RESEARCH PAPER

# DO RETIREMENT BENEFITS ASSETS CONTRIBUTE TO ECONOMIC GROWTH IN KENYA?

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***Abstract***

*Mobilization of resources for national development has been a central issue for policy makers in many countries. The role of savings in economic growth has therefore been given considerable attention given the fact that for any sustainable growth and development, resources must be effectively mobilized and allocated efficiently so as to achieve the growth objectives.*

*One of the avenues of mobilizing resources is through retirement benefits schemes. Many countries both in developed and emerging markets have seen a rapid growth in the number of retirement benefits schemes as well as the value of the retirement benefits assets. This has been most notable following the pension reform which has seen the shift in the finance of the retirement income from pay-as-you-go (PAYG) to funding.*

*In Kenya, the retirement benefits assets have increased over time, both in absolute terms and as a ratio of GDP. The Pension assets grew from Kshs. 117.4 billion in 2002 to Kshs. 432.8 billion in 2011. As a share of GDP, the ratio improved over the period from a ratio of 11.5 percent in 2002 to approximately 14.3 percent in 2011.*

*However, the income replacement ratio falls way below the ILO recommended standard of 40 percent. Many retirees therefore suffer during their retirement due to lack of sufficient income to finance their needs. This is further complicated by the fact that the old have special and different needs, including health care compared to the younger generation.*

*The study used quarterly data for the period 2002:2 to 2011:4 to examine the role of retirement assets in economic growth. It utilized E-Views software to perform various diagnostics tests including unit roots tests. The granger causality tests were also done to establish whether there are any causal effect between retirement benefits assets and economic growth.*

*The standard Granger Causality Tests showed that there is a unidirectional causality running from pension assets to economic growth at 5 percent significance level both in levels and logs. A cursory analysis also showed that retirement benefits assets was positively correlated with economic growth and a significant proportion of the assets were invested in government securities. The study therefore proposes the need to amend the investment guidelines so as to enable retirement benefits assets be invested in innovative/alternative market products geared towards the achievement of the desired economic growth as well as the Kenya vision 2030 objective.*

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**Acronyms and Abbreviation**

STMC – Stock Market Capitalization

QE – Quoted Equities

PAYG – Pay as You Go

GDP – Gross Domestic Product

KANU – Kenya African National Union

NARC – National Alliance Rainbow Coalition

GFC – Global Financial Crisis

GoK – Government of Kenya

MTP – Medium Term Plan

ILO - International Labour Organization

OECD – Organization for Economic Corporation and Development

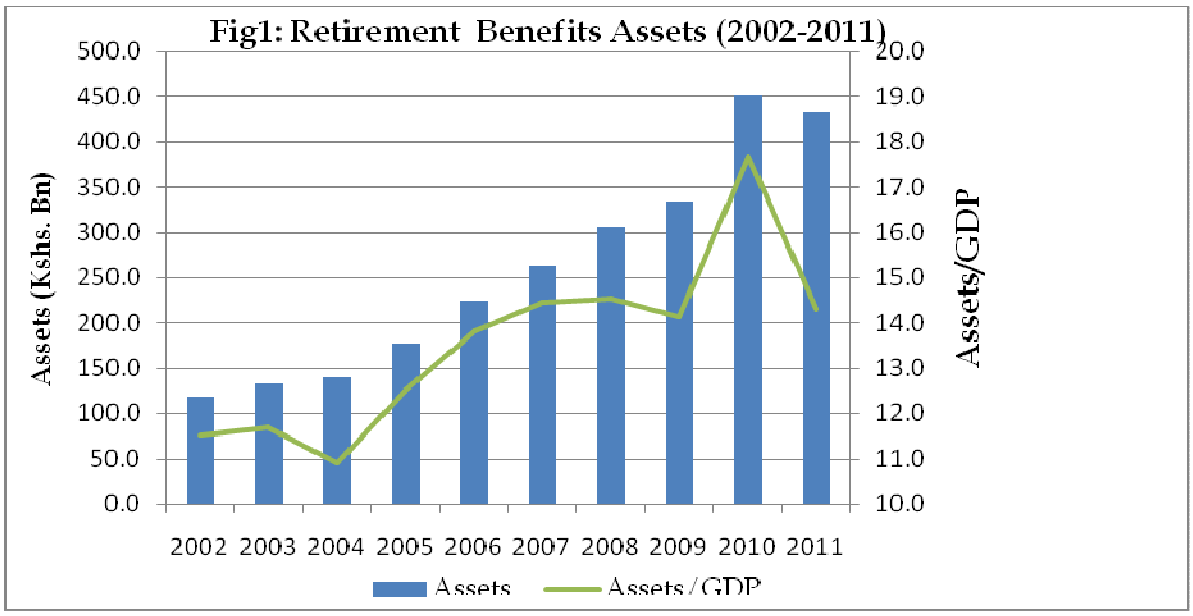
## 1.0 Introduction

Mobilization of resources for national development has been a central issue for policy makers in many countries. The role of savings in economic growth has therefore been given considerable attention given the fact that for any sustainable growth and development, resources must be effectively mobilized and allocated efficiently so as to achieve the growth objectives.

One of the avenues of mobilizing resources is through retirement benefits schemes. Many countries both in developed and emerging markets have seen a rapid growth in the number of retirement benefits schemes as well as the value of the retirement benefits assets. This has been most notable following the pension reform which has seen the shift in the finance of the retirement income from pay-as-you-go (PAYG) to funding (Davis, 2005). According to the Global Pension Asset Study Report of 2011, the total retirement benefits asset for thirteen selected countries[1] as at the end of 2010 was USD 26,496 billion which was approximately 76 percent of the GDP of the surveyed countries. This represented an increase of 12 percent compared to the 2009 fund value.

