allied sectors. Farmers formed the movement towards the end of nineteenth century and it formed the mechanism for pooling their meager resources to solve common problems relating to credit, supplies of inputs and marketing of agriculture produce. This led to the formation of the cooperative Act in 1904. In 1958 the National Development Council (NDC) recommended a national policy on cooperatives. The number of all types of cooperatives has increased over the years and the total membership of cooperatives has increased. (Jayakodi & Sivakumar, 2014). These cooperatives are welfare driven rather than profit oriented and are legal institutions supported by the government.

The cooperatives face the problems of inadequate capital, poor member participation, poor managerial skills and frauds (Siddaraju, 2012). In Malaysia, cooperatives are community based and have democratic roots. They are flexible and have participatory

involvement, which makes them well suited for economic development. The cooperatives promote community spirit, identity as well as help in poverty alleviation, job creation, economic growth and development. The cooperatives however face challenges like lack of capital, improper, governance, poor financial performance, managerial inadequacies and noncompliance with legislations laid down by the Cooperative Act of 1993 in the country (Tehrani et al, 2014)

1.1.4 Savings and Cooperative Societies in Kenya

In Kenya, the co-operative movement started with formation of Lumbwa Co-operative Society in 1908 by some European farmers. In 1931, the cooperative society's ordinance became law and societies could formally be registered as cooperatives. The first society to be registered under the new Act was the Kenya Farmers Association (KFA), which started as a company in 1923. In 1945 a new Cooperative Ordinance was passed in the legislative Assembly, which allowed Africans to form Co-operative Societies. After independence, the Co-operative Societies Act of 1966 replaced this ordinance. By independence time, there were over 600 primary cooperatives in Kenya with the Kenya National Federation of Cooperatives (KNFC) formed in 1964 (Maina & Kibanga, 2004). Primary cooperatives comprise of groups of individuals who are producers of products such as tea, sugar, milk, coffee or consumers who join up to save and obtain credit most conveniently (Njoroge, 2003).

Most primary cooperatives operate at the village level, sub county level, county level and a few at national level. Secondary cooperative societies, which are also referred to as unions, are generally composed of primary cooperatives as their members. All cooperative societies are affiliated to a national body known as the Cooperative Alliance of Kenya (CAK)

while individual SACCOs are affiliated to the Kenya Union of Saving and Credit Cooperative society (KUSCCO) (Ministry of Cooperative Development and Marketing, 2007).

The co-operative movement in Kenya is an important player in the social economic development as envisaged in Kenya's Vision 2030. Cooperatives cut across all sectors of the economy and provide an important framework for mobilization of both human and capital resources. To ensure an enabling environment for cooperatives to prosper in Kenya, the Ministry of Cooperative Development and Marketing established the SACCO Societies Regulatory Authority (SASRA) to regulate deposit taking SACCOs, the Ethics Commission for Cooperative Societies (ECCOS) to address governance matters, revitalized the Cooperative Alliance of Kenya (CAK) which is the apex body of cooperatives, to enable it play a more critical role in modernization of the cooperative sector including participation in serious investments (Fujo & Ali, 2009). The cooperatives have an advantage over other financial institutions due to the geographical spread of their membership when compared to banks whose outreach is limited to branch network. This makes the cooperative to reach the poor more effectively.

The Ministry further ensured that a review of policies in line with the new constitutional requirements on the devolved government and the revision of the Cooperative Development Policy and the Cooperative Societies Act Cap 490 alongside revitalizing key commodity cooperatives in areas such as coffee, dairy and horticulture (Ministry of Cooperative Development and Marketing, 2007).

SACCOs are autonomous associations of persons united voluntarily to meet their common economic and social needs through a jointly owned and democratically controlled enterprise (WOCCU, 2009). Members own them. SACCO's are important financial

intermediary in Kenya providing savings, credit and insurance services to a large portion of the population (KUSCCO, 2003).

SACCOs are established under the Co-operative Societies Act Cap 490. They are important form of financial intermediaries, which over the years have played vital role in provision of financial services to their members. SACCOs provide an avenue for savings and offer affordable credit facilities to its own members. They are known to offer loans in multiplicity of long term deposits commonly referred to as shares. Members deposit money in form of savings and shares and the SACCO uses this to advance loans and other credit facilities to the members. SACCOs are formed and owned by members with an aim of improving members' welfare. They grant loans at low interest rates (lower than bank lending rates) and dispatch dividends each year (Wanjiku, 2016).

SACCOs use the member guarantee as security besides the member's shares to award a credit facility to a member. Other members should guarantee a member who wants a loan. In the recent past, however, SACCOs have adopted the use of collaterals like title deeds logbooks as security for loans (SASRA Sacco supervision report, 2013). SACCOs need to perform well and grow like the other financial intermediaries if the number of people in Kenya living below the poverty line is to reduce.

The SACCO sector is the most vibrant and dynamic in Africa (ICA Report, 2006). The last 45 years have seen the SACCO movement evolve into a big force for the social and economic transformation of Kenyan people. The sub sector has a membership of over 3 million making it the largest in Africa, with combined net assets of Ksh 393 billion based on unaudited financial statements, up from Ksh301billion in 2014. This growth is funded by deposits, share capital and retained earnings (SASRA, 2016)

Capital which is a key measure of financial health of a SACCO grew up by over fifty percent from Ksh 33 billion in 2014 to Ksh 58 billion by close of December 2016 (SASRA, 2017). In Kenya we have 7,400-registered SACCOs equivalent to 42% of all co-operatives. Out of the 7,400 SACCOs, 3800 are active and 215 have FOSAs offering basic banking services across the country, with 124 SACCOs licensed (SASRA, 2017). The SACCO movement has mobilized over Ksh.150 billion in savings (more than 30% of the National Domestic savings) and loans amounting to Ksh. 120 billion (MOCMDM, 2012).

In 2006, the SACCO introduced the Micro Savings and Credit Activity (MSCA) for small savers coming in as groups to save and borrow. To date, the SACCO has over 53,503 members classified as; 18,251 MSCA members, 20,667 FOSA members and 14,585 BOSA members (Imarika SACCO, 2015).

1.2 Statement of the problem

The importance of SACCOs in Kenya has been confirmed by independent reports including Finances Household Surveys and Central Bank of Kenya and Kenya Bureau of Statistics. The 2016 survey indicated that amongst the formal financial service providers, SACCOs are popular with households for not only credit but also savings (SASRA, 2017). However, many SACCOs operate without knowing the effect of macroeconomic variables on their financial performance. The capping of interest rates in Kenya in 2016 puts SACCOS in stiff competition with banks since SACCO members are exposed to borrowing from banks at interest rates close to the rates offered by the SACCOs. The Kenyan Banking Amendment bill (2016) became an act of parliament and therefore law in 2016. Amongst other provisions the law states that the maximum interest rate chargeable for a credit facility in Kenya should

not be more than four percent the base rate set and published by the Central Bank of Kenya (Wasike, 2016).

