ANALYZING THE DETERMINANTS OF HOUSEHOLD SAVINGS IN ZAMBIA 1985-2017
(Paper ID: CFP/1120/2019)

Corazon Mumba,
Humanities and Business
Information and Communications University,
Email: corazonmumba@gmail.com

Mr. Saviour Lusaya
Humanities and Business
Information and Communications University,
Email: mynameissaviour@gmail.com

Abstract

Savings have divergent definitions, in this paper however savings are defined as the decision to defer a fraction of a household's income on consumption for purposes of future investment, preparing for unforeseen circumstances or upgrading of an individual's lifestyle by funding purchase of a farm or funding of future education. Over the last few years Zambia has displayed a reliance on foreign debt to finance her investments this however is not a favorable indication for the country. Therefore, efforts ought to be made in order to increase domestic savings of which household savings is a component.

The main purpose of this study was to empirically analyze the determinants of household saving in Zambia over the period (1985-2017). The study reviewed both theoretical and empirical work on the relationship between household saving and its independent variables (income, dependency ratio, inflation rate, real interest rate and financial deepening). The study employed the ARDL Model. The results of the Augmented Dickey Fuller and Philip Perron unit root test showed that five of the time-series data were non-stationary at levels, but become stationary in the first differences and one series was of order I (0). The results of the study reveal that contrary to a theoretical expectation, the level of income and household savings are positively related, implying that Zambian households do save

although their income is very low. While inflation rate, real interest rates and financial deepening have positive long run relationships with household savings rate. On the other hand, age dependency ratio has a negative long run relationship with household savings. In the long run all explanatory variables are insignificant to explain household savings in Zambia.

The study revealed that although inflation and interest rates have a significant impact in the short run, in the long run their impact on household savings is insignificant, therefore policy makers should concentrate on formulating policies based on individual capabilities and deliberate future investments such as investments in government bonds and treasury bills, this strategy calls for an improvement in financial securities literacy. An additional recommendation is that policies that encourage the emergence of indigenous enterprises in various forms of farming, manufacturing and value addition to products should be encouraged. This would in turn create employment opportunities resulting in a trickle-down effect to the populous hence an increase in household savings and turn domestic savings.

Keywords: Zambia, *Household Savings, Augmented Dickey Fuller, Co-integration, ARDL model*

1. INTRODUCTION

1.1. Background

Savings is the amount of disposable income saved after the consumption of goods and services at a given time period that is not consumed by economic units. Economists believe that savings and investment are a necessary requirement for the growth and development of countries, therefore a decline in savings will lead to decrease in investment and in turn a decline in economic growth and development of the country. Stated that the higher the increase in the rate of investment, the greater the rate of capital formation, which eventually encourages growth and development.

Economists see domestic savings as disposable income less consumption expenditure. In other words, it is seen as income that is not used for purchasing of goods and services intended for consumption. This research refers to deposits in formal financial institutions. Because it is difficult to ascertain the amount of savings held in informal saving groups or institutions such as Chilimba or personal possessions such as houses, farms, motor vehicles, farming equipment or laptops and cellphones, the focus of this study are on those savings held by formal financial institutions like banks and microfinance institutions.

Based on the definition above it is very clear that savings has relationships with investment, this is because a country with a low savings rate will need to borrow either externally or internally in order to fund its local economic sectors such as health and education.

According to Otiwu K. Okere P.A Uzowuru L.N (2015) savings are very important in order to increase the amount of capital available and additionally an increase in savings is vital but not the sole necessity for investment. Savings are a strategic variable in the theory of economic growth and its role as a determinant of economic growth has been emphasized by classical economists. In many developing economies particularly Africa, savings and investments are necessary engines for capital formation hence economic growth.

Households may save in various forms, ranging from financial assets such as corporate bonds and treasury bills to wealth in the form of household goods, livestock and agricultural produce as small as back gardens among others. It should be stressed on the onset though that the interest of this econometric paper does not lie in the discussion of savings in the above forms but rather savings in the financial systems. This is affirmed by the fact that savings are distributed from surplus to deficit economic units for lending to productive investment purposes when they are in the form of financial savings which results in economic growth of a country.

In order for any country to fund its investment expenditure adequate savings both public and private are needed which will in turn boost the economic growth of such a country or else the country has no option than to borrow domestically or externally. Nonetheless, borrowing from abroad can have adverse effects on the balance of payments as these loans will have to be serviced in the future and it also carries a foreign exchange risk. So, sufficient household savings are necessary for economic growth because it also forms part of the most important issues in development economics, and for developing countries, on how to stimulate investment, and how to bring about an increase in the level of savings to fund increased investment. In fact, the crucial role of household savings mobilization to the sustenance and reinforcement of the saving-investment-growth chain in developing countries has preoccupied development economists for decades. Given this, the main thrust of this study is to empirically investigate the determinants of household savings in the Zambia economy. This study becomes crucial in the light of the need to provide necessary insight on how to foster rapid growth and development of the economy.

For a number of years there has been a reliance on revenue obtained from copper production and exportation, however lack of utilization of profits and inadequate revenue generation has led to reduced revenue from copper production and therefore loss of both formal and indirect informal employment that provided income for a number a business's visor vi households. Savings are very important in order to generate fund for investment. It cannot be emphasized enough that savings play a pivotal role in economic growth and sustainable economic growth in both small open economics and large economies. It is important for any country to have higher savings as compared to investments as a country with more savings than it does investments is termed a net lender.

Chama Bowa-Mundia and Caesar (2017) state that the World Bank report 2017 indicated that at microeconomic level 60% of Zambian adults had no possession of a formal bank account. They however stated that the 2015 FinScope survey revealed that an estimated 60% comprising the population that do not have possession of a bank account took advantage of other forms of saving such as keeping money at home, informal savings groups known as Chilimba or the more formalized savings groups known as village banking.

Zambia is among the developing countries that need fast and sustainable increase in investment growth; however, her household saving rate was on the lowest for several decades. The savings level in Zambia particularly in rural areas is very low and its patterns and determinants are not empirically identified. In rural areas in Zambia, savings is mainly made out of the income from agricultural produces, the flow of the income is irregular and seasonal which reduces the ability to save or poorly respond to the incentives which promote savings and agreed that the negative growth in real GDP in the mid-1980s may possibly be accredited to a multitude of factors of which decline in investment and savings are major ones. BAZ affirmed also that savings and investment culture in Zambia is very poor relative to most economies of the world. He indicated that private domestic savings which averaged 15.7 percent of GDP during the period 1986- 1989 declined significantly to 6.0 per cent between 1990-1994 while in 1996 and 1999, this ratio stood at 13.2 per cent and 14.5 percent respectively.

1.2. Statements of the problem

Zambia's 2017 national budget revealed external debt of $6.7 billion which translated to 35% of Zambia's gross domestic product, it's domestic debt as a proportion of government bonds and treasury bills was at zmk26 billion or 12% of GDP as at September 2016 (National budget 2017). For the 2018 budget it was revealed that external debt by then stood at $7.56 billion translating into 29% of GDP and domestic debt stood at zmk44.6 billion which is 18% of GDP (National Budget 2018). Owing to the fact that Zambia's budget is financed largely by external it is pertinent that domestic revenue is boosted so as to enlarge the pool of possibilities for alternative financing locally which would reduce the debt burden that is a reality today. Repayment of foreign debt means that any foreign exchange obtained from trade exports or revenues from sale of government securities is utilized to meet debt obligations incurred. The importance of adequate household savings means that domestic savings increase and can be considered as one way to significantly reduce external borrowing. A country like Zambia with a low capability to fund its local investments resorts to other countries and international organizations in order to fund its capital investments, in such a case a country runs a trade balance deficit. However according to Keynes, a country with too high a savings ratio lowers consumption and aggregate demand. It is therefore important to know what factors influence household

savings and what policies can aid policy makers ensure that desirable levels of savings are achieved. Savings are an essential part of the economy as a means of economic growth; however, it should be emphasized that savings alone are not adequate to attain economic growth there are other factors to consider in order to attain economic growth but this study focused on savings as an explanatory variable. It is inevitable that a nation should strive to boost its domestic savings as an aid to economic growth and sustainable development. To this end therefore, an adequate supply of domestic and/or household saving remains a core national policy objective; mainly due to its direct impact on growth process as well as its role as domestic investment stimulants. Rehman, Bashir and Faridi (2011) and Ogbokor and

Samahiya (2014) further reaffirms the inevitability of saving in the economy by stressing the fact that, higher savings rate is crucial for long term investment process, which in turn manifest into industrialization that breeds; employment opportunities and economic development. Given the increasing integration of international financing for instance, it is high domestic saving that can ensure macroeconomic stability internally. This postulations of positive influence of savings on investment and subsequently growth and development are an indication that savings matters for growth and development anywhere in the world.

