

THE IMPACT OF PENSION SAVINGS SCHEME ON KENYA'S
INVESTMENT GROWTH - An Empirical Analysis.

BY

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X51/69292/2013

AN ECONOMIC RESEARCH PAPER SUBMITTED IN PARTIAL
FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF A
DEGREE IN A MASTER OF ART , ECONOMIC POLICY MANAGEMENT ,
SCHOOL OF ECONOMICS,

UNIVERSITY OF NAIROBI

OCTOBER 2015

DECLARATION

This proposal is my original work and has not been presented for an academic award in any other university.

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ABSTRACT

The accumulation of physical capital has long been linked to growth by various theories of Growth and development. In his well-established empirical fact (Kuznets, 1973), draws strong association between investment ratios and long term growth. This study analysed the impact of pension savings scheme on Kenya's investment growth. The pension sector in Kenya is estimated to hold assets in excess of Ksh 700 billion or 16 per cent of gross domestic product.

Using time series analysis for a period between 2001- 2014, the study findings show that investments in Kenya are highly responsive to pension scheme funds. Holding other factors constant, a one dollar change in pension funds increases investments by 128,619.7 dollars. This implies that pension funds shock the economy positively.

From these findings and with a scope for further development in the sector, prudent investment of these funds with enabling policies will be catalytic in enhancing Kenya's economic growth as only 15 per cent of the labor sector is currently covered by the formal retirement benefits sector. With proper policies in place, the sector can help in deepening of capital markets, long term capital formation and the development of financial markets. Sensitisation programmes of the public on the importance of participating in the pension scheme and ensuring wide sector coverage to include informal sector need to be implemented by the retirement benefits authority.

ACKNOWLEDGEMENTS

I wish to sincerely thank my research supervisor Dr B O Ongeru for his invaluable guidance throughout the process of carrying out this study. In deed special recognition also goes to the staff and my colleagues at the school of economics for their informed comments and suggestions which made this study holistic.

My gratitude also goes to my entire family members for their unrelenting support and understanding throughout the course of my study, more so when I thought to have hit the rock bottom, their moral encouragement and support always came in handy. Special mention to my brother Solomon and younger sister Rebecca, I will always remember the socks scandal and smile.

Last but not least, to all the others who contributed indirectly or directly to the realisation of this research work, I extend my great gratitude. Above all, the Almighty God for making His plans possible.

DEDICATION

This research work is dedicated to my parents Mr Peter Okeiga and Mrs Jemimah Kerubo who taught me the ways of humility, hard work and self believe. Their steadfast support has seen me excel throughout my academic pursuit.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

With the unveiling of the vision 2030 blue print, Kenya, in its quest to become a newly industrialised middle income earner and eradicate poverty by the year 2030, embarked on massive and aggressive investment projects requiring substantial amount of capital. Infrastructure development as one of the foundations under which the economic, social and political pillars are anchored, saw key infrastructural project flagged off. These included construction of the standard gauge railway, the northern corridor project culminating in the LAPSET project, expansion of the ports and international airports among other key mega projects. All these aimed at opening Kenya to international markets, positioning itself as a key financial hub in the Sub Saharan Africa, (Kenya vision 2030).

The implementation of the new constitution, which called for a devolved system of government saw Kenya's annual budget estimate surge to almost Kenya shillings 2 trillion in the fiscal year 2015/2016 with domestic borrowing and grants equalling Ksh. 303 billion and an estimated budget deficit of Ksh. 341 billion to be funded externally through borrowing (Kenya Tax newsletter, 2015).

Table 1: Summary of Kenya's budget revenues and expenditure fiscal year 2014/2015 and 2015/2016

	2015/2016 Ksh (billions)	2014/2015 Ksh (billion)
Total Revenue	1,358	1,238
Total Expenditure	(2,002)	(1,581)
Deficit	644	343

Source: Kenya tax newsletter, Year 2015

Table 2: Kenya's Budget Deficit Funding

	2015/2016 Ksh (billions)	2014/2015 Ksh (billions)
External financing	341	150
Loan repayment receipts	0	2
Grants	73	0
Domestic borrowing	230	191
Total	644	343

Source: Kenya tax newsletter, Year 2015

Cognizant of the fact that the Kenyan government lays critical emphasis on infrastructural development as a basis for renewed economic growth, the current and expected huge debt financing will on the contrary slow growth. The economy risks rapid debt escalation when planned borrowings for the mega projects are taken into account and consequently inhibit growth. The country should therefore explore innovative funding mechanisms, including public-private partnerships and domestic saving to finance such development projects.

Pension schemes in Kenya hold huge resources which can be key to funding the multibillion shilling projects such as power and infrastructure, which are key to spurring economic growth. The pension sector held assets worth Kenya shillings 700 billion or 16% of Kenya's GDP by the end of year 2014 (RBA, 2014). The asset classes where these wealth is held include property, equities, government securities, fixed incomes and guaranteed funds. These funds usually provide a direct match in investment profile and funding required in the in long term projects such as infrastructure projects that the government is looking to invest in. The government thus need to seek ways to encourages more saving and mobilise more of these pension funds through increased member contribution.

1.1.1 Kenya's Pension Sector

The Kenyan pension sector is estimated to hold assets in excess of Kshs 700 billion or 16 per cent of Kenya's gross domestic product (GDP). Proper management and investment of the funds can be a vital catalyst to enhancing economic growth in the country while deepening

the capital markets and the development of longer term capital market instruments. With only an estimated 15 per cent of the labor force covered by the formal retirement benefit sector (RBA, 2014), the scope for further development is wide.

Table 3: Kenya’s Pension Scheme Asset Portfolio (2001-2014)

Year	Govt securities	Immovable properties	Guaranteed funds	Fixed incomes	Fixed Deposits	offshore	cash	Quoted equities	Unquoted equities	others	Total
01	22.15	33.53	2.86	2.32	5.14	3.34	0.94	4.09	0.45	0.24	44.70
02	35.24	41.30	9.15	6.97	3.81	2.48	6.00	10.86	1.28	0.004	117.48
03	39.88	36.20	11.33	4.83	4.44	4.74	1.22	25.77	0.59	3.76	132.76
04	46.86	35.23	12.85	4.97	6.40	4.67	1.61	22.90	0.45	3.67	139.61
05	56.80	39.31	14.74	5.90	4.21	6.32	1.74	44.87	2.38	0.02	176.79
06	65.84	40.87	17.52	5.37	4.04	8.89	2.83	76.19	2.20	0.25	224.02
07	78.54	38.39	21.53	4.56	7.02	9.70	6.68	95.24	1.65	0.39	263.70
08	87.56	34.93	26.42	7.50	14.16	6.12	4.19	85.16	1.78	4.46	272.28
09	113.60	46.10	30.63	14.50	7.81	10.70	5.12	83.41	1.97	-	313.87
10	143.33	50.01	33.26	21.04	16.80	15.35	7.30	130.30	2.50	0.98	420.87
11	145.74	57.76	48.03	20.97	21.93	5.25	6.83	93.02	3.66	-	403.18
12	190.30	130.40	101.60	48.10	26.70	27.10	8.50	12.90	3.1	-	548.70
13	235.16	177.41	119.84	71.46	30.38	34.17	15.29	9.03	3.94	-	696.68
14	241.97	203.73	103.39	94.09	46.52	41.47	14.68	10.74	4.55	0.01	788.15

Source: Retirement Benefits Authority Sector Media briefs, years 2001-2014

From the table above, the number of total asset under the pension sector increased from Kshs 44 billion in the year 2001 to a massive Kshs. 788.15 billion by the end of year 2014. By the same year the number of registered pension schemes stood at a record 1,232 schemes while the number of individual Retirement benefit schemes stood at 32 with a total of 29 fund administrators. The sector has got a total of 20 approved fund managers and 11 custodians.

