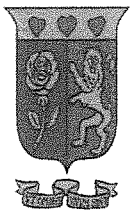

Strathmore
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ASSESSING THE DETERMINANTS OF PUBLIC PENSION SYSTEM REFORM IN KENYA

BY
OKOTH GEORGE OWINO

Student Number: 071194

A research project submitted in partial fulfilment of the requirements for the Degree of Bachelor of Business Science Actuarial at Strathmore University

School of Finance and Applied Economics
Strathmore University
Nairobi, Kenya

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SIGNED..... DATE....13th Nov 2015.....

Okoth George Owino,

071194.

This Research Project has been submitted for examination with my approval as the Supervisor.

SIGNED..... DATE....16th Nov 2015.....

Dr Carolyn Njenga,

School of Finance and Applied Economics

Strathmore University

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ABSTRACT

In recent years many countries around the world have either undertaken or are seriously considering a pension reform due to various factors. This study was done to try and establish the key factors Kenya should consider when undertaking a public pension system reform. Data was collected from 2005 to 2013. Time series regression analysis was conducted with the NSSF fund value growth as the dependent variable and the following independent variables: central government debt, pension debt, external debt, gross savings as percentage of GDP, contributions growth rate, age dependency and life expectancy. The regression analysis was used to determine the relationship between the dependent variable and the independent variables. The study found a significant relationship between the NSSF fund value growth and central government debt, pension debt, gross savings as percentage of GDP, life expectancy and age dependency ratio, indicating that pension reforms have generally been effected because of economic and demographic factors. The study recommends that policies should be put into place to better manage pension contributions, pension debt and the age dependency ratio, to increase the sustainability and robustness of the NSSF.

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LIST OF ABBREVIATIONS

AKI- Association of Kenya Insurers

GDP- Gross Domestic Product

IMF- International Monetary Fund

NSE- Nairobi Stock Exchange

NSITF- Nigerian Social Insurance and Trust Fund

NSSF- National Social Security Fund

OECD- Organization for Economic Cooperation and Development

PAYG- Pay-as-you-go

RBA- Retirement Benefits Authority

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

A pension fund, also known as a superannuation fund in some countries, is a form of institutional investor which collects pools and invests funds contributed by sponsors and beneficiaries to provide for the future pension entitlements of beneficiaries (Davis, 1995). The main purpose of pension funds is to provide means for individuals to accumulate savings during their productive and working life in preparation for financing of their needs when they retire from active employment. Pension funds make payments to beneficiaries either by means of a lump sum or by provision of an annuity, while also supplying funds to corporations and governments for investment.

Generally around the world, there is growing need to have a sustainable growth of pension funds due to growing populations. Most countries are experiencing change in demographic trends such as increasing life expectancy, increasing longevity risk[1], and reduced fertility rates that seem to threaten the sustainability of traditional pay-as-you-go pension systems (Awino, 2013). If the demographic trends continue, the pension contributions from the working population will be insufficient to support the elderly. In response, many countries are increasingly reforming their pension systems towards partial or full funding. Another motivator for countries to reform their pension systems include the belief that growth of pension funds will contribute to economic development, by promoting national savings and capital market development (Meng & Pfau, 2010).

Lindbeck and Persson (2003) classified pension systems under three key dimensions: type of benefit (defined benefit versus defined contribution[2]), type of financing (funded versus unfunded[3]) and type of actuarial fairness (non-actuarial versus actuarial[4]). The classification can be summarised in a graph where system I represents a non-actuarial unfunded PAYG pension system;

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[1] Risk attached to the increasing life expectancy of pensioners and policyholders which may eventually translate to higher than expected pay-out-ratios.

[2] In a defined contribution system the definition of final amount of pension is unknown but how much is contributed each year while working is known whereas defined benefit system the definition of the final amount of pensions is agreed and known to the individual.

[3] In a funded system, aggregate benefits are financed by a tax on currently working generations whereas in a fully funded system benefits are financed directly from returns on previously accumulated pension funds.

[4] Actuarial fairness refers to the existence of a link between contributions paid and benefits received.

system II a quasi-actuarial unfunded system; system III a non-actuarial funded system; and system IV a fully funded actuarial system.

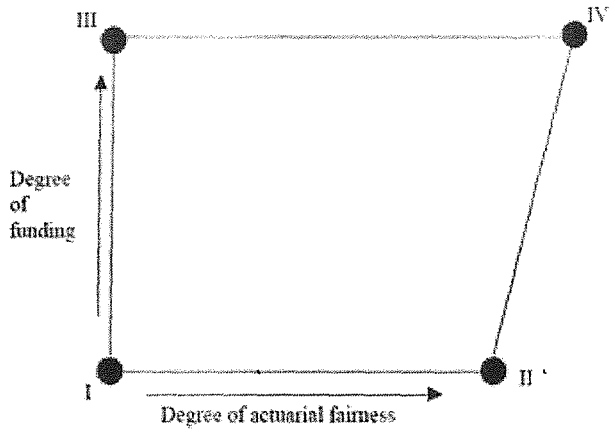

Figure 1: A Taxonomy of Social Security Systems

In principle, a defined benefit or defined contribution system can be placed anywhere along the trapezoid. In practice, however, it is virtually impossible to find a defined benefit system in position II or IV. Pension reforms can therefore be summarized as a shift from a system of type I to one of type II ,III, or IV or finding the best mix with intention of enhancing efficiency, equity, financial stability and political sustainability (Baroni, 2007).