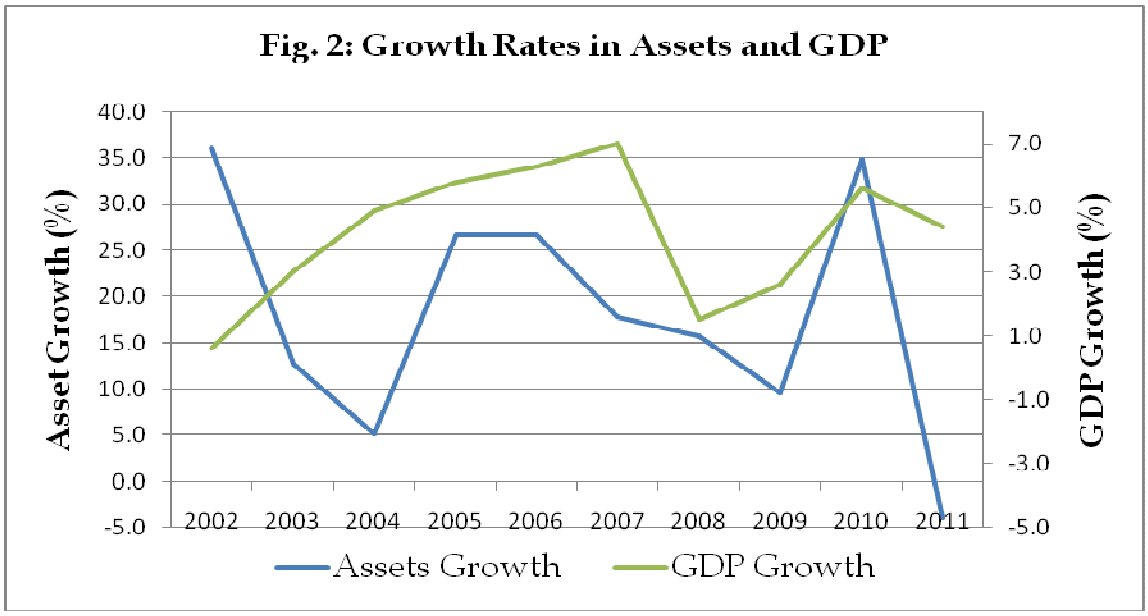
In Kenya, the retirement benefits assets have increased over time, both in absolute terms and as a ratio of GDP (see figure 1 below). The Pension assets grew from Kshs. 117.4 billion in 2002 to Kshs. 432.8 billion in 2011, translating to an average annual growth rate of 26.9 percent over the period. As a share of GDP, the ratio improved over the period from a ratio of 11.5 percent in 2002 to approximately 14.3 percent in 2011.

[1] The surveyed countries include: Australia; Brazil; Canada; France; Germany; Hong Kong; Ireland; Japan; Netherlands; South Africa; Switzerland; UK and USA.




Compared to the GDP growth rate, the retirement benefits asset growth rate exhibits sharp fluctuations (see figure 2 below). There was a sharp drop in the retirement benefits assets growth rates during the period between 2002 and 2004, declining from a growth rate of 36 percent in 2002 to 5.2 percent in 2004. Surprisingly, the GDP growth rate increased over the period. During the period 2004/2005, the retirement benefits assets grew to reach a growth rate of 26.6 percent but stagnated in 2006. There was a drop again in the asset's growth rate in 2007 through 2008 and 2009 to stand at 9.6 percent in 2009. Interestingly, the retirement benefits asset growth rate picked in 2010 but dropped in 2011, witnessing a negative growth of 4 percent. The GDP growth rate on the other hand witnessed a positive growth between the periods 2008 to 2010 but dropped in 2011.

The decline in the growth of the pension assets between 2002 through 2004 may partly be attributed to the effects of 2002 general election and the change over in government (KANU and NARC) in 2003 while the decline in 2007 through 2009 may partly be attributed to a number of factors; the effects of the general election of 2007 and the 2008 post election violence; and, the effects of the Global Financial Crisis (GFC). The negative growth in the pension assets in 2011 may be attributed to the unfavorable macro-economic conditions which include high inflation and interest rates.




Although, the growth rate in the retirement benefits assets exhibits sharp fluctuations compared to the GDP growth rate, the ratio of retirement benefits assets to GDP has been somewhat stable. However, it cannot be decisively concluded whether or not the retirement benefits assets have an effect on economic growth in Kenya.

## 1.1 Problem Statement

One of the primary motivations for the establishment of a retirement benefits schemes is to provide for members in their old age. It is also meant to provide retirees with a certain standard of living so as to ensure that their income does not fall below a certain minimum level after retirement. However, many retirees suffer during their retirement due to lack of sufficient income to finance their needs.

In Kenya, the income replacement ratio falls way below the ILO recommended standard of 40 percent (GoK, 2008). This is further complicated by the fact that the old have special and different needs, including health care compared to the younger generation. Their behaviors are also different, older people work less hence earn less, implying that they have low disposable income, thus making them even more vulnerable.

According to Africa Development Bank (2011), 36 million people were age 65 and above in 2010 and accounted for 3.6 percent of the African population. The Bank projects the ageing population to increase as more people reach 65 years and could account for 4.5 percent of the population by 2030 and nearly 10 percent of the population by 2050 leading to a shift in the demographic dependency ratio.

Unfortunately, in most African countries, Kenya included, have weak health care systems as well as lack of viable social security systems coupled with high poverty levels[2]. Further, the traditional family support systems which acted as insurance and safety net for providing for the old have also failed. Worse still, most African countries have witnessed a large scale migration of the labor force to urban areas.

The effect of the HIV/AIDS pandemic has also worsen the situation and has led to a situation where the elderly are increasingly shouldering the responsibility of most families which have been affected by the pandemic. In some cases, the old have become the prime earning members of their families, hence, making them more susceptible, more so, in the face of the skyrocketing cost of living with limited resources and unstable incomes to support their households.

Retirement benefits schemes have therefore been viewed as viable platforms for providing for the old and their dependants. Equally, pension funds have been argued to be the principal source of retirement income and an important contributor to the Gross Domestic Product. Various Studies (World Bank, 1994; Hu, 1979; Walker and Lefort, 2002; and Davis and Hu, 2004) have also shown that implementation of proper retirement schemes have a positive effect on poverty alleviation amongst the old and the development of the capital markets and the economy at large. This paper therefore seeks to answer the following questions: Do retirement benefits assets stimulate economic growth in Kenya? if so, how? and what is its impact?

[2] The Kenya Integrated Household and Budget Survey (KIHBS) report, estimates that over 46.7 percent of Kenyans are food poor and cannot meet the cost for basic food. The poverty levels are much high in rural areas (49.7%) compared to urban areas (34.4%)

## 1.2 Objectives of the Study

The broad objective of this study is to examine the role of retirement benefits assets on the economy in Kenya. The specific objectives include:

a) Examine the relationship between retirement benefit assets and economic growth;

b) Analyze the impact of retirement benefits assets on economic growth in Kenya;

c) Draw policy recommendations based on the study findings.

## 1.3 Justification of the Study

Kenya, like any other nation, seeks to develop expediently by pursuing economic development goals which would make it industrialized with high level of income and standard of living. The Kenya Vision 2030 and the Medium Term Plan (2008-2012) acknowledges that, high levels of savings and investment are required to facilitate the envisaged high levels growth and development by the year 2030[3]. The plan envisioned an increase both the investment and domestic savings to GDP by 10 percentage points by the year 2012 (GoK, 2008)[4].