Figure 1. 4 Gross Domestic Savings
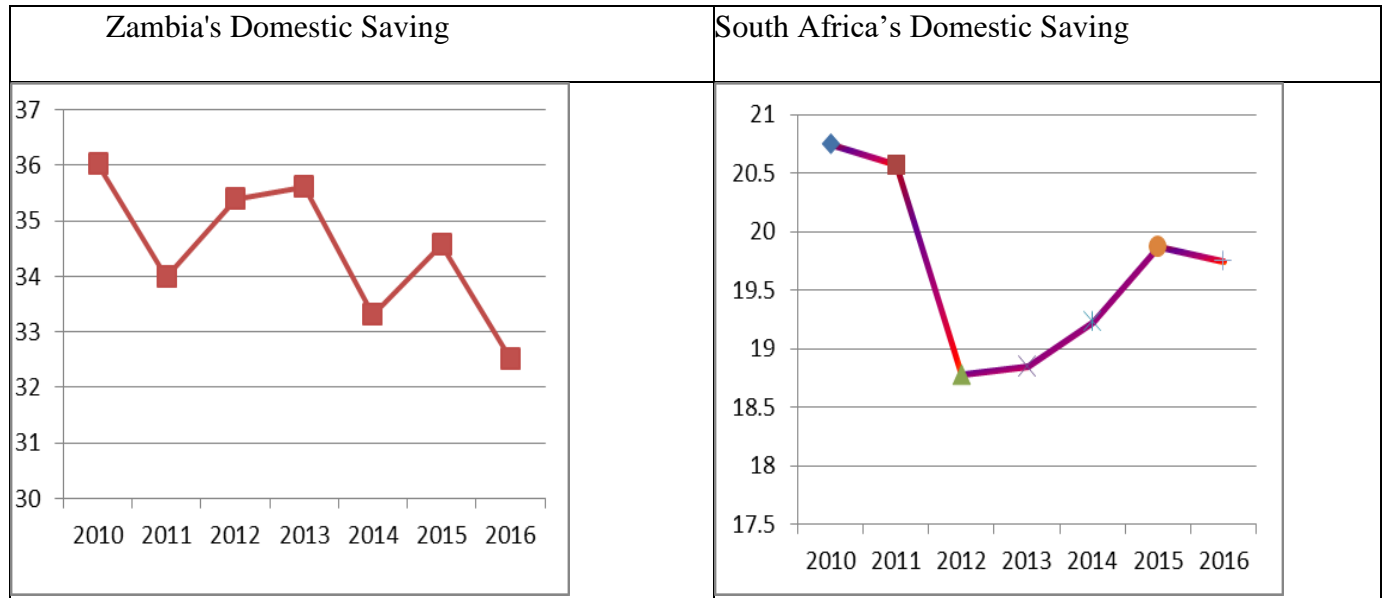
Source: *Researcher's computation using World Bank data set.*

Ironically however, it is the dismal household saving record in most African countries relative to other regions of the world that have been of concern to economists in the recent time. Despite Zambia's domestic savings averaged high compared to SADC's mostly developed country in the region South Africa as in Figure 1.4 but lower to countries like China, the country is yet characterized with low

investment and output growth thus, suggesting that her average saving rate ratio is still far from being impressive. Basically, there is lack of incentives to household savings in Zambia mainly due to: lack or poor understanding of household savings determinants; and high saving mobilization cost in terms of the transaction costs involved and also the cost of overcoming the information asymmetry

4

related to ensuring savers are convinced of postponing their consumption to a future date.

As it has been evident in recent years and as can be seen from the previous year's national budgets, Zambia has become too dependent on foreign debt as a means to fund the country's investment ventures and fostering economic growth. This translates into an increase for foreign exchange which is intended to finance foreign public debt, dependency on foreign debt also means that public savings polled from within the country are eventually diverted to service the repayment of public debt acquired internally and externally. This dilemma brings us to sort for alternatives that can be used to mobilize private saving (which consist of household and corporate savings) which can aid in future investment ventures and simultaneously contribute to sustainable economic growth.

While corporate savings accounted for around 70% of national savings during the 1970s, the situation has drastically changed over the years. With the deteriorating performance of manufacturing sector following the onset of the structural adjustment programme (SAP) in 1991 aimed at resuscitating growth which included policies such as trade liberalization, with no due attention paid to the protection of certain industries, the consequence has been a decline in corporate savings. In 2016 Zambia's gross domestic saving to GDP was below 20% from which only 2.8% was household savings compared to China's household saving of 40% which is the larger proportion of China's gross domestic savings. Figure 1.2 further highlights in 2017 the real average 30-day deposit rate for amounts above K20,000 fell to 1.2% from 2.5% as inflation rose, while the real average saving rate for amounts exceeding K100 further reduced to -4.9% from -3.3% over the same period. This decline in household savings entails that Zambia as a whole are particularly not saving. This supports the study of Pamu (2003), which showed that domestic investment in Zambia had been financed mainly by external resources rather than domestic savings.

The importance of the present paper stems from the fact that increased saving rate is of crucial importance for achieving macroeconomic stabilization, sustainable development and poverty-reducing growth in developing countries. In addition, savings that are generated within the national economy provide the means for the financing of domestic fixed capital formation, which in turn, affects economic growth potential. Understanding of the fundamental determinants of Household savings in Zambia represents critical importance in order to formulate policies to raise the saving rate. This study thus aims at investigating the empirical determinants of household savings in Zambia. The need to also understand these factors stems from: The rising uncertainty of foreign financing on which the country has largely been dependent on in planning its economic growth process. This is in terms of aid and foreign direct investment, the fact that despite various polices that have been instituted, domestic savings (as a percentage of GDP) have not been improving. Being relatively high at 16.6% in 1990, this fell to 7.4% in 1994 and according to statistics, in 1998 and 1999 the ratio stood at 3.9% and -1.15% respectively (World Bank, 2001). This implies not only a fall in public savings but in private savings as well; and the fact that no significant savings are unlikely to be realized in the immediate future, from the cooperate sector, owing to its fragmented size.

1.2 Objectives of the project
The general objective of this study is to analyze the determinants of household savings in Zambia over the period (1985-2017).

Specific Objectives
i. Determine the effect of per capita income on household saving rate in Zambia.

ii.   Find out the effect of interest rate on household savings in Zambia.

iii. Determine the effect of financial deepening on household saving in Zambia.

iv.   Establish the effect of inflation on household savings in Zambia.

v.   Determine the effect of dependency ratio on household savings in Zambia

2.1 Theoretical Framework / Model

Saving is an important discussion for an economy and has been studied from varies sects of economic thought as will be illustrated. Savings and consumption usually go hand in hand in most theories of saving, owing to the fact that when a household decides not to consume the household prioritizes saving (Mbuthia, 2011). Several models are used to explain motivations to save: life-cycle (to provide for anticipated needs), precautionary, independence, inter-temporal substitution (to enjoy interest), improvement (to enjoy increasing expenditure), enterprise, bequest, avarice and down payment (Karlan & Morduch, 2010).

Four main theories are widely used to explain saving patterns or habits of economic agents, these theories are Absolute Income Hypothesis by Keynes (1936), Relative Income Hypothesis by Duesenberry (1949), Permanent Income Hypothesis by Friedman (1957) and Life-Cycle Hypothesis by Modigliani (1963). The four theories are briefly explained below

Absolute Income Hypothesis (Keynesian Theory)

Aggregate consumption has been used in macro-models as far back as (Keynes, 1936) and is especially vital for growth in a transitional economy. Household's current consumption expenditure is a positive function of real current disposable income. As income increases, a portion of the increase in income is to some extent consumed and saved as a safety net in case of unfortunate circumstances such as loss of employment, sickness, demise of the individual who provides income for a household or for purposes of investment. The absolute income hypothesis is a short run theory and makes the assumption that marginal propensity to consume (MPC) is between zero and one. MPC declines with increase in income, implying that marginal propensity to save increases as income increases. This theory entails that the more an individual earns the greater their level of consumption and also the more the possibility for such an individual to save, in reality an individual with a higher wage is more likely to consider saving as compared to an individual with a low wage. Therefore, increases in income make it possible not only for saving but future investments for an individual.

The Life-Cycle Model (LCM)

Life-cycle hypothesis is developed by Modigliani. According to the theory consumption is a function of the consumer's life expected income. Individual's consumption depends on the rate return on capital, the spending plan and the retirement age of individual which the plan is made.

Modigliani (1963) postulates a life-cycle hypothesis of consumption of an individual in a specified period of time. These theories suggest that in the early years of a persons' life they are net borrowers. In the middle years they save to repay debts and provide for retirement (Epaphra, 2014: s. 226). This model is extended to the national level; the main determinants of the saving are the rate of growth of per capita income and the age structure of population. A critical analysis of this theory however shows that it seems to mirror what happens in developed economies with little or no regard to the peculiarities of developing countries like Zambia. There are a number of reasons that make it imperative for saving behavior in developing countries to be modelled separately from that in developed economies. This model implies that an

individual just starting out in his or her career is likely to spend all of his or her income and borrow to meet needs that arise from living standards that they decide to commit themselves to. Debts acquired at the onset of one's career for instance a car loan or mortgage is paid off during an individual's mid age years. By the time this individual reaches retirement, he or she should be debt free provided he/she made the right life choices of preparing for retirement as opposed to meeting expenses on daily basis which is earning a living only for consumption

The Permanent Income Hypothesis (PIH)

The Permanent Income Hypothesis (PIH) was developed by Friedman. The hypothesis argues that consumption isn't by current income but depends on expected average income and transitory income. This hypothesis income and consumption are divided into two major components as the transitory and permanent components.

