SAVINGS MOBILIZATION AND ITS DETERMINATION
THE CASE STUDY OF PRIMARY CO-OPERATIVE
SOCIETIES IN KENYA

By

PURITY NKIROTE MUNG'ATHIA

A Project Submitted to the School of Business in Partial Fulfillment of the Requirement of the Masters Degree in Business Administration

UNITED STATES INTERNATIONAL UNIVERSITY
IN NAIROBI

Spring Quarter, 2001
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Declaration

I, the undersigned, declare that this is my original work and has not been submitted to any other College, University or institution other than USIU in Nairobi for academic credit.

Signed: ___________________ Date: 22/4/02

Purity Nkirote Mung’athia

This Project paper has been presented for examination with my approval as the appointed supervisor

Signed: ___________________ Date: ___________________

DR. K.D. Singh

Signed: ___________________ Date: 24-4-2002

Dean, School of Business

Signed: ___________________ Date: 8 May 2002

Deputy Vice Chancellor, Academic Affairs
ACKNOWLEDGEMENTS

My utmost gratitude goes to God, for the strength that he gave me to accomplish the whole program including the final project. I would like to thank my supervisor Dr. K.D Singh without whose direction, corrections, and constructive decisions I would not have accomplished this work.

Special thanks go to my parents and husband Ayub for their moral support, financial assistance, and guidance during my studies. I am also grateful to my family for being there throughout this program.

I thank my husband for helping with the typing and formatting of this work and my friends Nancy and Fred in their assistance. I thank my sister Rose and her husband Frank for all their patience and encouragement in their on special way until the end of the program, to the finalizing of this paper which mark the end of my program.
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ABSTRACT

The co-operative section is a very important sector because it provides employment, investment funds and reduces a lot of dependence on external financial resources among other things. The aim of this study was to identify the determinants of corporate savings in primary co-operative societies with a view to recommend some policies that can improve the savings rate in this sector.

Cross-sectional data was used due to the haphazard manner in which the time series exists. Therefore twenty co-operative societies in Nairobi were used. To avoid simultaneity and specification biases, simultaneous equation models were used for the estimation of intended deposits/share capital, assets, savings, and loan functions. From the results assets, deposits, loans outstanding and loans advanced to members were found to be the main determinants of corporate savings in primary co-operative societies. Loans advanced to members were the main determinants of deposit/share capital. And finally deposit/share capital and loan defaults were the main determinants of loans advanced to members.

Various policy implications were recommended all based on these functions and the major determinants of these variables. For example it was recommended that in order to increase deposits, there is need for mass membership drive plus extensive membership education.
1. CHAPTER ONE: INTRODUCTION

1.1. INTRODUCTION

In Kenya the ability to mobilise saving and to obtain credit for any worthwhile purpose and that at a reasonable cost has been a difficult problem for a long time.

It is evident that most of the developing countries, which Kenya is amongst, are faced with a lot of socio-economic problems. The most common ones are high illiteracy levels, inefficiency, large debts and shortage of investment funds to low savings rate. Therefore in order to alleviate some of this problems it calls for mobilization of financial resources. Most of the financial institutions in Kenya are aimed at profit maximization for the shareholders making it impossible for the ordinary people to use their services. The financial needs of the majority of the people are left unattended to. The co-operative societies can play a major role in taking care of these needs, but they have also been neglected in this area of mobilisation of financial resources. This study therefore intends to look at how the units of co-operative societies can be used to promote thrift and provide sources credit at fair rates of interest.

And for this to happen so as the co-operatives to mobilize savings and meet the country’s requirements we need to know the determinants of savings in this sector.

The economic welfare of the country depends very much on how much savings are mobilized by these institutions and how efficiently these resources are utilized in the financial sector as a whole and in other lines of activity. Knowing of the determinants of savings is important because one of the major financial regulations is to mobilise savings, give loans and ensure efficient production and utilisation. This study can therefore be used to shed light on possible policies that can facilitate savings mobilisation and loans expansion. Noting that the highest interest rates charged by banks and other non-bank financial institutions, there is need to establish alternative means of providing cheap credit.

Co-operation means working together for the benefit of all workers. A co-operative is defined as a voluntary association of persons or institutions working together with the aim of achieving certain common interests or goals.
Formal cooperative were first started in Europe. Handloom weavers formed the first society, Rochdale society of equitable pioneers, in England in 1844. Its main aim was to sell clean and high quality products to the members, the cooperative movement expanded very first due to the formation of the international cooperative alliance (ICA) in 1895.

African cooperative started before independence but more emphasis was put in them after independence. In the earlier stages of cooperative movement, east African countries performed better than most other African countries with respect to number of societies, membership and turnover.

In Kenya we have very many cooperative societies. Looking at deposits turnover, membership number and loans, both increasing and decreasing trends can be spotted. This study is set to explain why there is variation across societies, why there exists insufficiency of savings for investments purposes and what can be done to balance them out and or even to create surplus savings for economic development in Kenya. Knowledge about the determinants of savings will help in drawing up policies aimed at balancing the savings and the investments requirements. The Kenya’s national and sectoral savings have not grown sufficiently to finance her investments. In fact the growth rate of gross national savings as a per cent of GDP has been somewhat stagnant despite past policies as shown in the table B of appendix I. The domestic savings at constant 1998 prices has had fluctuating growth. These facts are supported by the tables B and C of appendix I.

1.2. SCOPE OF THE STUDY

The cooperative societies in Kenya are diverse. This study focuses on primary cooperative societies, whereby there are two types of savings, corporate and personal savings. Therefore it focuses on corporate savings and in particular the determinants of this savings. The study is handling savings at a sectorial level so it's a micro analysis. The data is collected for the financial year ending 31st December 1998. It focuses on one point in time rather than over a long period of time. Therefore it cannot be used to analyse problems that spread over a long period of time. But it is useful in comparing what is happening across societies in the given time period.
1.3. STATEMENT OF THE PROBLEM

Savings are important for investment and economic development of a nation. When a sector grows, it's demand for credits increases.