1.1.2 Types of Pension plans in Kenya

The pension sector in Kenya basically has got three pension plans, namely:

- i. **Public Pension Fund:** This fund is regulated by public law, such as National Social Security Fund (NSSF). Under the fund, both the employer and employee make statutory contributions as stipulated by law.
- ii. **Occupational Pension Scheme:** this scheme is sponsored by the employer and open to the employees of that specific organisation only.
- iii. **Individual Pension Plan:** The scheme is operated by an independent entity. It is open to the general public. These schemes must get licenced annually.

1.1.3 Design of the Pension Plans in Kenya

Under these three types two plans exist

Defined Contribution Plan: the amount that a member shall receive upon retirement under this plan depend on the performance of the fund's investments over time and the total amount contributed.

Defined Benefits Plan: The amount a member shall receive upon retirement is determined in advance using a formula. Members of the scheme contribute a fixed amount and the sponsor meets the balance of the promised benefit. This plan is treated as a liability by the employer to be paid when an employee retires.

The pension sector in Kenya is regulated by the Retirement Benefits Authority which has as its key objective to regulate and supervise the establishment and management of the retirement benefits scheme (Retirement Benefits Act, 2012). Other objectives mandated to it include protection of the interest of members and sponsors of retirement benefits schemes, promote the development of the of the retirement benefits sector, advise cabinet secretary for the National Treasury on national policy to be followed with regard to the retirement benefit sector, and to ensure implementation of government policies relating pension. The trustee of

the fund plays a safeguarding role in the interests of the fund's members while Fund Managers, appointed by the trustees, invest the scheme's funds. Fund custodians perform the custodial role to the pension assets. Fund administrators maintain records of contributions by the members and benefits to the members. The fund managers invest the funds under specified investment guidelines which are in line with the objectives of the scheme. These guidelines ensure that the manager acts in the interest of the scheme members.

The Retirement Benefits Authority, RBA, was created as part of the Kenya government's financial reforms to mobilise domestic savings, develop the capital market and enhance economic development (Retirement Benefits Act, 2012).

Pension reforms affect domestic savings through four channels. The first channel is the change in governments overall savings or surplus. Secondly, the private savings respond to the change in total government saving. This then induces the new mandatory savings by households in the pension scheme. Finally, households respond by voluntary savings to the mandatory pension savings (Corbo and Schmidt-Hebbel, 2002).

Various theoretical and empirical literature has focused on different aspects of pension systems. When assessing the economic effects of pension schemes, a number of factors have been taken into account (Lindbeck and Persson, 2002; Feldstein and Liebman, 2002). In fully funded systems based on individual pension accounts, accrued pensions directly relate to workers' contributions and market returns.

A number of researchers have analysed partial aspects of pension saving systems such as the macroeconomic aspects of the pensions, financial aspects, and labor-related issues (for example, Valdez-Prieto, 2002; Edwards and Edwards, 2002; and Lefort and Walker, 2001). Others estimated the effects of pensions on welfare and/or output (Holzmann, 1997; Schmidt-Hebbel, 1998; Arrau, 1991; Valdez-Prieto and Cifuentes, 1993). However, this research work sought to assess the impact of pension systems as a tool for influencing saving, investment and economic growth in Kenya.

The role of savings in any economy cannot be overemphasised and its importance is at different levels. One needs to consider who all the savers are in the economy and how it affects overall performance (Le Roux, 2009). Three entities contribute to savings in the economy, namely: the government, households, and companies. According to Le Roux (2009), households will save for two basic reasons, first to cover future expenses and secondly for

future retirement. Failure by households to save enough to cover future expenses imply that they will struggle financially during retirement as they do not have sufficient funds to cover for planned future expenses.

If savings are too little it means that there shall be financial constraints for individuals and for the broader economy there shall be insufficient funds to finance investments in social and physical infrastructure. With Insufficient investment, the overall living standards of the country will be poor relative to countries with better savings rates and this is as a result of sub optimal economic growth and job creation. The government’s burden in service provision will be over-stretched as a result of low savings by households. This will eventually limit government’s ability to spend money infrastructural development. The government will be forced to raise taxes to generate additional revenue for increased social expenditures, and this further will handicap households’ saving and spending power.

Every act of saving corresponds to an act of investment. The building of capital requires the use of resources that could otherwise have been used for something else. This could be seen as an opportunity cost of spending: a foregone best alternative. International flow of capital is important in effecting savings, however, a country’s saving rate is the most significant determinant of its investment rate. Via the Solow model, differences in saving lead to differences in investment rates. This ultimately translates to differences in the level of income per capita. The table below compares Kenya with the top five savers in Africa in the year 2014. Kenya managed only 3.9% as a percentage of GDP.

Table 4: Saving rate as a percentage of GDP for selected Countries in Africa

Year	2010	2011	2012	2013	2014
Equatorial Guinea	79.7	81.9	82.1	78.3	74.6
Algeria	48.5	48.0	48.0	45.8	52.2
Gabon	58.4	58.6	58.9	51.6	46.2

Congo Rep.	50.9	54.7	49.4	41.4	43.4
Botswana	26.8	31.0	22.6	33.3	37.3
Kenya	7.8	4.5	5.9	4.6	3.9

Source: World Bank National Data and OECD National Accounts Data files 2014

Low levels of savings in poor countries can be explained by the assumption that people simply cannot afford to save. Their present consumption levels cannot allow them to save for the future.

A variant to the argument focus on individual's voluntary choices. The decision to save rather than consume will be a balance between current and future satisfaction. Individuals who do not care much about the future will be current spenders and thus will forgo the saving option.

1.2 Statement of the problem

The Kenyan government lays critical emphasis on investing heavily on infrastructural development as the basis for renewed economic growth. However, over-reliance on external borrowing threatens this course. The current and expected huge debt financing will slow down the investment momentum experienced. With low levels of domestic savings (3% in the year 2004 as a percentage of GDP), Kenya has to pursue innovative funding mechanisms. This includes public-private partnerships and increased domestic savings to finance these developments.

National saving and domestic investment are identically equal in a closed economy. Increasing domestic saving effectively increases investment as well. However, little effort has been put on policy to foster greater domestic savings in Kenya.

Pension saving schemes which hold huge resources and offer a long term matching profile with these investments can offer a solution to challenges posed to the government while maintaining their retirement obligations. This study analyses empirically the impact of pension saving scheme on Kenya's economic investment development.

1.3 Research objectives

The objective of the study is to establish the impact of pension saving scheme on Kenya's investment growth.

The specific objectives included:

- i. To determine the main types of pension schemes in Kenya.
- ii. To establish the impact of pension savings on Kenya's investment growth.
- iii. Recommend on the role of pension saving system in Kenya's overall economic growth.

1.4 Research Questions

- i. What are the main types of pension saving systems in Kenya?
- ii. What impact does the pension saving system has on Kenya's investment development?

1.5 Significance of the study

Capital inflows can provide a country with a massive but limited solution to investment. Kenya, over the past few years has had strong capital inflows injected into investments. This has played a vital role in providing capital required for investment in the economy. However, the country cannot indefinitely rely on the flow of foreign capital to finance local investment. Whenever there is bad news or concern over the health of the economy or worries about future policy direction foreign investors tend to fickle. This often result in sudden and massive withdrawal of their funds. This causes sudden shocks in form of currency slump, higher interest rates, increased inflation, and severe economic downturn not to mention the huge debt burden to be paid. Typically new investment and employment are severely curtailed.