1.2. Situational Analysis and the Current Pension System in Kenya

1.2.1. Kenya's population and employment structure

Kenya's population at the last census in 2009 was indicated at 38.6m. The population is currently estimated at 45.9m[5]and is projected to increase to 85m by 2050. The proportion of the population above age 55 is estimated at 6% whilst 41% of the population is estimated to be below age 15. Kenya's population is thus young, but is projected to age and by the time today's labour force entrants retire, the proportion of the population above age 55 is expected to almost triple. The dependency ratio[6] is also expected to increase from 15% to 35% by 2050 (United Nations, 2013).

Total employment outside rural small scale farming and pastoral activities increased from 13.5m in 2013 to 14.3m in 2014. Of this, the formal sector comprised of 2.5m (or 17.3% of the total employment) and the informal sector[7] which covers informal urban and the agricultural workers

[5] Source: Economic Survey 2015
[6] Ratio of elderly to active workforce
[7] Informal Sector- Commonly referred to as 'jua kali' sector

comprised 82.7% of total recorded labour force. More importantly, the economy generated a total of 799.7 thousand new jobs, in both the formal and informal sectors.

1.2.2. Relevant macro-economic[8]

Kenya's GDP was estimated to have expanded by 5.3% in 2014, compared to a growth of 5.7% in 2013. Government monetary policy has been directed at attaining and maintaining inflation rate of 5%, though actual inflation was 6.9% in 2014.

1.2.3. Relevant financial sector data[9]

In East and Central Africa, Kenya has a relatively more development financial services sector with close to 45 banking institutions and a similar number of insurance companies. Over the past five years, there has been a rapid growth in the customer base of banks and in the growth of consumer banking products. The level of penetration of life insurance remains low at less than 2% of GDP.

During the past few years, Kenya has made important progress towards improving the financial markets, including the dematerialization of securities, automated trading, introduction of risk rating agencies and the introduction of new performance measurement indices, all of which have improved the investment environment in which pension schemes operate in.

The Government Bond market has expanded significantly in the last seven years with bond tenors ranging from 1 to 15 years and in 2008 seeing the introduction of a 20 year fixed rate Government bond. Interest rate remained stable, with the 91-day Treasury bill rate settling at 8.58% in December 2014. The Nairobi Stock Exchange has also experienced significant growth with volumes of shares traded recording a growth of 38.5% from Ksh 156 billion in 2013 to Ksh 216 billion in 2014. NSE 20 share index rose from 4, 927 points in 2013 to 5,113 points in December 2014.

Kenya also has a vibrant cooperative sector with over 11,000 registered cooperatives, a membership of over 7 million and assets estimated at Ksh 30 billion.

1.2.4. Current Pensions System in Kenya

The current retirement benefits system in Kenya can be classified into the following scheme types:

[8] Source: Economic Survey 2015
[9] Source: Economic Survey 2015

Table 1: Classification of Retirement Benefit Schemes in Kenya

Scheme Type	*NSSF*	*Public Service Pension Schemes*	*Occupational Schemes*	*Individual Schemes*
Legal Structure	Act of Parliament	Act of Parliament	Established under Trust	Established under Trust
Membership	Employees in formal sector establishments excluding public service employees	All public service employees, including civil servants, teachers and disciplined forces. Separate schemes for armed forces	Formal sector workers in companies that operate retirement schemes	Open to all on voluntary basis
Funding	Funded	Non funded	Funded	Funded
Regulation	RBA	Act of Parliament	RBA	RBA

Criteria used to assess the aspects of the current pensions system:

a) Adequacy – benefits are sufficient to prevent old age poverty and provide reliable means to smooth lifetime poverty for the vast majority of the population
b) Affordability – both within the financing capacity of individuals and society
c) Sustainability – financial soundness over an appropriate time horizon under a broad set of reasonable assumptions.
d) Robustness – capacity to withstand major shocks, such as significant shifts in economic prospects or demographic trends.

1.3. Problem Statement

Many developing countries are undertaking pension system reforms either to replicate systems existing in developed countries or to adopt the three-pillar system proposed by World Bank in 1994 (Mudrazja, 2006). World Bank proposed the three-pillar after studying Chilean pension reform and concluding that there is a causal relationship between Chilean-style pension and economic performance, therefore causing countries to adopt the system with belief that the reform will boost economic development and increase savings.

According to Brooks (2005) countries have also reformed their pension systems due to the global trend of aging and also due to regional influence from countries with stronger economies. Countries are generally reforming their pension systems not because of their unique socio-economic and political circumstances but because of the general urge to replicate what works well in other

countries. This study therefore seeks to establish the key factors Kenya needs to consider when undertaking public pension system reforms.

1.4. Research Objective

To analyse the determinants of pension reforms in order to establish which factors will be relevant to consider when undertaking public pension system reforms in Kenya.

1.5. Research Questions

The study is guided by the following research questions:

1. What are the key determinants of pension reforms?
2. What factors are relevant for the decision to undertake pension system reforms in Kenya?