- If primary cooperative societies would start a scheme of lending more and more what would be the source of such a loan?
- What would be the criteria of determining who qualifies for such loans?
- What would such a scheme be of help to the rural community in order to eliminate the socio-economic problems prevailing there like illiteracy, unemployment, illiteracy and shortage of funds due to low savings rate and indebtedness?

In brief the main research problem will be to analyse the determinant of savings and this is a problem because savings are insufficient both at national and sartorial level in Kenya leading to low investments and mass poverty in the rural community. Tables A, B, and C can help in problem identification showing how it is a problem and the basis for the choice made of this topic.

1.4. OBJECTIVES OF THE STUDY

The main objective of the study is to respond to the issues raised in statement of the problem.

SPECIFIC OBJECTIVES

* Identify determinants of primary cooperative society savings, deposits and loans and why they vary across societies.
* Formulate, estimate and analyse savings, deposits and loans functions for primary cooperative societies.
* On the basis of (b) to estimate and stimulate total savings, deposits and loan potentials of the societies.
* Based on results from (a), (b), and (c) suggest policies for enhancing savings mobilization, thus improving the primary cooperative societies performance in terms of deposits, turnover, membership, numbers and loans.
1.5. JUSTIFICATION AND SIGNIFICANCE OF THE STUDY

These factors of savings, deposits and loan functions would give a clear picture as to the possible policy measures which can eliminate savings shortage in the primary coop sector and even the economy as a whole. Borrowing will be reduced in this sector and the whole economy. This study will be of relevance towards proper planning and policy decisions of both the cooperative and monetary sectors. Funding primary coop societies through deposits only is not sufficient. There is need to raise corporate savings. Thus study on the above mentioned factors could prevent the sectors problems such as loan defaults among others, hence improve the sector’s contribution to national savings and economic growth and development. There have been few researches in this area where emphasis has been laid on seminar papers and non-empirical studies whose observations and results are theoretical and not for any test of significance and for simulation purposes.

1.6. ASSUMPTIONS AND LIMITATIONS OF THE STUDY

ASSUMPTIONS

I. A primary cooperative society will be engaged in production and consumption activities. It’s on this basis that I specify an income-earning asset function.

II. Besides paying dividends and giving loans, primary coop societies may generate more savings. If this assumption were absent then the savings function would have a weak base considering that it’s absent in the legally defined objectives of primary coop societies.

III. I also assume that there is zero risk in case of giving loans. Without this assumption, we would otherwise need to attach a risk adjustment coefficient to the loans function. The usefulness of this assumption is that the magnitude of that coefficient is rather difficult to estimate apriori.

LIMITATIONS

I. The problem of multicollinearity will not be rid of completely this would have led to a very insignificant study and specification bias. This is because very important variables will be excluded from the functions simply because they are collinear.
II. The study will be based on a sample of societies from Nairobi province. Probably the behavioural results could have been different since the environmental conditions of operation may differ if the study was conducted countrywide.

III. For certain variables, proxies will be used and this could lead to high standard errors of the estimates and regression.
2. **CHAPTER TWO: LITERATURE REVIEW**

2.1. **GENERAL AND THEORITICAL LITERATURE**

This covers co-operatives and savings. The theoretical aspect covers non-empirical literature on savings and co-operatives, which is based on economic theory.

Galbis and Fisher (1982) feel that real rate of interest is the most important factor in determining the equilibrium between savings and investment. Galbis seems to support the neoclassical economists where savings are positively correlated to interest rates. How would the situation be in the case of cooperative societies?

Figure 1: Neoclassical equilibrium of real interest rate and alternative disequilibrium states.

Assumptions made on the model in figure 1 include:

a) The investment is outside financed

b) There is a single real interest rate

c) That only real magnitudes are relevant

d) That inflationary expectation is equal to actual inflation

*Source: Adopted from Galbis and Fisher (1982)*
Justern (1984) pointed out that a rise in saving would reduce federal deficits. He also held that time series data does not support the view that consumer saving will respond significantly and positively to rates of return. Thus there is no clear relationship between savings and certain factors like rate of return and interest rate. In (1986) he went ahead to argue that the rate of personal saving in America is low which will lead to low capital formation and hence low productivity and low economic growth. He said the national saving depended on the function that led young people to save. He held that low savings lead to low capital formation.

Mwarania and Mutugu (1986) focused on the role SACCOS would play in Kenya’s economic development they argued that SACCOS are part of the financial system hence needing financial attention. They added that funding is also a responsibility of corporate savings. Hence agreed there is a need to increase corporate savings, but they did not say how this can be done.

Mutugu and Munishi (1988) also viewed the role of co-operatives in agricultural products. Mokanda (1986) also commented on the potential role of co-operatives in Agri-business, nature of co-operative movement and reasons for poor performance in Kenya. None of these have done empirical analysis to give binding and testable conclusions.

Most other scholars have only focused on agricultural cooperatives. But all I all none of them have seen the role the cooperative societies can play in the cooperative movement and that they can also compete with the commercial banks and non-bank financial institutions for existing funds. Making the study purposeful in dealing with this neglected area that fills the gap in literature.

2.2. EMPIRICAL AND SPECIFIC LITERATURE

This involves work done in the areas of cooperatives, savings, and other related areas. The results are useful in the comparison between earlier results and the results of this study.

Oludimu (1982) studied the determinants of savings and its relation to credits in the Nigerian agricultural sector. He used the correlation matrix model fitted in the cross-sectional primary data.
The model was specified as below:

i. \( \text{Msa}=\text{corr} (\text{la}, \text{Msh}, \text{Srs, M}) \)

ii. \( \text{Msh}=\text{corr} (\text{Msa, M, Srs}) \)

iii. \( \text{Srs}=\text{corr} (\text{Msa, M, Msh, La}) \)

iv. \( \text{La}=\text{corr} (\text{Msa, M, Srs, Msh}) \)

v. \( \text{M}=\text{corr} (\text{Srs, Msh, La, Msa}) \)

Where,

\( \text{Msa} \) - Members savings

\( \text{La} \) - Amount of loans received by members

\( \text{Msh} \) - Members shares

\( \text{Srs} \) - Societies realized surplus

\( \text{M} \) - Membership

\( \text{Corr} \) - Correlated to

The results were:

1. Members' savings and loans obtained from societies were positively and significantly correlated.

2. Savings and membership were positively correlated.

3. Realized surpluses and members shares were also positively and significantly correlated. His conclusion was that the more the members save the more the society is able to mobilise funds and disburse loans on credits. This is a very useful and relevant study to the current study.