Relative Income Hypothesis

According to relative income hypothesis, a household's consumption expenditure is a function of the relative income of the household. When a household's income falls, the household stops saving completely or saves less than it used to before the fall in income or alternatively borrows as a measure to maintain the standard of living in comparison with their peers (keeping up with the Jones). This is what distinguishes the absolute income hypothesis from the relative income hypothesis. A keeping up with the Joneses attitude is one where an individual with a lower income attempts to enjoy the same benefits that an individual with a higher comfortable salary enjoys. The difference is that one can afford to maintain such a lifestyle while the other struggles to keep up. This is what distinguishes the absolute income hypothesis from the relative income hypothesis.

2.0 Literature Review

Household savings are integral not only in economics but in finance as well. In this chapter, we define household savings and discuss the theoretical points of departure on savings that is the various theories which have been developed by economists about consumption and saving. We go on to look at the various motives of savings advanced by scholars. More-still, we discuss the importance of savings to an economy as a whole.

Keynes refers to savings as residuals remaining from income after expenditure on consumption (Davidson 2007). Savings are an important concept in macro-economics as the level of savings in an economy determines the resources available for investment. If investments exceed savings in a country with an open economy such a country is termed a net borrower, this is because such a country will resort to predominantly foreign borrowing in order to finance local investments. Aridas (2006) of Global Finance defines household savings as the difference between a household's disposable income and its consumption. A negative savings rate implies that a household spends more of its income on consumption as compared to the income it generates thereby catering for the over shot in the expenses by borrowing or disposing off some assets. Athukorala and Sen (2001) analyzed the determinants of private savings in India during the period (1954-1998), complications arose with regards the methodology that was used to examine the savings rate function using the life cycle model. Continuous terms of trade changes and concealed settlements/payments by emigrant Indians appeared to have a negative impact on the savings rate, additionally fiscal policy clearly played a significant role in increasing total savings in the economy.

Using a distinctive survey of consumers, Harris, Loundes and Webster (1999) analyzed Australia's determinants of household savings. They used quarterly data for the period August 1994 to

February 1999 in their analysis. Their results agreed with the notion that income is the most important determinant of household saving. Results of the study concur with the observation that income is the most vital determinant of household saving. Demographics and the reactions of consumers to certain economic changes were also revealed to furnish household savings to a large extent.

Findings of the study done by Kulikovet al (2007) to examine the determinants of household savings in Estonia indicate that income/emoluments and affluence related continuous controlled variables along with other important variables, like ownership of consumer durable and educational attainment were found to be among the most important determinants of household saving behavior.

Fasoranti (2007) concentrated on the impact of rural savings as a means of mobilizing savings by studying this behavior in the rural areas of Nigeria. Utilizing data collected from 100 respondents through means of questionnaires covering 5 villages, the results of the ordinary least square estimation technique revealed that labor (human capital), income, investments and assets had a positive relationship with total savings. The rural saving situation in Vietnam was examined by Newman et al (2008) studied the rural saving state of affairs in Vietnam by paying particular attention to the determinants of household savings specifically the likely outcome of network saving behavior in relation to household savings behavior. The data used in this study was obtained from the Vietnam Access to Resource Households Survey undertaken between August and September 2006 covering the vicinity of 12 Provinces. The study revealed the following concerning the determinants of saving, wealth overrides the participation decision, education was found to have no significant impact, the age of the head of household had a negative impact on savings, low financial savings

were discovered and the portion of formal savings was modest.

Using Panel data from 18 countries, Salotti (2008) studied the determinants of aggregate savings for the period 1980-2005 giving prominence to the importance wealth had on savings. Results of the fully modified ordinary least square (FMOLS) estimation technique indicated that an increase in wealth had a negative impact on household savings. Du Plessis (2008) In South Africa the investigation into the determinants of household savings was conducted by face to face interviews which involved economists as respondents. Despite being in agreement that theoretical determinants of household savings heighted in most saving literature are important in determining household savings, present income was not regarded as a primary determinant of household savings factor. The study revealed that South Africa's consumption culture aided by credit facilities is a deterrent to household savings. Also, government policies aimed at wealth distribution and welfare payments are viewed as an aid to a dependence culture hence a reduction in household savings.

Mususu (2006) used quarterly data to study the determinants of household savings in Zambia for the period 1994-2004 and his research utilized stationary and cointegration tests and established that inflation and interest rates had a long run positive relationship on household savings. He however concluded that there was insufficient evidence to establish if income had any impact on household savings.

Chizoma (2004) studied household savings in Zambia for the period 1975-2000. She used time series data and utilized dickey fuller tests to test for stationary and the vector error correction model to establish long run and short run relationships among variables. The research concluded that education, inflation rates and demographic factors had a long-term effect on household savings in Zambia. Income

however was proved to only have a short term effect on household savings. The research however did not establish if urbanization and dependency rates had any effect on household savings.

2. METHODOLOGY/RESEARCH DESIGN

2.1 Project Design / Approach

The study, being a quantitative study, used a quasi-experimental design in order to answer the research hypotheses posed. This type of design involves selecting groups, upon which a variable is tested, without any random pre-selection processes. This study is largely based on secondary time series data. The Bank of Zambia publications and the Central Statistics Office documents are the main sources of the data. Some data was obtained from the World Bank publications. The data in this study is therefore valid and reliable. The tool for data analysis used for this research the STATA14 package. The study originally intended to cover a period of fifty three years from 1964 to 2017. However due to non-availability of data household savings, dependency ratio and financial deepening, the study has been limited to the period from 1985 to 2017. Yearly data for the thirty-two-year period is sufficient to provided valid conclusions from the analysis.

Data source and validity

This study is largely based on secondary data time series data. The Bank of Zambia publications and the Central Statistics Office documents are the main sources of the data. Some data was obtained from the World Bank publications. The data in this study is therefore valid and reliable. The raw data for household savings, income per capita, dependency ratio, interest rate, inflation rate and financial deepening are on Appendix 1. The study was originally intended to cover a period of fifty-three years from 1964 to 2017. However due to non-availability of data household savings, dependency

ratio and financial deepening, the study has been limited to the period from 1985 to 2017. Yearly data for the thirty-two-year period is sufficient to provided valid conclusions from the analysis.

2.2 Model Specification

Starting with the model specification and later jump to other tests, various analytical techniques have been suggested in the literature by various authors in order to determine the determinants of households in Zambia. The empirical Household savings function can take the form as follows: $HHS = f(PCI, DR, INF, RIR, FD)$

Where;

HHS = Ratio of household savings to GDP

PCI = Per Capita Income

DR = Dependency Ratio in this context is defined as the ratio of dependents (people younger than 15 or older than 64) to the working-age population (those ages 15-64)

INF= Inflation rate (total consumer price percentage)

RIR= Real Interest rate (prime lending rate)

FD = Financial deepening (ratio of M2 to GDP)

The model specification is as follows;

$$\ln HHS_T = \beta_0 + \beta_1 \ln PCI_t + \beta_2 \ln DR_t + \beta_3 \ln RIR_t + \beta_4 \ln INF_t + \beta_5 \ln FD_t + \varepsilon_t$$

Where;

lnHHS = log of Ratio of household savings to GDP

lnPCI = log of Per Capita Income

lnDR = log of Dependency Ratio in this context is defined as the ratio of dependents (people younger than 15 or older than 64) to the working-age population (those ages 15-64)

INF= log of Inflation rate (total consumer price percentage)

RIR= log of Real Interest rate (prime lending rate)

FD = log of Financial deepening (ratio of M2 to GDP)

and ε_t is the error term

Estimation Procedure

Since this study utilized time series data it employed Stationarity tests to test for unit root, namely the graphical method, Augmented Dickey Fuller test (ADF) and Phillip-Perron (PP) test. Both ADF and PP tests test the null hypothesis of a unit root. The null hypothesis of a unit root is rejected in favor of the stationary alternative in each case if the test statistic is more negative than the critical value.

Stationarity means that a variable's mean, variance and covariance are constant over time. This implies that the mean, variance and covariance do not change over time. Stationarity tests are performed on data in order to avoid the problem of spurious or nonsensical regression.

To determine the order of the AR process, one strategy is to include lags whose coefficients are significantly different to zero; another more common strategy is to use a lag selection criterion such as the Akaike information criterion (AIC) or the Hannan Quinn information criterion (HQ). In this study, the Hannan-Quinn information criterion is used to choose the number of lags to be included. The long run relationship test used was the bounds tests for co-integration, this test was selected because it can be used to test for co-integration in a series where variables are stationary at different orders, that is regardless of the regressors being in the order of I(0) or I(1).

Error Correction Model: The study used the Error Correction Model (ECM) to estimate long-run causality and short-term dynamics an evidence of co-integration relationship among the variables.

4. RESULTS AND DISCUSSION

Results / Research findings

Descriptive Statistics

The table below shows the descriptive statistics of the data. The table reports the mean, standard deviation, minimum, maximum, kurtosis and skewness values of the data included in the study.