1.6. Significance of the Study

Currently in Kenya the coverage of existing pension system is still low with less than 15% of active work force having a pension saving plan, leaving 85% of the working force with no form of retirement saving (Source RBA). The coverage is mostly in the formal sector leaving behind informal and agricultural sectors uncovered. The low coverage is mainly attributed to non-mandatory requirement for employer to sponsor a pension scheme. Other factors that have contributed to low coverage are: individual retirement pension benefit plans not being popular country wide and fast growing informal sector than the formal sector.

All these factors contribute to the urgent legislative and government intervention to increase the level of pension penetration in the country to generate enough fund that can be of economic importance to all sectors of development. It is from low pension penetration level in the country that it can be justified to have a mandatory pension system that requires employees to subscribe to supplementary pension schemes. However, the nature and structure of such systems in terms of design and delivery may differ depending on key issues addressed such as: coverage of the scheme, contribution levels, cost distribution, means of scheme introduction, and the establishment of ceilings and floors.

The findings of the study will therefore assist the government to know factors that affect the performance and growth of pension funds. The government will also be able to put in place any appropriate regulations and policies to enhance a sustainable growth of pension funds.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This study seeks to examine the relevance of various factors underlying the decision of countries to undertake a pension reform. This section therefore generally introduces and/or critically questions literature that are relevant to the research objective and research questions.

2.2. Determinants of Pension Reforms

This section gives a critical analysis of literature that highlight on general conditions that prompt some countries to reform their pension system. The conditions are then related to the current situation in Kenya.

2.2.1. Political Factors

One key finding has been that although globalization means that countries face increasingly similar economic challenges, they are still so different that there is not a single type of national social security system that would be the most appropriate for all countries (Scharpf, 2000). This represents a strong argument against the quest for "one-size-fits-all" policy. In addition, this argument has been reinforced by the fact that even those countries that have reformed their pension systems opted for different models of reform, depending on their particular pre-reform economic and political conditions (Mesa-Lago, 2001). Difference in national security systems is evident in East Africa where Kenya, Uganda and Tanzania have close to similar economic challenges but the countries opt for different models of reform.

A popular notion has always been that the less democratic a government of a certain country, the more likely a substantial reform of national social security. This has been mostly based on the theoretical expectation that decision making is centralized in non-democratic regimes. The argument has been supported by the comparison of several democracies in Latin America with Chile in the time of reform, where the reforms in democratic countries were either more modest or did not occur (Kay, 1999). Further support has come from a quantitative analysis of the relationship between the level of democracy and the likelihood of pension reform from the sample of all countries that did any pension reforms (Brooks, 2002). Galasso and Profeta (2003) came to similar conclusions for European countries, as they observed that delegating pension policy to the European Commission could facilitate reforms due to the inherent characteristics of lesser accountability of the commission. The arguments have however being developed focusing on few

countries, so it is hard to make generalizations on a global scale. Nevertheless, the findings underpin an important point. It is likely that increased likelihood of pension reform in a less democratic country is just a special case of a general rule, which would be that any decision is easier to be made in a less democratic country.

The other political factor given serious attention is peer dynamics. Historical experience shows how the number of countries deciding to introduce a pension system in any region of the world decisively grew after one or several dominant countries in the region decided to introduce it (Orenstein, 2003). Orenstein finds evidence that the policy diffusion of pension reform in recent years follows the same pattern with the influential regional models playing a key role in the proliferation of pension reform. Boeri (2003) also finds out that Central and East European Countries and the new European Union members are likely to opt for social models similar to those in the European Union.

Another political factor recognized as important for both the decision of undertaking pension reforms, as well as the particular model of reform is the role of different players and interest groups on the political scene. The strength of the president for Latin American countries (Madrid, 2002) or by the level of party fragmentation in the legislative arm of power is found to be positively correlated to the decision to undertake pension reform (James & Brooks, 2001). The World Bank has emerged as the most important player on a global scale. The strength of the World Bank's influence has been found both in theory and empirical studies of pension reforms to be positively correlated with pension reform decisions and the degree of pension system privatization. The Kenyan pension system has been structured towards the Multi-Pillar System proposed by World Bank in 1994. The Multi-Pillar system involves a strategy to reform simultaneously a country's public, private and occupational systems.

2.2.2. Economic Factors

Generally there have been many studies about the impact of pension reforms on the economic performance of countries. To mention but a few, Brooks (2002) in his study identified that the size of debt to GDP ratio has a negative correlation with decision to reform national social security systems. This reluctancy has been associated with the necessary transitional costs that occur with pension reform, and which pose a bigger burden and a greater financial risk for those governments that are already significantly indebted.

Many governments believe that introduction of defined contribution pension schemes will generally boost savings, develop capital markets and reduce governmet contingent liabilities (Mesa-Lago & Muller, 2002). However, this may not be the case in Kenya since there are personal

pension gaps, which are closely associated with growing informal sector, low paying jobs and increasing self employement as indicated by the 2015 Economic Survey. These gaps are likely to still lead to poverty and hardships for the elderly population and inflated future government welfare expenditure.

2.2.3. Demographic Factors

Aging and deteriorating old-age dependency ratio[10]have been cited by the pension reform proponents as argubly the most important reason for undertaking pension reform ever since *Averting the Old Age Crisis* (World Bank, 1994). Occasionally, though, demographic factors like aging are taken into account, and found to be positively correlated with the pension reform decision (Brooks, 2005). Cases where demographic factors are given the central place in a study, like the one by Galaso and Profeta (2003) who studied the political consequences of aging in several leading OECD countries, are not so common.