It has got so much to offer in terms of variables. However, the methodology is weak. It never considered inter-dependence of variables. Another problem is multicollinearity. For example the results show that societies realized surplus and members shares are positively and significantly correlated yet both of them appear as explanatory variables in equation (I). The author never made the readers aware of whether it was deliberately introduced and how he eliminated it later. Otherwise if it was not eliminated then the estimates could lead to misguided policy implications.
Giovannili (1985) used cross-sectional time series data to determine the interest elasticity of savings and the magnitude of aggregate savings response to changes in real rate of interest in LDC's. He used the two stages least squares (Gurlay, Patrick and Shaw, 1965). His dependant variable was domestic savings as a ratio of GDP. His dependent variable was domestic savings as a ratio of GDP. And the explanatory variables were: - the growth rate of real GNP, log per capita of GNP, real time deposit rate of interest, ratio of trade balance deficit to GNP and lagged dependent variable. Some the models estimated were as follows: -

I. \( S_t = f(Y_t, I_r, F_s, S_{t-1}) \)
II. \( S = f(Y_r, P_r, R_r, D_r) \)

Whereby

\( S_t \) - Savings as a ratio of GNP
\( Y_t \) - Real income growth rate
\( I_r \) - Real interest rate
\( F_s \) - foreign Savings rate
\( S_{t-1} \) - lagged savings as a ratio of GNP
\( S \) - Ratio of domestic savings to GNP or GDP
\( Y_r \) - Rate of growth of per capita income
\( P_r \) - Rate of growth of population
\( R_r \) - Realized real interest rate
\( D_r \) - Dependency ratio

His findings were that in the case of small samples the correlation between real interest rates and savings was significantly positive. Yet for larger samples it was an insignificant negative relationship. Rate of growth had a significant and positive effect on savings. Therefore he concluded that in LDC's the savings do not respond positively to the rate of interest. He filed rather to explain what he regarded as small or large, which is relative and could vary the above results.
2.3. OVERVIEW OF THE LITERATURE

This section critically analyses the weaknesses and the strengths of the past studies. It summarizes the literature and the knowledge gaps that exist in the world at large and in the area of co-operatives and in Kenya in particular, which the current study aims at filling, especially with respect to the latter.

Little has been done on primary cooperatives in Kenya. Concentration has been mostly on savings and credit coop societies and these have been descriptive general and non-empirical. The assertions not subjected to any empirical and statistical tests. The service sector is becoming more and more significant for the process of economic development. Primary co-operative societies should get more attention especially in the area of research. This study intends to do that at a micro level.

No past study seems to recognise the dual role that primary coops societies play in Kenya and there behaviour with respect to corporate savings, deposits, assets and loans is not known. The study is undertaken to fill the gap.

Most past studies on savings determinants have focused on national savings. But their results may not necessarily be true for the whole economy or for a particular sector unless some adjustments are done. This is because the whole economy has different sectors with different properties to save hence need for sectoral analysis. Moreover, past studies have focussed more on personal savings rather than corporate savings, where primary coop societies may fully belong by the virtue that are also both producing and consuming economic agents. Primary coop societies contribute to national GDP, capital formation and corporate savings hence specific sectoral analysis of the determinants of savings in this sector needs some investigation to assist in enhancing this contribution.

Some studies have used variables which are less representative of what they actually wanted to look at. Hence the results are not truly representative and suffer from specification bias. Moreover, statutory reserves is also a part of corporate savings but most past studies have ignored it. Its inclusion may or may not bring some differences. This study focuses on the determinants of savings, loans and deposits in primary coop societies sector and why they vary across societies.
3. CHAPTER THREE: HYPOTHESIS AND RESEARCH METHODOLOGY

3.1. INTRODUCTION

The literature review, economic theory and a few observational modifications provide the theoretical framework of this study. Presented also are the hypothesis tested later using data from the Kenyan coop sector. The hypothesis tested were based on economic theory postulations, results from past empirical studies and the daily observations of the co-op sector. This chapter briefly discusses the nature of the data and sampling method used.

3.2. METHODOLOGY AND MODEL

3.2.1. Model

To accommodate inter-relationships (direct and indirect linkages) simultaneous equation models will be used. Secondly, not all the explanatory variables are fixed, and neither are they independent of the disturbance term (Koutsoyiannis, 1984).

The models take the following structural forms:

Model (i)

\[ S = f(p, A, Ld, La, Lo) \] \hspace{1cm} (1)

\[ A = g(R, S, Shc, Lo) \] \hspace{1cm} (2) and

\[ f11, f12, f14, f16, g22, g23 < 0 \text{ and } f13, f15, g21, g24 < 0 \]

The model is mathematically complete because it contains two endogenous variables (S and A) and two equations (1) AND (2)

Model (ii)

\[ Shc = h(m, shc(t-1), Dd(t-1), Nb, La, A mem) \] \hspace{1cm} (3)

\[ La = K(Shc, Ld, Iu, Lo) \] \hspace{1cm} (4)

\[ H31, h32, h33, h34, h35, h36, k41, k42, >0 \text{ and } k43, k44, < 0 \]
This model is also mathematically complete because it contains endogenous variables (she and La) and two equations (3) and (4).