Table 4.1 Descriptive Statistics

	Ln_HHS	Ln_PCI	Ln_DR	Ln_INF	Ln_RIR	Ln_FD
Mean	1.935756	6.404658	4.574977	3.215767	3.154765	2.992193
Median	2.618974	6.134098	4.581299	3.101593	3.863018	2.932489
Std. Dev	3.747571	.6652085	.0268131	.9787279	2.821626	.2285772
Min	-17.11461	5.517933	4.495503	1.860881	-12.21737	2.607376
Max	3.6812	7.5165	4.60809	5.21119	4.18145	3.491993
Skewness	0.0000	0.2050	0.0010	0.2948	0.0000	0.0788
Kurtosis	0.0000	0.0001	0.0348	0.3059	0.0000	0.8288
Obs	33	33	33	33	33	33

The result above shows the mean values of the Ln_HHS, Ln_PCI, Ln_DR, Ln_INF, Ln_RIR and Ln_FD Variables are 1.935756, 6.404658, 4.574977, 3.215767, 3.154765 and2.992193 respectively. The medians of the series are 2.618974, 6.134098, 4.581299, 3.101593, 3.863018 and 2.932489respectively for Ln_HHS, Ln_PCI, Ln_DR, Ln_INF, Ln_RIR and Ln_FD variables. It should be noted that the median is a robust measure of the center of the distribution that is less sensitive to outliers than the mean. The maximum values of each of the series in the current sample are 3.6812 for Ln_HHS, 7.5165 for Ln_PCI, 4.60809 for Ln_DR, 5.21119 for Ln_INF, 4.18145 for Ln_RIR and 3.491993 for Ln_FD respectively. The standard deviations which are a measure of dispersion spread

in each of the series are 3.747571 for Ln_HHS, 0.6652085 for Ln_PCI, 0.0268131 for Ln_DR, 0.9787279 for Ln_INF, 2.821626 for Ln_RIR and .2285772 for Ln_FD.

Unit Root Test Results - Graphical Method
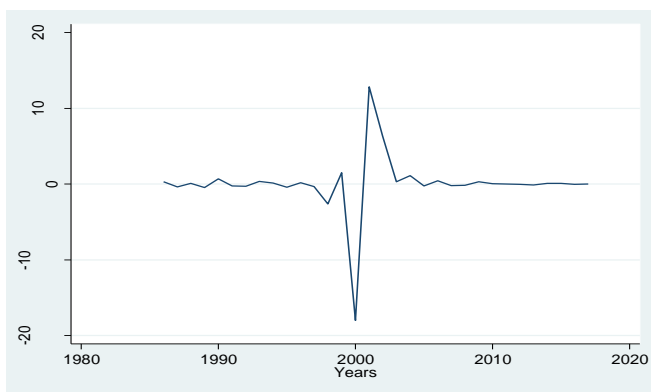### 4.2.1 Household Savings

Household savings for the period 1985 to 2017 is graphically presented in Figure 4.1. The graph is a case of a random walk with shift and time trend. A random walk shift and time trend in non-stationary. It contains a unit root. Therefore, household savings contain unit root. However, the first difference of household saving in Figure 4.2 is a case of a white horse. The first difference of household savings therefore is of order I (1).

Figure 4.1Household Savings at level
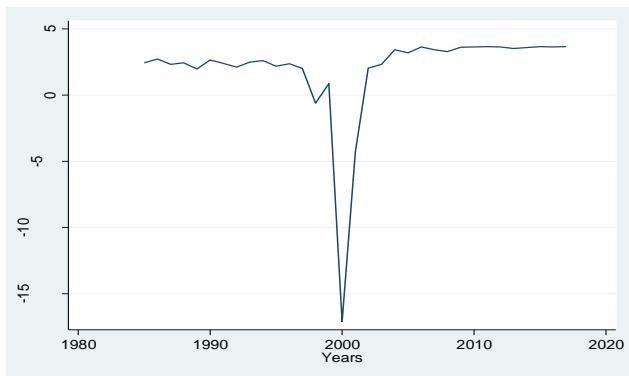
Author's Analysis from STATA14
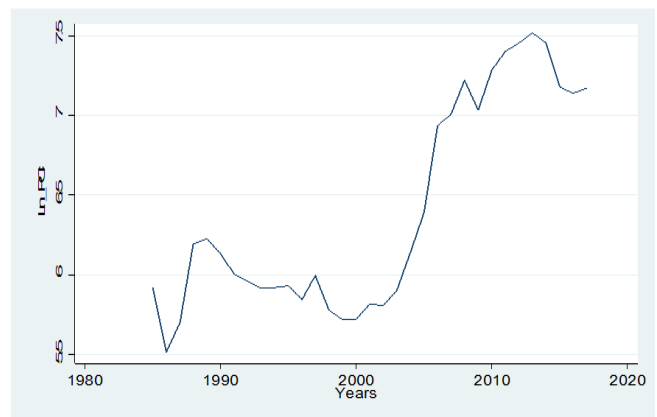
Figure 4. 2Differenced Household Saving

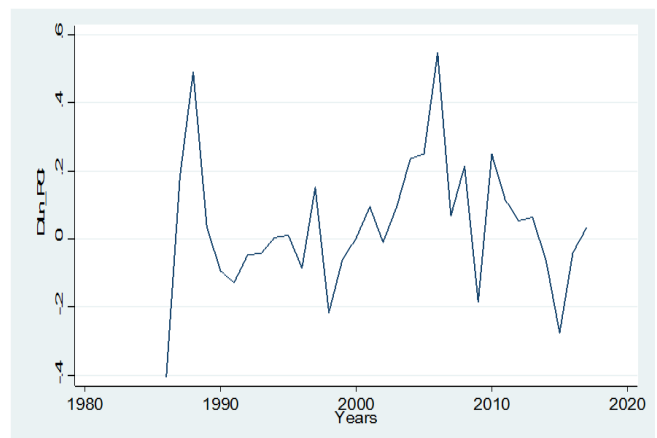*Author's Analysis using STATA14*

4.2.2 Income

Per capita income for the period 1985 to 2017 is graphically presented in Figure 4.3. The graph is a case of a random walk with shift though drifting upward. A random walk shift and drift is non-stationary. Therefore, income per capita contain unit root. However, the first difference of per capita income in Figure 4.4 is a case of a white noise and it is of order I (1).

Figure 4.3 Per Capita Income at level

Author's Analysis using STATA14
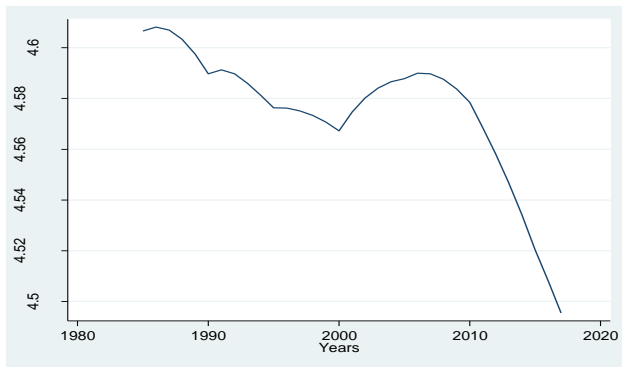
Figure 4.4 Differences Per Capita Income

Author's Analysis using STATA14

Dependency Ratio

Dependency ratio for the period 1985 to 2017 is graphically presented in Figure 4.5. The graph is also a case of a random walk with shift and drifting downward. It is a random walk with shift and time
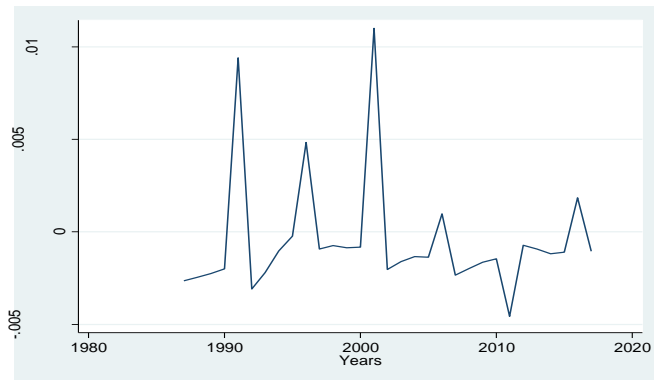
trend in non-stationary. It contains a unit root. Dependency ratio therefore contain unit root. However, the second difference of dependency ratio in Figure 4.6 is a case of a white noise. The second difference of dependency ratio therefore is of order I (2).

Figure 4.5 Dependency Ratio

Author's Analysis using STATA14
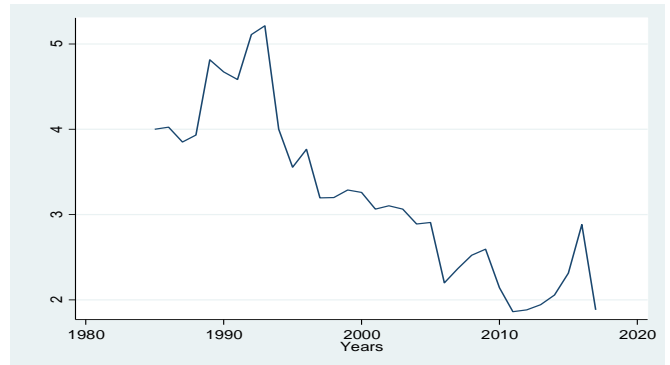
Figure 4.6Differenced Dependency Ratio

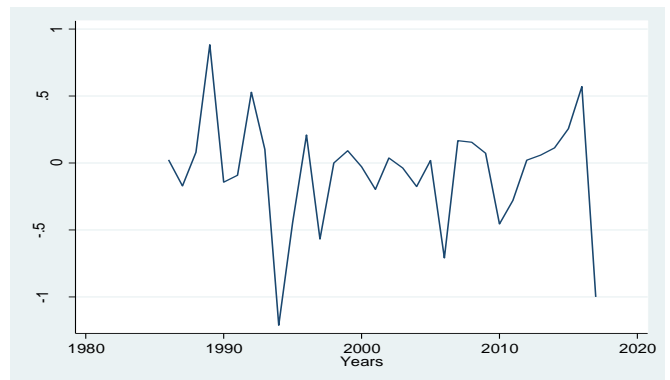*Author's Analysis using STATA14*

Inflation Rate

Inflation rate for the period 1985 to 2017 is graphically presented in Figure 4.7. The graph is a case of a random walk with shift though drifting downward. A random walk shift and time trend in non-stationary. It contains a unit root. Therefore, inflation rate contains unit root. However, the first difference of inflation rate in Figure 4.8 is a case of a white noise. The first difference of inflation rate therefore is of order I (1).