The real solution on the long run to the country's capital needs is to provide it through a higher levels of savings. Global experience especially in Asia, associate high saving rates to higher economic growth and employment with less cyclical economic volatility. Thus encouraged savings through pension systems will be a viable for financing infrastructural projects.

Hence the significance of this study shall include the policy recommendations on ways of enhancing domestic savings through pension schemes as well as adding to the existing literature on the linkage between savings and investments.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provide information from publications on related topics, in addition to examining findings from various scholars on the impact of pension saving systems on economic growth. The first part covers various saving, investment and growth theories of growth. The second part is on empirical literature review of different scholarly articles as well as their findings on the impact of pension saving scheme on development. The last part gives a summary of the literature presented

2.2 Theoretical Literature Review

Traditional development theory greatly link long-run rate of economic growth to saving rate. The rate of capital accumulation is essentially determined by savings, which in turn affect long-run growth. The long-term patterns of saving and growth in developing countries supports this conventional theory. Policy implication mean that priority should be given at policies aimed at raising domestic saving to ensure a sustainable growth path.

Consumption theories, predict a negative effect of growth on saving as individuals adjust their present consumption upward in anticipation of higher future income. However, in a life-cycle overlapping-generations framework, growth takes place in cohorts (rather than within cohorts' lifetimes); in such conditions, growth increases aggregate saving. Deaton (1989) using data for LDCs, show that actual age-consumption profiles are not consistent with what is predicted by life-cycle theories.

Positive saving-growth link has been explained by number conventional hypotheses on consumer behaviour. Such theories include the concentration of growth in households with high saving rate, such as rich or middle-aged households (Collins, 1991). Growth pushes consumers beyond the threshold level of income under which they are borrowing-constrained or myopic. Slowly changing consumption habits could also contribute to higher saving rates in the face of rapid growth. Carroll and Weil (1993) suggest a mixture of habit formation with uncertain income (giving rise to precautionary saving). A final unconventional hypothesis is that both consumption and wealth (or capital) enters the utility function, (Cole,

Mailath and Schumpeter, 1992). Higher growth raises wealth, but due to wealth/consumption substitutability, increases consumption less than proportionately thereby raising saving.

However, the Marshall-Mill classic suggests that saving is automatically translated into capital accumulation and thereby income growth. This simple mechanism underlie the positive correlation between saving and growth observed. These theories, suggest that causality between saving and growth runs both ways.

The saving-investment link is key for two main reasons; first, the possibility of the positive correlation between saving and growth and Secondly, the interaction between saving and investment giving the validity of traditional assumption that if saving rise growth will also raise. Thus implying that a country's extra saving effort is necessarily translated into higher domestic investment.

The determinants of saving are essentially different from the ones of investment. Savings mainly depend on income and wealth, while investments depend on risk and profitability. As a result of the differences, saving and investment can differ ex-ante. This is shown by the Keynesians tradition. According to Keynes' paradox thrift, an ex-ante increase in saving leads via multiplier to an ex-post decline in real output, investment and saving itself. Therefore policies aimed at raising investment and growth by encouraging saving might actually, according to the paradox yield the opposite result. However, in a closed economy national saving and domestic investment are equal at least in an ex-post sense. Therefore as saving increases investment will rise also.

Growth and development theory link accumulation of physical capital to growth. Most country experiences of sustainable growth tend to stress the link between capital accumulation and GDP growth (Kuznets, 1973).

Regardless of whether saving is the key driver for growth, the influence of public saving on national saving and the effectiveness of financial and tax incentives in raising private saving are two important factors key to research design and policy in developing countries.

Public saving affects national saving according to the life-cycle overlapping-generations model. This is because of the shifts of resources across generations weakly (or not at all) connected to one another. On the contrary, the infinite-horizon (Ramsey) model predicts that as private consumers internalise the governments intertemporal budget constrain, because of

strong intergenerational linkages, changes in public saving are exactly offset by changes in private saving. However, recent studies on developing countries as well as empirical evidence from OECD countries rejects the Ricardian equivalence theory. The implication of this support the view that public saving in the medium term is an effective tool in raising national saving.

Via various channels, Financial and capital market reforms can effects private savings, other than through changes in real interest rates. Capital market reforms can reverse capital flight, while raising the portfolio share of domestic assets and increasing measured income, net exports and domestic saving, without affecting overall private saving. Easterly (1993) and King and Levine (1993) show that financial liberalisation and capital market deepening can as well raise the efficiency of intermediation, increase growth and indirectly increase private saving. Lastly, liberalisation of financial markets and consequent increase in the number of financial institutions, variety of financial instruments, and rules of regulation and supervision of the financial sector, will lead to financial deepening reflected in a permanent increase in the stock of financial savings, such as financial and banking sector liabilities.

Pension reforms could also deepen the capital market yielding long-term static effects on saving and the level of output. This will also mean higher economic growth.

2.3 Empirical literature review

This section reviews various empirical studies by other authors who previously analysed the role of pension saving systems on economic development in different countries.

Corbo and Schmidt-Hebbel (2002) evaluated quantitatively the macroeconomic effects of pension reforms in Chile. In their study, they focused on three channels of reforms: savings and investment, labour markets (employment and labor productivity), and capital markets.

Using Bennett, Loayza, and Schmidt-Hebbel (2001) model, they evaluated the effects of the overall public deficit caused by the pension reforms in Chile. They found coefficients of the response of voluntary saving to government saving to vary between -0.36 and -0.57 values which are significantly different from zero (the extreme case of no consumption) and -1.0 (extreme case of Ricardian equivalence). Using these two estimated coefficients they defined a plausible range and an intermediate coefficient (-0.47) to evaluate the voluntary saving response of households (and therefore private saving) to the change in public savings. To

obtain the response, they multiply the compensation coefficient by the increase in the public deficit stemming from the pension reform. The result they found range from no increase in voluntary saving when fiscal adjustment is 100%, to 1.45% of GDP when fiscal adjustment is 25% and the compensation coefficient is at the highest level (-0.57).

To determine the possible effects on domestic investment of the change in domestic saving derived from pension reforms, they estimate using Feldstein and Horioka (1980) equation for the period 1960-2001 in Chile. They found a point estimate for the coefficient a_1 to be 0.51, with a standard error of 0.089 with a high statistical significance. Estimates based on a moving window of twenty-year sub samples, beginning with 1960-1980 and ending with 1981-2001, show that the saving/investment coefficient fell from nearly 0.99 in the 1960s and 1970s to 0.4 in the 1980s and 1990s. The increase in investment rate, resulting from the increase in the saving rate was attributed to the pension reform, and this ranged from a minimum of 0.28% of GDP (when the increase in saving stemming from pension reform is at its minimum and the saving-investment coefficient is 0.42) and a maximum 2.76% of GDP (when the increase in saving is 4.6% of GDP and the saving-investment coefficient is 0.6).

To quantify the effects of the pension reforms on total employment, Corbo and Schmidt-Hebbel constructed a two sector (formal and informal) model for labor markets based on Edwards and Edward (2002). The results from their study showed that the effect of the pension reform on total employment in the economy ranges from 1.3% to 3.7%. There was also an important effect on the formalisation of labor: formal sector employment expanded from by 3.2% to 7.6%, while informal employment contracted by 1.1% to 1.3%. They also found that the flow of workers from the formal sector is greater in the latter ranges, because the reduction in the informal employment stemming from the formalisation of employment is partially offset by an increase in employment in the sector, owing to the work force.