Where,

S - savings (statutory reserve plus retained earnings)

P - net profit after tax

A - total income earning assets

Ju - investments undertakings

Ld - Loan defaults

La - loan advanced to members

Lo - loans outstanding

R - rate of return on assets (profit/total assets)

She - members share capital/deposits

M - membership

She (t-1) - lagged share capital/deposits

Dd (t-1) - lagged divided

Nb - number of primary co-operative societies branches

Amem - average monthly contribution per member

F1i, g2i, h3i, and k4i _ expected partial derivatives

Model (i)

The reduced form savings and assets functions, which are obtained by substituting equation (2) in equation (1) and vice versa can be presented as:

S = a0+a1p + a2A + a3Ju + a4Ld + a5La + a6Lo + et ........................................(5)

A = a7 + a8R + a9S + a910 SHc + a11 Lo + Nt .......................................................(6)

Model (ii)

The reduced form share capital/deposits and loan functions which are substituting equation (3) and (4) and vice versa, can be presented as:

She=bo+b1+sbhc (t-1) +b3Dd (t-1) +b4Nb + b5ha +b6 Amem + mt .........................................(7)

La = b7+b8sht + b9Ld + b10Ju + b11Lo+Vt ------------------------------------------------------ (8)
Where $a_i$ and $b_i$ are coefficients and $e_t$, $n_t$, $u_t$, and $v_t$ are error terms.

### 3.2.2. Estimation Methodology

Both the models were estimated using two stages least squares (2 SLS). 2SLS involves the application of ordinary least squares (OLS) in two stages. Stage one involves getting rid of the likely correlation between the dependent variable in equations (1) and (3) and the stochastic error terms in equations (2) and (4) respectively. Stage two involves using OLS to estimate the purified functions thus getting consistent and unbiased estimates. In all the equations, the error term was included to capture all the effects of the omitted random variables. But since the expected value of the error term is normally assumed to be zero, the impact of these omitted variables was accounted for by the constant terms.

### 3.3. **DETERMINANTS AND THE HYPOTHESIS**

#### 3.3.1. Determinants of Savings

This discussion offers a justification to the expected savings of the coefficients hypothesized in the models.

**Memberships**

This is composed of the registered subscribers of the society. Increased membership implies increased demand for deposits. From these higher profits are likely and hence an increase in corporate savings ($h31$, $g23$ and $f11 > 0$)

**Loan Defaults**

This means either failure to pay back advance or fail to pay back at the right time. Thus higher loan default leads to higher need for retained earnings and hence lower profits. Hence societies will increase the loaning rate in order to compensate the reduced profits. ($f14$ and $K42 > 0$)

**Loans advanced to members**

Loan means an advance of finance by a lender to a borrower. When the corporate savings or its demand is reduced the societies liquidity and profitability in the future is threatened hence they tend to have an incentive to increase the amount of loans given to members.
(h31 >0, f13, k43 and f15 < 0)

**Profit**

Profit is the income of primary coop societies. As it rises savings will also rise. Increased savings increases the demand for assets and the need to diversify the portfolio.

(f11 and g22 > 0)

**Assets**

Increase in assets increases demand for savings. More assets will cause the allocation of corporate savings to be more.

(f12 >0)

**Lagged dividend**

This is the dividend for the previous year. Higher level of lagged dividend is an incentive and increases demand for deposits in the current period. Further more, if it is viewed as transitory income, it encourages more savings.

(h32 and h33 >0)

**Number of branches**

Opening a branch in a primary cooperative society lacking area would encourage its inhabitants to transfer apart of their wealth from other forms of assets to deposits. It implies higher accessibility, increased membership and demand and thus increased deposits/ share capital.

(h34 > 0)

**The other variables**

Loans outstanding is an advance of finance that is yet to be repaid back. If it is very high then the society’s liquidity position will be threatened hence higher demand for retained earnings or corporate savings.

(f16 > 0)

Rate of return is the earnings from the investment to capital are expressed as a proportion of the outlay. Increased rate of return may therefore reduce the amount assets acquired.
Share capital is the sum lent to certain financial institutions on terms allowing withdrawal with or without notice or providing for repayment after specified periods. Thus as it increases the assets of the society also increase. Loan outstanding increases then assets reduce.

\( g21 \) and \( g24 < 0 \), \( g23 > 0 \)

The rate of contribution per month by each member will tend to raise the level of share capital. As it rises, the deposits will also rise. The amount of loans given out to members also rise. Lastly higher loan outstanding may discourage the primary cooperative societies from giving more loans.

\( h35, h36 \) and \( K41 < 0 \)

### 3.3.2. Hypothesis

From the above several hypothesis can be derived:

- There is a positive relationship between the share capital/deposits and loans advanced to members
  \[ dL_a / dshc > 0 \]

- There is a positive relationship between membership, lagged dividend and share/deposit
  \[ dshc / dm \) and \( dshc / dD_d \ (t-1) > 0 \]

- There is a positive relationship between profits and corporate savings in primary cooperative societies.
  \[ ds / dp > 0 \]

Certain partial derivatives were not regarded as hypothesis because they could not represent reputable hypothesis.

### 3.4. Data and Sampling Methods

Secondary cross-sectional data have been used mainly. In using cross-sectional data we have assumed that the propensity to save is constant. Cross-sectional data has been preferred to time series data in this area because the later exists in bits as a result of poor book keeping and audit areas problem.
However, cross-sectional data is easily available and consistent for all the required variables in the selected societies.

In total the data has been collected in four main sources

- The Apex of federation of cooperatives (AFC)
- Ministry of cooperative development (MOCD)
- African confederation of cooperative savings and credit association
- The Kenya union of savings and credit cooperative (KUSCO)

This diversity in the sources has ensured Reliability, Authenticity, Availability and Accuracy of the data used. Simple random technique has been used to select the primary cooperative societies surveyed in this study. There is an agreement between statistician and econometrician that the sampling distribution is normal as long as the sample size is 20 and above. This is satisfied in this study.

The whole of the 20 societies surveyed in this study are from Nairobi due to time and resource constraints. Although the sample is concentrated in Nairobi, Nairobi province has majority cooperative societies compared to other provinces.
4. CHAPTER FOUR: - EMPERICS AND ANALYSIS

4.1. ECONOMIC RESULTS

4.1.1. Introduction

Presented in this section are the results after applying the ordinary least squares (OLS) and the two stage least squares (2sls) on the models presented in chapter three. The test of hypotheses and other tests have been carried out at 95% level confidence with the t-critical values being -1.68 and +1.68 and sample size of 20. Any variable with calculated t-value being either less than -1.68 or greater than +1.68 is regarded as significant hence plays a vital role in that function.