Figure 4.7 Inflation Rate

Author's Analysis using STATA14

Figure 4.8 Differenced Inflation Rate

Author's Analysis using STATA14

4.2.5 Interest Rate
**Interest Rate**

Interest rates for the period 1985 to 2017 have graphically presented in Figure 4.9 and the data is a case of a random walk with a shift and time trend. It implies that interest rate contains unit roots. The first difference of interest rate in Figure 4.10 however, is white noise and is of order I (1)

Figure 4.9 Interest Rate
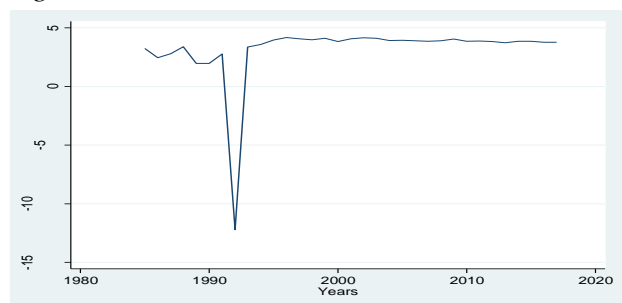
Author's Analysis using STATA14

Figure 4.10 Differenced Interest Rate
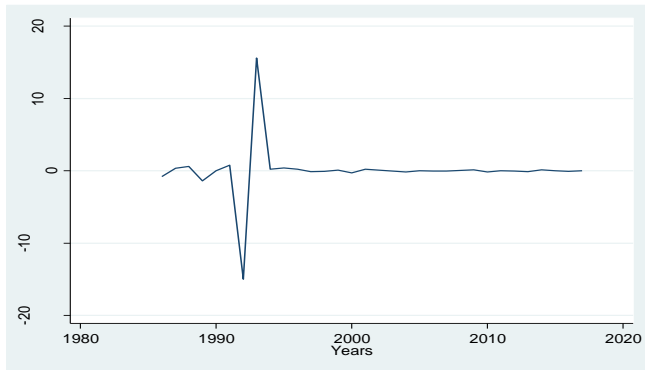
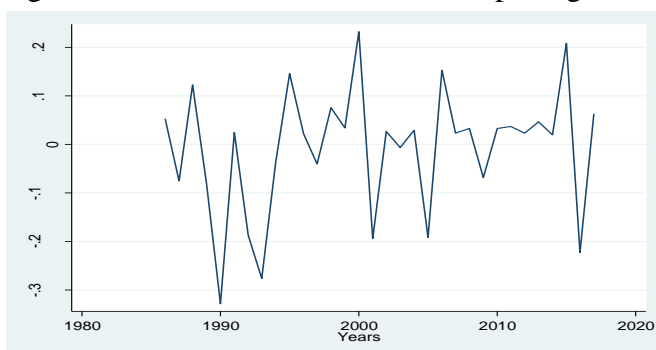*Author's Analysis using STATA14*

4.2.6 Financial Deepening

Financial deepening is graphically presented in Figure 4.11 and is a case of a random walk with a shift and time trend. It implies that financial deepening contains unit roots. The first difference of financial deepening in Figure 4.12 however, is white noise and is of order I (1)

Figure 4.11 Financial Deepening
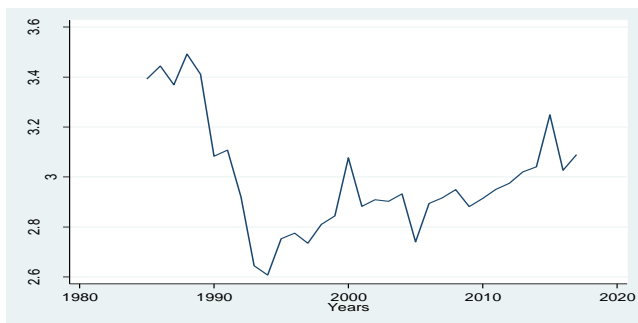
Author's Analysis using STATA14

Figure 4.12 Differenced Financial Deepening

Author's Analysis using STATA14

Summary of the graphical method

The graphical method of testing for unit root has reviewed that all the variables under study contains unit root at level during the study period of 1985 to 2017. The first difference of savings, income, interest rate, inflation rate and financial deepening are of order I (1) while dependency ratio was discovered to be of order I (2). Since they are of different orders, they can be only be tested for cointegration using a bound test. The study has also applied a mathematical method called the Augmented Dickey Fuller and Phillip Perron Models to confirm the presence of unit roots.

Unit Root Test Results - Mathematical Method
The Augmented Dickey Fuller

The null hypothesis is that the variables have unit root or are non-stationary while alternative is that the variables have no unit root or are stationary. The decision criteria is that, accept the null hypothesis if the absolute value of test statistic is lower than 5% critical value. Table 4.2 shows the results of unit root test using Augmented Dickey-Fuller (ADF). The absolute values of the ADF *t* statistic in this case of savings, income, dependency ratio, inflation rate and financial deepening are all less than their 5% critical values as can be seen in the table so we shouldn't reject the null hypothesis of the mentioned variables indicating the presence of a random walk, or has a unit root in the variables. While interest rate variable indicated the absence of random walk at order I (0). This was the case because the absolute test statistics of 3.681 is greater the 5% critical value of 3.576, so we reject the null hypothesis.

Table 4.2 Augmented Dickey-Fuller (ADF) at Level

Variable	Test Statistic	P-Value	5% Critical Value	Decision
Ln_HHS	-2.851	0.1788	-3.576	Non-Stationary
Ln_PCI	-1.549	0.8117	-3.576	Non-Stationary
Ln_DR	-1.019	0.9415	-3.576	Non-Stationary
Ln_INF	-3.067	0.1143	-3.576	Non-Stationary
Ln_RIR	-3.681	0.0237	-3.576	Stationary
Ln_FD	-1.880	0.6650	-3.576	Non-Stationary

Sources: Researcher's analysis using STATA 14

Table 4.3 shows the results of differenced variables of household savings, income, dependency ratio, inflation and financial deepening. To achieve stationarity in the variables differential technique was effected on the variables, the absolute value of test statistic of household savings, income,

dependency ratio, inflation and financial deepening are higher than their respective 5% critical values, so we should reject the null hypothesis of random walk in variables.

Table 4.1 Augmented Dickey-Fuller (ADF) at First Difference

Variable	Test Statistic	P-Value	5% Critical Value	Decision
Ln_HHS	-5.109	0.0001	-3.580	Stationary
Ln_PCI	-3.335	0.0134	-2.986	Stationary
Ln_DR	-4.567	0.0012	-3.580	Stationary
Ln_INF	-4.920	0.0003	-3.580	Stationary
Ln_FD	-4.150	0.0053	-3.580	Stationary

Sources: Researcher's compilation from STATA 14

Phillip Perron

The null hypothesis with Phillips-Perron is that the variables has unit root or are non-stationary while alternative is that the variables has no unit root or is stationary. The decision criteria is that, accept the null hypothesis if the absolute value of test statistic is lower the 5% critical value. Table 4.4 shows the results of unit root test using Phillips-Perron (P-P) at level. The absolute values of the p-p *t* statistic in this case of household savings, income, dependency ratio, inflation and financial deepening are all less than their 5% critical values as it can be seen in the table so we should not reject the null hypothesis of the mentioned variables represents a random walk, or has a unit root. The variable interest rate was found to be stationary at level as it can be seen from the absolute test statistics of 5.496 is greater the 5% critical value of 3.572, so we reject the null hypothesis.

Table 2.4 Phillip Perron (PP) at level

Variable	Test Statistic	P-Value	5% Critical Value	Decision
Ln_HHS	-2.779	0.0614	-2.983	Non-Stationary
Ln_PCI	-1.805	0.7024	-3.572	Non-Stationary
Ln_DR	1.029	1.0000	-3.572	Non-Stationary
Ln_INF	-2.902	0.1616	-3.572	Non-Stationary
Ln_RIR	-5.496	0.0000	-3.572	Stationary
Ln_FD	-1.740	0.7329	-3.572	Non-Stationary

Sources: Researcher's compilation from STATA 14

Table 4.5 documents the differenced variables of household savings, income, dependency ratio, inflation and financial deepening. Household savings, income, dependency ratio, inflation and financial deepening after applying first difference become stationary, as it is evidenced from the absolute test statistics which are higher than their respective 5% critical values, so we should reject the null hypothesis of random walk in variables. It was found that from both ADF test and P-P test variables were found to stationary at different levels such as at level and first difference.