In today's business environment Deposit Taking SACCOs are competing with commercial banks for customers. Banks are offering unsecured loans without requiring deposits from members and at a long repay duration (Mureithi, 2008). Deposits Taking SACCOs have therefore resulted to borrowing from commercial banks to satisfy their members' demands for loans (Ademba, 2006). SACCOs are already playing their critical role of savings mobilization for investments. Many rural and urban Kenyans now own homes and other businesses enterprises courtesy of funds through their SACCOs. Kenya continues to enjoy the fastest growing economy in East Africa, her service industry performing better than any other sector in the economy (Tok, 2007).

The SACCOs financial performance is generally considered an important pre-condition for long term survival and success of SACCOs. The SACCO performance significantly affects the achievement of other financial goals (Kosmidouet al, 2006). There are internal and external factors that affect the financial performance of SACCOs and the members need to address them if long term goals of SACCOs are to be achieved. A study by Kiptoo & Wanyoike (2015) on effect of push inflation on financial performance of SACCOs in Eldama Ravine revealed that there was a weak relationship between financial performance of SACCOs and cost push inflation. Nzuve (2016) looked at impact of macroeconomic factors on financial performance of deposit taking microfinance institutions in Kenya. She looked at GDP, exchange rate, National savings rate, employment rate and inflation. She concluded that macroeconomic variables have an influence of financial performance of deposit taking microfinance institutions in Kenya. Desaro (2012) did a study on effect of macroeconomic factors on financial performance of commercial banks in Kenya. She concluded that macroeconomic variables can influence the performance of commercial

banks. Olweny and Omondi (2011) sought to find out the impact of macroeconomic factors on the performance of stock market. The results showed evidence that foreign exchange rate, interest rate and inflation rate have a significant effect on stock market volatility. From the reviewed empirical literature, the effect of Central Bank regulation through the macroeconomic factors in DTS in Nairobi has not been covered.

1.3 General objective of the study

The general research objective was to examine the effect of macroeconomic variables on average financial performance of Deposit Taking SACCOs in Nairobi Kenya.

1.3.1 Specific objectives

The study was guided by the following specific objectives

- (i) To determine the effect of interest rate on the average financial performance of Deposit Taking SACCOs in Nairobi, Kenya.
- (ii) To determine the effect of inflation rate on the average financial performance of Deposit Taking SACCOs in Nairobi, Kenya
- (iii) To establish the effect of Money Supply, on the average financial performance of Deposit Taking SACCOs in Nairobi, Kenya.

1.4 Research questions

- (i) What is the relationship between interest rate fluctuations and the average financial performance of Deposit Taking SACCOs in Nairobi Kenya?
- (ii) What is the relationship between inflation rate fluctuation and the average financial performance of Deposit Taking SACCOs in Nairobi, Kenya?
- (iii) What is the relationship between Money Supply and the average financial performance of Deposit Taking SACCOs in Nairobi, Kenya?

1.5 Significance of the Study

The findings of this study will be important to the SACCOs' management, researchers, academicians and scholars, finance professionals, and policy makers. The study will be useful to the SACCOs, as the members will know whether the management is making viable decisions based on macroeconomic variables.

The study will be of importance to those in management since they can tell the relationship between financial performance of the SACCOs and macroeconomic factors. To academicians, scholars and researchers, this study will open up new areas that have not been studied hence arouse curiosity in trying to dig deeper in this field especially those who may be interested in conducting further research on this area will undoubtedly find this study to be a significant point of reference for literature and research gaps.

The study will also be useful to government agencies such as Central Bank of Kenya and KRA and policy makers this will offer a useful basis to guide them in decision-making process especially when formulating policies such as fixing the interest rates and legislations that govern the operations of SACCOs in Kenya.

1.6 Assumptions of the Study

The study assumed that during the period of the study the macroeconomic variables being studied did not experience major fluctuations. The study also assumed that none of the SACCOs in the study was deregistered by SASRA.

1.7 Delimitations of the Study

Out of the 164 licensed DTS in the Country, this study focussed on 35 DTS in Nairobi County. Only 15 of the 35 had data available for the period of study, which is 20 years. This study focussed on the chosen macro-economic factors affecting the financial performance of DTS specifically in Nairobi County. Specifically, it narrowed down and focussed on the effect of money supply, interest rates and inflation rates on average financial performance of the DTS. The Money Supply was used as a proportion of GDP. The study period was 20 years between 1997 and 2016 where quarterly data was used. The variables selected were those perceived to have highest effect on financial performance of DTS and that were supported by previous empirical studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section presents the literature review. It explores the various theories that will anchor this study, other related studies on the effects of macroeconomic factors used by Central Bank for regulation on average financial performance of DTS in Nairobi County and the conceptual framework of the study.

2.2 Theoretical framework

This section presents a review of theories that anchored this study. These included the international Fisher effect theory, classical theory of inflation and Baumol-Tobin Approach to transaction demand for money.

2.2.1 International Fisher Effect Theory

This theory was developed by Irving Fisher in his book *The theory of interest (1930)*. It uses market interest rates to explain why interest rates change over time. The international Fisher effect states that exchange rates changes are balanced out by interest rates changes. The Fisher theory argues that real interest rates across countries are equal due to the possibility of arbitrage opportunities between financial markets, which occur in form of capital flows. Real interest rate equality implies that the country with the higher interest rate should also have a higher inflation rate, which in turn makes the real value of the country's currency decrease over time (Gopinath & Rogoff, 2014). The relationship between relative interest rates and

foreign exchange rates is explained within the interest rate theory of exchange rate expectations. If the international fisher effect holds, interest rates in appreciating currencies tend to be low enough and in depreciating currencies high enough to offset expected currency gains and losses (Keynes, 2016). The international fisher effect (IFE), suggests that foreign currencies with relatively high interest rates will tend to depreciate because the high nominal interest rates reflect expected rate of inflation (Gopinath & Rogoff, 2014).

This theory informed the current study in that interest rates fluctuations encourage or discourage levels of borrowing. The capping of interest rates in Kenya by the Central Bank has reduced the bank lending rates to levels close to the lending rates of the SACCOs. The subsequent buying off of loans from the SACCOs by the banks reduces the source of income of the SACCOs.

2.2.2 Classical Theory of inflation

The classical theory of inflation attributes sustained price inflation to excessive growth in the quantity of money in circulation. This theory explains how the aggregate price level gets determined through the interaction between money supply and money demand. The classical theory traces the behaviour of inflation back to the most basic forces of supply and demand. The classical theory allows inflation to be studied independently without reference to interest rates, unemployment and the other macroeconomic variables, which makes the neoclassical theory of inflation very useful (Dvali & Gomez, 2014).

The classical theory is also useful since it reveals inflation as the erosion in the purchasing power of money engineered through policy actions taken by the Central Bank. The study by Baumann & McAllister (2015) focuses on hyperinflation episodes that have occurred in various parts and in various times throughout the world economic history. In all

the cases where inflation rate exceeds a hundred per cent per annum, there is also a high rate of growth in the money supply. In all the cases, hyperinflation stops as soon as the central bank takes action to restrain the monetary expansion (Baumann & McAllister, 2015).

