THE EFFECT OF ASSET ALLOCATION ON THE FINANCIAL PERFORMANCE OF PENSION FUNDS IN KENYA

FAITH MWIKALI MUIA

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DECLARATION

I declare that this is my original work and has not been submitted at any academic institution for examination purposes.

Signature…… Date ……

Faith Mwikali Muia

D61/79722/2012

This research Project has been submitted for presentation with my approval as the university supervisor.

Mr. Ronald Chogii

Signature…… Date……

Lecturer, Department of Finance and Accounting

Dr. Cyrus Iraya

Signature…… Date……

Lecturer, Department of Finance and Accounting

University of Nairobi, School of Business.

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DEDICATION

I humbly dedicate this project to my family, colleagues, friends and all those who supported me in the completion of this project. Thank you and God bless you.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

ANOVA	-	Analysis of Variance
CIS	-	Collective Investment Scheme
CMA	-	Capital Markets Authority
IPP	-	Individual Pension Plans
IPS	-	Investment Policy Statement
OECD	-	Organization of Economic Cooperation and Development
RBA	-	Retirement Benefits Authority
RBS	-	Risk Based Supervision
ROI	-	Return on Investment
USA	-	United States of America

ABSTRACT

Studies around the area of asset allocation and financial performance of pension funds have mostly been conducted in developed countries. Very few local studies have focused on the effect of asset allocation on the financial performance of pension funds**.** This study therefore sought to fill the existing research gap by carrying out a survey study on the effect of asset allocation on the financial performance of pension funds by determining the effect of selection of each asset class on the overall performance of the pension scheme. This research was conducted through a descriptive survey study and utilized secondary data obtained from the RBA website on the asset allocation and financial performance of the pension schemes. From the study, it was found out that there is a positive correlation between a pension fund's performance and the returns of the various asset classes with the strongest correlation being between fund performance and returns in other approved assets and quoted equities. Moreover, it was also found out that other factors such as the manager's selection, timing of investments and securities selection within an asset class and whether the manager adopts an active style of management of the fund also have an impact on the financial performance of the pension funds.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study traction

Pension funds play a critical role in finance through the mobilization and allocation of stable long-term savings to support investment (Genesis Kenya, 2013). Recent reforms in many African countries have created private pension systems, which are rapidly accumulating assets under management. Pension funds play a key social role in channeling retirement contributions to finance retirement benefits for employees and their dependents. Over and above this key role, pension funds not only provide benefits to individuals but their activities significantly impact on the larger economy, for instance, pension funds tend to complement and stimulate development of capital markets through their complementary role with other financial institutions (Walker and Iglesias, 2010). Pension funds are one of the most important players of social securities of the African countries, managing more than $18 trillion of assets in 2009 (Asebedo & Grable, 2010). In order to promote both the performance and the financial security of pension fund assets and plan benefits, it is critical that sound principals and methodologies of asset allocation are adopted.

Pension reforms have taken place in various countries worldwide. Each country has handled reforms on investment differently but all have similar underlying principles on diversification and a balance of risk and return trade off to achieve optimum returns (Nicholas, 1984). In Kenya for example, assessment of pension fund performance is greatly influenced by the portfolio allocation of the fund which is based on the asset allocation selected by the pension fund managers. The asset allocation strategies adopted by a pension fund in Kenya have to comply with the guidelines provided by the Retirement Benefits Authority of Kenya (RBA) and

enforced in the Retirement Benefits Act. This Act came into force in 1997 and soon after, the RBA investment guidelines were introduced in 2001 stipulating various investment assets as well as the maximum investments in percentage terms that the pension funds would invest in each of the specified assets. Pension Funds in Kenya operate under a trust arrangement where the Trustee acts as the legal owner of the scheme/fund assets. Trustees are required to develop and Investment Policy statement (IPS) to guide them in the allocation of assets of pension scheme funds. Trustees often engage investment advisors to provide technical advice on the investment policy (IP) and later mandate the fund managers to implement the IP's. Having developed the IP's, the Trustees of a pension fund will rely on it to supervise, monitor and evaluate the performance of the schemes investment assets. According to the RBA report (2013), Trustees are expected to devote adequate time and resources in ensuring that asset allocation strategies adopted by pension schemes increase performance owing to the fact that pension fund assets are measured at market values. A drop in market values will therefore indicate a drop in performance of the fund.