Figure 2: The t-distribution at 95% level of confidence and sample size of 20

Regarding the coefficient of a variable as significant means rejecting the null hypothesis hence accepting the alternative hypothesis that the coefficient is significantly different from zero.

The Durbin-Watson statistic was used to test for absence, presence of serial correlation or indecision.

Figure 3: - The DW Distribution for testing serial correlation
Where,

dL - lower value of Dw

du - upper value of Dw

d=2-classical value of DW - No serial correlation

4.1.2. OLS (Single Equation) Regression Results

4.1.2.1. Savings Function (s)

In this function we had two endogenous variables, S and A and five purely explanatory variables, p, lu, La, Ld and Lo. The variables profits (P) Assets (A) and Lo were found to be positively correlated to savings and were significant at the stipulated level of significance. The variable loans advanced to members (La) were also significant but negatively correlated to savings. The other two variables loan defaults (Ld) and investment undertakings were found to be negatively correlated to savings but insignificant. The below presents the results.

<table>
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<tr>
<th>Independent Variable</th>
<th>Estimated coefficient</th>
<th>standard error</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>C (constant)</td>
<td>7637.614</td>
<td>23241.1</td>
<td>0.329</td>
</tr>
<tr>
<td>A</td>
<td>0.723</td>
<td>0.003</td>
<td>14.221</td>
</tr>
<tr>
<td>P</td>
<td>0.941</td>
<td>0.023</td>
<td>16.572</td>
</tr>
<tr>
<td>JU</td>
<td>-0.022</td>
<td>0.184</td>
<td>-0.616</td>
</tr>
<tr>
<td>La</td>
<td>-0.734</td>
<td>0.002</td>
<td>-7.622</td>
</tr>
<tr>
<td>La</td>
<td>-0.035</td>
<td>0.086</td>
<td>-0.903</td>
</tr>
<tr>
<td>La</td>
<td>0.293</td>
<td>0.002</td>
<td>3.531</td>
</tr>
</tbody>
</table>

R² = 0.987 and R² (adjusted) = 0.980

F-statistic (F) = 159.378

Dublin-Watson statistic (DW) = 1.933
The DW calculated is 1.933 and it is greater than 0.75 but less than 2.04 [the critical DW's at K=6 and N=20] hence lying in the indecision region. Thus we cannot tell whether there exists autocorrelation or not.

From the $R^2$ above, 98 percent of changes in savings are explained by the variables included in this function. The calculated F-statistic is 159.378 and it's greater than the F-Critical. This means that the difference between sample means is significant and that the populations from which the samples are drawn do differ.

4.1.2.2. Assets Function (A)

This function also contains two endogenous variables A and S and three purely explanatory variables Lo, R and she.

The variable savings (s) and loan outstanding (lo) were found to be significant and positively related to assets. The variable rate of return (R) is also significant but negatively correlated to assets. The other variable share capital / deposits (shec) was found to be insignificant and negatively correlated to asset.

Table 2: Ordinary least squares results (A)

<table>
<thead>
<tr>
<th>Dependent variable: - A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variable</td>
</tr>
<tr>
<td>C (constant)</td>
</tr>
<tr>
<td>R</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>Shc</td>
</tr>
<tr>
<td>Lo</td>
</tr>
</tbody>
</table>

$R^2 = 0.887$ and $R^2 (Adjusted) = 0.857$

$F (4, 15) = 29.435$

$DW = 2.089$
The DW is 2.089 and thus we can accept the null hypothesis that there is no serial correlation. The \( R^2 \) i.e. = 85.7% hence about 86% variation in assets is explained by variables listed above. The F-statistic is 29.435, which is greater than the F-critical hence the population from which the sample means is drawn are significantly different.

4.1.2.3. The Share Capital/Deposits Function (Shc)

The two Endogenous variables in this function are shc and la, while the pure explanatory variables are m, and Dd (t-1). The variable loans advanced to members (la) are positively correlated to share capital and significant. The variable membership (M) is also positively correlated to share capital but insignificant. The other variable lagged divided Dd (t-1) is negatively correlated to share capital and insignificant.

Table 3: Ordinary least squares results (shc)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Estimated Co efficient</th>
<th>Standard Error</th>
<th>t-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>C (constant)</td>
<td>1171956</td>
<td>655197</td>
<td>1.789</td>
</tr>
<tr>
<td>M</td>
<td>0.307</td>
<td>128.006</td>
<td>0.737</td>
</tr>
<tr>
<td>Dd(t-1)</td>
<td>-0.012</td>
<td>1.504</td>
<td>-0.329</td>
</tr>
<tr>
<td>La</td>
<td>0.972</td>
<td>0.044</td>
<td>26.227</td>
</tr>
</tbody>
</table>

\( R^2 = 0.993 \) and \( R^2 \) (Adjusted) = 0.992

\( F (3, 20) = 766.250 \)

\( DW = 2.418 \)

The DW is 2.418 and thus lies in the indecision region. Thus we cannot tell whether there is autocorrelation or not. 99.2 per cent of the variations in share capital is explained by the variables included in the equation.

The \( f \)-calculated is 766.250 was found to be greater than the \( f \)-critical hence the population from which the samples were drawn did differ significantly.
4.1.2.4. The loans advanced to members (La)

The pure explanatory variables are Lu, Lo, Ld, and she. The endogenous variables are La and she. Share capital (she) has positive impact on loans advanced to members and it’s significant. Loan defaults (Ld) has a negative impact on loans advanced to members and are also significant. Both investment undertakings (lu) and loan defaults (Lo) have negative and insignificant impact.