This theory informed this study in that in periods of high inflation consumers with fixed income have a low purchasing power due to the reduced value of money, due to the reduced value of money. This leads to reduced demand for products. Inflation also increases the cost of production. This reduces the saving power and may affect the performance of SACCOs.

2.2.3 Baumol-Tobin Approach to Transaction Demand for Money

The Baumol-Tobin approach is also known as Inventory Theoretic Approach and is a significant improvement of the Keynesian theory of transaction demand for money. Baumol and Tobin considered money together as being held for all purposes and held together as real cash balance. Keynes had considered transaction precautionary and speculative demand for money separately. Keynes had linked the demand for money to income and interest while Baumol-Tobin introduced another variable, the cost of transforming real cash balance into interest bearing bond. Macroeconomics, McConnel, Campell R (200035262).

The Baumol-Tobin model considers the hypothetical individuals who receive an income paid at the start of a period and expenditure incurred evenly throughout the period. Incomes that the subjects get at the start of the period can be deposited to a greater or lesser extend in various assets. The rest of the income is used for expenditures. The mathematical derivation of subjects' behaviour is shown in the following equation, which express the transactions demand for money.

$$M^D = \sqrt{\frac{b-y}{2r}}$$

Where:

b= Transaction costs for intermediating a sale (including transport, loss of time).

y= Amount of money which the subject will receive at the start of a period.

r= Rate of return on the bond.

The major finding of this model is the conclusion that the level of interest rate influences money holding for transaction purposes. This theory helps the researcher to articulate the importance of the money in circulation and the effect it has in the saving patterns. When there is excess money, people are motivated to save a portion of the money and this increases capital in the SACCOs and this increases financial performance of the SACCOs.

2.3 Empirical Review

In this section, the researcher reviews the existing literature surrounding the effect of macroeconomic variables on financial performance. The researcher looks at different ways in which researchers have measured the effect of various macroeconomic variables on performance.

2.3.1 The effect of interest rate on the financial performance of SACCOs

Interest rate can be defined as the amount of interest paid per unit time articulated expressed as a percentage of the amount borrowed. The cost of obtaining cash measured in shillings

every year per sum acquired is the interest rate. Nominal loan fee can be measured on money related terms not as far as products. The ostensible loan cost measures the yield in cash every year per the sum contributed while the genuine financing cost is ascertained as the ostensible loan cost less the rate of expansions (Okiro & Ndungu, 2013). A considerable measure has been explored as far as loaning exercises of different store cash banks. A few assessments thought on the components in charge of banks readiness to stretch out much credit to some part of the economy, while some talked about impact of such augmentation of credit on profitability and production.

Holtgrave & Crosby (2003) carried out a linear regression analysis to access the effects of banking behaviour in Africa. He concluded that interest rates charged has the significant effect on the lending behaviour. People are encouraged to borrow money by low interest rate charged. The lower the interest rates the more people will tend to borrow money and finally the improved performance of financial institutions. Kariuki (1995) adopted a regression model to evaluate the effect of interest rates, determinants and concluded that as the financial sector incorporates more with world markets, returns on foreign assets will play a noteworthy role in determination of local interest rate. SACCOs and other financial intuitions decisions to advance out money are affected by many factors such as the predominant interest rate, the volume of deposit, the level of their domestic and international venture, liquidity ratio, prestige and public recognition.

The loaning practices in the world can be traced back to the period of industrial revolution, which has a significant effect on the production and commercial activities thereby bringing about the need for large capital outlays for projects. According to Holtgrave & Crosby (2003), Interest rates play an imperative role in enhancing economic activities and such financial authorities should ensure suitable determination of interest rate level that will break the double edge influence of interest rate on savers and local investors.

A bank ought to also consider how interest rate risk may act mutually with other risks and finally affecting the banks (Van Devente & Mesler, 2013). The time of shabby advances that around two million Kenyan employees right now appreciate from SACCOs is bit by bit reaching an end as high organizations cost and new control apply weight on the managing of cooperative societies. A few investment funds and credit helpful social orders have expanded their loaning rates for back-Office items, the advance offered on the quality of individuals reserve funds from a normal of one percent for every month to approximately 1.5 and two percent for each month (Van Deventer & Mesler, 2013).

Ngumi (2014) adopted an ordinary least square method to ascertain the assessment of the effects of interest rates deregulation in enhancing the financial performance of SACCOs. They concluded that interest rate plays a noteworthy role in improving economic activities therefore, monetary authorities should make sure that appropriate determination of interest rate level that will break the double edge effect of interest rate on savers and local investors.

2.3.2 The effect of inflation rate on the financial performance of SACCOS

Empirical literature has investigated the effect of inflation on financial sector performance. This can be traced in the study of Bashir (2003) who stated in a specific manner the emphasis of the recent theories on how increase in inflation effect credit market frictions with negative repercussions for financial sector performance. They further concluded that the volume of bank lending and performance in turn tend to decrease as the rate of inflation rises in a given economy. This further affects the volume of equity market trading in the end. Kariuki (2016) found a non-linear, significant negative relationship between inflation and banking sector. They attested the existence of the rapid diminishing trend on banking lending activities as inflation increases marginally that leads to a discrete drop in the financial sector performance.

It is further explained that the activities of bank lending rapidly reduces as inflation increases prior to its threshold level.

This heavily affects the process of effective and efficient resource allocation in the financial sector. Duncan & Tirimba (2015) used different countries data on inflation and financial sector performance indicators and the result shows that inflation has a negative incidence on financial sector performance even though there was no evidence of thresholds level after controlling for simultaneity and ignore biases on variables. Although, he argued “a marginal increase in inflation is harmless to stock market performance and banking sector development whatever the rate of inflation.”

According to Fredrick (2013) the effect of inflation uncertainty on real economic activities using data from four industrialized countries. The result indicated differential impact of inflation on output growth in different countries studied. They argue that the effect depend on the structure and financial pattern in different countries. Moreover, Wainaina (2014) constructed a model and employ a cross sectional data and found a negative significant correlation between the country’s financial services and the rate of inflation. In the words of Olando & Mbewa (2013) high and uncertain inflation rate is found based on both time series and panel approaches to be detrimental to stable financial sector performance. Thus, low level of inflation serves as a prerequisite condition for attaining a stable and deep financial sector. They concluded that the effect is more vulnerable to market-based financial system than bank-based financial system.

Mathuva and Kiweu (2016) found a direct correlation between inflation and decrease of absorbed deposit and loan given capacities of banks. Therefore, any increase in the rate of inflation will lead to a corresponding decrease in banking system performance. Despite a quite number of studies discovered a negative relationship between inflation and bank performance, in contrast, some studies revealed a positive relationship such researchers

include Abdullahi (2014) who reported inflation as a macroeconomic variable that have a positive relationship with bank profitability and performance whereas a negative relationship exist between interest rate and bank profitability.

2.3.3 The effect of Money Supply on the financial performance

The performance of banking industry in Europe was reviewed between the periods 1994 to 1998 by Pao and Tsa (2011). The ordinary least square technique and fixed effects model was used and the findings showed that interest rate has a positive significant effect but GDP growth has a significant negative impact on ROA. Kosmidou (2008) used a cross sectional regression on the profitability of 583 union domestic banks in Europe and the result revealed a significant positive effect of gross domestic product on profitability.