However, the target is still far from being achieved. The gross national savings increased marginally from 13.4 percent in 2009/2010 to 14.2 percent in 2010/2011 which is way below the target. Similarly, total investment as a percentage of GDP slowed down to 19.6 in 2010/2011 from 20.7 percent in 2009/2010. This has been attributed to multiple shocks including the post election violence, drought, global financial and economic crisis, rising commodity prices, weakening Kenya shilling, and political crisis in Middle East and North Africa (MENA) countries, which affected the country between 2008 and 2011 (GoK, 2012).

[3] The Medium Term Plan (2008-2012) of the Kenya Vision 2030 aims at increasing the real GDP from the estimated 7 percent in 2007 to 7.9-8.7 percent by the years 2009-2010 and to 10 percent by 2012. Savings and investment levels were therefore targeted to increase at a high rate in order to support the high economic growth and employment creation envisaged in the plan.

4 According the Medium Term Plan (2008-2012) the investment and savings as a ratio of GDP stood at 22.9 percent and 16.7 percent respectively in 2007/2008 financial year.

The Medium Term Plan also identified pension reform as one of the key pillars in the financial sector development and envisaged an increase in the retirement benefits assets base to 30 percent of GDP by the year 2012. It also viewed the retirement benefit schemes as instrumental in the country's economic development through the mobilization of savings and investment. In the same vein, studies have shown that retirement benefits assets contribute to economic growth (Hu, 1979; Walker and Lefort, 2002; Davis and Hu, 2004).

However, no conclusive evidence has yet been produced on the impact of retirement benefit assets on economic growth. Conflicting arguments in regards to retirement benefits assets and its contribution to economic growth have been posited, for instance, Zandberg and Spierdijk (2010) found no relationship between funding of pensions and economic growth in both OECD and non OECD countries. Furthermore, the causal relationship between retirement benefits assets and economic growth is not clear (Kerr and Wellington, 1997; World Bank, 2004). This study therefore seeks to examine the role of retirement benefits assets on economic growth in Kenya.

## 1.4 Significance of the Study

The need to provide retirees and their dependants with a certain minimum standard of living has led to the development of retirement benefits programs, more so, in developing countries where high levels of unemployment and poverty levels are predominant. According to the World Bank report of 1994 on "*Averting the old age crisis*", the aged suffer from lack of sufficient income to sustain their needs and risks in many cases due to lack of social security programs to cater for them.

The findings of this study would be crucial in informing the policy makers in Kenya on the impact that policies directed at the retirement benefits sector may have on the economy. More importantly, the findings would be vital in heightening the awareness of policy makers on the importance of retirement benefits assets in the performance of the economy and consequently, the economic growth and development.

In addition, this study is also meant to fill the gap in literature on the impact of the retirement benefits assets on economic growth given that few studies have been published in Sub-Saharan Africa (Correia, 2007).

The remainder of this paper is structured as follows; section 2 presents the literature review, both the theoretical and empirical literature on the relationship between retirement benefits assets and economic growth. Section 3 presents the research methodology adopted and the sources of data, while section 4 presents the descriptive statistics and discussion of the research findings. Section 5 presents the conclusion and policy recommendations.

## 2.0 Literature Review

This section describes the various channels through which retirement benefits assets may impact upon economic growth. The literature review is divided into two: theoretical and empirical literature.

### 2.1 Theoretical Literature

Retirement benefit assets have been generally regarded as having a significant impact on the economy. Davis (2006) posits that retirement benefits assets affects economic growth both directly and indirectly. The indirect effects include the impact on economic growth through savings, capital markets and labor markets.

Three theories have been put forward on the effect through savings: the life cycle saving model; the Bequest model and the precautionary motives model. These theories mainly explain the individuals' saving behavior. The life cycle saving model was first developed by Modigliani and Brumberg (1954) and later generalized by Feldstein (1974). The life cycle model postulates that an individual live in two periods; in the first, he/she earn a wage from his/her labor and the second he/she retires.

The individual therefore is assumed to accumulate wealth during their working life and dissave during their retirement to smoothen his/her consumption. Thus the only motivation for saving in this framework is to provide for retirement. The life cycle hypothesis also assumes that through savings households generates capital stock and changes in household savings translate into changes in aggregate savings (Bailliu and Reisen, 1997).

However, the life cycle saving model has been contested. Deaton (1992) argues that an increase in pension wealth has no impact on the overall savings. This is because households would simply alter their non pension wealth to fully offset the increase in pension wealth. Pisando (1992) on the other hand argues that funding of pensions generates increased savings given that pension assets are normally illiquid and therefore other household wealth may not always be reduced one to one when pension assets increase. Additionally, in most cases the pension laws prohibit pensioners from assigning their future pension benefits.

The bequest model on the other hand, assumes that individuals have a multi-generational time horizon i.e. they try to maximize not only their own utilities but also their children's while in the precautionary motives model, the individuals are assumed to put more weight on factors which are uncertain e.g. health expenditures.

On the effect through the financial markets; the retirement benefits assets have been shown to have a positive impact on the capital and financial market development through the substitution and complementary roles. Walker and Lefort (2002) argue that retirement funds decreases the cost of capital via three channels which in turn spurs economic growth. First, due to pension reforms, the capital markets are more developed and thus issuances of securities are cheaper.

Second, the expected investments time horizon of pension funds is longer than that of individuals and firms, thus reducing the 'term premium'. Third, the risk premium may be reduced due to pension funds pooling and professional management. Reduction in both term premium and risk premium may lead to decreased average cost of capital.

Further, the retirement benefits funds may generate a better functioning of the capital markets through the accumulation of assets due its longer term nature of liabilities; investment in illiquid and long term assets that yield higher returns, hence, providing a long term supply of funds to the capital market (Davis, 1995). The retirement benefits assets therefore foster competition and efficiency of loans and primary securities markets. It also complements banks by purchasing long term debt securities or in investing in long term bank deposits.

On the direct effect of retirement benefits assets on economic growth, Barr (2000) argues that, for retirement benefits assets to induce economic growth, three conditions have to be fulfilled. First, pension reforms must lead to high saving rates; second, high savings rates must be translated into productive investments which results into increased output as predicted by the standard Solow (2000) growth model. However, Barr warns that all these three links does not necessarily hold.

The pension funds have also been seen to boost economic growth via improved corporate governance (Davis and Hu, 2008). Clark and Hebb (2003) identifies four drivers in which pension funds may improve corporate governance: i) the use of indexation techniques in the pension industry which hinders the sale of shares in under performing companies which are in the Stock Exchange index; ii) the increasing demand by the owners for more transparency and accountability; iii) the pressure for pension funds to undertake socially responsible investing; and, iv) the pressure to humanize capital with social, moral and political objectives extend pension funds simple concerns for rate of return.