2.2.4. Other Factors

Besides the political, economic and demographic factors, some authors tried to point to several other factors that might have contributed to the pension reform decision. One such factor is expectation of (economic) crisis (Weyland, 1998), which gives importance to the psychological factors in explaining pension reform. Another factor is culture, which was found to be a statistically siginificant explanatory variable in a study done by Simmons and Elkins (2004).

2.3. Reforms

2.3.1. Chilean Pension Reform

Chile reformed its pension system in 1981 by replacing a public pay-as-you-go system with a new complusory system of individual funded and privately owned pension accounts based on defined contribution principles. In 1994, World Bank in its article *Averting the Old Age Crisis* suggested that the Chilean pension reform proved that a shift of pension provisions from the public to the private sector and from PAYG to defined contribution would maintain social protection while increasing economic growth via the deepening of financial markets. However, the Chilean reform proved to be unsuccessful as originally assumed. Although the Chilean system increased the number of workers contributing for their pensions, the level and length of contributions and subsequent expected pension benefits remained on average quite low (Feldstein, 1998). The system delivered poverty pensions rather old age security to most contributors. In reaction to the coverage gaps of the funded system, the Chilean government reformed the system further by introducing a

[10] Dependency ratio in Kenya can be defined as the ratio of people aged 60 and above to people aged 18-59.

new public and tax-financed social pension system in order to provide additional income for current and future pensioners with very small funded pensions (Riesco, 2009).

2.3.2. Nigerian Pension Reform

The Nigerian 2004 reform was inspired by the Chilean experience. Nigeria attempted to replicate the 1981 Chilean pension reform. Before 2004, Nigeria had its formal sector covered by a pay-as-you-go pension scheme, the Nigerian Social Insurance and Trust Fund (NSITF). NSITF's scope and coverage was limited compared to those of public sector schemes. Only some large enterprises offered access to the scheme and NSITF's accumulated capital and pensions payouts were low whereas administrative expenses were high (ILO, 2006). The resulting pattern of pension provisions was highly fragmented and the avaiable data suggested that only 10 percent (4.8milllion out about 48million) of the Nigerian workforce belonged to the formal employment sector, out of which about 3.7 million also belonged to a pension scheme (Casey, 2009). The main draw-back being the implementation challenges.

2.3.3. UK Pension Reform

In 2004, the UK also reformed its pension system. The reform stipulated that all employers were obligated to offer a qualifying workplace pension scheme and automatically enroll eligible employees with an increase in contribution rates (Taylor-Gooby, 2005).

2.4. Kenyan Pension Reform to date

The Kenyan pension system has undergone a number of major reforms all directed to maintain long-term sustainability. In this section, an analysis of literature on pension reforms in Kenya, mostly reforms on the NSSF, is given.

The first major reform made in the pension sector was the introduction of the Retirement Benefits Act in 1997. The Act was introduced to strengthen the governance, management and effectiveness of the NSSF and of the occupational pension sector (Sundeep, 2008). The reform was simply aimed at bettering the operations of the NSSF. According to Odundo (2003) the need for the reform was due to the fact that the retirement benefits sector had poor administative and investment of scheme funds with particular concerns on concentration of investments, particulary in real property. Odundo further pointed out that disclosure and accountability were lacking and that the NSSF had also been riddled with governance issues and concerns over its payment of benefits. Sundeep (2008) added that the 1997 reform was made due to little effective regulation and supervision. The interests of retirement scheme members and their beneficiaries were not sufficiently protected. There was concern about the design and financial viability of certain schemes in the country.

Generally, the issues mentioned by Odundo and Sundeep were some of the major reasons for the 1997 reform in the Kenyan pension sector.

In 2000, further reforms were made through the establishment of the Retirement Benefits Authority. The Retirement Benefits Authority marked the beginning of a regulated, organized and more responsible retirement benefits sector in Kenya (Sundeep, 2008). The main aim of RBA according to the Act was to improve protection of members' benefits and improve governance of schemes. The Act did not address issues concerning benefit adequacy, sustainability and robustness of the NSSF.

The reforms made up until 2000 had a positive impact on the occupational pension sector but the NSSF's overall levels of coverage and benefit adequacy were poor. Poor levels of coverage, inadequate benefits and many other factors like demographic aging, changing in social fabric of the country, changes in employment structures, behavioural obstacles to saving and the need for a coordinated reform strategy motivated the 2012 NSSF bill to be proposed. The bill was enacted in 2013 to address the loop-holes in the Kenyan pension system that were not adequately addressed in the previous reforms. A study by Olukuru and Masinde (2014) anaylzed the impact of the NSSF Act of 2013 on the Kenyan pension industry. Their study asserted that the newly set 6 per cent contribution is sufficient to meet the welfare conditions of Kenyans. The study, however, did not consider the factors that prompt pension reforms and if the reforms made are linked to the changing demographic and economic trends.

2.5. Summary

From the literature reviewed, it can be clearly seen that there are many factors that motivate pension reforms. The factors highlighted and other circumstances have caused many countries around the world, developed and developing, to reform their pension system and set new policies with the objective of having a sustainable and robust pension industry. The literature review has also highlighted reforms in the Kenyan pension industry and the factors that prompted the reforms. The study will be focused on Kenya and the main aim will be to determine revelant factors to consider when undertaking further reforms. The study is simply meant to inform issues such as: further increasing contribution rates, lowering benefits, allowing later retirement with the same benefits and increasing savings.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter gives the methodology that was used to accomplish the already established research objective. Under this chapter the research design, target population, sampling design, sample size, data collection and analysis, are briefly discussed. According to Kothari (2004), research methodology is a way to systematically solve the research problem. It examines the various steps that are generally adopted by a researcher in studying the research problem.