In view of the above, policymakers, pension fund trustees as well as fund managers therefore have a key role to ensure that regulations, investment policies, and asset allocation classes adopted encourage increased financial performance of pension funds so as to meet the retirement income objectives of the pension plan (Bikker & Dreu, 2009).

1.1.1 Asset Allocation

Reilly and Brown (1997) define asset allocation as the process of deciding how to distribute an investor's wealth among different countries and asset classes for purposes of investment. An asset class is comprised of securities that have similar

characteristics, attributes, and risk/return relationships. A broad asset class such as bonds can be divided into smaller asset classes, such as Treasury bonds, corporate bonds, and high yield bonds. This asset allocation is based on investor's policy statement and it contributes to the performance of an investment. Asset allocation involves making decisions on a number of issues such as the asset classes to consider for investment, the policy weights to assign to each eligible class, determining the allowable allocation ranges based on policy weights, determining the specific securities to purchase for the portfolio among other such decisions. However a large percentage of the overall investment return is due to the first two decisions, not the selection of individual investments.

There are two types of asset allocation strategies specifically strategic and tactical asset allocation. Strategic asset allocation refers to how portfolio funds will be divided given the portfolio manager's long term forecasts of expected returns, variance and covariance (Sharpe,1996). It involves the asset managers deciding on the asset classes as well as the specific securities with superior performance to invest in. Tactical asset allocation on the other hand refers to how the funds are to be divided at any particular moment given the investors short-term forecasts. The decision determines what deviations based on current market valuations should be made from the strategic asset allocation projections (Lofthouse, 2001).

Asset allocation as an important factor in determining returns of an investment portfolio. Asset allocation is based on the principle that different assets perform differently in different market and economic conditions (Besley & Prat, 2003). These researchers further indicate that the notion that different asset classes offer returns that are not perfectly correlated fundamental is a justification for asset allocation,

hence diversification reduces the overall risk in terms of the variability of returns for a given level of expected return.

1.1.2 Financial Performance

Van Horne et al. (2010) defines pension performance as the earnings that members receive after investment of their contributions. These vary from one pension fund to another. His study indicates a portfolio return as simply a weighted average of the expected returns of the securities constituting that portfolio. The weights are equal to the proportion of total funds invested in each security (the weights must sum to 100 percent).

Pension funds, like many other organizations, can be viewed as open systems which receive inputs, convert these inputs into outputs and deliver these outputs to stakeholders. Pension funds receive inputs (scarce financial resources in the form of contributions and investment funds) and convert these inputs to outputs (pension fund value and retirement benefits) (Davis, 2005) A pension fund would be regarded as efficient if it succeeds in maximizing financial outputs by the efficient use of the financial resources (inputs) (Chansarn, 2005).

Rudolph (2010) asserts that the development of performance measurement framework specific to the pension funds industry is a relatively new topic in academia. In fact, the impulse for the development of industrial specific evaluation tracks back to Campell and Viceira (2002). In their work, the emphasized the objective of the pension industry which is to ensure an adequate retirement income to future pensioners and which is thus naturally different from the other forms of collective investment that are primarily concerned with the short-term asset maximization.

Different objectives then define a different framework over which the performance should be tracked, which are also associated with the different levels of risk tolerance.

Chandra (2009), pension funds look at various items when considering the investments, that is, current income, capital appreciation, and safety of the principal. They have to be good in portfolio execution, that is, implementing the portfolio plan by buying and /selling specified securities in given amounts.

1.1.3 Effect of Asset Allocation on the Financial Performance of Pension Funds

According to Besley and Prat (2003), the asset allocation decision governs the allocation of assets between public and private, and fixed income and equity. Strategic allocation of assets is the most important factor in the determination of the realized total rate of return.

Strategic asset allocation targets are established within a variety of sub-asset categories to achieve the identified performance objectives. In conjunction with the overall asset allocation targets, sub-asset class level tactical ranges provide flexibility to adapt to changing market conditions (Brady, 2009).

Asset allocation of pension plans is probably the most important decision made by a pension fund's trustees in their objective of providing adequate retirement incomes. It certainly has a direct effect on all defined contribution members. It is the investor's objective to obtain the highest risk adjusted return as possible. Brinson et al. (1986) showed that the asset allocation decision is by far the most dominant factor of portfolio performance as it explain more than 91% of the variation in asset returns. Furthermore, Black and Litterman (1991) suggestions that asset allocation can be divided into two different types of decisions: asset allocation between different asset

classes, e.g. stocks and bonds and asset allocation within one asset class, e.g. countries and sectors.