## 2.2 Empirical Literature

Lopez-Murphy and Musalem (2004) used data from 43 countries, both in OECD and developing countries to examine whether accumulation of pension funds financial assets have an effect on national savings. The study found out that Mandatory pension savings fostered national savings while voluntary pension savings either in form of pension savings or in form of insurance had no significant effect on national savings.

Davis (2006) found a positive relationship between retirement benefits assets and savings while Reisen and Bailliu (1997) using data from eleven countries both from OECD and non OECD countries found out that pension asset accumulation had a positive and significant impact on private savings, but to a varying degree. However, Bosworth and Burtless (2004) found evidence that pension saving substitutes other forms of private saving in OECD countries.

Correia (2007) analyzed data from fourteen Sub Saharan countries and the results showed that the social security programs positively affected savings in the SADC countries, but in West Africa savings was affected negatively. The study also found that the social security crowds-out growth in the per capita GDP in West African countries, but crowds-in growth per capita GDP in SADC countries. However, the author notes that the effects differ markedly in terms of the nature of the retirement benefit program and how they contribute to savings and economic growth.

Davis and Hu (2008) used a dataset covering 38 countries to investigate the direct link between pension assets and economic growth using a cob-Douglas production function with the inclusion of pension assets/GDP as a shift factor. The results showed that there was a positive relationship between economic growth and retirement benefit assets in both OECD countries and the Emerging Market Economies (EMEs) than OECD countries. However, the effects were larger for EMEs than OECD countries. Hu (2004) also found a positive link between pension assets and economic growth. The study also established that pension assets granger caused economic growth in both OECD countries and emerging market economies.

On the contrary, Zandberg and Spierdijk (2010) found no relationship between funding of pensions and economic growth in a sample of OECD as well as non OECD countries over the period 2001-2008. They used a dataset consisting of 58 countries; of which 29 were OECD countries. The study controlled for capital market returns on pension funds and the results showed only a marginally significant positive effect in the sample with OECD countries. The study used a two step procedure; first, they regressed the change in pension assets on the rate of return of pension funds and the change in the inverse old dependency ratio. They found a positive relationship between change in pension assets and the rate of return of pension assets. They then used the residual from the first regression as a proxy for changes in the degree of funding and estimate a dynamic growth model.

In terms of the link between retirement benefit assets and capital market development, numerous studies (Davis and Hu, 2004; Murphy and Musalem,

2004; Beck and Levine 2004; Davis, 1998; 2006; Levine and Zervos, 1998; Filer, Hanousek and Campos; 1999; Meng and Pfau, 2010) have shown that there is a positive relationship between retirement benefits assets and capital market development. Capital market development on the other hand, has been found to have a positive effect on economic growth (Levine and Zervos, 1998; Beck and Levine, 2004). Retirement benefits assets therefore might lead to better developed capital markets which in turn lead to economic growth. Meng and Pfau (2010) notes that even though the retirement benefits assets have a positive impact on the stock market depth and liquidity in developing countries, the impact of differs significantly according the country's level of financial development.

From the preceding the literature review, it is evident that retirement benefits assets have a positive effect of economic growth, though with varying degree depending on the state of financial development of the country. It is also evident that retirement benefits assets can either affect economic growth directly or indirectly. The succeeding section discusses the methodology adopted in the study and the sources of data.

## 3.0 Methodology

The study used quarterly data for the period 2002:2 to 2011:4. The data was mainly obtained from secondary sources, among them, economic surveys and statistical abstracts. Data from the Retirement Benefits Authority and Central Bank of Kenya publications and database were also utilized. The study utilized ratios, percentages, charts and figures to demonstrate the relationship between retirement benefits assets and economic growth. The study also utilizes E-Views software to perform various diagnostics tests including unit roots tests. The granger causality tests are also done to establish whether there are any causal effect between retirement benefits assets and economic growth.

## 4.0: Descriptive Statistics and Data Analysis

This section discusses the data and the relationship between economic growth and retirement benefits assets.

### 4.1.1 Correlations

The correlation shows that the retirement benefit assets are positively and highly correlated to GDP and domestic debt at 97%. The equity turnover and Treasury bill rate are also positively correlated to retirement benefits assets at 61% and 19% respectively. However, the retirement benefits assets are negatively correlated to inflation.

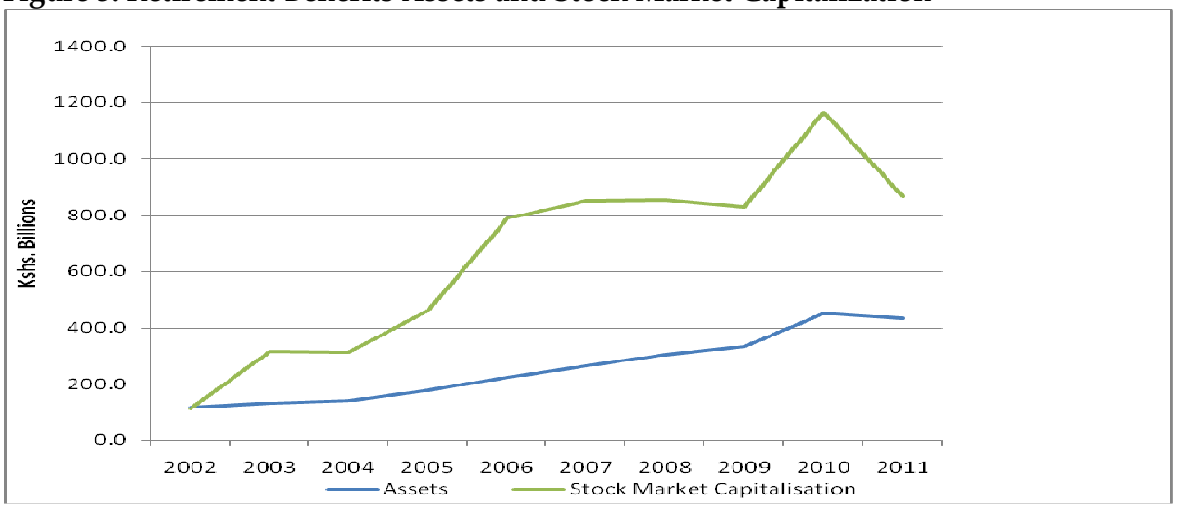
**Table 1: Correlation Matrix**

| | GDP | PENSION ASSETS | DOMESTIC DEBT | INFLATION | TREASURY BILL | EQUITY TURNOVER |
|---|---|---|---|---|---|---|
| **GDP** | 1.00 | | | | | |
| **PENSION ASSETS** | 0.97 | 1.00 | | | | |
| **DOMESTIC DEBT** | 0.95 | 0.97 | 1.00 | | | |
| **INFLATION** | 0.05 | -0.04 | 0.01 | 1.00 | | |
| **TREASURY BILL** | 0.29 | 0.19 | 0.19 | 0.43 | 1.00 | |
| **EQUITY TURNOVER** | 0.55 | 0.61 | 0.46 | -0.31 | 0.02 | 1.00 |