Table 4: Ordinary least squares Results (La)

Dependent Variable: - La

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Estimated Coefficient</th>
<th>Standard Error</th>
<th>t-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>C (constant)</td>
<td>-221673</td>
<td>485511</td>
<td>-0.457</td>
</tr>
<tr>
<td>she</td>
<td>1.071</td>
<td>0.029</td>
<td>31.379</td>
</tr>
<tr>
<td>Ld</td>
<td>-0.055</td>
<td>1.924</td>
<td>-2.739</td>
</tr>
<tr>
<td>Lu</td>
<td>-0.010</td>
<td>4.162</td>
<td>-0.521</td>
</tr>
<tr>
<td>Lo</td>
<td>-0.047</td>
<td>0.035</td>
<td>-1.500</td>
</tr>
</tbody>
</table>

\[ R^2 = 0.996 \text{ and } R^2 \text{ (Adjusted) } = 0.995 \]

\[ F \left( 4, 20 \right) = 880.347 \]

\[ DW = 1.741 \]

The DW is 1.741 and thus lies in the indecision region (between du=1.83 and dl=0.9) and we cannot tell whether there is autocorrelation or not. About 99.5 per cent of variations in loans advanced to members are explained by the variables in the equation. The \( f \)-statistic =880.347 is greater than \( f \)-critical and hence the population from which the samples are drawn are significantly different.

4.1.3. 2SLS (Simultaneous Equation) Regression Results

4.1.3.1. Savings function (s)

As stated earlier, variables P, A and Lo are positively correlated to savings (s) and significant. The variable loans advanced to members (La) were also significant but negatively correlated to savings. The other two variables, loan defaults (Ld) and investment undertakings (lu) were found to be negatively correlated to savings but insignificant. The \( R^2 \) has gone down to 97.39 per cent. The same
applies to the $t$-statistics but the result is as before. The $t$-statistics have reduced but the coefficients’ significance has not changed except that the standard errors of the coefficients have risen.

The two stages least squares 2sls) results are in the table below.

Table 5: Two stage least squares regression results (s)

Dependent variable: - 5

Instrumental variables: - R, she, Lo, P, lu, La and Ld

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Estimated Coefficient</th>
<th>Standard Error</th>
<th>$t$-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>C (constant)</td>
<td>6736</td>
<td>24294.3789</td>
<td>0.277</td>
</tr>
<tr>
<td>A</td>
<td>0.672</td>
<td>0.011</td>
<td>3.750</td>
</tr>
<tr>
<td>Lo</td>
<td>0.323</td>
<td>0.0034</td>
<td>2.411</td>
</tr>
<tr>
<td>P</td>
<td>0.949</td>
<td>0.0263</td>
<td>14.479</td>
</tr>
<tr>
<td>lu</td>
<td>-0.27</td>
<td>0.206</td>
<td>-0.661</td>
</tr>
<tr>
<td>La</td>
<td>-0.729</td>
<td>0.0023</td>
<td>-7.177</td>
</tr>
<tr>
<td>Ld</td>
<td>-0.031</td>
<td>0.094</td>
<td>-0.726</td>
</tr>
</tbody>
</table>

$R^2 = 0.9822$ and $R^2$ (Adjusted) = 0.9739

$F (6, 13) = 119.229$

4.1.3.2. Assets function (A)

Comparing the 2sls results and those of the OLS, we find that, the $t$-statistics of all the coefficients have reduced but the coefficients’ significance has not changed. Standard errors have increased and the $R^2$ has gone down to 79.45 per cent. F-statistic has reduced to 19.367 but the result is as before.

Table 6: Two stages least squares regression results (A)

Dependent variable: - A

Instrumental Variables: - P, lu, La, Lo, R and s
<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Estimated Coefficient</th>
<th>Standard Error</th>
<th>t-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>C (constant)</td>
<td>1783277.196</td>
<td>1370877.716</td>
<td>1.301</td>
</tr>
<tr>
<td>S</td>
<td>0.444</td>
<td>2.42</td>
<td>3.057</td>
</tr>
<tr>
<td>R</td>
<td>-0.287</td>
<td>2451155.55</td>
<td>-2.906</td>
</tr>
<tr>
<td>Shc</td>
<td>0.011</td>
<td>0.0699</td>
<td>0.053</td>
</tr>
<tr>
<td>Lo</td>
<td>0.493</td>
<td>0.079</td>
<td>2.648</td>
</tr>
</tbody>
</table>

$R^2 = 0.8378$ and $R^2$ (Adjusted) = 0.7945

$F (4, 15) = 19.367$

### 4.1.3.3. The share capital/deposits function (shc)

The variable La was positively correlated to share capital and significant. The variable M was also positively correlated to share capital but insignificant. The other variable Dd (t-1) was negatively correlated to shc but insignificant. The F-statistic is 19.367 and was found to be greater than the F-critical hence the population from which the samples were drawn did differ significantly. The standard errors have increased while the t-statistic has reduced.

---

Table 7: Two stage least squares regression results (shc)

Dependent variable: - shc

Instrumental variables: M, Dd (t-1), S, R and Lo

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Estimated Coefficient</th>
<th>Standard Error</th>
<th>t-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>C (constant)</td>
<td>1171955.61</td>
<td>655197.037</td>
<td>1.789</td>
</tr>
<tr>
<td>M</td>
<td>0.037</td>
<td>128.006</td>
<td>0.737</td>
</tr>
<tr>
<td>Dd (t-1)</td>
<td>-0.011</td>
<td>1.504</td>
<td>-0.329</td>
</tr>
<tr>
<td>La</td>
<td>0.972</td>
<td>0.044</td>
<td>26.227</td>
</tr>
</tbody>
</table>
4.1.3.4. The Loans advanced to members function (La)

Both the loan outstanding (Lo) and investment undertakings (Lu) are negatively correlated to La and insignificant. The share capital (Shc) is positively correlated to La and significant. The loan default (Ld) was found to be negatively correlated to La but insignificant. All these variables explain 99.46 percent of the variation in La. The F-statistic is 880.347, which is greater than the f-critical hence the population differs significantly.