Hassan & Bashir (2003) used 43 Islamic financial institutions Eight (8) years financial data. Their findings showed a significant positive impact on profitability of those financial institutions. Bashir (2003) applied a linear estimation on 14 Islamic banks return between 1993 and 1998 on Eight (8) Middle Eastern countries. The result showed a positive impact of the variables that was used. Shafie & Haron (2004) proved a direct relationship between inflation rate and ROA but indirect relationship between real interest rate and ROA from 1984-2002 on five (5) major Islamic banks-using statistical means.

Wong and Sung (2006) found that Gross Domestic Product (GDP) and inflation have a significant impact on asset returns using a feasible generalized least square method. Anwar & Herwan, (2006) focused on Indonesian banking industry. The result showed a significant relationship of inflation, real interest rate and economic growth with ROA but the result was the opposite with ROE.

Kosmidou, Tanna and Pasiouras (2005) carried out a research on United Kingdom (UK) commercial banks profitability. The results revealed a strong positive relationship of inflation rate, interest rate and Gross Domestic Product (GDP) on (2006) applied a linear regression model to appraise 71-132 financial institutions in South-Eastern Europe between the year 1998 and 2002 using unbalanced panel data. Their findings show that during the periods of high inflation, earnings was high and an insignificant effect of GDP similar result was also found by Havrylchyk & Jurzyk (2006) from a study of SACCOs in Eastern and Central Europe.

Mudibo (2005) discussed some of the factors affecting performance of SACCOs as weak regulation, limited product and services, low marketing and poor image. Rodenholm and Dominique (2013) studied the effect of macroeconomic factors on REIT market securities which was studied comparatively with that of Switzerland and Sweden. The research investigated the extent to which macroeconomic indicators influenced REIT stock prices prior to and after the 2007 financial crisis outbreak. It was established that macroeconomic factors affected the stock prices of the REIT market at different levels among small markets and are not consistent in a period just before and after the crisis.

Aburime (2008) researched on the profitability of financial institutions in Nigeria and found that inflation rate and interest rate have a significant relationship with ROA and this affects Sacco's profitability positively. Suffian & Chong,(2008) applied a linear regression on bank profitability in Philippines. Their findings revealed an insignificant positive impact of market capitalization and GDP on ROA but found a negative impact of inflation.

Overtoom & Vong (2008) studied five large financial institutions in Macao using a balanced panel data. The result of the linear model showed a strong impact of inflation on ROA, but the result showed that interest rate and GDP did not reveal any effect. Shaher, Kasawneh & Salem (2011) found positive relationship between domestic product and

Earnings. Khrawish (2011) studied macroeconomic indicators that affect Jordanian listed financial institutions including SACCOs. Solovjova (2011), carried out a comparative study of large five financial institutions during the financial meltdown in Latvian commercial banks. The result showed that GDP growth had a positive impact on profits, but inflation affected ROA negatively.

2.4 Research gaps

Scholars such as Okiro and Ndungu (2013), Holtgrave and Crosby (2003) and Kariuki (1995) adopted simple linear regression to determine the effect of interest rate on the financial performance of SACCOs. They indicated that there is a positive relationship between interest rates and financial performance of SACCOs. These studies did not reveal if the effect was significant. As such, the current study will determine the significance effect of interest rates.

Duncan and Tirimba, (2015) used different countries data on inflation and financial sector performance indicators and the result shows that inflation has a negative incidence on financial sector performance even though there was no evidence of thresholds level after controlling for simultaneity and ignore biases on variables. Their study also did not show the level of significance; therefore, this study determined the significance effect of inflation on the financial performance. Olweny & Omondi (2011) sought to find out the impact of macroeconomic variables on the performance of stock. The results showed evidence that foreign exchange rate, interest rate and inflation rate have a significant effect on stock return volatility. Desaro (2012) did a study on the effect of macroeconomic variables on financial performance of commercial banks in Kenya. He found that ROA was negatively correlated with the exchange rate. Wanjala (2014) did a study on macroeconomic determinants of stock

market performance in Kenya. The study followed descriptive research design and used secondary data.

The results showed a positive relationship between the chosen macroeconomic variables and stock market performance in Kenya. Gikonyo and Wanyoike (2015) looked at effect of cost push inflation on financial performance of SACCOs in Eldama Ravine sub location. The study found out that cost-push inflation had an influence on financial performance of SACCOs. Nzuve (2016) looked at impact of macroeconomic factors on financial performance of deposit taking microfinance institutions in Kenya. She looked at GDP, foreign exchange rate, National savings rate, employment rate and inflation.

From the above review, most previous studies on effect of macroeconomic variables have concentrated on the banking industry, manufacturing industry and the stock market. Those that have studied effect of macroeconomic variables on financial performance of SACCOs have concentrated on SACCOs in other counties outside Nairobi. This study sought to fill the gap by using the average ROA of the selected SACCOs in Nairobi that are registered with SASRA.

2.5 Conceptual Framework

The conceptual framework shows the relationship between the independent and the dependent variables of the study. It is a graphical or diagrammatic representation of the relationship between variables in a study. It helps the researcher to see the proposed relationship between the variables easily and quickly (Mugenda & Mugenda, 2003).