### 4.1.2 Retirement Benefits Assets and Stock Market Capitalization

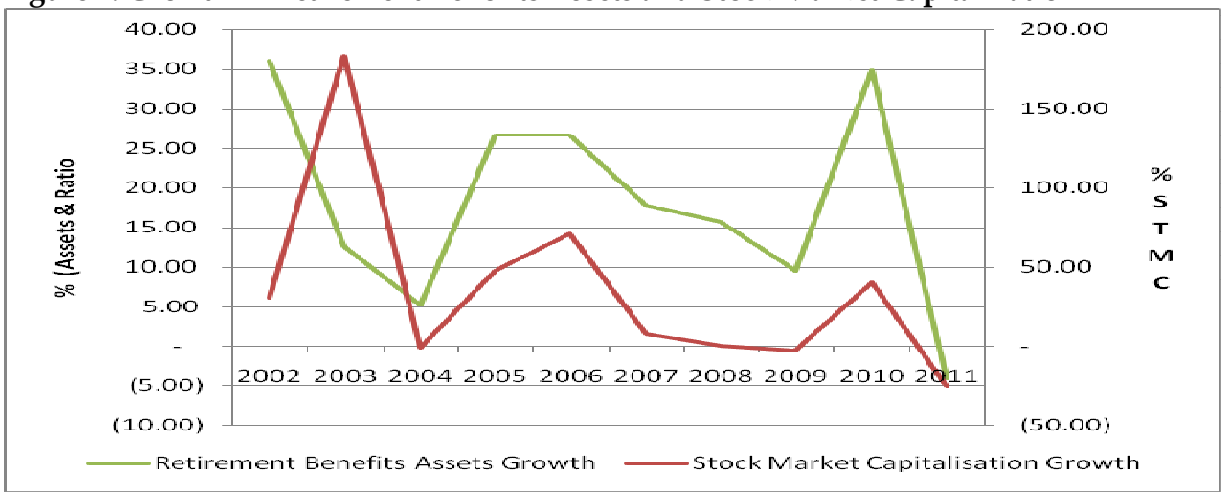
The retirement benefits assets and the stock market capitalization has been increasing in absolute terms over time though stock market capitalization exhibits some shocks in the periods 2003/2004, 2007/2008 and 2011. Both the retirement benefits and stock market capitalization dropped in 2011 as depicted in the figure 3 below.

**Figure 3: Retirement Benefits Assets and Stock Market Capitalization**



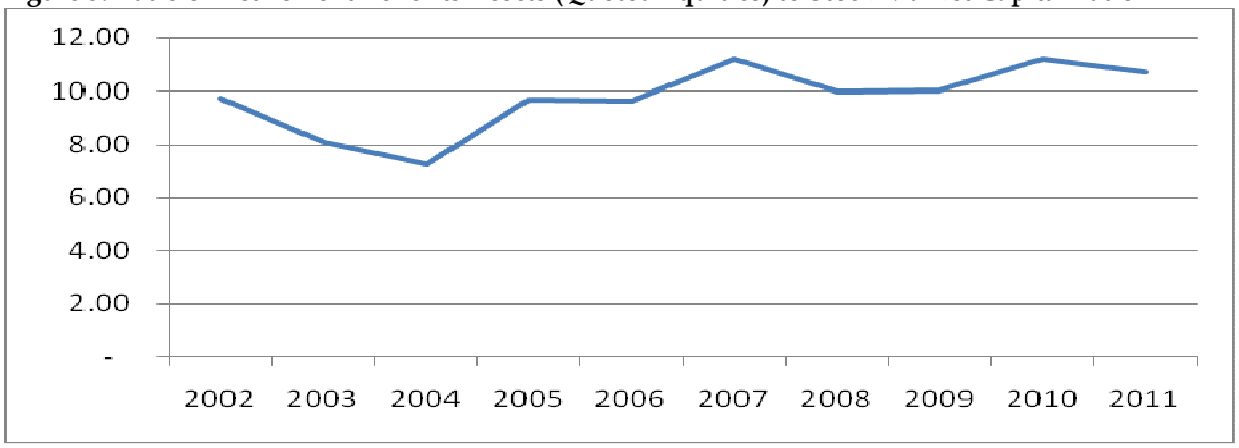
Both the growth rates of retirement benefit assets and the stock market capitalization on the other hand exhibits sharp fluctuations, but, in most cases, tends to move towards the same direction as illustrated in the figure 4 below, depicting a positive relationship between the two variables. Notable drops in the growth rates are between the periods 2003/2004, 2007/2008 and 2011. This may be attributed to multiple factors which include General elections in 2002 and the change over in government in 2003; post election crisis in 2008, global financial and economic crises in 2008 and 2011; and, the weakening Kenya shilling in 2011.