3.2. Research Design

Rajendra (2008) defines research design as the linkage and organization of conditions for collection and analysis of data in a manner that aims at combining relevance to the research purpose with economy in the procedure. He further argues that research design focuses on the structure of an enquiry, which leads to the minimization of the chance of drawing the wrong casual inferences from the data. This study was a case study of the NSSF, investigating the key factors to consider when reforming the public pension system. This design was most appropriate for a single unit of study because it offers a detailed in depth analysis of the subject of investigation. According to Mugenda and Mugenda (2003), a case study involves a careful and complete examination of a social unit, institution, family, cultural group or an entire community and embraces depth rather than breadth of the study. The primary purpose of a case study is to determine factors and relationships among the variables identified in the study.

3.3. Population of the Study

According to Vanderstoep and Johnston (2009) the population is the universe of people to which the study can be generalized. The population can simply be the entire spectrum of a system or process of interest. According to the Retirement Benefits Authority (2014) there are 1216 registered pension funds in Kenya. The target population consisted of all registered pension schemes.

3.4. Sample Size and Sampling Procedures

The study focused on the NSSF since it is the largest pension scheme in Kenya and it has audited annual financial statements that are readily available.

3.5. Data Collection

The study used secondary data. The secondary data was quantitative in nature and collected from the annual financial statements of the NSSF and World Development Indicators Reports. All data was sourced from the internet.

3.6. Data Analysis

A multiple regression model was used to analyze the data collected. The regression analysis was done using the regression model below:

$$FVG = \beta_0 + \beta_1 PD + \beta_2 CGD + \beta_3 GS + \beta_4 ED + \beta_5 DR + \beta_6 AGE + \beta_7 CGR + \varepsilon$$

In short form:

$$REFORM = \alpha + \beta ECON_i + \gamma POL_i + \delta DEMOG_i + \varepsilon_i$$

Where $REFORM$ is the probability of reform and this is measured using the fund value growth-assuming that when a reform is made there is significant change in the fund value growth rate; $ECON_i$ is the economic factors measured using pension debt (PD), central government debt as a percentage of GDP (CGD) and gross savings as a percentage of GDP (GS); POL_i is the political factors measured using external debt (ED); $DEMOG_i$ is the demographic factors measured using age dependency ratio (DR), life expectancy (AGE) and contributions growth rate (CGR); and ε_i is the error term. The terms α, β, ϒ and δ represent the intercept in the regression and the sensitivity of fund value growth on each of the factors.

The t-tests at 85% confidence level was used to determine the statistical significance of the constant term, α, and the coefficient terms, β, γ and δ. The F-tests was used to determine whether the regression is of statistical importance at 85% confidence interval. The coefficient of determination, R^2, and the adjusted $R^2$was used to determine how much variation in the dependent variables is explained by variation in the independent variables. The analysis was done using Excel 2013.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS OF FINDINGS

4.1. Introduction

In this chapter, the focus is on the presentation of data and interpretation of the findings. It presents the analysis of the data and the regression analysis results. The data is presented and analysed, then compared with other similar studies done on the subject matter of this study.

4.2. Analysis of Data and Presentation of Findings

4.2.1. NSSF Fund Value Growth (FVG)

The values of the fund value are as reported in the audited financial statements of the NSSF. The figures are presented in Table 2 below. The highest fund value growth of 22.15 was reported in 2013 and the lowest growth was reported in 2009.

Table 2: NSSF Fund Value Growth

Year	Fund Value (KES. '000)	Fund Value Growth (%)
2004	54,247,164	
2005	63,467,619	17.00
2006	71,824,668	13.20
2007	81,310,870	13.18
2008	90,508,481	11.31
2009	82,147,889	-9.24
2010	98,606,651	20.04
2011	110,365,142	11.92
2012	110,461,612	0.09
2013	134,932,875	22.15

(Source: NSSF Financial Statements)

4.2.2. Pension Debt (PD)

Pension debt was measured as the current liabilities of the NSSF as reported in the audited financial statements. Table 3, in the next page, provides the extracted figures. The pension debt has generally being on a rising trend and this can be attributed to more people retiring than those joining the scheme.

Table 3: Pension Debt

Year	Current Liabilities (KES. '000)
2005	1,722,851
2006	1,636,556
2007	1,355,228
2008	1,492,079
2009	1,745,772
2010	2,221,540
2011	4,371,493
2012	5,854,131
2013	4,193,043

(Source: NSSF Financial Statements)

4.2.3. Central Government Debt (as a percentage of GDP) (CGD)

Claims on central government as a percentage of GDP was used to measure the central government debt. According to World Bank (2014) claims on central government include all loans to central government institutions net of all deposits. The extracted figures are presented in the Table 4 below.