Table 8: Two stage least squares regression results (La)

Dependent Variable: - La
Instrumental variables: M, Dd (t-1), S, r and Lo

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Estimated Coefficient</th>
<th>Standard Error</th>
<th>t-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>C (constant)</td>
<td>-221673.05</td>
<td>485510.868</td>
<td>-1.5</td>
</tr>
<tr>
<td>Lo</td>
<td>-0.047</td>
<td>0.035</td>
<td>-0.521</td>
</tr>
<tr>
<td>Lu</td>
<td>-0.009</td>
<td>4.162</td>
<td>-2.739</td>
</tr>
<tr>
<td>Ld</td>
<td>-0.055</td>
<td>1.924</td>
<td>31.379</td>
</tr>
<tr>
<td>Shc</td>
<td>1.07</td>
<td>0.028</td>
<td>-0.457</td>
</tr>
</tbody>
</table>

*R² = 0.9958 and  R² (Adjusted) = 0.9946
F-statistic = 880.347

4.1.4. The Econometric Results versus The Hypothesis

i) It was confirmed that there is a positive relationship between profits and corporate savings. And that profit is one of the main determinants of corporate savings.

ii) It was also confirmed that membership and share capital/deposit are positively correlated. Lagged divided had a negative coefficient and these two variables are insignificant determinants of share capital/deposits.
iii) Lastly, it was confirmed that share capital/deposits is the major determinant of loans advanced members and it has positive coefficient.
5. **CHAPTER FIVE: POLICY IMPLICATIONS, SUMMARY AND CONCLUSION**

5.1. **INTRODUCTION**

This chapter presents the policy recommendations based on the results of this study and other implied results. The policies recommended here are further based on the major functions of this research presented in chapter three. The summary subsection gives a summary of what is mostly contained in each of the five past chapters. It precisely tells us what we wanted to do, how we did it and what we found out. From the whole study, the major conclusions are also stated.

5.2. **POLICY IMPLICATIONS**

The corporate savings as mentioned earlier are quite important for the development of this sector especially for investment purposes. From the results the major factors that determine its magnitude are profits, investment undertakings, assets and loans advanced to members. Others include loan defaults and loan outstanding.

In order to increase the demand for corporate savings, we need to reduce the amount of loan defaults. This is because the two variables are negatively correlated. And therefore the loanees and the loaners (management) must follow the laid-down regulations of giving out loans so as to prevent defaults. Increase of complete failure to pay, they can resort to guarantors. Loans should be insured against defaults. Members need to be enlightened about the demerits of loan defaults so that they advance an attitude of repaying.

The profits of co-op societies need to be raised in order to boost the corporate savings. One way of doing that may to employ qualified management so that the costs of running theses institutions could be reduced and therefore profits raised.
In order to increase the current corporate savings, the societies need to reduce the amount of investment being undertaken now until such a time that the society is financially strong enough to undertake heavy investments. Increased demand for investment funds reduces the demand for corporate savings. Thus the policy of postponing unnecessary and unviable investment undertakings is recommended.

As the society’s assets increase, there is higher demand for corporate savings. This means that to raise the corporate savings, the assets of the society must expand. This will need increased participation and motivation on the part of the members who can supply funds to acquire these assets.

Loans advanced to members and corporate savings are positively correlated hence increasing loans would increase the demand for corporate savings. Thus, cooperative societies need to increase the loans advanced to members if they are to raise their corporate savings.

The corporate savings increases as loan outstanding increases. Hence if we have the intention of increasing corporate savings, we should increase loan outstanding by either extending the payment period or reducing the monthly repayments.

From the assets function, we realize that corporate savings and rate of return are the most important factors. Hence in order to increase the society’s assets or the demand for assets or to improve on the diversification of the portfolio, the corporate savings must rise and this could be done as stipulated above. The loan outstanding needs to be raised in order to increase the assets of the society. From the results, societies with higher returns will tend to have fewer assets. Thus it is recommended that the ratio of profits to total assets should not be very high if we aim at improving the assets of the society.

The need to increase share-capital or increase the demand for it is one of the objectives of both the primary coop societies and this study. From the results, this can be achieved through increased membership and loans advanced to members. It can also be increased through reduced lagged dividends. Hence there is need for coop education and active participation by the relevant agent especially the coop leadership, membership, the government and the apex organizations such as KUSCCO and KNFC. It is also a policy implication that loans taken by members be properly
monitored so that they are used rightly. This would ensure better proceeds and hence encourage more members to come for more loans taken by members are properly monitored so that they are used rightly. This would ensure better proceeds and hence encourage more members to come for more loans which would in turn increase the share capital through interest charged (the two variables are positively related).

Though the t-statistic of lagged dividend was lower than the t-critical; the impact of this factor on deposits is not so small as indicated by the value of its t-statistics. Since lagged dividend and share-capital are negatively correlated, there is need to give members dividends presently to have a higher level of share capital in the future.

The last function, which represents the loans given to members, is also quite important. In fact one of the main objectives of primary coop societies is to give as much loans as possible and at a minimum cost to its members. First it is noted that loans advanced mainly come from share-capital/deposits. Hence in order to raise it or its demand, there is need to raise the share-capital as discussed above.

The second method is by reducing the amount of funds being allocated to investment undertakings, especially investment on unviable projects so those funds are set free for loans. This requires discussion among the different coop members. Thirdly, members need to be educated about the investment opportunities and constraints, and the above-mentioned agents should assist both morally and materially so as to quicken the process, to make it more effective and meaningful.

Loans advanced to members and loans outstanding are both negatively correlated. Therefore increase the objective is to increase loans being advanced to members loan outstanding should be reduced.

Another subsidiary important policy, which has been used in the past, is that one of increasing the multiplier. We must propose that the multiplier taken must consider the available funds, the laid down regulations, the loan applicants’ income and the society’s objectives among others.
5.3. **SUMMARY AND CONCLUSION**

5.3.1. **Summary**

Chapter one of this study has given the historical background of co-operatives. It has also defined the scope of this study, the statement of the problem, objectives of the study, justification and significance of the study and assumptions and limitations of the study. What the study wanted to do was to find out the determinants of savings with a view to giving recommendations which can help to boost the inadequate as can be seen in tables A, B and C of appendix 1.

Chapter two has reviewed both the theoretical and empirical literature that has formed the basis of this study and other studies that may follow thereafter. One notable weakness of these past studies is in the methodologies where single equation models have been used instead of simultaneous equation models. Thus they suffer from specification and simultaneity bias. But in studies where these biases have been eliminated, the studies have been too general hence not very useful for sectoral policies.