**Figure 4: Growth in Retirement Benefits Assets and Stock Market Capitalization**



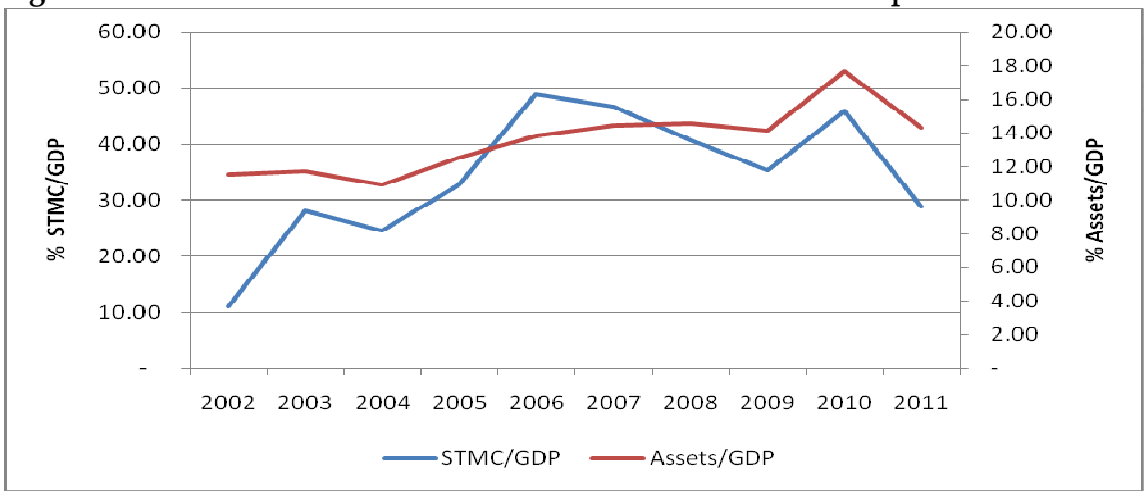

Similarly, the ratio of retirement benefits assets invested in quoted equities to stock market capitalization exhibit slight fluctuation with slow growth. The ratio dropped between the periods 2003/2004; 2007/2008 and 2011. As at 31st December 2011, the quoted equities amounted to Kshs. 93 billion, constituting 21 percent of the total retirement benefits assets and accounting for 10.7 percent of the total market capitalization as shown in figure 5 below.

**Figure 5: Ratio of Retirement Benefits Assets (Quoted Equities) to Stock Market Capitalization**




As a ratio of GDP, both the retirement benefits assets and stock market capitalization exhibit some fluctuations but tends towards the same direction as shown in figure 6 below.

**Figure 6: Ratio of Retirement Benefits Assets and Stock Market Capitalization to GDP**

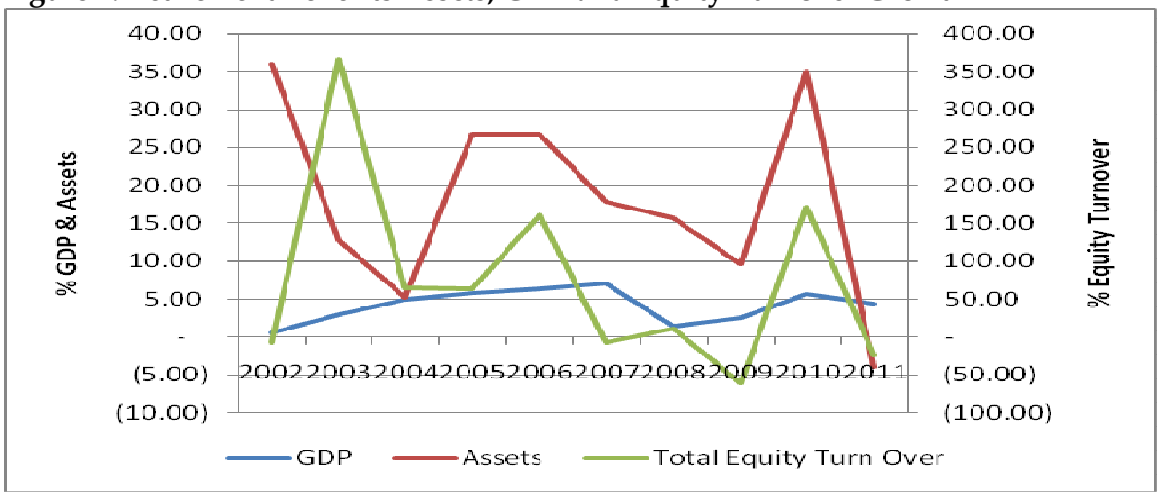



From the analysis above it is evident that the retirement benefits assets have a positive relationship with stock market capitalization. The two variables also exhibit sharp fluctuations between the periods 2002/2003; 2003/2004; 2007/2008 and 2011, implying that the two variables are susceptible to shocks.

### 4.1.3 Retirement Benefits Assets, GDP and Equity Turnover

The growth rates of total equity turnover and retirement benefits assets exhibit sharp fluctuations compared to the growth rates in GDP.

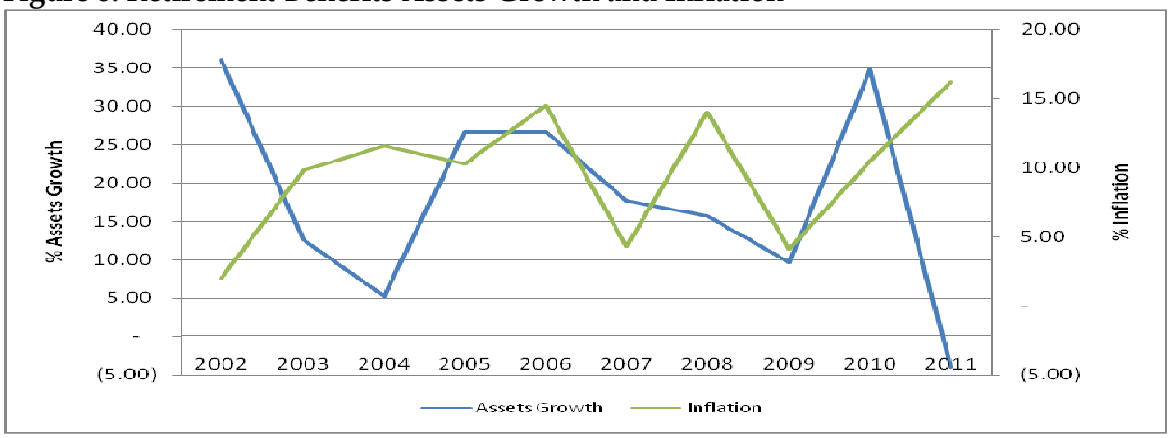
**Figure 7: Retirement Benefits Assets, GDP and Equity Turnover Growth**




### 4.1.4 Retirement Benefit Assets and Inflation

The retirement assets and inflation have a negative relationship as depicted in figure 8 below implying that an increase in the rate of inflation leads to a decrease in the growth of retirement benefits assets.