1.1.4 Pension Funds in Kenya

In Kenya, the pension fund industry is regulated by the Retirement Benefits Authority, a body established by an Act of Parliament, specifically, the Retirement Benefits Act. According to the Retirement Benefits Act, the retirement benefits industry in Kenya is categorized into four broad schemes namely the Civil Service Pension Scheme, the National Social Security Fund, Occupational Retirement Schemes and Individual Retirement Schemes. The first two schemes are born out of the Acts of Parliament with their members being all civil servants and teachers, and formal sector workers in companies respectively, whereas the latter are born by Trust Deeds with their members being formal sector workers in companies that have schemes and individuals in formal and informal sectors who join voluntarily respectively (The Retirement Benefits Act Chapter 197 of the Laws of Kenya).

These schemes are managed by pension fund management firms registered with RBA. The RBA Act stipulates that every retirement benefit scheme must appoint a fund manager. The role of fund managers' therefore is clearly outlined and anchored by RBA regulations. Currently, there are 1,232 pension schemes in Kenya (RBA, 2015). Additionally, there are 20 registered fund managers as at January 2015 (RBA, 2015). The RBA provides fund managers with investment guidelines in which the asset classes and the maximum percentage investment in each class is provided. The guidelines also offer allowance for pension fund management firms to make temporary violations of the maximum caps. These rules therefore guide risk profiles of various asset classes as invested in by pension fund management firms.

The RBA supervises the investments by pension fund management firms through a specific division whose role is purely to supervise retirement benefit schemes. The supervision of schemes has shifted to risk based supervision (RBS). The RBA has shifted from a compliance based to a more pro-active risk based approach. The RBA does not specify the assets in which a scheme should invest in rather provides guidelines on the asset classes. The pension scheme has the discretion to determine and select the assets they consider most suitable to maximize the returns to investors through adopting a properly selected and well diversified portfolio (Brunner, 2008).

The RBA Guidelines on pension fund asset management set out a basic framework for the regulation of the investment by pension funds. Regulation is defined in a broad sense to include the main body of the pension law; related laws; tax requirements; standards set by pension and financial sector supervisory authorities; codes of conduct developed by professional associations; collectively bargained agreements; or plan documents (Retirement Benefits Act of Kenya).

In Kenya, the pension fund investment limits under the Retirement Benefits Act per asset class include Cash and Demand deposits 5%, Fixed deposits, Time deposits and certificate of deposit 30%, Commercial paper, corporate bonds, mortgage bonds and loan stocks 30%, East Africa Government securities & Infra bonds and East Africa CIS's approved by CMA 70%, Publicly quoted preference and ordinary shares in East Africa and Kenyan CIS's 70%, Unquoted shares of Kenyan companies and Kenyan CIS's 5%, Offshore investments: bank deposits, government securities, quoted equities, rated corporate bonds and offshore CIS's 15%, Immovable property in Kenya and units in Kenyan property trust schemes, Kenyan CMA approved CIS's

30%, Guaranteed funds100%, Any other assets 10% as per the investment guidelines in the Retirement Benefits Act of Kenya.

1.2 Research Problem

Most people depend on their pension funds as a source of income when they retire. Retirement income accounts for 68% of the total income of retirees in Kenya, 45% in Australia, 44% in Austria and 80% in France, while in South Africa 75% of the elderly population rely on pension income. In the United States of America 82% of retirees depend on pension income (Kakwani, Sun & Hinz 2006). Pension fund Assets should therefore be managed efficiently to ensure higher retirement income for pensioners.

The pension fund industry is a significant source of capital in the Kenyan financial market. Pension funds invested a sum of KSh. 223 billion in the Kenyan financial sector in 2007 of which Ksh. 77 billion was invested in government securities (Omondi, 2008). According to the retirement benefits industry performance report of June to December 2014, the total fund assets in the country stood at Kshs.788.15 billion as of December 31st 2014. Pension fund assets are thus significant institutional investors and must therefore be managed efficiently.