From all these studies have been too general hence not very useful for sectoral policies. From all these studies, savings institutions are very important economic aspects and agents of linkage in any economy, Kenya inclusive.

Chapter three gives the hypothesis and research methodology used in undertaking this study. Both ordinary least squares (OLS) and two stage least squares were used to estimate the four functions mentioned earlier.

More emphasis was placed on the latter methodology as it got rid of the earlier sighted weaknesses of past studies.

Chapter four has presented the results of study. It was found that just like any other economic entity, primary coop societies also follow the laid down economic theory rules in their daily operations. For example, savings is quite and important ingredient in achieving economic development. For any economic entity to raise its savings the income level must be raised. And for loans and share-capital to rise, membership and monthly contribution need to be raised. Policies to do all these have already been suggested above.
5.3.2. Conclusion

The Central position which primary co-operative societies occupy in the Kenyan economy and more importantly in the co-operative movement has made and continues to make them the subject of interest of contemporary researchers. The nation's economic welfare depends very much on how much savings are mobilized by these institutions and how efficiently these resources are utilized in the financial sector as a whole and in other lines of activity. Knowledge about the determinants of savings, give loans and ensure efficient objective of financial regulation is to mobilize savings, give loans and ensure efficient production and utilization. A study of this nature therefore can be viewed as a means of providing information, which helps to shed light on possible policies that can facilitate savings mobilization and loans expansion.

Obviously, the savings shortage is far from over. Formidable obstacles, which are at once physical, financial, political and attitudinal remains. Constructive new ideas and policies, nevertheless, are receiving attention and may show the way to an ultimate solution. Besides increasing income levels or reducing tax rates, which is an ever-present possibility, new approaches to savings shortage problem have been proposed and are being adopted. Primary co-operative societies are new center of focus. Above all, is the growing realization that the savings shortage problem is part of the larger problem of the national poverty. As most economists have pointed out, savings shortage problem and the national poverty will not be solved separately but together through the process of economic growth and development.

In this paper, an attempt has been made to emphasize the importance of primary co-op societies in the savings mobilization process in the co-operative movement and to find out the determinants of savings in this sector. The paper concludes that:

(i) To increase corporate savings or its demand, the primary co-operative societies increase their assets and profits. And also could make an attempt to decrease non-beneficial investment undertakings and excessive loans being advanced to members.
(ii) To expand and diversify the assets and portfolio respectively, the primary co-operative societies should increase their corporate savings, loans outstanding and attempt to reduce their share capital.

(iii) To expand their share-capital/deposits or to raise the demand for their shares, primary co-operative societies should not only raise their loans to members but also the membership. While at the same time pay out more dividend to create an incentive on the part of members.

(iv) Finally to expand the amount of loans advanced to members or to raise the demand for loan, primary co-operative societies should expand their share capital, while at the same time reduce their investment undertakings in unviable areas and minimize the loan outstanding in order to create excess loanable funds.

In spite of the great effort put into this paper, it stands out just as an opener to greater depths that need research. Hence there are greater opportunities for future research in the area.
### APPENDIX 1

**Table A: - Societies Intended Investment and corporate savings 1998 (Ksh. Millions)**

<table>
<thead>
<tr>
<th>Society</th>
<th>Investment (a)</th>
<th>Retained Earnings (b)</th>
<th>Statutory Reserves (c)</th>
<th>Cumulated Reserves (d)</th>
<th>Gap 1 b-c-d</th>
<th>Gap 2 b-e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ukulima</td>
<td>130.188</td>
<td>1.202</td>
<td>0.399</td>
<td>1.136</td>
<td>128.587</td>
<td>129.05</td>
</tr>
<tr>
<td>Magereza</td>
<td>19.167</td>
<td>0.318</td>
<td>0.765</td>
<td>5.573</td>
<td>18.084</td>
<td>13.59</td>
</tr>
<tr>
<td>Ardhi</td>
<td>6.000</td>
<td>1.482</td>
<td>0.450</td>
<td>1.835</td>
<td>4.068</td>
<td>4.17</td>
</tr>
<tr>
<td>Harambee</td>
<td>197.613</td>
<td>0.171</td>
<td>2.171</td>
<td>11.910</td>
<td>195.271</td>
<td>185.70</td>
</tr>
<tr>
<td>Afya</td>
<td>19.133</td>
<td>2.075</td>
<td>1.819</td>
<td>17.495</td>
<td>15.239</td>
<td>1.63</td>
</tr>
<tr>
<td>Tembo</td>
<td>45.000</td>
<td>0.120</td>
<td>0.032</td>
<td>0.940</td>
<td>44.848</td>
<td>44.06</td>
</tr>
<tr>
<td>Mwalimu</td>
<td>12.000</td>
<td>0.149</td>
<td>0.105</td>
<td>2.022</td>
<td>11.746</td>
<td>9.98</td>
</tr>
</tbody>
</table>

**Source:** - MOCD and Annual Financial Statements of Co-operative Societies (various)

**Table B – Investment and savings as a percent of GNP at current price 1988-1998**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gross Investment</td>
<td>38.1</td>
<td>35.85</td>
<td>38.4</td>
</tr>
<tr>
<td>2. Foreign Savings</td>
<td>11.25</td>
<td>11.85</td>
<td>14.25</td>
</tr>
<tr>
<td>4. Private Savings</td>
<td>23.85</td>
<td>20.55</td>
<td>25.35</td>
</tr>
<tr>
<td>5. Government Savings</td>
<td>3</td>
<td>3.6</td>
<td>-1.2</td>
</tr>
<tr>
<td>6. Gap (1-3)</td>
<td>11.25</td>
<td>11.7</td>
<td>14.25</td>
</tr>
</tbody>
</table>

**Source:** - Adopted from Sessional paper, Number 3, 1999, p 18.


<table>
<thead>
<tr>
<th>Year</th>
<th>Saving</th>
<th>Growth Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>661.99</td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td>476.03</td>
<td>-28.11</td>
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**Source:** - Economic Survey (various)
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Statistics for Co-operatives in Kenya, MOCD statistics Units (various issues)