Table 4.5 Phillip Perron (PP) at First Difference

Variable	Test Statistic	P-Value	5% Critical Value	Decision
Ln_HHS	-7.549	0.0000	-3.576	Stationary
Ln_PCI	-4.901	0.0003	-3.576	Stationary
Ln_DR	-6.029	0.0000	-3.576	Stationary
Ln_INF	-5.168	0.0001	-3.576	Stationary
Ln_FD	-6.689	0.0000	-3.576	Stationary

Sources: Researcher's analysis using STATA 14

Order of Integration

The ADF and PP test statistics for savings, interest rate, income, inflation rate and financial deepening are of order I (1) and Interest rate are of order I (0). This means that the data can be tested for cointegration using the ARDL bound test. The summary of the result is presented in Table 4.6 below.

Table 4. 6 Summary of the Order of Integration

Variable	Order of Integration
Household Saving	I (1)
Per Capita Income	I (1)
Dependency Ratio	I (1)
Inflation Rate	I (1)
Interest Rate	I (0)
Financial Deepening	I (1)

Sources: Researcher's compilation using STATA 14

Optimal lags

Next step towards the ARDL model, the co-integration testing technique requires suitable lag length of all variables. Best model has different lag length of each variable. Lütkepohl, (2006) found that dynamic link among the series can be captured if proper lags are used. The optimal lags should be chosen by the model itself. I used STATA 14 for selecting optimal lags for each variable according to the smallest AIC (Akaike information criterion), HQIC and SBIC values. Table 4.7 shows the optimal lags for all variables. Therefore, for this model four (3) lags were chosen to be used in the models.

Table 3 Lag Selection-Order Criteria

Selection-order criteria

Sample: 1989 - 2017   Number of obs   =   29

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-115.182				.000172	8.35741	8.44601	8.6403
1	46.6384	323.64	36	0.00	3.1e-08	-.319887	.300293	1.66033*
2	96.7036	100.13	36	0.00	1.7e-08	-1.2899	-.138138	2.38765
3	166.738	140.07*	36	0.00	5.0e-09	-3.63709*	-1.95374*	1.7378
4	.	.	36	.	-2.0e-40*	.	.	.

Endogenous: Ln_HHS Ln_PCI Ln_DR Ln_INF Ln_FD Ln_RIR

Exogenous: _cons

4.5 Co-integration test

This study used the bounds co-integration test to ascertain for co-integration among the variables. The test has two forms, namely, the Wald F statistic test and the t statistic. The test was arrived at for the fact that variables were stationary at different levels as evidenced by Augmented Dickey-Fuller and Phillips-Perron tests, the appropriate test in this case was bound test of co-integration. The Wald F tests will be used to determine whether the dependent variable and independent variables are cointegrated. The null hypothesis for the Wald F statistic shows that there are no co-integrating vectors present while the alternative hypothesis confirmed that there is co-integrating vector present.

The co-integration test results in Table 4.8 indicate the existence of long run relationship between the dependent variable (HHS) and independent variables (PCI, DR, INF, RIR and FD) in Zambia as indicated by the F-statistics. The results show that the F value is higher than I(0) and I(1) and the decision criteria is that if the value of F statistic is lower than I(0) then you accept the null hypothesis of no level relationship and when the F statistic is higher the I(1) you reject the null hypothesis and conclude that the variables are co-integrated at the 0.05 percent level, therefore the calculated F-statistic 6.394 is higher than both the I(0) and I(1) critical value at 5% level of significance. We reject the null hypothesis of no long-run relationship at 5% significance level. So, there exists a cointegration among the variables.

Table 4. Bound Co-integration Test Results

	Psarian/Shin/Smith (2001) ARDL Bounds Test							
	H0: no levels relationship					F = 6.394		
	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_5	2.26	3.35	2.62	3.79	2.96	4.18	3.41	4.68

accept if F < critical value for I(0) regressors

reject if F > critical value for I (1) regressors

Sources: Researcher's compilation using STATA 14

Long-Run Results

In order to comprehensively conclude on the research hypothesis in chapter 1, ARDL-EC model were performed. It was important to identify and analyze the determinants of household saving in the country so as to formulate policies that encourages the culture of savings for the so purpose of economic development of the nation.

Table 5. Long-run estimates

Dependent variable: Ln_HHS

Estimates of the Long Run ARDL model (1985-2017)

Dependent Variable=HHS

Variable	Coef.	Std. Err	t	P-value
Ln_PCI	10.46269	6.020795	1.74	0.120
Ln_DR	-65.851	106.1467	-0.62	0.552
Ln_INF	2.299468	4.575764	0.50	0.629
Ln_RIR	3.284419	1.922954	1.71	0.126
Ln_FD	17.12664	23.66702	0.72	0.490

Note: * denote significance at 5 percent level

Sources: Researcher's compilation using STATA 14

A negative co-integrating equation coefficient of dependency ratio -65.851 signifies a negative and insignificant relationship between household saving and dependency ratio unlike in the short run where its significant, the results show that a percent change in dependency ratio in the long run leads to 65.841 percent decrease in household saving but not significant. This relationship does not concur with the theory as well as expected priori. Findings of the study support the work of Hermansson (2002) who argue against the saving pattern proposed by the LCH stating that research of actual saving in several countries show that there

is more saving and lower borrowing than expected among young people despite the fact that current income is less than future income. In addition, some economists argue that the older generations save for inheritance motives, thereby supporting the positive relationship. Findings also support the works of Aktas et al (2012); Bersales and Mapa (2006), and Rehman et al (2010). Therefore, from the findings, we accept the null hypothesis that in the long run dependency ratio does not have a significant impact on household savings in Zambia.

A positive co-integrating equation coefficient for Ln_PCI of about 10.46269 represents a positive and insignificant relationship that exists between the level of income and household savings, whereby a percent change in GDP per capita is associated with 10.463 percent increase in household saving on average ceteris paribus at 5 percent level. This is consistent with theory and expected priori. The finding of the study leads to rejection of the alternative hypothesis and accept the null hypothesis of per capita income does not have a significant impact on household savings in Zambia. Mususu (2006) supports this by proposing that household savings behave counter-cyclical in Zambia. This means that households tend to increase their levels of saving when the economy is in a downswing and decrease saving levels during an upswing. One such reason for such a saving behavior may be that during downswing households expect the fall in economic activity to continue and thus the need to save more for future use. Likewise, during an upswing household expect the favorable economic activity to last for a longer period hence reduced saving levels as less income will be required for future consumption.

The positive coefficient for inflation rate of approximately 2.299468 indicates that inflation has a strongly positive and insignificant on household savings. It can be deduced that in the long run, if inflation rate should increase by a unit; it will cause household savings to increase by approximately 2.299 percent on average ceteris paribus at 5 percent level. Findings support the works of Chizoma (2004) and the findings lead to acceptance of the null hypothesis, that in the long run inflation rate does not have significant impact on household savings in Zambia; this is unlike in the short run model.

The impact of real interest rate on household savings is theoretically ambiguous; it can either be positive or negative depending on the effect (substitution or income) at hand. Results of the study indicate a positive coefficient signifying positive relationship whereby the results show that an increase in the deposit interest rate by 1 percent leads to 3.284 percent increase in household saving and this is not significant at 5 percent significance level. In the Zambian context, Mususu (2006) as well as Chizoma (2004) found a positive relationship. H_0 is accepted thereby leading to the rejection of the H_1 and conclude that Interest rate does not have a significant impact on household savings in Zambia

A positive co-integrating equation coefficient of Ln_FD17.12664 signifies a positive and insignificant relationship between Ln_HHS and Ln_FD whereby a percent increase in Ln_FD will cause Ln_HHS to increase by 17.1267 percent. This relationship does not concur with the theory as well as expected priori. We also therefore accept the null hypothesis and reject the alternative hypothesis and conclude that financial deepening does not significantly impact on household savings in Zambia.

Short run analysis

The Short Run (ARDL-EC) mode: The short run dynamic results are provided under the Error Correction Model as shown in table 4.10 below.

The purpose of the short run analysis is to discover whether the short-run dynamics are influenced by the estimated long run equilibrium conditions, that is, the co-integrating vectors. The error correction mechanism is the speed or degree of adjustment i.e. the rate at which the dependent variable adjusts to changes in the independent variables. The negative coefficient of the Error Correction Mechanism implies that there is a feedback mechanism in the short run. The error correction helps to correct any disequilibrium in the short run. Positive coefficient indicates that any disequilibrium in the variable continues to grow. However, it should be noted that a positive coefficient in an error correction model could also signify incomplete specifications. Table 4.10 below show the results of the short run vector error correction model.

As reported in table 4.10, the coefficient of speed adjustment of approximately -.6950156 indicates that the speed of adjustment is around 65.5 percent but insignificant. This implies that if there is a deviation from equilibrium, only 65.5 % is corrected in one year as the variable moves towards restoring equilibrium. This means that there is high speed of adjustment of HHS which may reflect high pressure on the variable in restoring to the equilibrium in the long run due to any disturbance.