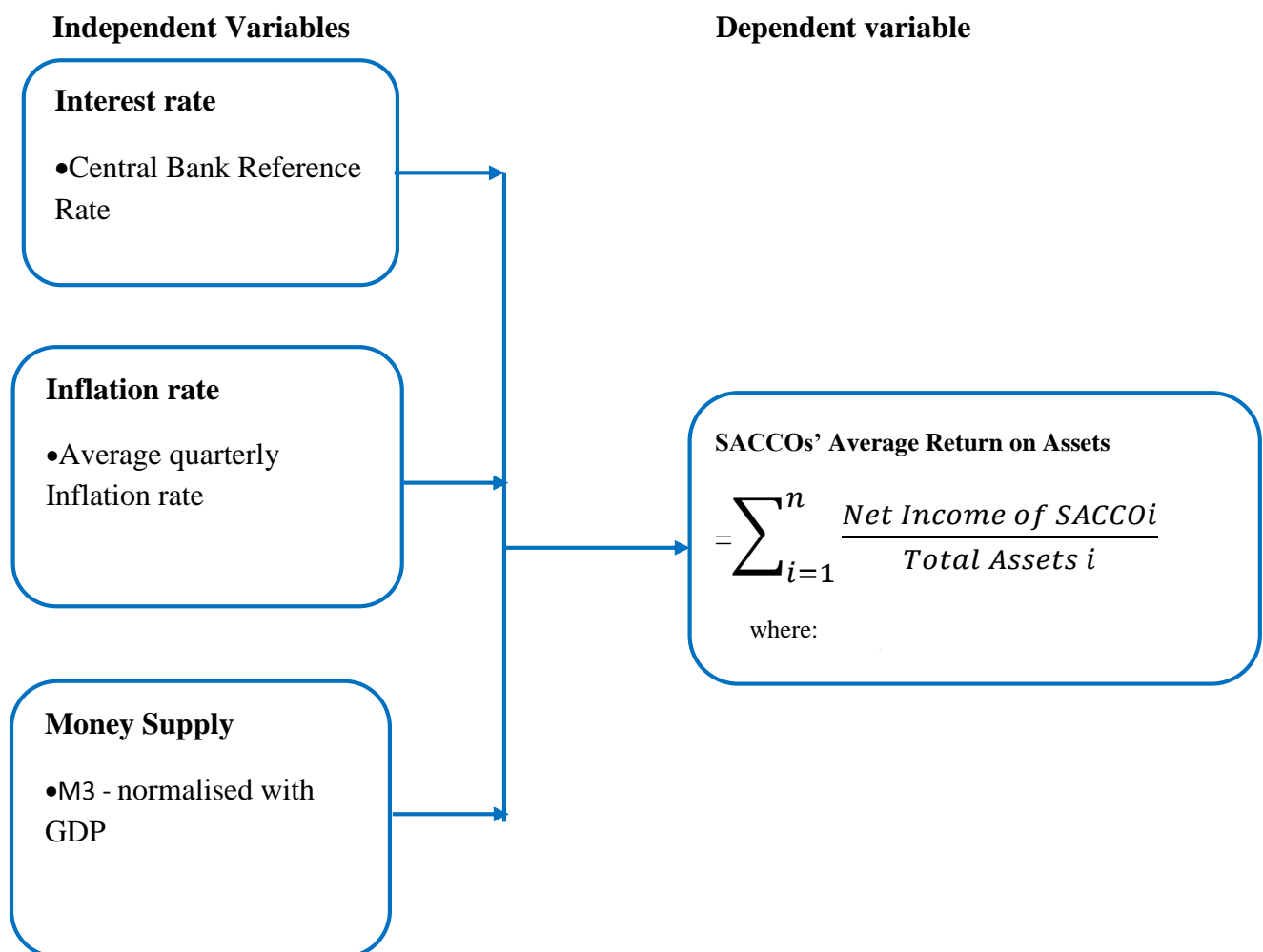


Figure 2.1: Conceptual Framework

2.6 Operationalization of variables

Table 2.1: Operationalization of variables

	Variable	Indicators	MEASURE
Dependent Variable	Financial Performance	Average quarterly ROA of deposit taking SACCOs in Nairobi	<ul style="list-style-type: none"> Average ROA $= \sum_{i=1}^n \frac{\text{Quarterly Net Income of SACCO } i}{\text{Total Assets } i}$ where: n=number of SACCOS
Independent variables	Interest rate	<ul style="list-style-type: none"> Average quarterly interest rate 	<ul style="list-style-type: none"> Quarterly Central Bank Reference Rate(CBRR)
	Inflation rate	<ul style="list-style-type: none"> Average quarterly inflation rate 	<ul style="list-style-type: none"> Quarterly Consumer Price Index(CPI)
	Money Supply	<ul style="list-style-type: none"> GDP – normalised Money Supply 	<ul style="list-style-type: none"> Average quarterly Money Supply divided by GDP

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter covers the research design, determination and identification of the population sample size and sampling techniques, the instrument of data collection and methods of analysing data.

3.2 Research design

The study used a descriptive design to examine the effect of selected Macro economic variables on average financial performance of Savings and Credit Cooperative Societies in Nairobi County. A descriptive design was suitable in the study owing to the fact that several SACCOs were included.

3.3 Target population

Target population is the entire group of people, events or things that the researcher intends to investigate (Flick, 2009). There were 164 DTS licenced by SASRA to operate up to December 2017 in Kenya. The population for this study comprised of 35 DTS operating in Nairobi Kenya. The sample consists of 15 DTS which operated in Nairobi. These DTSs were licenced to operate FOSA by SASRA for the period ending December 2017. This sample is chosen due to availability of data. The data includes years before SASRA was formed but the chosen SACCOs existed during the period of study.

3.4 Data Collection

Secondary data was obtained from financial statements of SACCOs available from SASRA and Ministry of cooperative Development. Return on assets calculated by dividing net income by average total assets for each yearly data of the SACCOs was done from the published financial statements of the DTS. Average inflation data was collected from the Kenya Bureau of Statistics periodicals. Money supply data was collected from the Kenya National Bureau Statistics periodicals and was normalised using GDP. Interest rate data was also collected from the Kenya National Bureau of Statistics Publications. The data collected was quarterly from January 1997 to December 2016.

3.5 Data Analysis and presentation

The study used descriptive statistics to realize the relationship from the data and to strengthen the analysis emerging from the data. Time series analysis methods were then applied to investigate the relationship between, interest rates, money supply, inflation rates and average financial performance of SACCOs.

3.5.1 Analytical model

The study adopted time series analytical model. Data was modelled in time series a multiple linear regression model of the form:

$$Y_t = \beta_0 + \beta_1 IR_t + \beta_2 Inf_t + \beta_3 MS_t + \varepsilon$$

Y = Average ROA

IR_t = Interest rate

Inf_t = inflation rate

MS_t = Money supply

β_0 = Constant term

β_1 = Interest rate coefficient

β_2 = inflation rate coefficient

β_3 = Money Supply coefficient

ε = Error term

The trend analysis allows for the observation of movements of variables over time thus depicting the pattern of the movement. The unit root test was used to check whether the variables were stationary or non-stationary. The Philips Perron test for unit root test was adopted. The variables were non-stationary but became stationary after differencing once.

The researcher used Variance Inflation factors to test for multicollinearity. The Akaike Information Criteria (AIC) was used to determine the optimal lag length. The Johansen Cointegration test was used to determine the order of integration between different

variables. The Johansen Cointegration test indicated existence of Cointegration hence the VEC model was fitted.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter looks at analysis of data, presentation of findings and discussion of the findings. The chapter also presents the pre-estimation tests that were conducted before the analysis and the post analysis tests that were conducted after the model was run. The analysis includes exploratory analysis of the average financial performance of the Deposit Taking SACCOs and growth plots of the interest rates, inflation rates and ratio of money supply to GDP.

4.2 Descriptive Statistics

The study analysed the trend of quarterly average ROA of the DTSS over the period from 1997 Q1 to 2016 Q4. The study findings in table 4.1 indicate that average ROA of DTSS in Nairobi was 10.63%, with a standard deviation of 1.984 a minimum value of 7.07% and a maximum value of 15.408%. The interest rate had a mean of 16%, with a standard deviation of 1.96, a minimum of 13.85% and a maximum of 20.34%.