Several studies have been done including a study that was carried out in Kenya by Nguthu (2009) showed that the variation in returns over time for pension schemes explained up to 62.4% by investment policy adopted by the trustees of the scheme. Another study carried out by Kagunda (2011) showed that asset allocation can explain a significant amount of the difference in returns across time and hence a primary determinant of return performance of unit trusts in Kenya. Omondi (2013) sought to explain the relationship between asset allocation and financial performance of pension

funds Kiplagat (2014) sought to explain impact of asset allocation on the performance of a fund by explaining the percentage variation in a pension scheme performance that is attributed to asset allocation.

The empirical literature however suggests that there are certain research gaps regarding the asset allocation policies and the performance of pension funds. Very few local studies have tried to measure effects of asset allocation on pension fund performance. Additionally, no study has determined the degree of contribution that each asset selected by a fund under its investment policy makes to the overall performance of the fund. The present study therefore sought to fill this knowledge gap by quantifying the effect of asset allocation on the performance of pension funds in Kenya by determining the extent to which each asset selected contributes to the overall performance of the fund.

1.3 Research Objective

The objective of this study was to determine the effect of asset allocation on the financial performance of pension funds in Kenya.

1.4 Value of the Study

The study helps the Board of Trustees of Pension schemes to know the extent to which regulations on various asset classes have an effect or influence the level of performance of their funds.

The findings of this study provide the RBA with information for the formulation of better policies and rules that are relevant in guiding investment of pension funds in various asset classes in Kenya as well as to inform the regulator (RBA) on the need of revising the asset allocation limits.

The study provides useful insights to various categories of stakeholders. The RBA and the government in general would be interested to know whether the regulations they have put in place have achieved the desired objectives. This is important given that pension systems and retirement benefits schemes are necessary for developing countries like Kenya not only to secure people's livelihoods after retirement, but also due to the fact that retirement schemes provide an avenue for mobilizing savings for long-term investments.

The helps the government in knowing how well the sector is doing financially as this has implications on the overall performance of the economy. Furthermore, RBA and the government from this study know whether the efforts and the resources put into regulating the sector are justified.

The data and information availed by the study is of significance to academicians and professional service providers i.e. people and firms that provide advisory and consultancy services to RBS and the RBA. This study may enable them to conduct further research.

Moreover, the study equip both policy makers and stakeholders with knowledge to identify the strengths and weaknesses of various strategies/incentives and practices as well as policy guidelines on areas that require immediate intervention for development of pension services.

The study also contributes to the body of knowledge for the researchers and scholars interested in the development of RBA Asset Allocation Guidelines.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter summarizes the information from other researchers who have carried out their research on factors that affect performance of pension funds, a review of relevant theories that explain pension funds and financial performance, empirical review that provides evidence from actual studies, conceptual framework as well as a summary of the literature.

2.2 Theoretical Review

This section will involve a review of the relevant theories that explain the financial performance of pension funds or similar organizations that invest via a portfolio of assets. To this end, the research was based on the following theories, namely capital asset pricing model (CAPM), arbitrage pricing theory, modern portfolio theory and the Black Litterman model theory.

2.2.1 Capital Asset Pricing Model

The concept of portfolio with regard to performance results based on risk is part of a set of results known in the financial economics literature as the Capital Asset Pricing Model (CAPM) developed by Sharpe (1964) and Lintner (1965) and later refined by Black (1972). It represents an extension and simplification of the model by Markowitz (1952). The Markowitz model was the first theorizing a relationship between risk and return. In his model, there are as many efficient portfolios are there are investor risk preferences.

All efficient portfolios must lie on the mean-variance investment frontiers where investors can get a higher return only by accepting a higher level of risk (Gossy,

2008). The CAPM extends this theory to a situation of equilibrium. The CAPM argues that all investors will hold the same efficient portfolio (the market portfolio) regardless of their individual risk 18 preferences. This theory implies that for ERM, firms should institute efficient portfolios that offer maximum returns and minimum risks.

2.2.2 Arbitrage Pricing Theory

The Arbitrage Pricing Theory (APT) was developed primarily by Ross (1976). It is a one period model in which every investor believes that the stochastic properties of returns of capital assets are consistent with a factor structure. Ross argues that if equilibrium prices offer no arbitrage opportunities over static portfolios of the assets, then the expected returns on the assets are approximately linearly related to the factor loadings.