Table 6. Short-run estimates

Estimates of the Short Run ARDL model (1985-2017)				
Dependent Variable=HHS				
Variable	Coef.	Std. Err	t	P- value
ADJ	-.6950156	.4222486	-1.65	0.138
Ln_HHS				
LD.	-.9843299	.3555421	-2.77	0.024
Ln_PCI				
LD.	-7.341105	4.710354	-1.56	0.158
Ln_DR				
L2D.	-1226.151	499.8421	-2.45	0.040
Ln_INF				
L2D.	-7.680584	2.384619	-3.22	0.012
Ln_RIR				
LD.	.2342264	.3075312	0.76	0.468
Ln_FD				
LD.	-53.63114	13.40605	-4.00	0.004
Cons	117.3187	299.4538	0.39	0.705
R-squared = 0.9150		**Adj R-squared = 0.6920**		
Log likelihood = -48.957521		**Root MSE = 2.3961**		

Note: * denote significance at 5 percent level

Sources: Researcher's compilation using STATA 14

Income per capita was found to be insignificant at 5% level. The coefficient was approximately -5.682626 which implied that for a 1 percentage increase in the GDP per capita in a particular year (in the short run), household savings decreased by 5.68 percentage. This implies that there was a negative relationship between household saving and

19

GDP per capita but not significant. Therefore, we do not reject the null hypothesis and conclude that per capita income does not have a significant impact on household savings in Zambia. This finding is inconsistent with the life -cycle hypothesis, Gobna et al (2009), Imoughele et al (2014) and Nwachukwu et al (2007)

Coming to the dependency ratio, the results showed that the coefficient for DR was negative and significant at 5% level of significance. The coefficient of approximately -1226.151 implied that for a 1 percent increase in dependency ratio reduced household saving by 1226.151 percent. To this end, this meant that in the short run we reject the null hypothesis and accept the alternative hypothesis and conclude that dependency has a negative and significant impact on household savings in Zambia. The implication of this result is that the higher the ratio of persons under 15 years and above 65 years, the lower the level of savings. This finding is consistent with the life cycle hypothesis, Gobna et al (2009), Imoughele et al (2014) and Nwachukwu et al (2007)

The other variable considered was deposit interest rate. The results showed that the coefficient for the RIR was not significant based on the p value. The RIR coefficient of approximately 0.2342264 implied that for a 1 percentage increase in the Real Interest Rate on deposits, in a particular year (in the short-run), household would increase by 0.234 percentage. This meant that in the short-run, the increase in the deposit Interest Rate increased household savings but was insignificant. This implies that there was a positive relationship between household saving and deposit interest rate, therefore H_0 is accepted thereby leading to the rejection of the H_1 and conclude that Interest rate does not have a significant impact on household savings in Zambia.

The other variable included in the model was inflation. The coefficient of inflation was found to

be approximately -7.680584. This meant that in the short run, a 1 percentage increase in inflation decreased household by 7.681 percent, this result was found to be significant based on the 5% level of significance. Here, H_0 is rejected thereby leading to the acceptance of the H_1 and conclude that Inflation has a significant impact on household savings in Zambia.

While for financial deepening the coefficient was found to be approximately-53.63114, the variable was also found to exhibit negative and significant relationship between the financial deepening and household saving. This meant in the short run a 1 percentage increase in financial deepening decreased household by 53.631 percent. We therefore reject the null hypothesis and accept the alternative hypothesis and conclude that financial deepening does significantly impact on household savings in Zambia.

Finally, the adjusted R-squared of about91.50 percent, implied that in the short run, the explanatory variables that were considered in the model accounted for about 92 percent of the changes that take place in household savings.

In conclusion, from the table 4.10 above, it can be observed that deposit interest rate and income per capita do not significantly contribute to household savings in Zambia while financial deepen, inflation rate and dependency ratio significantly contribute to household savings in Zambia.

4.0 Discussion and Interpretation of Findings

Saving is the catalyst of economic growth. The aim of this study was to examine the determinants of Zambia's household saving rate. For this purpose, it examined the relationship between household saving and its determinants, namely deposit interest rate, inflation, dependency ratio, financial deepening and GDP per capita growth using annual data for the period 1985-2017. In this study ADF and PP test were used to examine whether the

variables are stationary or not. The study results showed that series were stationary at different orders. Then ARDL bounds testing approach was applied and found household savings and its determinants were cointegrated.

In developing countries, Zambia included, savings are difficult to apprehend as they can be raised on an informal basis. As a result, household savings cannot be completely assessed by the national accounts. The majority of household's hoard money. This is due to the fact that these savings are perfectly liquid so this enables them to meet any urgent needs or investment opportunity. This becomes all the more important since households' confidence in the banking system is low. Saving in Banks is not something households are perfectly comfortable with owing to the fact that the majority of households are illiterate and tend to make decisions that are not that well informed. Thus, this limited the report findings in that the household savings rate used might have been inaccurate since individuals hoard and save money in other forms, not only in the financial system (Banks).

Recommendations

The Bankers Association of Zambia and Bank of Zambia needs to embark on aggressive campaigns to encourage and instill a culture of saving into Zambia in-order to uplift the level of savings in the economy, this will also help in more investment and also in uplifting the functioning of the stock market because savings do flow into the stock market. It was noted in China that the state still plays a dominant role in the provision of public services to individuals. This implies that individuals don't have to spend money on services provided by the state thereby saving a lot. Therefore, the Zambian government needs to improve the level of efficiency and service delivery by the public sector so that individuals don't have to spend money on things which should be paid for by the state such as

security, education, health services. This will help uplift the level of household savings.

Regardless of the challenge as outlined above, a number of policy implications could still be drawn from what this research found.

The positive relationship between household savings and income in the long-run entails that income that individuals have tend to stimulate household savings hence the need for the state or government to actually secure more investment or to provide more employment opportunities for the masses so as to increase their savings. In other words, the state is to come up with more industries to absorb the labor that tend to be roaming around (unemployed). This might ultimately result in increased household savings given that everything else remains constant or is well monitored (checked). Policies such as sustainable minimum wage implementation should also be critically analyzed and innovations to enable adherence to these policies by would be employers should be taken as a matter of urgency. Other economic scholars have argued that implementation of minimum wage policies tends to reduce employment. Alternatively, policies to encourage sustainable entrepreneurship and creation of a favorable environment for Zambian citizens to be able to compete with larger more established firms should be put in place in order to widen the scope of income generation.

Furthermore, the negative effect of inflation on household savings in the short-run results in people shifting their savings into consumer durables, efforts to reduce inflation would be of paramount concern. Perhaps policies should be put in place such as implementing policies that slow down aggregate demand such as high interest rates which would be aimed at reducing consumer spending and as a result of the cost of borrowing. In reality high interest rates actually encourage saving. With regards to fiscal policy policies to increase taxes and reduce

21

government spending in order to reduce aggregate demand. This entails that high inflation or general price levels tends to discourage household savings hence the need for the government to tighten monetary policy or to strictly monitor monetary policy through the Central Bank (BOZ) so as to reduce the general price levels which might ultimately result in increased household savings. It should be noted that policies aimed at reducing inflation with regards to encouraging saving should not be considered in the long run as the study shows that in the long run inflation has an insignificant impact on savings.

5.0 Conclusion

This paper has estimated a household savings function for Zambia between the years 1985 to 2017. It incorporated Gross Domestic Product per capita (proxy for income), dependency ration, inflation rate, interest rate and financial deepening (proxy for broad money) as regressors. Before analyzing the results, statistical properties of the model were first assessed. Diagnostic tests were carried out to test for stationarity in the short-run using the ECM method, heteroscedasticity or model specification, normality and autocorrelation. The tests suggested that the model is reasonably well specified and is actually stable in the short-run. These results showed the residuals are normally distributed, serially uncorrelated and the relationship between household savings and the regressors.

The research findings emphasized that household savings were positively related to GDP inflation rate, interest rate and financial deepening respectively between the years 1985 to 2017 in the long-run and negatively related to dependency ratio in Zambia. Despite this, the report results went on to stress that the relationship between household savings and income, dependency ratio, inflation rate, interest rate and financial deepening, was also individually statistically insignificant. In other words, the overall influence of regressors on Household Savings in the long-run was insignificant (no influence). In addition, the overall influence of dependency ratio, inflation rate and financial deepening on Household Savings in the short-run was significant (influence). Meanwhile GDP per capita and interest rates overall influence on Household saving in the short run was insignificant (no influence).

Future Research

Future research on the issue of savings should be geared towards determining whether gross savings have a significant impact on the stock market. The summation of savings by all entities including corporations and government should be analyzed to determine whether they explain the trend in the stock market capitalization of an economy.

ACKNOWLEDGMENTS

REFERENCES

[1] Adelakun, O. J. (2015) An Investigation of the Determinants of Savings and Investment in Nigeria. International Economics and Business ISSN 2377-2301, 2015, Vol. 1, No. 2

[2] Adewuyi, Bankole, &Arawomo. (2007). What Determines Saving in the Economic Community of West African State (ECOWAS)? Journal of Monetary and Economic Integration, 71-72.

[3] Antai, A. S, Ita J. J. &Anam, B. E. (2015) Estimation of the Short Run and Long Run Determinants of

[4] Ahmad, K. and Mahmood, H. (2013). Macroeconomic Determinants of National Savings Revisited: A Small Open Economy of Pakistan. *World Applied Sciences Journal*, 21 (1): 49-57.

[5] Aktas, A. Guner, D, Gursel, S and Uysal, G. (2012). Structural Determinants of Household Savings in Turkey:2003-2008. Betam Working Paper Series #007.

[6] Ayalew, H.A. (2013). Determinants of domestic saving in Ethiopia: An autoregressive distributed lag (ARDL)bounds testing approach. *Journal of Economics and International Finance*. 5(6): 248-257.

[7] Ayanwu, J.C. and Oaikhenan, H.E. (1995). *Modern Macroeconomics: Theory and Application in Nigeria.*JoaneeEducational Publishers LTD. Onitsha.