The increase in output may not only reflect greater aggregate employment but also a rise in average labor productivity owing to the reallocation of workers among sectors. To measure this effect, Corbo and Schmidt-Hebbel differentiated between the three flows of workers that occur in response to wage changes and the probability of finding formal employment. In their results they conclude that the increase owing to migration from informal to formal employment is in the range of 0.03% to 0.09% of GDP while that stemming from the net increase in employment is from 0.08% to 0.23% of GDP. Thus they concluded that the total

effect of the pension reform on labor productivity in the economy, exclusively as a result of reallocation of labor among sectors is from 0.11% to 0.32%.

Disney and Whitehouse (1999) presented a theoretical model to analyse how different types of pension plans affect retirement incentives. Their results show a powerful incentive to retire earlier under defined benefits plan, whereas defined contribution plans encouraged people to stay in the job. Blöndel and Scarpetta (1998), and Gruber and Wise (1999), presented empirical evidence for different countries showing that the decision to retire is closely related with the type of pension plan in existence. To quantify this effect in Chile, Corbo and Schmidt-Hebbel estimated an equation on the share of old people in the workforce in Chile using OLS for a period 1976-2001. From the model, they concluded that the pension reform variable affect the labor share of people between ages of fifty-five and sixty-four with an estimated coefficient of 0.037.

Impávodo and Musalem (2000) did undertake empirical studies to quantify the effects of pension funds on financial development. These authors used a simple portfolio model with three assets – money, bonds, and shares- to measure the effect of the development of institutional investors on the size of the stock market in different countries. Using panel data for a set of countries, they find that the assets of institutional investors have a positive and significant effect on share capitalisation. Lefort and Walker (2001) used time series to estimate the effect of pension funds on financial development in Chile. They found a positive relation between this variable and the financial variables used. The Chilean housing market similarly benefitted from the pension reforms, which triggered the development of the mortgage industry. Pension funds and life insurance companies began investing in mortgage bonds and supported the creation and expansion of the endorsable mortgage credits.

Corbo and Schmidt-Hebbel (2002), using econometric estimates based on time series analysis analysed the contribution of the pension system reform to the development of the financial markets in Chile. Their specification model is as follow:

$$FIV = \beta_0 + \beta_1(MS/GDP) + \beta_2(RER_t - RER_t) + \beta_3D_{inf<10} + \beta_4D_{inf<20} + \beta_5(Priv/GDP) + \beta_6FinLib + \beta_6RefIndex + \beta_7(TS/GDP) + \beta_8EBR + \beta_9EMR + \beta_{10}ESR + \beta_{11}EER$$

where FIR is the financial development variable defined earlier above; MS/GDP is the flow of mandatory savings in the pension system in each period as a proportion of GDP; $RER_t - RER_t$ is a measure of the gap between the real interest rate and its trend; $D_{inf<10}$ is a dummy

that takes the value of 1 when inflation is less than 10%; $D_{inf<20}$ is a dummy that takes the value of 1 when current inflation and that of adjacent periods is under 20%; Priv/GDP is the stock of privatised assets as a proportion GDP; FinLib is a measurement of financial liberalisation; RefIndex is an index of structural reforms; TS/GDP is total savings as a proportion of output; EBR is the expected bond return; EMR is the expected monetary return; and EER is the expected return on external assets.

From the specification they estimated a series of equations to test the robustness of the estimated parameter that link the pension system reform with financial development. The parameter was found to be robust for different specifications, maintaining its significance and a similar value in twenty estimated equations. The only case in which the value of parameter changed significantly was when the privatised asset variable was not included in the equations: the parameter increased from around 7.5 to 11.7. This is due to the fact that whenever a variable that is important for financial development is omitted, any correlated variables include its effects. Another possibility is that the two policies complement each other: the development of the new pension system may have contributed to the privatisations' success in boosting financial market development, such that controlling for privatised assets may lead to underestimate the effect of the pension funds.

They observe a long term relationship between financial development, control variables and mandatory saving variable. The estimated parameter for the contribution of pension savings flow on financial development is quite strong and is situated within two ranges, one around 7.5 when the estimation includes privatisation as a proportion of GDP, which implies a contribution of 31% to financial development between 1980 and 2001, and one around 11.7% when the latter variable is excluded, and which indicates a contribution of 46% to financial development.

Njuguna (2010) notes that the importance of pension funds to the economic growth and development cannot be overemphasised as global indices indicate that pension assets are playing an important role in mobilising savings for investment in the critical sectors. Pension funds contribute directly and indirectly to economic growth of countries worldwide.

Pension funds add value to world economies through direct contribution to the GDP, accumulation of savings, financial markets development, reducing old age poverty and acting as consumers of financial services (Njuguna, 2010). For example, in Australia, pension assets

amounted to AU\$ 1 trillion (which is about 20 per cent of GDP), while in Belgium pension assets amounted to €140 Billion in 2004. In 2003, the pension assets in Canada were worth CAD 1.3 trillion (30 per cent of GDP), while in China pension assets amounted to RMB 714 billion (24 per cent of GDP) for the same year. The contribution of pension assets to the GDP of the United Kingdom reached 14 per cent (GDP 1.9 trillion in 2003, while in the United States of America, the pension assets had a value of US\$ 14.5 trillion (37.7 per cent of all household financial assets). In Namibia, with only about 15,000 workers covered under CPS, the total pension assets amounted to N25 billion (US\$ 3.5 billion) which is 68 per cent of their GDP in 2004 (BGL, 2010). In Nigeria, the pension fund industry contributed to the economy by providing funds to finance infrastructural projects such as electricity, railway, tourism etc. (Balogun, 2006).

The most important reasons for low participation rates in pensions are lack of employment and employment with firms that do not offer pensions (Wu et al., 2014). About half of US private sector workers do not participate in a retirement plan at their current jobs. Non-participants are more likely to have low incomes.

The mechanism of pension participation involves four steps: having a job; working for an employer with a plan; being eligible for plan; and taking up the plan (Wu et al., 2014).

First, to be associated with a plan, an individual must work regularly. Lower income individuals due to lack of education and job skills, have weak labour force attachment and higher unemployment rates. Secondly, a worker must work for an employer that offers a pension to at least some employees, that is, the worker needs a good job with the prospects of fringe benefits. Previous research showed that lower income workers are less likely to be at a firm offering fringe benefits like health insurance, paid time off, and disability insurance the employee be eligible for coverage and lastly, the employer must take up the employer's offer. Thirdly, if pension is offered, the then worker must be eligible for coverage. Many firms make pension plans available only to workers with sufficient tenure and hours worked. Some defined contribution plans make eligibility for an employer match conditional on a minimum tenure length. In addition part time workers are less likely to be eligible for any type of plan. Finally, the eligible worker must take up the employer's offer (Wu et al., 2014).

Defined contribution plans typically require participation. However, pension coverage has rapidly shifted from defined contribution plans. In pension schemes, participation is

voluntary. Higher income are more likely than their lower income counterparts to participate in a retirement plan (Wu et al., 2014). Using a decomposition procedure, they found that the primary driver to low participation rate of lower income respondents is working for a firm without pension and weak labour force attachment. Only about half of the lower income individuals are working and, among those who are working only about 60 per cent work for firms that offer pension.

As defined benefits plans disappear from the private sector, low take up rates becomes a significant contributor to the low coverage rates among older workers. The most potent approach for boosting pension participation would be requiring employers to offer all workers access to a retirement saving plan that includes auto-enrolment. Such a policy however will not help lower income individuals of working g who are not employed. This will also mean measures to boost employment (Wu et al., 2014).

2.4 Overview of Literature and Research Gap.

Majority of the studies on the determinants of investment have considered foreign direct investments, capital flight, taxation, external debt and monetary policy among other factors in Kenya.

From the literature reviewed, it is clear that pension saving schemes have a big impact on economic growth of different countries. The effects of pension reforms on output through are substantial. If the reforms are fully implemented and appropriate policies set in place, pension sector can prove to be a major boost to the development agenda as witnessed in Chile and Singapore.