The factor loadings, or betas, are proportional to the returns' covariance with the factors). The APT is a substitute for the Capital Asset Pricing Model (CAPM) in that both assert a linear relation between assets' expected returns and their covariance with other random variables. In the CAPM, the covariance is with the market portfolio's return.

2.2.3 Modern Portfolio Theory

This theory has its roots in mean-variance portfolio analysis. It is a theory that was pioneered by Markowitz (1952) in his paper "Portfolio Selection". Markowitz found that the different correlations between assets could be utilised to reduce the risk in a portfolio or to obtain additional return without increasing the risk. He developed a model which took into account the interactions between different investment opportunities, and the correlation between them, to optimise the ratio between risk

and return. According to Markowitz, a combination of several types of assets may reduce risk, provided that the investor chooses types of assets which move as independently of each other as possible. Once this condition has been met, the best possible ratio between risk and return will be achieved.

MPT emphasizes how risk-averse investors can construct portfolios to optimize or maximize expected return based on a given level of risk, emphasizing that risk is an inherent part of a higher reward. According to the theory, it is possible to construct an "efficient frontier" of optimal portfolios offering the maximum possible expected return for a given level of risk.

2.2.4 The Black-Litterman Model

This is a mathematical model for portfolio allocation developed in 1990 at Goldman Sachs by Fischer Black and Robert Litterman, and published in 1992. It seeks to overcome problems that institutional investors have encountered in applying modern portfolio theory in practice. The model starts with the equilibrium assumption that the asset allocation of a representative agent should be proportional to the market values of the available assets, and then modifies that to take into account the 'views' (i.e. the specific opinions about asset returns) of the investor in question to arrive at a bespoke asset allocation (Black & Litterman, 1992). It starts with a benchmark portfolio which come from the equilibrium expected returns that would clear the market, assuming a given risk model. The equilibrium expected returns (market-implied views) are the set of expected returns that would produce the market portfolio if led into an optimiser with the specified risk model. In other words, these are the returns from reverse optimization assuming the market portfolio is efficient (Drobetz, 2001; Jones, Lim &

Zangari, 2007). These "market-implied" views are combined with the investor's private views using the Bayesian mixed-estimation techniques.

The Black Litterman allows the 10 incorporation of both absolute views (e.g. affixed expected return) and relative views (e.g. one stock or sector will out-perform another). The relative weights placed on an investor's view will reflect the confidence that he has in that view. The posterior distribution of expected asset returns given the recommendation changes are used as the input for portfolio optimization. The blended views will produce balanced portfolios that are tilted towards the investor's private views, with the degree of tilt (for a given level of risk) depending on the investor's relative confidence in his or her expectations. Practical guides to the implementation of the model in general contexts are presented by Drobetz (2001) and Idzorek (2004).

2.3 Determinants of Financial Performance of Pension Funds

Several factors determine the financial performance of pension funds. The key factors identified during this study are summarized below.

2.3.1 Market Volatility

Mutuku (2012) stated that market volatility experienced in the Kenyan pension industry affected the overall returns realized in the industry over the last few years, which is largely attributed to most of the investments having a high correlation with the market. Maya Fisher-French (2012) stated that volatility of an asset class affects the returns arising from the investment. The researcher advocates that the asset allocation for retirement savings should consist of a wide range of assets including cash, property, bonds, shares, among others whose overall impact will be to have a medium risk portfolio.

2.3.2 Retirement Age

The retirement age is also an important factor that affects the performance of pension funds. This is because the accumulation period is shorter in countries that allow individuals to retire earlier. In effect, individuals are likely to receive lower retirement income. As a consequence, governments in some countries have been raising the official retirement age or have introduced incentives to delay retirement. The capacity of funded individual account systems to deliver retirement income will be further challenged in this respect as life expectancy continues to increase in virtually all countries (Bodie et al., 2009).

2.3.3 Portfolio Weighting

Block and French (2002) showed that the weighting of individual securities within the portfolio. The weight that a portfolio manager assigns to a given security in a portfolio can make a contribution to return that is just as important as the security selection and investment timing decisions. The researcher found that fund managers tended to hold consistent in constructing and maintaining equal weights in management on retirement benefits funds.