Table 4: Central Government Debt

Year	Claims on Central Govt. Debt (% of GDP)
2005	9.28
2006	7.93
2007	6.90
2008	6.22
2009	7.97
2010	11.42
2011	8.45
2012	9.85
2013	8.65

(Source: World Development Indicators Report)

4.2.4. Gross Savings (as a percentage of GDP) (GS)

Figures on savings presented in the Table 5, in the next page, were obtained from the World Development Indicators Report. World Bank (2014) calculates gross savings as gross national income less total consumption, plus net transfers. Gross savings as a percentage of GDP has generally been on a declining trend since the country's total consumption has been increasing through the years.

Table 5: Gross Savings (as % of GDP)

Year	Gross Savings (as % of GDP)
2005	16.84
2006	16.01
2007	16.55
2008	13.79
2009	14.51
2010	13.27
2011	10.86
2012	11.21
2013	11.78

(Source: World Development Indicators Report)

4.2.5. External Debt (ED)

External debt was measured using external debt stocks. World Bank (2014) defines external debt stock as total external debt owed to non-residents repayable in currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. The figures are presented in the Table 6 below.

Table 6: External Debt

Year	Total External Debt Stocks (KES. '000)
2005	489,809,358
2006	481,670,421
2007	506,407,838
2008	526,242,737
2009	664,414,491
2010	697,343,249
2011	913,586,977
2012	997,942,996
2013	1,160,202,727

(Source: World Development Indicators Report)

4.2.6. Dependency Ratio (DR)

Dependency ratio was used to account for changes in the population make up. Dependency ratio is the ratio of dependents (people younger than 18 or older than 60) to the working-age population (those between ages 18-60). Data presented in Table 7, in the next page, are shown as the proportion

of dependents per 100 working-age population. The age dependency ratio has been declining through the years due increasing working age population and reduced fertility rates.

Table 7: Age Dependency Ratio

Year	Age Dependency Ratio (% of working-age population)
2005	84.03
2006	83.65
2007	83.33
2008	83.09
2009	82.89
2010	82.71
2011	82.47
2012	82.20
2013	81.86

(Source: World Development Indicators Report)

4.2.7. Age of Contributors (AGE)

Life expectancy of Kenya was used as a proxy for the variable of age. This was used due to the difficulty of establishing the ages of the contributors to the NSSF. The life expectancy data are presented in Table 8 below. When life expectancy is short, it is expected that contributions will be less and this may affect the reforms to be made. Life expectancy has been generally increasing due to improved healthcare, better access to education and technological advancements.

Table 8: Life Expectancy

Year	Age (Years)
2005	54.70
2006	55.60
2007	56.59
2008	57.61
2009	58.62
2010	59.55
2011	60.37
2012	61.08
2013	61.68

(Source: World Development Indicators Report)

4.2.8. Contributions Growth (CGR)

Contributions variable was captured by the values in the audited financial statements of the NSSF. The contributions growth was used as a proxy for the number of individuals joining/exiting the fund. The values are presented in Table 9 in the next page. Contributions receivable growth has

been fluctuating through the years with the highest and lowest values been recorded in 2007 and 2011 respectively. The NSSF had more people joining in 2007 thus the high contributions growth rate.

Table 9: Contributions Growth

Year	Contributions Receivable (KES. '000)	Contributions Receivable Growth (%)
2004	3,847,119	
2005	4,267,576	10.93
2006	4,552,895	6.69
2007	5,445,691	19.61
2008	5,670,353	4.13
2009	6,317,984	11.42
2010	6,789,513	7.46
2011	6,838,451	0.72
2012	7,266,410	6.26
2013	7,800,358	7.35

(Source: NSSF Financial Statements)

4.3. Descriptive Analysis

This study was based on the NSSF fund value growth (FVG) as the dependent variable. The independent variables were: pension debt (PD), central government debt as a percentage of GDP (CGD), gross savings as a percentage of GDP (GS), external debt (ED), dependency ratio (DR), life expectancy (AGE), and contributions growth rate (CGR). The data analysed was in relation to the NSSF. Table 10 below provides the summary statistic for each variable of the study.

Table 10: Summary Statistics

	FVG	*PD*	*CGD*	*GS*	*ED*	*DR*	*Age*	*CGR*
Mean	0.11	2732521444.44	8.52	13.87	713068977207.50	82.92	58.42	0.08
Std. error	0.03	545878281.18	0.52	0.76	82824436230.18	0.23	0.82	0.02
Median	0.13	1745772000	8.45	13.79	664414490813.96	82.89	58.62	0.07
Std. Dev	0.10	1637634843.53	1.56	2.29	248473308690.55	0.69	2.47	0.05
Kurtosis	1.26	(0.24)	0.42	(1.62)	(0.71)	(0.63)	(1.34)	2.10
Skewness	(1.23)	1.10	0.44	0.00224	0.81	0.11	(0.20)	1.04
Range	0.31	4498903000	5.20	5.98	678532305297.27	2.17	6.99	0.19
Min	(0.09)	1355228000	6.22	10.86	481670421446.01	81.86	54.70	0.01
Max	0.22	5854131000	11.42	16.84	1160202726743.28	84.03	61.68	0.20

(Source: Research Findings)

4.4. Correlation Analysis

Table 11 below provides a summary of the correlation among the variables. As shown in Table 11, there was strong positive correlation between: external debt and pension debt, r = 0.878; dependency ratio and gross savings, r = 0.909; gross savings and contributions growth rate, r = 0.693; age and pension debt, r = 0.801; and between age and external debt, r = 0.926. The relationship between external debt and pension debt, and age and external debt was spurious in that there was no causation between the variables. Strong positive correlations between age and pension debt, dependency ratio and gross savings, and gross savings and contributions growth rate were expected. Increased contributions leads to increased savings, which also increases in line with increasing dependency ratio. Increasing dependency ratio implies that the working age population should set aside more in order to cater for the needs of the older and younger population.