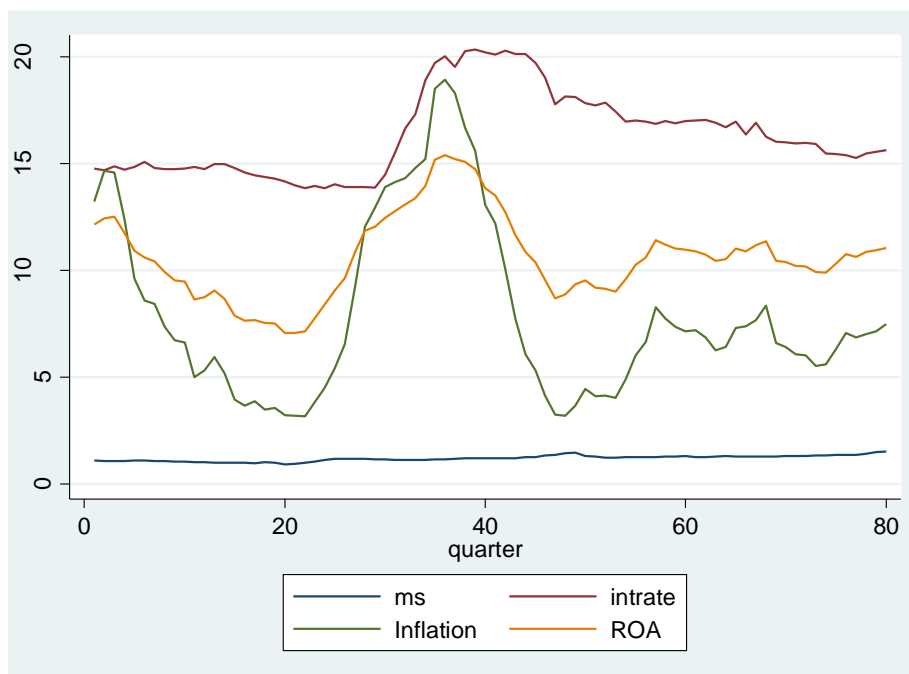
Table 4.1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	80	10.62361	1.984134	7.071523	15.40891
intrate	80	16.205	1.960022	13.85	20.34
Inflation	80	8.09925	4.414243	3.18	19.72
ms	80	1.204068	.1359151	.931844	1.515784

4.3 Exploratory Data Analysis

Figure 4.1 below shows the general trends of the four time series over the study period. From the results, the time series indicated some level of volatility, with the inflation rate showing the greatest level of fluctuations while the money supply was most stable.

Figure 4.1: Time Plots



4.4 Diagnostic Testing

Diagnostic tests were carried out to evaluate the appropriateness of the data for time series analysis.

4.4.1 Testing for Stationarity

Data presented for time series analysis is required to be stationary. This is because data that is not stationary might lead to results being spurious. (Wooldridge, 2012). Brooks (2010) posits that time series data is deemed stationary if it has a mean, variance and autocorrelation that don't change with time. The researcher used the Phillips Perron (PP) test to test the study's data for stationarity. There was no stationarity in any of the time series data since the test statistics for the four variables were not significant at all levels of significance. According to Wooldridge (2012), a time series is stationary if its test statistic is more negative than the critical values of all levels of significance. This is shown in table 4.2 below.

Table 4.2: Philips Perron Test

	Z(rho)	1% Critical Value	5% Critical Value	10% Critical Value
Return on Assets	-6.182	-19.422	-13.532	-10.874
Interest Rate	-3.610	-19.422	-13.532	-10.874
Inflation Rate	-7.152	-19.422	-13.532	-10.874
Money Supply	-1.127	-19.422	-13.532	-10.874

4.4.2 Testing for Stationarity after First Differencing

All the four-time series data were differenced. Philips Perron Test was conducted on the differences. This is in accordance with Sims (2007) who noted that non-stationarity in time series data can be remedied through differencing. As per table 4.3, all the four series became stationary after first differencing and are hence integrated of order one. Subsequent analysis was conducted using the first differences.

Table 4.3: Philips Perron Test after First Differencing

	Z(rho)	1% Critical Value	5% Critical Value	10% Critical Value
d.Return on Assets	-31.075	-19.404	-13.524	-10.868
d.Interest Rate	-57.937	-19.404	-13.524	-10.868
d.Inflation Rate	-30.741	-19.404	-13.524	-10.868
d.Money Supply	-56.905	-19.404	-13.524	-10.868

4.4.3 Testing for Multicollinearity

Variance inflation factors were used to test multicollinearity. Variance inflation factors (VIF) measure how much the variance of the estimated regression coefficients are inflated as compared to when the predictor variables are not linearly related. A variable whose VIF values are greater than 10 may merit further investigation. Tolerance, defined as $1/VIF$, is used by many researchers to check on the degree of collinearity. A tolerance value lower than 0.1 is comparable to a VIF of 10. It means that the variable could be considered as a linear combination of other independent variables. As evident in table 4.4 below, all VIFs were below 10. Consequently, it was concluded that there was no multicollinearity in the dataset.

Table 4.4: Variance Inflation Factors

Variable	VIF	SQRT VIF	Tolerance	R- Squared
ROA	2.15	1.47	0.4653	0.5347
IR	2.07	1.44	0.4840	0.5160
Inf	1.80	1.34	0.5546	0.4454
MS	1.63	1.28	0.6132	0.3868
Mean VIF	1.91			

4.5 Optimal Lag Order Selection

The researcher undertook Optimal Lag Order Selection in order to settle for optimum number of lags. This helps to avoid inclusion of too many lags or too few lags. Use of excessive lags leads to a loss of degrees of freedom while utilization of an inadequate number of lags might lead to model misspecification. As per table 4.5 below, the optimal number of lags is one. This lag order was settled on by all four information criteria, that is, Final Prediction Error (FPE), Akaike Information Criteria (AIC), Hanan Quinn Information Criteria (HQIC) and Schwarz Bayesian Information Criteria (SBIC). As such, analysis was done at a single lag.

Table 4.5: Optimal Lag Order Selection

Selection-order criteria								
Sample: 6 - 80				Number of obs = 75				
lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	50.3363				3.4e-06	-1.23564	-1.18628	-1.11204
1	90.0132	79.354	16	0.000	1.8e-06*	-1.86702*	-1.62026*	-1.24902*
2	98.554	17.082	16	0.380	2.2e-06	-1.66811	-1.22394	-.555712
3	114.354	31.6*	16	0.011	2.3e-06	-1.66278	-1.0212	-.055985
4	125.989	23.27	16	0.107	2.6e-06	-1.54638	-.707396	.554812

Endogenous: droa dintrate dinflation dms
Exogenous: _cons

4.6 Testing for Cointegration

There was need to test for cointegration to guide the researcher in model selection. A collection of time series integrated of order one (they become stationary after first differencing) and another time series which is a linear combination of the said collection is integrated of order zero (it's already stationary) are said to be cointegrated. If there is at least a single cointegrated pair of time series, the researcher should fit a Vector Error Correction (VEC) model. On the other hand, a Vector Autoregressive (VAR) model should be fitted if there are no cointegrated time series in an analysis. Johansen cointegration test was used to test for cointegration. Table 4.6 shows that there was one cointegrating relationship in the four time series data of this study. A VEC model was thus fitted.