2.3.4 Experience of the Fund Managers

A study carried out by Tonks (2005) on pension fund management and investment performance established that the value of the pension fund will increase over time due to contributions and the investment returns on the fund. These investment returns depend on the asset allocation and portfolio decisions of fund managers. Small changes in the investment returns, increase to large changes in the value of the pension fund at retirement. The evidence on fund manager performance is that on average they do add value since majority are compensated based on performance. It is this intrinsic interest in receiving part of the profits generated from the investment that

ensures they expend necessary efforts to ensure that returns to investors are maximized.

2.3.5 Interest Rates

Flannery and James (1984) in their study on the effect of interest rate changes on the common stock returns of financial institutions found that returns on equities are found to be positively correlated with interest rate changes. This implies that pension scheme performance highly depends on performance of the stock exchange and interest rates applied to government securities. This implies that where pension funds in correlated investment products, the asset classes will lose if interest rates decrease and the vice versa would hold true if there was an increase in interest rates.

2.3.6 Liquidity

This is ideally the ability to convert an asset to cash at a reasonable price and within reasonable timing. The easier it is to convert/sell an asset, the more liquid is the asset. It is a relationship between the time dimension (how long it will take to dispose) and the price dimension (any discount from fair market price) of an investment asset. Cash and money market instruments such as treasury bills and commercial paper are most liquid assets, and real estate is among the most illiquid. Liquid assets tend to have lower rates of returns than the less liquid assets. Therefore fund managers should strike a balance between liquidity and desired returns by establishing the minimum level of liquid assets they wish to hold in the investment portfolio.

2.3.7 Regulations

Professional and institutional investors are constrained by regulations since they manage other people's money and hence have a fiduciary responsibility to restrict investment to assets that would have been approved by a prudent investor. However,

there are specific regulations that apply to various institutional investors. For instance, fund managers are regulated by the Capital Markets Authority, there is also the investment guidelines issued by RBA aimed at regulating the way in which trustee of retirement benefit scheme invests retirement funds. This affects financial performance of the funds as an investment manager is restricted from investing, say, 100% in the assets that have the highest returns like equities.

2.4 Empirical Review

Brinson, Singer and Beebower (1991) showed that 91.5% of the portfolio returns were attributable exclusively to strategic asset allocation. Elkin (1999) also stated that asset allocation, rather than stock picking or market timing, is by far the most important factor that determines the returns that a portfolio would generate over time. Surz, Stevens and Wimer (1999) devised a simple model to estimate what percentage of investment policy is explained by performance pertaining to the magnitude of the return, not the variability of the return. In this model, the fraction of return explained by policy was devised. They found that asset allocation on average explains about 95% of investment returns.

Brinson, Hood and Beebower (1986) and Brinson et al. (1991) in their study of US corporate pension plans concluded that the investment policy explained 93.6% of the 15 total variation of the actual returns of the funds. In their study, 91 retirement benefit funds were studied over a 10 year period. The funds must have had a discretionary mandate with the investment manager. The asset classes considered were the equities and bond portfolios and cash equivalent portfolios. The fund returns were decomposed to the selection and timing reasons. Regression of the policy returns against the actual returns was done and the level of correlation determined.

Ibbotson and Kaplan (2000) in their study of US retirement benefit funds concluded that the main determinant of investment performance of a retirement benefits fund is the asset allocation, rather than the stock selection. In their study, they considered 94 balanced mutual funds and the quarterly returns for 10 years and also 58 returns for both the pension fund for 5 years. Policy weights were used to calculate the policy returns for both the pension and the mutual funds. Data was analyzed to determine the returns behaviour over time, across funds and what level of returns was explained by the asset allocation. Over time, specific policies explain less than half of the remaining time series variation of funds returns. Asset allocation explained about 40% of the variation of returns among the funds. The method of data analysis used was of regression analysis and ratio analysis.

Gitundu (2009) did an assessment of asset selection and performance evaluation of pension funds in Kenya. The study was motivated by a World Bank (1997) study on Old Age Security in China that revealed an impending old age crisis due to the breakdown of family based systems of old age security. It was established that asset allocations differ between various pension funds, an indicator that the criteria for developing the optimum investment mix differ between investment managers of various pension funds. It was also clear from the findings that that, although performance of pension fund assets is comparable to various market indexes, there is no defined standard performance measure. Some fund managers construct in-house indexes for some assets, others evaluate performance against available economic performance indicators, while others were silent on the performance of the pension fund portfolio.