Weak positive correlation was realized between fund value growth and external debt, r = 0.039, implying that external debt does not affect the NSSF fund value growth rate; fund value growth and gross savings, r = 0.071; and between fund value and dependency ratio, r = 0.066. Strong negative correlation was realized between gross savings and pension debt, r = -0.853, implying that there is reduced need for pensions when individuals save more on their own and also there is reduced need for saving when individuals contribute more to pensions; gross savings and external debt, r = -0.871, implying that there's reduced need for external debt when the country saves more and vice versa; dependency ratio and external debt, r = -0.929; age and gross savings, r = -0.936; and between age and dependency ratio, r = -0.991.

Table 11: Correlation Matrix

	FVG	*PD*	*CRG*	*ED*	*GS*	*DR*	*Age*	*CGD*
FVG	1							
PD	-0.09854	1						
CRG	-0.07229	-0.48808	1					
ED	0.039155	0.878568	-0.4144	1				
GS	0.070769	-0.85252	0.693646	-0.8711	1			
DR	0.065646	-0.78106	0.393678	-0.92999	0.909077	1		
Age	-0.08908	0.800874	-0.43885	0.92625	-0.93609	-0.99147	1	
CGD	0.188962	0.405415	-0.18334	0.358805	-0.31032	-0.26373	0.3465	1

(Source: Research Findings)

4.5. Regression Analysis

Table 14 provides the results of the regression analysis with the NSSF fund value growth as the dependent variable. The constant term was 205.60370 which was significant, t = 5.24108, p < 0.15. The coefficient of pension debt (PD) was 0.00000, which was significant, t = -5.20212, p < 0.15.

The coefficient of contributions growth rate (CRG) was not significant, t = 3.94503, p > 0.15. The coefficient of external debt (EDS) was also not significant, t = 3.58094, p > 0.15. The coefficient of gross savings (GS) was significant, t = -4.89803, p < 0.15. The coefficient of age dependency ratio (DR) was significant, t = -4.98426, p < 0.15. The coefficient of life expectancy (Age) was significant, t = -5.70185, p < 0.15. Finally, the coefficient of central government debt (CGD) was significant, t = 5.67418, p < 0.15.

Figures provided in Table 12 and Table 13 show that the whole regression was not statistically significant and the variation in pension debt, contributions growth rate, external debt, gross savings, age dependency ratio, life expectancy and central government debt weakly explains the variation in the NSSF fund value growth, F = 6.379044, p > 0.15, and $R^2 = 0.9781$.

Table 12: Regression Statistics

Multiple R	*0.988987251*
R Square	0.978095783
Adjusted R Square	0.824766261
Standard Error	0.041364021
Observations	9

(Source: Research findings)

Table 13: Anova

	Df	***SS***	***MS***	***F***	***Significance F***
Regression	7	0.076401016	0.010914	6.379044	0.296055207
Residual	1	0.001710982	0.001711		
Total	8	0.078111999			

(Source: Research findings)

Table 14: Summary Output

Variable	*Coefficients*	*Std. Error*	*t-statistic*	*p-value*
Intercept	205.60370	39.22928	5.24108	0.12002
PD	0.00000	0.00000	-5.20212	0.12090
CRG	4.60815	1.16809	3.94503	0.15804
ED	0.00000	0.00000	3.58094	0.17336
GS	-0.46170	0.09426	-4.89803	0.12821
DR	-1.80589	0.36232	-4.98426	0.12605
Age	-0.87211	0.15295	-5.70185	0.11053
CGD	0.13000	0.02291	5.67418	0.11106

(Source: Research findings)

The regression model was found to be:

$$FVG = 205.60370 + 0.000000(PD) + 4.60815(CRG) + 0.0000(ED) - 0.46170(GS) - 1.80589(DR) - 0.87211(AGE) + 0.13000(CGD)$$

Which simplifies to:

$$FVG = 205.60370 + 4.60815(CRG) - 0.46170(GS) - 1.80589(DR) - 0.87211(AGE) + 0.13000(CGD)$$

With FVG as fund value growth rate which was a proxy for reform under the assumption that a reform results in a significant change in fund value growth rate, PD as pension debt, CRG as contributions growth rate, ED as external debt, GS as gross savings, DR as age dependency ratio, AGE as life expectancy and CGD as central government debt.

4.6. Summary and Interpretation of Findings

The findings of the regression analysis indicate a significant relationship exists between pension debt, gross savings, dependency ratio, life expectancy, central government debt on one side and the NSSF fund value growth on the other side. The results also indicate a weak relationship between contributions growth rate and external debt, and the NSSF fund value growth.

Results of demographic variables, age dependency ratio and life expectancy, are in line with initial expectations that an aging population is bound to influence the pension reform decision. These results of demographic variables confirm the findings of World Bank (1994) and Brooks (2005) that attributed pension system reforms to demographic factors like aging and increasing age dependency ratio. Brooks (2005) argued that there is a higher probability of undertaking a pension reform when dependency ratio increases. Increasing dependency ratio implies that there are more retirees and also more people in the society moving closer to retirement, resulting to pension schemes having liabilities that will fall due within a short duration. The short-term liabilities significantly affect pension schemes' liquidity and thus reforms are necessary to guarantee the schemes' solvency.