Table 4.6: Testing for Cointegration

Johansen tests for cointegration					
Trend: constant			Number of obs =		78
Sample: 3 - 80			Lags =		2
5%					
maximum				trace	critical
rank	parms	LL	eigenvalue	statistic	value
0	20	89.309406	.	66.1002	47.21
1	27	110.35831	0.41709	24.0024*	29.68
2	32	119.04361	0.19965	6.6318	15.41
3	35	122.02157	0.07352	0.6759	3.76
4	36	122.35953	0.00863		

The results in the table show that one pair of the study variables is cointegrated. This led to the researcher to use the vector error correction model.

4.8 Vector Error Correction Model Fitting

There was one cointegrating equation so the researcher fitted a VEC model to study the data. The results of this model are as per table 4.7 below

Table 4.7: Vector Error Correction Model

Vector error-correction model					
Sample: 3 - 80				No. of obs	= 78
				AIC	= -2.137393
Log likelihood = 110.3583				HQIC	= -1.810819
Det(Sigma_ml) = 6.94e-07				SBIC	= -1.321609
Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_ROA	6	.398843	0.3980	47.60852	0.0000
D_ms	6	.033276	0.1271	10.48079	0.1058
D_intrate	6	.34682	0.3023	31.19672	0.0000
D_Inflation	6	.82772	0.4658	62.78431	0.0000
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
D_ROA					
_cel					
L1.	.0824413	.06951	1.19	0.236	-.0537957 .2186784
ROA					
LD.	.4501131	.3461259	1.30	0.193	-.2282812 1.128507
ms					
LD.	2.703268	1.4832	1.82	0.068	-.2037514 5.610287
intrate					
LD.	.1304632	.1589806	0.82	0.412	-.1811331 .4420595
Inflation					
LD.	.0654273	.148837	0.44	0.660	-.2262879 .3571425
_cons	-.0089932	.0470766	-0.19	0.849	-.1012615 .0832752

D_ms						
_cel						
L1.	-.0017904	.0057993	-0.31	0.758	-.0131568	.0095761
ROA						
LD.	-.0263083	.0288777	-0.91	0.362	-.0829076	.030291
ms						
LD.	.3069125	.1237453	2.48	0.013	.0643762	.5494488
intrate						
LD.	-.0046099	.013264	-0.35	0.728	-.0306068	.021387
Inflation						
LD.	.0087623	.0124177	0.71	0.480	-.0155759	.0331004
_cons	.0040839	.0039277	1.04	0.298	-.0036142	.0117819
D_intrate						
_cel						
L1.	-.2347311	.0604434	-3.88	0.000	-.3531979	-.1162643
ROA						
LD.	.1751987	.3009785	0.58	0.561	-.4147083	.7651056
ms						
LD.	-.9288479	1.289737	-0.72	0.471	-3.456686	1.59899
intrate						
LD.	.1121783	.1382437	0.81	0.417	-.1587744	.3831311
Inflation						
LD.	-.0603619	.1294232	-0.47	0.641	-.3140268	.193303
D_Inflation						
_cel						
L1.	.485695	.1442541	3.37	0.001	.2029622	.7684278
ROA						
LD.	-.0466143	.7183151	-0.06	0.948	-1.454486	1.361257
ms						
LD.	5.930832	3.078086	1.93	0.054	-.1021047	11.96377
intrate						
LD.	.7855196	.3299325	2.38	0.017	.1388638	1.432175
Inflation						
LD.	.6307511	.3088815	2.04	0.041	.0253545	1.236148
_cons	-.0089164	.097698	-0.09	0.927	-.2004009	.1825682

4.9 Post Estimation Procedures

4.9.1 Testing for Autocorrelation of Residuals

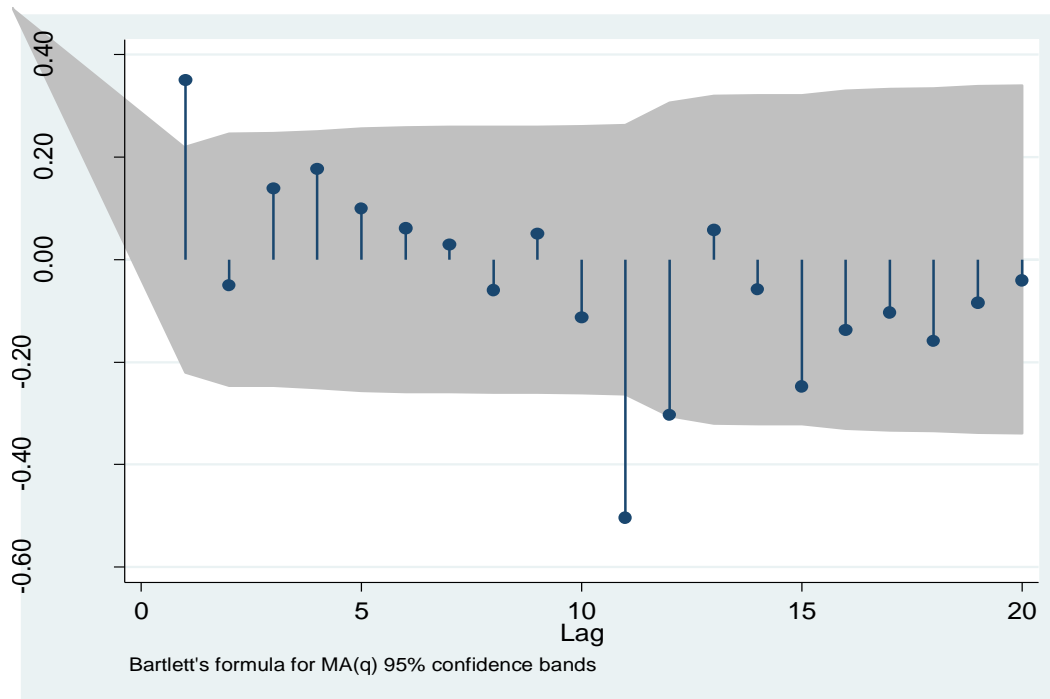
Autocorrelation of residuals was tested using the Ljung Box portmanteau test. As shown in table 4.8, the p value of this test was 0.0002, implying that there was no residual autocorrelation. The model was therefore deemed to have been correctly specified using the right number of lags.

Table 4.8: Ljung Box Portmanteau Test

Portmanteau test for white noise	
Portmanteau (Q) statistic =	44.7551
Prob > chi2(16) =	0.0002

The model residuals should not have any autocorrelation. They should have independent and identical normal distributions with a mean of zero and a constant variance. If there is residual autocorrelation, most likely there are too few lags in the model. The researcher computed autocorrelation functions to evaluate whether there was any residual autocorrelation. The results are as per figure 4.2 below.

Figure 4.2: Autocorrelation Functions



From figure 4.2 above, the autocorrelations do not have a tapering shape with increase in the number of lags. Since the downward trend isn't evident, the conclusion is that there was no residual autocorrelation and the number of lags used in the study was correctly specified.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study results, conclusions drawn from the study findings and the recommendations on the study of the effect of macroeconomic variables on average financial performance of DTS in Nairobi County.