However, little if any has considered the impact public-private partnership as a determinant of domestic investment. This research work seek to use this gap by empirically analysing the impact of pension saving schemes on Kenya's investment growth as part of the public-private partnership.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the theoretical framework as well as the conceptual framework that will be used in the study, modelling and data analysis techniques. As well as helping in data analysis, the conceptual framework will also help give direction towards the achievement of the main objective of the study. The various tests to be performed to ascertain data validity will also be discussed in this chapter.

3.1 Theoretical Framework

Traditional development theory greatly link long-run rate of economic growth to saving rate. The rate of capital accumulation is essentially determined by savings, which in turn affect long-run growth. The long-term patterns of saving and growth in developing countries supports this conventional theory. Policy implication mean that priority should be given at policies aimed at raising domestic saving to ensure a sustainable growth path.

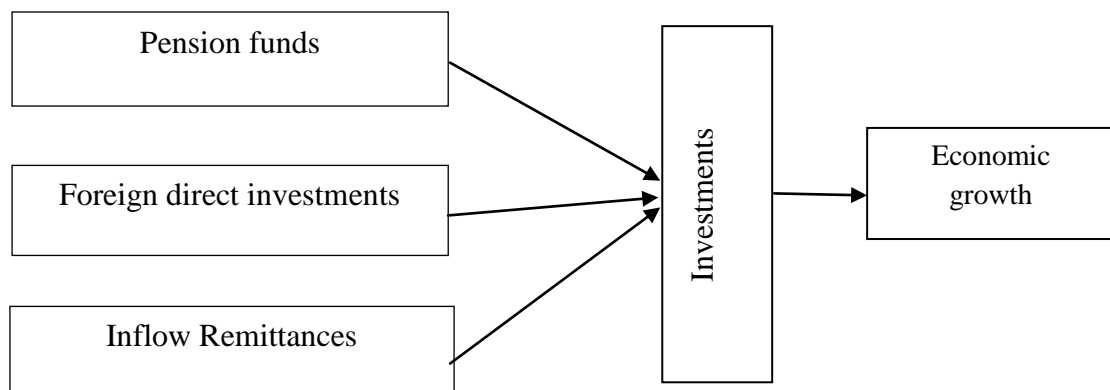
The saving-investment link is key for two main reasons; first, the possibility of the positive correlation between saving and growth and Secondly, the interaction between saving and investment giving the validity of traditional assumption that if saving rise growth will also raise. Thus implying that a country's extra saving effort is necessarily translated into higher domestic investment.

According to Keynes' paradox thrift, an ex-ante increase in saving leads via multiplier to an ex-post decline in real output, investment and saving itself. Therefore policies aimed at raising investment and growth by encouraging saving might actually, according to the paradox yield the opposite result. However, in a closed economy national saving and domestic investment are equal at least in an ex-post sense. Therefore as saving increases investment will rise also.

3.2 Conceptual Framework

The Conceptual Framework shows the relationship between dependent and independent variables in the model of study. It will offer a guide in analysing the impact of pension schemes on Kenya's economic growth.

Domestic savings is made up of saving by the three entities namely; household saving, corporate saving and government saving (an independent variable), contributing to resources for investment. In the model we will assume household contribute to domestic savings primarily via the pension funds. However in the defined contribution scheme, using the matching concept, employers (corporates) will match household pension contributions at an agreed rate to the pension funds while part of their saving will go directly to national investments in form of private investments. Foreign direct investments and inflow of remittances by Kenyan citizens from abroad, also add to the investment pool in the model as shown below.



Source: Author's Representation

3.3 Model specification

First we construct the pension's contribution variable to capture to national investments in the most suitable way. This variable, the pension fund is made up households and corporate contributions to investment funds. This follows Corbo and Schmidt-Hebbel (2002) model used to study the role of pension system reforms in the development of the Chilean financial market.

To make the model functional, we add foreign direct investments and inflow of remittances from abroad to the model as other variables that influence national investments. This model is in the general form as shown;

$$I_i = \beta_0 + X_i\beta + C + \mu_i \dots \dots \dots (1)$$

Equation 1 shows the factors that influence national investments in the model. β_0 is the intercept, μ , is the disturbance term, while X_i captures all the variables defined in the model that influence national investments.

The variables specified as influencing investments in the conceptual framework include savings in the pension funds, foreign direct investments and remittances from abroad by Kenyan citizens. Therefore the variable X_i is made composed of the pension funds, foreign direct investments, and remittances from abroad.

Inserting variables defined in X_i above into equation 1, we get the investment model specified as;

$$Investment_i = \beta_0 + \beta_1 Pensionfund_i + \beta_2 Remittances_i + \beta_3 ForeignDirectInvestments_i + \varepsilon_i \dots \dots (2)$$

Therefore, equation 2 will represent the model for estimation to determine the pension scheme contributions to investment development.

Hypothesis

The study hypotheses will be that

H₁ There is a positive correlation between national investments in the economy and pension savings (household savings and corporate savings through pension schemes) hence growth.

Table 5: Summary of priori expectations of the study

Variable	Description	Expected sign
Pension funds	Households and corporate savings in the economy via pension schemes	Positive
Foreign direct investments	Foreign direct investments injected into the economy's investments	Positive
Remittances from abroad	Net remittances from abroad into the economy for investments	Positive

3.4 Data sources

In the analysis, secondary data will be used primarily covering the period from 2001 to 2014. This data will be obtained from Retirement Benefits Authority, the World Bank Data source and Statistical Abstract.

3.5 Estimation and Data Analysis Technique

Time Series analysis was applied in analysing the data. STATA software was used to regress the Ordinary Least Squares (OLS) in attempt to explore the relationship between predictor and outcome variables in the model (Gujarati, 2004). The main assumptions of the OLS were adhered to during the time series data analysis.

3.5.1 Pre-Estimation Tests

3.5.2 Heteroskedasticity test

Heteroskedasticity refers to a situation where the variance of the error term varies with change in the number of observations. This affects the conclusions made in hypothesis testing making them invalid. Breusch-Pagan test will be used to test for the presence of heteroskedasticity.

3.5.3 Unit Roots/Stationary Test

Stationarity refers to a case where the mean of the data is time independent. Unit root tests help detect non stationarity in all the variables. If variables are non-stationary, there will be a tendency of the estimates to change over time. This leads to spurious estimates. Successful differencing is applied until the bias is eliminated in case non stationary is found. In this case, the null hypothesis is that a variable under consideration is non-stationary. Augmented Dickey Fuller (ADF) will be used to test for stationarity (Gujarat, 2004).

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The chapter covers data analysis and discussion of the results. It gives the summary descriptive statistics of investments, remittances, foreign direct investments and pension fund. In addition, the chapter covers the correlational matrix that gives the relationship among the variables, unit root test results to determine the order of integration for variables, test for heteroschasticity and lastly the regression results for the model.

4.2 Descriptive statistics

The descriptive statistics for the variables are presented in table 4.1. This comprises of the mean values, minimum and maximum values, variance and standard deviation values, skewness and kurtosis values of the variables.