[8] Domestic Savings Rate in Nigeria (1970-2008) *International Journal of Innovative Research in Technology, Basic and Applied Sciences Volume 1, Number 1, July 2015.*

[9] Athukorala, P. (1998). "Interest rates, savings and investment: Evidence from India." Oxford Development Studies, June.

[10] Athukorala, Prema-Chandra, and KunalSen (2004). "The Determinants of Private Saving in India", *World Development*, Vol. 32, No. 3, pp. 491-503.

[11] Bosworth, B.P. (1993). *Saving and Investment in a Global Economy*. Washington, D.C.: Brookings Institution.

[12] Carroll, Christopher, and David Weil (1994). "Saving and Growth: A Reinterpretation." Carnegie-Rochester Conference Series on Public Policy 40:133-192.

[13] Chaudhry, I; Riaz, U; Farooq, F.& Zulfiqar, S. (2014). The Monetary and Fiscal Determinants of National Savings in Pakistan: An Empirical Evidence from ARDL Approach to Co-integration'. *Pakistan Journal of Commerce and Social Sciences*, 8(2): 521- 539.

[14] Determinants of Private Saving in Nigeria". A Paper presented at the African Economic Society (AES) Conference, Cape Town, South Africa

[15] Duesenberry, J. (1949). Income, Savings and the Theory of Consumer Behavior. London: Harvard University Press.

[16] Domestic Savings in Nigeria (1981 -2012) *International Journal of Humanities and Social Science, Vol. 4 No. 5; March 2014*

[17] Gobna, W.O. and Nurudeen, A. (2009). Long Run Determinants of Savings in Nigeria (1981-2007); Evidence from Time Series Data. *The Nigerian Journal of Economics and Management Studies. 4(1): 87-106.*

[18] Imoughele, L. E & Ismaila, M (2014) An Econometric Analysis of the Determinants of Private

[19] Karlan, D., &Morduch, J. (2010). Access to Finance: The Economics of Saving - Ideas & Evidence. Journal of Development Economics, 1-25.

[20] Keynes J. M (1936): *General Theory of Employment, Investment and Money.* London Macmillan Company Ltd

[21] Lewis Arthur. (1955). *"Theory of Economic Growth"*, London: Allen and Unwin

[22] Loayza, Norman, Klaus Schmidt-Hebbel, and Luis Serven (2000). "What Drives Private Saving Across the World?" *Review of Economics and Statistics* 82(2):165-181.

[23] Macklinon R.I (1973): *Money and Banking in Economic Development.* Washington DC; the Brooking Institute.

[24] Maddison, Angus (1992). "A Long-Run Perspective on saving." *Scandinavian Journal of Economics*, 94(2): 181-196.

[25] Malunond A. T. (2007). Determinants of Domestic Saving Performance in Egypt An Empirical Study. World Bank, African Develop ant locks: ors, 2007.

[26] Mankiw, N. Gregory, David Romer, and David N. Weil (1992). "A Contribution to the Empirics of Economic Growth." *Quarterly Journal of Economics,* 107(2): 407-437.

[27] Mbuthia, A. N. (2011). Households' saving decisions in Kenya. Kenyatta University Press, 1-173.

[28] Modigliani, Franco (1970). "The Life-Cycle Hypothesis of Saving and Inter-country Differences in the saving Ratio." In W. A. Eltis, M.F.G. Scott, and J.N. Wolfe eds., Induction, Trade, and Growth: Essays in Honour of Sir Roy Harrod. Oxford: Clarendon Press.

[29] Mohamed, S. A. (2007): "Saving Function in Sudan". An Empirical Study (1990-2004)", (in Arabic), Unpublished M.Sc.

Appenixn1: Research Data					
Years	HHS	PCI	DR	INF	RIR	FD
1985	10.7652	373.1940	100.1410	54.5307	-15.9666	29.7206
1986	14.6537	249.1200	100.2920	55.8282	-29.9983	31.3332
1987	9.5951	299.3510	100.1790	47.0472	-25.1937	29.0558
1988	10.8020	489.4000	99.8206	51.0040	-11.9713	32.8513
1989	6.4312	506.7800	99.2396	123.4040	-34.5468	30.3138
1990	13.5383	461.3230	98.4651	107.0240	-34.5390	21.8250
1991	10.3201	405.8380	98.6200	97.6423	-25.7739	22.3601
1992	7.6068	387.5240	98.4711	165.7070	-41.7902	18.5426
1993	11.2843	371.1980	98.1057	183.3120	-12.4560	14.0717
1994	12.9078	372.9540	97.6412	54.6013	-5.6345	13.5634
1995	8.1365	376.8720	97.1563	34.9296	11.4249	15.6905
1996	10.0140	345.9660	97.1430	43.0731	23.6705	16.0382
1997	6.8297	402.4710	97.0404	24.4187	16.9766	15.4068
1998	-0.2672	324.2420	96.8661	24.4585	12.7393	16.6184
1999	1.5878	305.2830	96.6092	26.7877	19.1588	17.1956
2000	-0.8139	305.8680	96.2733	26.0304	4.6648	21.6860
2001	-0.8001	336.4090	96.9986	21.3938	16.6775	17.8610
2002	6.9857	333.1500	97.5318	22.2333	21.6156	18.3471
2003	9.5756	366.3080	97.9111	21.4016	19.5253	18.2307
2004	30.2690	463.8700	98.1608	17.9678	9.1969	18.7743
2005	23.7733	596.0480	98.2762	18.3244	9.9094	15.4971
2006	37.8183	1030.3200	98.4874	9.0196	7.5177	18.0616
2007	30.4621	1103.4800	98.4689	10.6573	5.2393	18.4837
2008	26.2998	1365.7400	98.2559	12.4456	7.6129	19.1017
2009	36.2313	1134.7700	97.8827	13.3953	15.6342	17.8374
2010	37.4041	1456.1200	97.3701	8.5018	6.1126	18.4296
2011	38.3017	1635.6000	96.4194	6.4294	6.9493	19.1215
2012	37.1367	1724.7800	95.4088	6.5759	4.8220	19.5767
2013	33.4495	1838.1200	94.3217	6.9777	-0.1881	20.5129
2014	36.1459	1727.7800	93.1362	7.8120	5.8186	20.9271
2015	38.8801	1310.7300	91.8656	10.1007	6.1783	25.7726
2016	37.2979	1258.0200	90.7797	17.8697	1.6960	20.6236
2017	38.2644	1300.2900	89.6133	6.5773	2.0840	21.9633

Appendix 2: Logged Research Data					
years	Ln_HHS	Ln_PCI	Ln_DR	Ln_INF	Ln_RIR	Ln_FD
1985	2.4492	5.9221	4.6066	3.9988	3.2513	3.3918
1986	2.7388	5.5179	4.6081	4.0223	2.4674	3.4447
1987	2.3427	5.7016	4.6070	3.8512	2.8092	3.3692
1988	2.4524	6.1932	4.6034	3.9319	3.3951	3.4920
1989	1.9803	6.2281	4.5975	4.8155	1.9801	3.4116
1990	2.6639	6.1341	4.5897	4.6731	1.9812	3.0831
1991	2.4100	6.0060	4.5913	4.5813	2.7736	3.1073
1992	2.1307	5.9598	4.5898	5.1102	-12.2174	2.9201
1993	2.4931	5.9167	4.5860	5.2112	3.3788	2.6442
1994	2.6190	5.9215	4.5813	4.0001	3.5878	2.6074
1995	2.1917	5.9319	4.5763	3.5533	3.9743	2.7531
1996	2.3821	5.8463	4.5762	3.7629	4.1815	2.7750
1997	2.0339	5.9976	4.5751	3.1954	4.0736	2.7348
1998	-0.6038	5.7815	4.5733	3.1970	3.9987	2.8105
1999	0.8762	5.7212	4.5707	3.2879	4.1100	2.8447
2000	-17.1146	5.7232	4.5672	3.2593	3.8385	3.0767
2001	-4.2856	5.8183	4.5747	3.0631	4.0685	2.8826
2002	2.0541	5.8086	4.5802	3.1016	4.1496	2.9095
2003	2.3408	5.9035	4.5841	3.0635	4.1160	2.9031
2004	3.4367	6.1396	4.5866	2.8886	3.9316	2.9325
2005	3.2022	6.3903	4.5878	2.9082	3.9455	2.7407
2006	3.6541	6.9376	4.5899	2.1994	3.8981	2.8938
2007	3.4429	7.0062	4.5897	2.3663	3.8508	2.9169
2008	3.3000	7.2194	4.5876	2.5214	3.9000	2.9498
2009	3.6121	7.0342	4.5838	2.5949	4.0505	2.8813
2010	3.6433	7.2835	4.5785	2.1403	3.8692	2.9140
2011	3.6665	7.3998	4.5687	1.8609	3.8865	2.9508
2012	3.6363	7.4529	4.5582	1.8834	3.8419	2.9743
2013	3.5341	7.5165	4.5467	1.9427	3.7282	3.0211
2014	3.6098	7.4546	4.5341	2.0557	3.8630	3.0410
2015	3.6812	7.1783	4.5203	2.3126	3.8705	3.2493
2016	3.6405	7.1373	4.5084	2.8831	3.7724	3.0264
2017	3.6656	7.1703	4.4955	1.8836	3.7813	3.0894