5.2 Summary of findings

This study was motivated by the need to investigate the dynamic interrelationship between macroeconomic variables and performance of DTSs. The influence of the macroeconomic environment on ROA of DTSs was of key interest to the researcher. To achieve this, the researcher analysed quarterly times series data collected over a range of eighty periods from quarter one 1997 to quarter four 2016, the data was tested for stationarity and then analysed using inferential statistics. Variance Inflation Factors (VIF) were used to test for Multicollinearity. All VIFs were below ten thus it was concluded that there was no Multicollinearity in the dataset. Johansen Cointegration test implied that there was one cointegrating vector in the time series. As such the study employed a VEC model with one lag. Finally, Ljung Box test was used to examine the presence of residual autocorrelation.

The return on assets equation had an R squared of 39.8%. This implies that 39.8% of variability in return on assets can be attributed to variability in lagged money supply, interest rates and inflation. On interest rates, the R squared was 30.23%. 30.23% of variability in interest rates can be explained by variability in the lagged values of interest rates and the other three variables.

Likewise, the R squared of 46.58% shows that 46.58% of variability in the inflation rates is attributable to variability in single lags of return on assets, interest rates, inflation rates and money supply. Finally, the money supply equation had an R squared of 12.71%, which implies that variability in the lagged values of the study's variables accounted for 12.71% of variability in money supply.

The results show that there was no statistically significant relationship between return on assets and lagged values of either themselves or of other variables. On money supply, there was a statistically significant relationship between this variable's lagged values and itself (p value = 0.013). The lags of all other variables did not have a significant relationship with money supply.

Pertaining the interest rates, it is evident that only the error correction term (p value = 0.000) impacted current interest rate significantly. Finally, Inflation rates had a statistically significant relationship with the error correction term (p value = 0.001), lagged values of itself (p value = 0.041), and lagged interest rates (p value = 0.017).

5.2.1 Effect of Interest rates on Average Financial Performance of DTSS

The study results showed that lagged interest rates had a short term positive but insignificant effect on average financial performance of DTSS in Nairobi. These findings contradict the international fisher effect theory (Gopinath & Rogoff, 2014) which posits that interest rates fluctuations encourage or discourage levels of borrowing. The expectation is that the changes in interest rates are expected to change lending by DTSS and hence affect their interest income and financial performance. However, the changes in interest rates in this study did not have a significant effect on financial performance of DTSS.

The study findings also disagree with findings by Holtgrave and Crosby (2003) that interest rates charged has the significant effect on the lending behaviour. Borrowers are encouraged to borrow money by low interest rate charged. The lower the interest rates the more people will tend to borrow money and finally the improved performance of financial institutions.

5.2.2 Effect of Inflation on Average Financial Performance of DTSs

Results Findings indicated that lagged inflation rate had a positive and significant effect on average financial performance of DTSs in Nairobi. These results supported the classical theory of inflation which attributes sustained price inflation leads to lower purchasing power which leads to consumers with fixed income to borrow from financial institutions (Baumann & McAllister, 2015). This increased borrowing is expected to lead to higher interest income for the financial institutions thus leading to increased interest income and enhanced financial performance.

The findings also contradicted with findings by Kariuki (2016) who found a non-linear, significant negative relationship between inflation and banking sector performance. The study attested the existence of the rapid diminishing trend on banking lending activities as inflation increased marginally that led to a discrete drop in the financial sector performance. However, the operations of DTS and commercial banks are significantly different and hence the effect of inflation on the finance performance of the two kinds of financial institutions may differ. The study findings also contradict the findings by Duncan and Tirimba (2015) who used different countries data on inflation and financial sector performance indicators and the results showed that inflation had a negative incidence on financial sector performance

even though there was no evidence of thresholds level after controlling for simultaneity and ignore biases on variables.

However, the current study findings agree with findings by Abdullahi (2014) who reported inflation as a macroeconomic variable that has a positive relationship with bank profitability and performance.

5.2.3 Effect of Money Supply on Average Financial Performance of DTSs

The study results indicated that lagged ratio of money supply (M3) to GDP had a positive but insignificant effect on average financial performance of DTSs in Nairobi, Kenya. These findings contradict the Baumol-Tobin model (McConnel & Campell, 2003) which considers that the money in circulation affects the saving and consumption patterns. When there is excess money, people are motivated to save a portion of the money and this increases capital in the financial institutions which leads to increased financial performance of the institutions. On the other hand, when money supply is lower than demand, people resort to saving less which reduces the capital in the financial institutions which leads to reduced financial performance of the institutions. The study however, did not find any significant effect of money supply on financial performance of the DTS.

5.3 Conclusion and Recommendation

Going by the findings, the researcher concludes that the study variables are non-stationary and integrated of order one. Additionally there is long-term cointegration between one pair of macroeconomic indicators. Results indicate a positive but insignificant relationship between ROA of the DTS and other study variables. The influence of money supply on ROA is

significant at the 10% level thus the conclusion that the fluctuations in money supply have the highest prediction ability for variability in the financial performance of DTSs.

It is therefore recommended that money supply targeting interventions should be incorporated in monetary policies of the Central Bank due to their ability to influence performance of financial services firms.

The other recommendation to the government is the control of interest rates through macroeconomic regulators such as CBK depending on inflation rates fluctuations. This is to ensure that firms that are providing financial intermediation services, including SACCOs are able to effectively and sustainably do so.

Lastly, the management committees of DTS should closely and continuously monitor the macroeconomic factors including inflation, interest rates and money supply to adjust their loan and savings products to the movements in these macroeconomic factors.

5.4 Limitations of the Study

The study was restricted only to Deposit Taking SACCOs in Nairobi and Kenyan macroeconomic indicators and therefore caution should be taken in generalizing the findings of the study. The analysis has also been constrained by the sample size. This could have affected the generalizability of the results.

5.5 Suggestion for Further Study

This research considered four variables; return on assets of Deposit Taking SACCOs, money supply, interest rate, and inflation rate. Suggested areas for further research include identification of other macro-economic factors that could significantly affect returns of SACCOs or other time series of interest. This will assist in making rational investment decisions and aid in policy formulation.

Significance of the results could possibly be improved by utilizing more data of a higher frequency, especially monthly data. The use of more frequent observations may better capture the dynamics of the time series variables.

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Appendix I

INTRODUCTION LETTER.

ScholasticaMwaniki
KCA University
P.O BOX 56808
NAIROBI.

27/9/2017.

Dear Sir/Madam

RE: REQUEST FOR DATA.

I am a Master of Science (Finance and Investment) carrying out research on effect of Central Bank on financial performance of deposit taking SACCOS in Nairobi Kenya. The purpose of this letter is therefore to kindly request your voluntary participation in this study by providing me with publications made by your entity containing information on financial reports.

The information gathered shall be treated confidentially and shall be used for this research only.

Yours Faithfully,

ScholasticaKivivyaMwaniki.

Appendix III

SAMPLE DATA COLLECTION INSTRUMENT.

YEAR	AVERAGE ROA	INTEREST RATE	INFLATION RATE	GDP	M3 Money Supply	$\frac{M3}{GDP}$