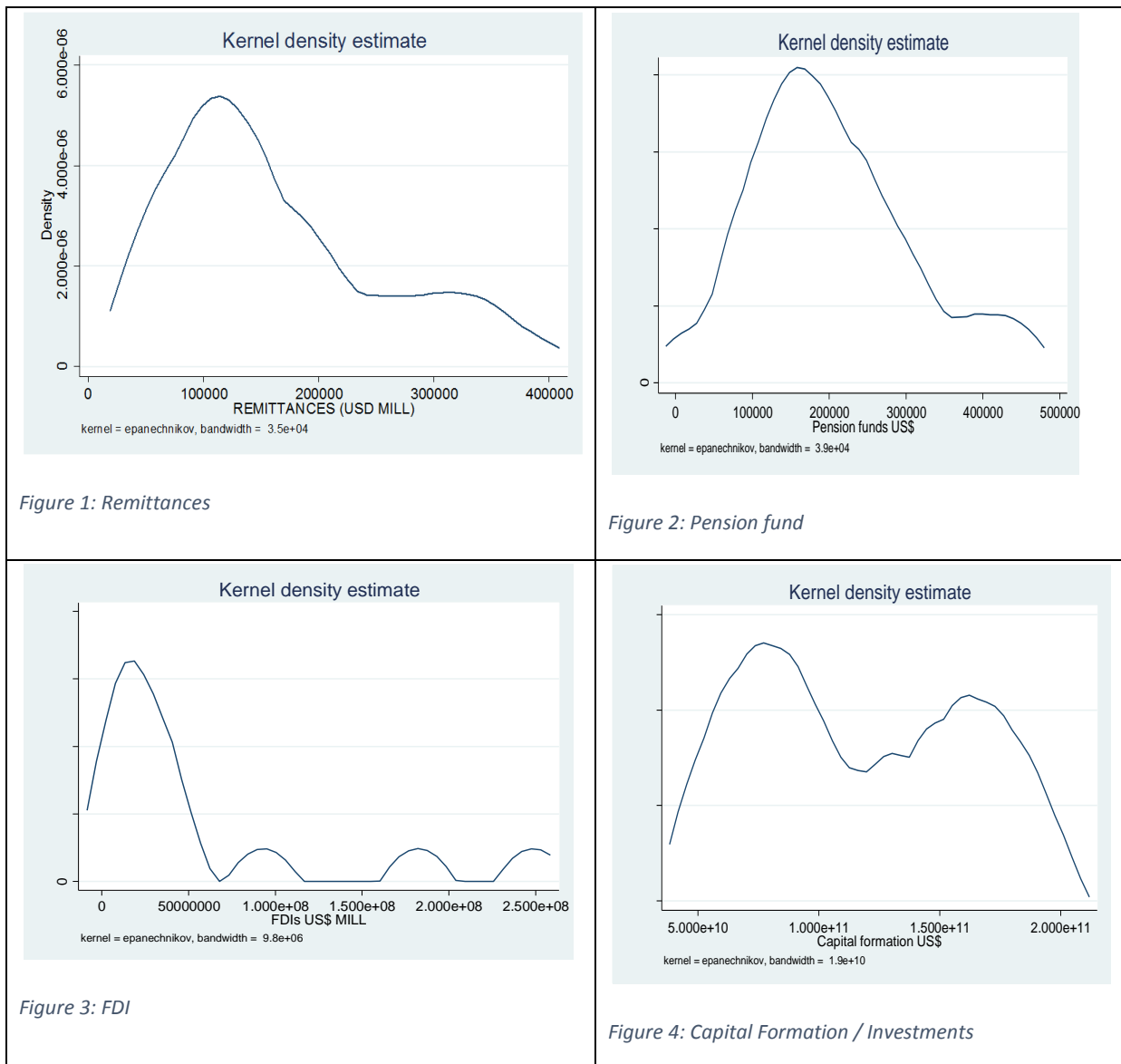
Table 4.1: descriptive statistics

	INVESTMENT	REMITTANCES	FDI	PENSION
Mean	1.19e+11	162094.3	5.39e+07	203892.8
Std. Dev.	4.73e+10	89816.21	7.13e+07	103744
Minimum	5.73e+10	54117	1325656	26821
Maximum	1.93e+11	373326	2.49e+08	440435
Variance	2.23e+21	8.07e+09	5.09e+15	1.08e+10
Skewness	0.141049	0.928305	1.807361	0.6195762
Kurtosis	1.508789	2.716274	4.960144	2.890293
Obs	56	56	56	56

Form the descriptive statistics of the model we deduce that investments has the highest mean value of 11.9 million dollars followed by foreign direct investments with remittances and pension fund coming third and fourth respectively. On the measures of dispersion as evidenced by standard deviation, investments have the largest dispersion from their mean

value with remittances having the least deviation from their mean value. Looking at the distribution parameters, we find that all the variables are positively skewed meaning that they are skewed to the right. On kurtosis values we conclude that remittances and pension fund have distribution that is near normal given that their kurtosis values as close to 3.0. However, investments and foreign direct investments are non – normally distributed. The graphical evidence on the distribution of variables are presented in figure 1, 2, 3 and 4.

Graphical illustration of distribution for all the variables



4.3 Correlational Analysis

In order to understand the correlation among the variables of the model, a correlation analysis was carried out to compute the correlation coefficient. The results for the correlation matrix are presented in table 4.2 below

Table 4.2 Correlational matrix

	REMITTANCES	PENSION	FDI	INVESTMENTS
REMITTANCES	1.0000			
PENSION	0.2730	1.0000		
FDI	0.6613	0.1621	1.0000	
INVESTMENTS	0.5125	0.5121	0.5461	1.0000

From the results, all variable have weak positive correlation. As such this does not warrant dropping any of the variables out of the regression equation since there is no any high correlation that would lead into multicollinearity problem upon regression of the empirical model.

4.3 Pre- estimation tests

Unit Root tests

Unit root test was essential in determining the order of integration of the variables prior to the empirical model estimations. This is because estimation of the empirical model without prior knowledge on the order of integration of the variables would lead into spurious regression problem. In this case the Dickey – Fuller tests was applied in testing the presence or the absence of unit root among the variables. Prior to testing for the unit roots, we plot the variables. The plot graphs indicate that all the variables are non – stationary and have a trend. This therefore implies that when testing for the unit root, we apply the test taking into account the deterministic trend. The plot graph is given in Figure 5, 6, 7, and 8.