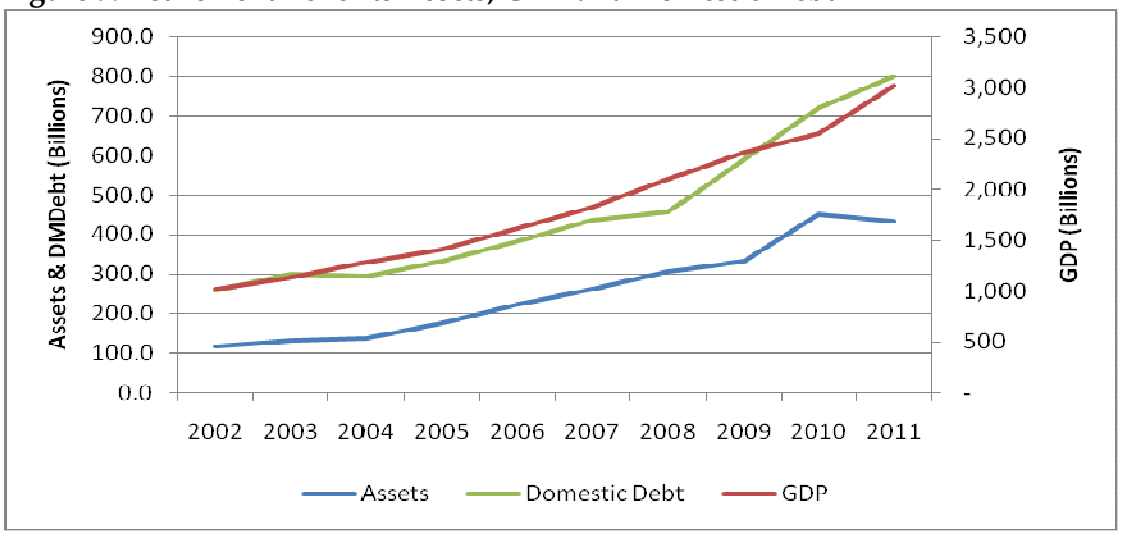
**Figure 8: Retirement Benefits Assets Growth and Inflation**



### 4.1.5 Retirement Benefits Assets, Domestic Debt and GDP

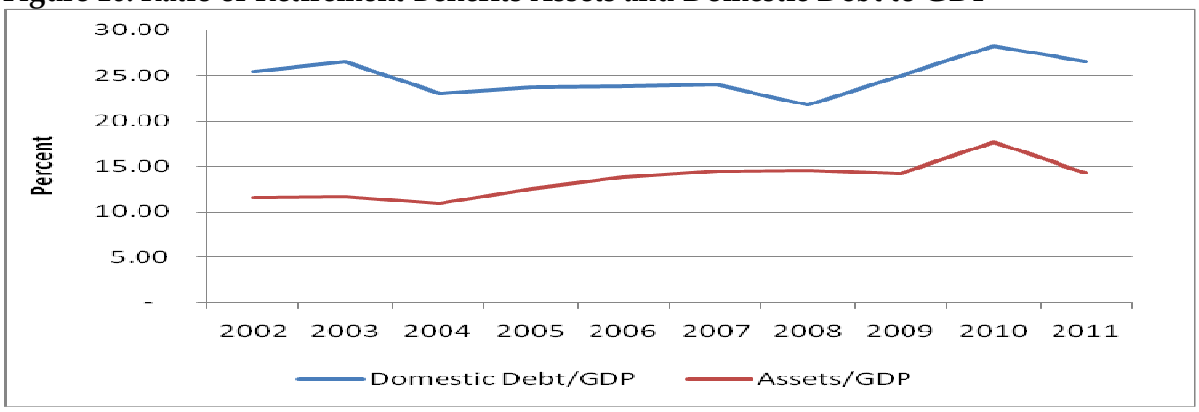
The retirement benefits assets; GDP and domestic debt have been increasing in absolute terms over the years as depicted in the figure 9 below. However the retirement benefits assets declined slightly in 2011.

**Figure 9: Retirement Benefits Assets, GDP and Domestic Debt**



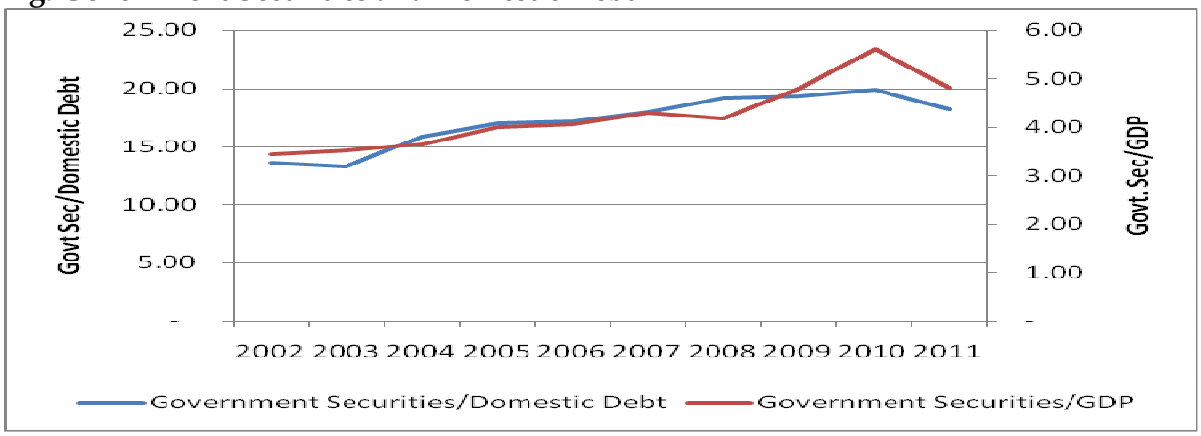

As a ratio of GDP both the retirement benefit assets and domestic debt exhibit slight fluctuations but have a similar trend implying a positive relationship between the two variables. Both ratio of retirement benefits assets and domestic debt to GDP declined between the periods 2003/2004 and 2007/2008 and 2011. This can be attributed to the effect of the general elections in 2002 and the change over in government in 2003; post election violence in 2008 and the financial and economic crises in 2011.

**Figure 10: Ratio of Retirement Benefits Assets and Domestic Debt to GDP**



Similarly, the retirement benefits assets invested in government securities as a ratio of GDP and as a ratio of domestic debt also exhibit similar trend, increasing gradually, but declined in 2011. Over time, investment of retirement benefits assets in government securities has been increasing and as at December 2011 the pension sector held a large proportion of its assets in government securities amounting to Kshs. 145.7 billion accounting for 34 percent of the total retirement benefits assets and 4.8 percent of GDP.

**Fig: Government Securities and Domestic Debt**




However, although the retirement benefits assets held in government securities are long term bonds (8 years and above) which constitutes 83.9 percent (122 billion) of the total government securities. The infrastructure bonds (inclusive KENGEN Public Infrastructure Bond) accounts for only 14.9 percent (21.8 billion) of the total government securities held by the pension funds. Similarly, the fixed income assets or corporate bonds accounted for only 5.2 percent (20.9 billion) of the total assets held by pension funds and controlled by the pension fund managers as at December 2011.