Results of economic variables are also in line with initial expectations. Increasing pension debt and central government debt imply that the country in under increasing pressure to undertake pension reform in order to have a larger pool of funds to try and minimize borrowing. This result opposes Brooks' argument in her 2002 paper that debt has a negative correlation with decision to reform

national social security systems. According to Brooks (2002), governments that are significantly indebted are unable to finance the transitional costs that occur with pension reform.

External debt had no influence on pension reform, and this result was quite surprising. Initially, it was expected that increasing external debt would influence pension reform since the country would be exposed to international pressures. The result was however consistent with results obtained by Mudrazja (2006) when he performed an analysis across 95 countries and concluded that external debt had no influence on pension reform in any of the countries in the study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary

Public pension system reform has become one of most important economic and political issues in recent years. Consequently, this has spurred interest of policy analyst who have tried to evaluate different reform proposals as well as to determine factors contributing to the pension reform. Building on their analysis, this study focused on examining the following question: what factors are relevant for the decision to undertake pension system reform in Kenya?

In order to answer the question, the study examined different economic, political and demographic factors, and evaluated their contribution to the pension reform decision. Data was collected for nine years beginning 2005 and ending 2013. Correlation analysis was done to find out co-movements among the variables. Regression analysis was done by analyzing how the three factors affect the decision to undertake pension system reform. Other than the regression model, statistics like t-tests, F-tests and the co-efficient of determination were used to find out the strength of the regression analysis model.

The regression results found that there was a significant relationship between economic and demographic variables and the decision to undertake pension reform. The co-efficient of pension debt, central government debt, gross savings as a percentage of GDP, age dependency ratio and life expectancy were statistically significant indicating that they all affected the decision to undertake pension reform. Co-efficient of contributions growth rate and external debt were on the other hand not statistically significant. The whole regression model was not statistically significant basing on the F-test which showed that the p-value of the regression was larger than the critical level. The variation in the independent variable poorly explained the variation in the NSSF fund value growth, implying that more variables could be considered.

5.2. Conclusions

From the findings of this research, the following conclusion are made. First, the relationship between the decision to undertake pension reform and external debt was not statistically significant. This means that external borrowing does not really influence or affect the decision to undertake pension system reform in Kenya. However there are many other political factors, which are difficult to quantify, that can affect the decision to undertake pension system reform.

Second, there was a significant relationship between demographic variables and the decision to undertake pension system reform. This leads to the conclusion that the change in population make-up can trigger a public pension system reform. This is true since the Kenyan government changed the retirement age from 55 to 60, due to improving life expectancy, in order for individuals to work longer and contribute more to pension schemes.

Third, there was also a significant relationship between economic variables and the decision to undertake public pension system reform. The level of central government debt and pension debt to some extent indicate the level and limits of the government to finance a pension system reform.

Finally, the whole regression analysis was not statistically significant indicating that there are other factors, other than those investigated in this research that seem to affect the decision of a pension system reform.

5.3. Policy Recommendations

Based on the findings of this study, the following recommendations arise. First, the NSSF needs to put contributions of pensioners to more productive investments other than just keeping the funds safely for the pensioners. The irresponsiveness of the fund value growth to pension contribution growth could indicate that the funds do not contribute to growth of the total fund value. Reforms should be effected to allow better investment of pension contributions to generate higher returns and boost fund value growth.

Secondly, there is need to check on pension debt and central government debt as they affect the fund value growth and the decision to undertake a pension system reform. Policies should be put in place limiting pension debt and encouraging effective asset-liability matching to generally minimize the need for a system reform. Kenya should not constantly reform its pension system due to increasing pension debt, instead it should come up with effective strategies to manage debt and other risks associated with pension schemes.

Thirdly, the government should come up with effective policies that would help reduce the age dependency ratio. For example, the government can promote agriculture and entrepreneurship among the elderly in the society to assist them have a source of income. Such an initiative can in the long run reduce the need for government benefits and this can minimize strain on the NSSF.

5.4. Limitations of the Study

This study has various limitations. First, the study covered a few years, precisely only nine years. The findings may not be elaborate enough and applicable in the future. The results given by this study are therefore limited to the nine years of the data collected.

Secondly, the study did not show if a causal relationship exists between the dependent variable and the independent variables. The study only indicated if the relationship between variables is positive or negative and if the relationship was significant. A causality test can be performed to establish which variables causes another and this can help draw more relevant conclusions of the study.

Finally, the study only focused on Kenya. Results can be stronger and of higher utility if the study considered other countries, for example countries in East African region. An East African study can be more useful than a Kenyan study since more relationships and trends can be establish.

5.5. Suggestions for Further Research

The findings of this study can be improved if the study is expanded to cover a longer period of time and the forecasted into the future. Further research can be carried out on the same topic but using data across a longer period of time, with the assumption that more data will provide better results.

The study can also be expanded to cover more countries with the aim of determining whether there is a causal relationship between the dependent variable and the independent variables in the various countries. This will help generate generalized results and also determine key determinants of pension reform that cut across all countries.

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