Graphical illustration of all the variables

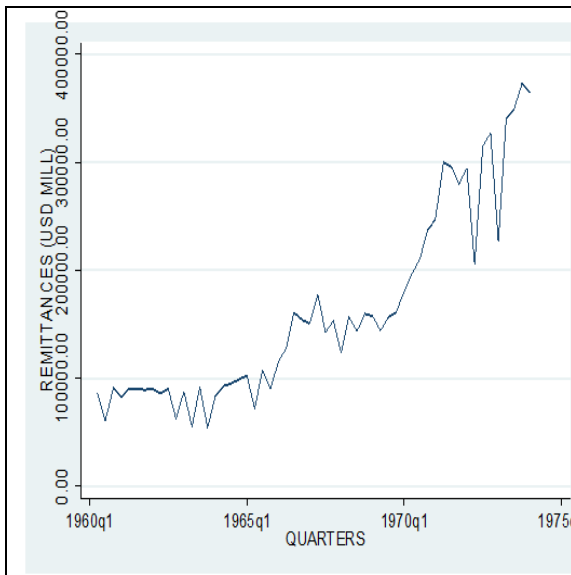


Figure 5: Remittances

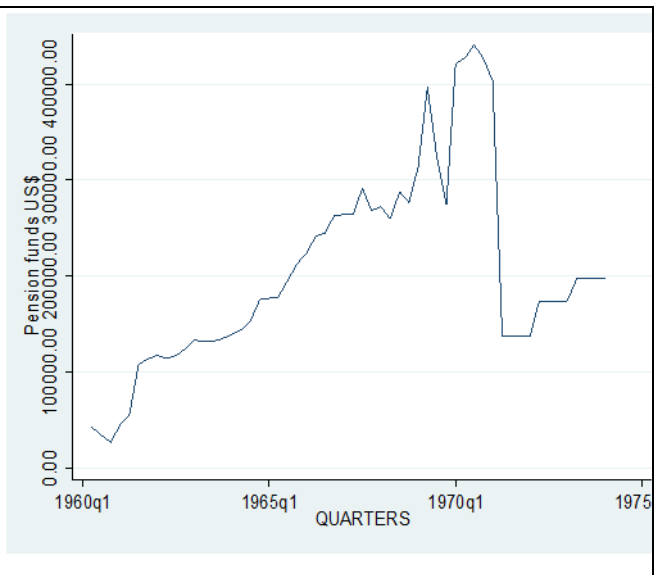


Figure 6: Pension fund

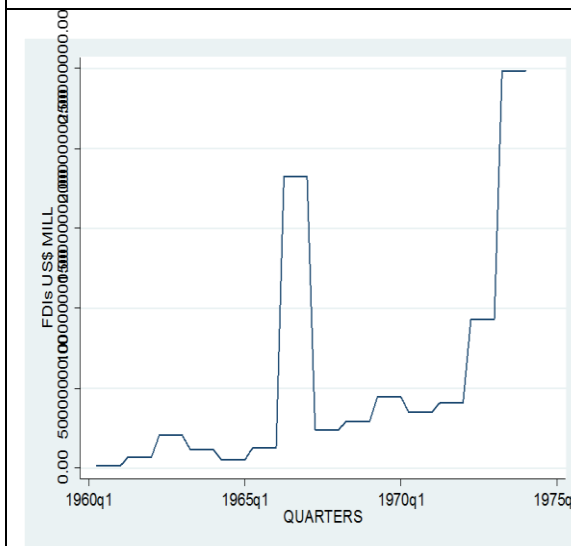


Figure 7: FDI

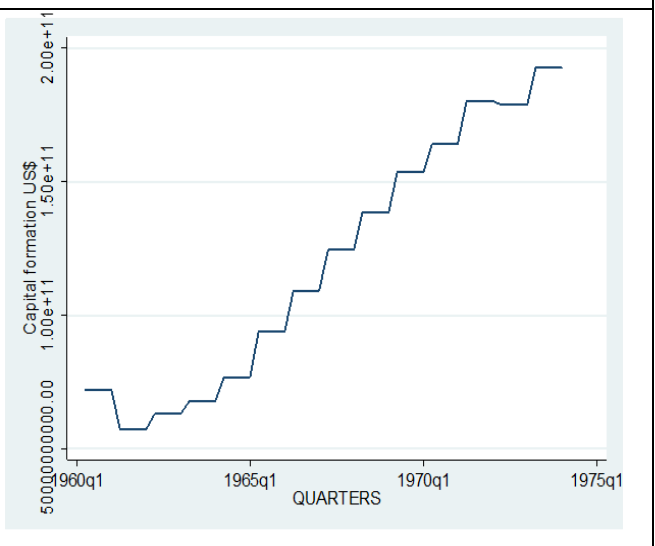


Figure 8: Capital formation/ investments

The results for stationarity / unit root tests with a deterministic trend in the variables are presented in table 4.2

Table 4.2 Unit root test results

	At level			At First Difference			Order of Integration		
	t-statistics	Critical values			t-statistics	Critical values			
VARIABLES		1%	5%	10%		1%	5%	10%	
INVESTMENT	-3.397	-4.139	-3.495	-3.177	-8.477	-4.141	-3.495	-3.178	I(1)
PENSION	-1.893	-4.139	-3.495	-3.177	-7.229	-4.141	-3.495	-3.178	I(1)
FDI	-2.017	-4.139	-3.495	-3.177	-7.349	-4.141	-3.495	-3.178	I(1)
REMITTANCES	-3.556	-4.139	-3.495	-3.177	-13.010	-4.141	-3.495	-3.178	I(1)

From the results, we find that at level all the variables are non – stationary implying that they have unit roots. This is because, the t – statistics is higher than the critical values at all one percent, five percent and ten percent significance levels. Therefore this called for the differencing of the variables. Upon differencing and thereafter testing for the unit root, we find that all the variables are now stationary implying that there is no unit root. This leads to the conclusion that the variables have one unit root meaning that they are integrated of order one.

4.3 Regression Analysis and Hypothesis Testing

Upon testing for the unit root among the variables, we find that all the variables have the same order of integration. This means that whether we estimate the model using variables at their level point or after first difference yields unbiased estimators and no spurious regression since all the variables are integrated of the same order. Upon estimating the empirical model, the results of the estimated model are reported on table 4.3 below.

Table 4.3 results of the estimated empirical model

	Coef.	Std. Err.	t	P> t 	[95% Conf. Interval]	
Remittances	471788.9	29572.79	15.95	0.000	412446.7	531131
Pension fund	128619.7	19463.28	6.61	0.000	89563.78	167675.6
FDIs	61.32196	36.29536	1.69	0.097	11.51	134.1539
Constant	2.01e+10	5.09e+09	3.94	0.000	9.84e+09	3.03e+10

Number of obs = 56
F(3, 52) = 180.10
Prob > F = 0.0000

R-squared = 0.9122
Adj R-squared = 0.9071
Root MSE = 1.4e+10

The total sample size was 56 meaning that we are dealing with the z – statistics. From the empirical model specified in the methodology, we regress investment on remittances, pension fund and the foreign direct investments. From the results looking at the p –values of all the variables we find that pension fund and remittances are very significant in determining the investment levels in the economy at 1 percent significance level. This is because their respective p – values are less the 1 percent significance level. This means that they are very statistically significant. However, we conclude that FDI is only significant at 10 percent significance level. This is because its p – value is 9.7 percent which is higher than 1 percent and 5 percent but lower than 10 percent.

Turning into the interpretations, we find that a one dollar change in the pension fund, increases investment by 128,619.7 dollars holding other factors constant. Therefore, pension fund shocks investment growth positively. For the remittances, we find that a one dollar increase in the remittances increases investments by 471,788.9 dollars ceteris paribus. However for foreign direct investments, a one dollar change in FDI increases investments by 61.32196 dollars holding other factors constant.

Looking at the joint test statistics we find that the F – statistics is equal to 180.10 with a p – value of 0.000. This means that all the factors (pension fund, FDI and remittances) are jointly significant in explaining investment. The coefficient of determination is equal to 91.22 percent implying that 91.22 percent of total changes in investments are accounted for by changes in pension fund, FDI and remittances with only 8.73 percent of total changes in investment being determined by the factors outside the model. Upon accounting for the degrees of freedom, the adjusted coefficient of

determination is 90.71 per cent implying that 90.71 per cent of total changes in investments are accounted for by changes in pension fund, FDI and remittances with only 9.21 per cent of total changes in investment being determined by the factors outside the model.

4.4 Heteroskedasticity test

Upon running the regression we test for the presence of the serial correlation in the residuals of the model. This is core in determining whether the estimated model best fits the data. In this study the Breusch-Pagan test for serial correlation was used. The results of the heteroskedasticity are presented below:

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: REMITTANCES, Pension fund, Foreign Direct Investments

chi2(3) = 0.37

Prob > chi2 = 0.9462

The test was applied using all the explanatory variables. This test is a chi – square test with a value of 0.37. To make the decision on whether to accept or reject the null hypothesis, we check on the p – value of the Chi – square. Since the p values is greater than 0.05 we accept the null hypothesis. In other words, there is no heteroskedasticity implying that there is homoscedasticity. This implies that the variance of the model residues is constant across the residuals.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This study analyzed the impact of pension saving scheme on Kenya's investment growth. In doing so the study reviewed the 2001 – 2014 period using quarterly data. The study was motivated by the fact that the pension sector in Kenya is estimated to hold assets in excess of Ksh 700 billion or 16 per cent of Kenya's gross domestic product. Prudent investments of these funds with enabling policies can be catalytic to enhancing economic growth as well as deepening of the capital markets and development of longer term capital and financial markets.