Given the fact that retirement benefits assets investment government securities forms part of the domestic debt it is prudent that these are invested in productive sectors of the economy like infrastructure. Zandberg and Spierdijk (2010) and Barr (2000) notes that effect of investment on economic growth depends on the

quality of investment[5]. Zandberg and Spierdijk (2010) also questions whether investment of pension funds in government debt leads to productive investments. Investment of pension funds in government debt may also lead to crowding out of private sector investment as government competes with the private sector for private savings. This is more so in developing countries like Kenya where the national savings are quite low (Maana and Mutai, 2008).

Extensive use of domestic debt may have severe implications on the economy, more so if the domestic debt interest payments consume a significant part of the government revenue and if the debt is held in short term instruments (Maana and Mutai, 2008). Equally, the average maturity has implications on the rollover/refinancing risks with a short average maturity implying a high refinancing risk through pressure on interest rates and liquidity (FSSR, 2011).

### 4.2: Diagnostic Tests

The paper performed the various diagnostic tests; among them: unit root tests and granger causality tests. The results of the tests are reported below.

#### 4.2.1 Unit Root Tests

Time series data tend to exhibit either a deterministic and or stochastic time trend and are therefore not stationary. They therefore have means, variances and covariance that are not time invariant (Engle and Granger, 1987). The direct application of ordinary least squares (OLS) to non stationary data produces regressions that are spurious.

A variable is said to be stationary if it's mean, variance and auto-covariance remains the same no matter at what point we measure them. In order to test whether the variables are stationary or not, unit roots tests were performed. Augmented Dickey Fuller (ADF) tests were used to test the variables for a unit root and the results of the unit root test are reported in table 1 below.

[5] The impact of high investment on economic growth depends on the quality of investment. An extreme example is given of the high investment rates in the soviet union during the latter days of communism yet the economic growth was zero (Barr 2000) cited in Zandberg and Spierdijk (2010).

The results show that we could not reject the null hypothesis of unit roots for all the variables in level form, i.e. the results of the stationarity tests at level show that all variables are non stationary. The variables then were differenced once and the stationarity tests performed again. The null hypothesis was rejected when the Augmented Dickey Fuller (ADF) test was applied to the first difference of each variable confirming that the differenced variables were stationary. The result also confirms that the variables are integrated of order one, *I*(1).

**Table1: Unit Root Test**

| Variable | $t_{calculated}$ | $t_{critical}$ | | |
|---|---|---|---|---|
| | | **1%** **-3.6117** | **5%** **-2.9399** | **10%** **-2.6080** |
| GDP Growth Rate | -2.600422 | Unit root | Unit root | Unit root |
| GDP | -0.719749 | Unit Root | Unit root | Unit root |
| Pension Assets | -0.545921 | Unit root | Unit root | Unit root |
| Pension Assets/GDP | -0.958414 | Unit root | Unit root | Unit root |
| Credit to Private Sector | 3.017249 | Unit root | Unit root | Unit root |
| Credit to Private Sector/GDP | 2.191731 | Unit root | Unit root | Unit root |
| Equity Turnover/GDP | -2.322438 | Unit root | Unit root | Unit root |
| Equity Turnover | -2.301696 | Unit root | Unit root | Unit root |
| Inflation | -2.668048 | Unit root | Unit root | Unit root |
| 91 Day T Bill Rate | -2.592131 | Unit root | Unit root | Unit root |
| Domestic Debt | 1.987017 | Unit root | Unit root | Unit root |
| Domestic Debt/GDP | 0.367724 | Unit root | Unit root | Unit root |

### 4.3 Granger Causality Test

The standard Granger Causality Tests shows that there is a unidirectional causality. The direction of causality is from pension assets to economic growth at 5 percent significance level both in levels and logs. The results are as shown in the Table 2 below: The granger causality results concur with Hu (2004) who established that pension assets granger caused economic growth in both OECD countries and emerging market economies.

**Table 2: Standard Granger Causality Tests Results**

Pairwise Granger Causality Tests
Date: 06/18/12 Time: 13:28
Sample: 2002Q2 2011Q4
Lags: 3

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---|---|---|---|
| GDP does not Granger Cause PENASSETS | 36 | 1.57280 | 0.2172 |
| PENASSETS does not Granger Cause GDP | | 3.84380 | 0.0197 |

## 5.0 Conclusion and Recommendation

The retirement benefits sector in Kenya has recorded significant growth in membership and assets since the introduction of the pension reforms in the early 2000. As at the end of 2011, the sector had generated a pool of over Kshs. 432 billion investible funds which have been invested in the various assets classes in the various sectors of the economy. Retirement benefits assets therefore are an important source of funds for investment and hence contributing to the growth of the economy as a whole. The retirement benefits sector also holds a significant proportion of its assets in form of government securities which forms the bulk of the domestic debt and hence contributing to the government development agenda.

The study therefore recommends the following:

- **Review of investment Guidelines**: a large proportion of the retirement benefits assets are currently invested in government securities, which basically forms part of the domestic debt of which in most cases are used for budgetary support. For instance the 30 year Savings Development Bond (SDB) issued in February 2011 amounting to Kshs. 18 billion was basically for the purpose of budgetary support. This may not translate to the anticipated effects on economic growth. Retirements benefits assets therefore need to be invested in more productive sectors.

There is therefore need to consider Economically Targeted Investments (ETI) of retirement benefits assets so as to yield the expected results of good returns to members as well as boosting the economic growth. Pension funds may also be invested in specific sectors of the economy for instance infrastructure so as to stimulate economic growth.

Investments of pension funds need not to be solely driven by investment returns/investment yield but also the desired economic and social goal. Investment of retirement benefits assets need to compliment the government development agenda like Kenya Vision 2030. However, government needs to provide incentives for schemes to invest pension funds in government ventures.

There is therefore need to amend the investment guidelines so as to enable retirement benefits assets be invested in innovative/alternative market products geared towards the achievement of the desired economic growth as well as the Kenya vision 2030 objective.

- **Sound Macroeconomic Environment:** there is need for the government to put in place the necessary fiscal and monetary policy measures aimed at reducing inflationary pressures and ensuring stable and predictable macroeconomic environment which reward savers and reduce fears of inflation.
- **Development and Promotion of Innovative Retirement Benefits Products**: the retirement benefits assets have been increasing over the last decade and the trend is expected to continue given the various initiatives the Retirement Benefits Authority (RBA) is undertaking. However, the asset base to GDP is low compared to the target of 30 percent as envisioned in the Kenya Vision 2030 Medium Term Plan. There is therefore need to develop and promote innovative products in the pension industry particularly those which target the informal sector and the self employed. The Authority therefore needs to intensify the awareness campaigns/initiatives to support and encourage the development and implementation of innovative products tailored to suit the uncovered population in the informal sector and the self employed.

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