In addition, the research work focused mainly on pension scheme as a channel for mobilising savings for investments as well as public-private partnership in Kenya's economic development. As well as maintaining its retirement obligation, the pension sector provides a long term matching investment profile with the various long term investment projects that the government and economy at large needs to invest in.

5.2 Summary of Findings

From the data analysis, the study found out that a one dollar change in the pension fund, increases investment by 128,619.7 dollars holding other factors constant. Therefore, pension fund shocks economic growth positively. This implied that the investments in Kenya are highly responsive to pension scheme fund. We also find that a one dollar increase in the remittances increases investments by 471,788.9 dollars *ceteris paribus*. However for foreign direct investments, a one dollar change in FDI increases investments by 61.32196 dollars holding other factors constant.

Looking at the joint test statistics we find that the F – statistics is equal to 180.10 with a p – value of 0.000. This means that all the factors (pension fund, FDI and remittances) are jointly significant in explaining investment. The coefficient of determination is equal to 91.22 percent implying that 91.22 percent of total changes in investments are accounted for by changes in pension fund, FDI and remittances with only 8.73 percent of total changes in investment being determined by the factors outside the model. Upon accounting for the degrees of freedom, the adjusted coefficient of determination is 90.71 percent implying that 90.71 percent of total changes in investments are accounted for by changes in pension fund,

FDI and remittances with only 9.21 percent of total changes in investment being determined by the factors outside the model. This was a conclusion for a good fit for the estimated model.

5.3 Conclusion.

From the data analysis, it is evident that growth in investments is highly responsive to pension fund in the Kenyan economy. This is evidenced by the fact that that a one dollar change in the pension fund, increases investment by 128,619.7 dollars holding other factors constant. This therefore emphasises on the importance of pension scheme in capital accumulation through saving for future consumption.

We can therefore conclude that investments growth in Kenya is pension fund responsive. This therefore implies that growth in pension savings would be a catalyst for economic growth and development via savings that leads to growth in the investment. Given that pension scheme is a crucial component of financial sector, therefore, its contribution to growth in investments underscore the importance of the sector in promoting investments.

5.4 Policy recommendation.

From the results of the model, several crucial policy recommendations can be drawn. First is the importance of the Retirements benefit Authority to come up with the prudent policies that will enhance the increase in the contributions to the pension fund. This will ensure more individuals are involved in pension fund participation. Sensitization programmes are of a great importance therefore to inform the public on the importance of the pension scheme.

Secondly, the government of Kenya should ensure the implementation of the pension contribution by the employers for their employees. This will ensure that all the employees on the formal sector participate in the pension fund scheme.

Lastly, policies to include the informal sector into the pension scheme should be devised and implemented by both the government and Retirement Benefits Authority. This is crucial given that the informal sector is larger compared to the formal sector in terms of the number of employees involved. By including the informal sector via attractive incentives such as the Mbao Pension scheme will significantly boost the overall pension scheme contributions thus enhancing capital formation via differed consumption which ultimately lead to increased investments in the economy and eventually economic growth and development.

5.5 Limitations of the study

Considering the research period covers a period within 2001 - 2014, this period is relatively short. However this was necessitated considering the fact that data availability on the pension funds was not consistently updated from the earlier period. This forced the period to be extended on quarterly basis, which was considered adequate for analysis and results.

5.6 Recommendation for further study

Considering the importance that savings and investments have in economic growth and development, extensive research on the effects of pension scheme in the economy need to be done. Pension schemes have wide spread effects on the economy of developing countries as evidenced by the findings of the research above as well as from the literature reviewed previously. The area has a wide scope of research given the fact that little has been done in this sector in Kenya. Pension reforms have got substantial effects both directly and indirectly on the country's economic growth through fiscal financing, factor accumulation and utilisation and the level of factor productivity.

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APPENDIXES

1. UNIT ROOT TEST AT LEVEL.

Remittances

Dickey-Fuller test for unit root Number of
 obs = 55

----- Interpolated Dickey-			
Fuller -----	Test	1% Critical	5% Critical
10% Critical	Statistic	Value	Value
Value			
Z(t)	-3.556	-4.139	-3.495
-3.177			

MacKinnon approximate p-value for Z(t) = 0.0338

Pension fund

Dickey-Fuller test for unit root Number of
 obs = 55

----- Interpolated Dickey-			
Fuller -----	Test	1% Critical	5% Critical
10% Critical	Statistic	Value	Value
Value			

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-----
Z(t)          -1.893          -4.139          -3.495
-3.177
-----
-----
MacKinnon approximate p-value for Z(t) = 0.6581
-----

```

FOREIGN DIRECT IINVESTMENTS

Dickey-Fuller test for unit root Number of
obs = 55

```

----- Interpolated Dickey-
Fuller -----
          Test          1% Critical          5% Critical
10% Critical
          Statistic          Value          Value
Value
-----
-----

```

```

Z(t)          -2.017          -4.139          -3.495
-3.177
-----
-----

```

MacKinnon approximate p-value for Z(t) = 0.5923

Capital Formation

Dickey-Fuller test for unit root Number of
 obs = 55

Fuller -----	----- Interpolated Dickey-		
10% Critical	Test	1% Critical	5% Critical
Value	Statistic	Value	Value
Z(t)	-3.397	-4.139	-3.495
-3.177			

MacKinnon approximate p-value for Z(t) = 0.0518

2. UNIT ROOT TEST AT FIRST DIFFERENCE

REMITTANCES

Dickey-Fuller test for unit root Number of
 obs = 54

Fuller -----	----- Interpolated Dickey-		
10% Critical	Test	1% Critical	5% Critical

Dickey-Fuller test for unit root Number of
 obs = 54

----- Interpolated Dickey-			
Fuller -----	Test	1% Critical	5% Critical
10% Critical	Statistic	Value	Value
Value			
Z(t)	-7.349	-4.141	-3.496
-3.178			

MacKinnon approximate p-value for Z(t) = 0.0000

Capital formation

Dickey-Fuller test for unit root Number of
 obs = 54

----- Interpolated Dickey-			
Fuller -----	Test	1% Critical	5% Critical
10% Critical	Statistic	Value	Value
Value			
Z(t)	-8.477	-4.141	-3.496
-3.178			

 MacKinnon approximate p-value for Z(t) = 0.0000

3. Regression results

Source	SS	df	MS	Number
of obs =	56			
-----+-----				F(3,
				52) = 180.10
Model	1.1206e+23	3	3.7352e+22	Prob >
F =	0.0000			
Residual	1.0784e+22	52	2.0739e+20	R-
squared =	0.9122			
-----+-----				Adj R-
				squared = 0.9071
Total	1.2284e+23	55	2.2335e+21	Root
MSE =	1.4e+10			

CapitalformationUS	Coef.	Std. Err.	t	P> t
[95% Conf. Interval]				
REMITTANCESUSDMILL	471788.9	29572.79	15.95	0.000
412446.7 531131				
PensionfundsUS	128619.7	19463.28	6.61	0.000
89563.78 167675.6				
FDIsUSMILL	61.32196	36.29536	1.69	0.097
11.51 134.1539				
_cons	2.01e+10	5.09e+09	3.94	0.000
9.84e+09 3.03e+10				

4. Heteroscedasticity test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of CapitalformationUS

chi2(1) = 0.37

Prob > chi2 = 0.9462