Nguthu (2009) did a study on the effect of assets allocation on retirement Benefits fund performance in Kenya. The objectives of the study were to determine how much of the variations of returns among retirement benefits schemes in Kenya are explained by asset allocation and also the level of returns which is explained by assets allocation. A sample of 40 schemes was drawn from a population of 400 segregated occupational schemes in Kenya. The secondary data on pension schemes assets allocation and returns was obtained from Retirement benefits Authority was analysed using regression analysis and descriptive statistics. Regression was done on the fund returns to the policy returns over time to determine the policy impact on variation over time. Regression was also done on the compounded annual fund returns to the compounded annual policy returns among schemes to determine the impact of assets allocation differences of schemes on the variability of returns. To determine the level of returns which is explained by assets allocation, the researcher computed the ratio of the average annualized total returns for each scheme to the average annualized policy returns. The study shows that the variation in returns over time for pension schemes is explained up to 62.4% by investment policy adopted by the trustees of the scheme. Other factors such as securities selection, timing of investments and managers selection explain the remainder. Differences in investment policies explained 37% of the variations on the return among different schemes. Further the study established that policy explains 100% of the total fund returns level of the schemes in Kenya. This shows that on average, schemes are not adding value above their policy benchmark because of the combination of the active management and the associated management expenses. It is possible for an investor who has the ability to select superior managers before committing funds to earn above average returns.

Omondi (2013) carried out a research on the relationship between asset allocation and financial performance of pension funds. The study was based on the 1,244 pension schemes registered in Kenya as at 31 December 2011and established that there is a liner correlation between fund performance and the returns in various asset classes with the strongest correlation being fund performance and fixed deposits and government securities. It went ahead to indicate that asset allocation explains 28% of the variability of fund returns is due to investment policy differences.

Kiplagat (2014) carried out a research on the impact of asset allocation on the financial performance of pension funds in Kenya. The study was based on the 1,232 occupational pension schemes as at May 2014. From the findings of the study, 58% of fund returns were explained by the investment policy with the remaining 42% being explained by other factors such as asset allocation, timing and manager selection.

2.5 Summary of Literature Review

Based on the review of literature on this subject, most studies reviewed tend to find a high correlation between asset allocation strategies and the financial performance of the funds. Notably, most of these studies have been conducted on offshore markets, for example the study by Ibbotson and Kaplan (2000) and that by Brinson, Hood and Beebower (1986). A local study by Nguthu (2009) explained that asset allocation explained about 62% of the returns of pension funds in Kenya but did not include the extent to which the individual asset classes contributed to the overall performance of the fund. Similarly, Omondi (2013) sought to explain the relationship between asset allocation and financial performance of pension funds by explaining the impact of asset allocation to the performance of the fund. This was the case for Kiplagat (2014) who sought to explain impact of asset allocation on the performance of a fund but did

not include the extent to which the individual asset classes contributed to the overall performance of the fund.

However, these local studies did not determine the percentage contribution that each asset has to the overall performance the pension scheme which would be useful in explaining each assets contribution to the overall results of the scheme which would be useful to the stakeholders and particularly the trustees in developing the investment policy. It would be important to properly assess and determine the contribution of each asset to the overall performance. This is important as the findings of this study will be crucial to trustees, fund managers and policy makers who will be guided at a higher level of detail on the impact investment policies have on the fund performance as well as to highlight which asset classes contribute to the largest extent on the performance of the fund. This study therefore sought to fill this void in research by seeking to establish the effect of asset allocation on the financial performance of pension funds in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter outlines the methodology, procedures and modalities that were used in data collection. It also covers research design, determination and identification of the population, sample size, sampling design, sampling procedure, the instruments of data collection, validity and reliability of data collected, sources of data, methods of data collection and methods of analyzing the data. According to Kothari (2004), research methodology is a way to systematically solve the research problem.

3.2 Research Design

The study adopted a descriptive survey method. This was preferred because it is efficient in collecting large amounts of information within a short time. Kerlinger (1978) argues for the use of surveys in social economic fact-finding because they provide a great deal of information which is accurate. Furthermore Cohen and Manion (1980) state that the intention of survey research is to gather data at a particular point in time and use it to describe the nature of existing conditions. Since the aim of this study was to investigate effect asset allocation on the financial performance of pension funds in Kenya, a survey design was considered most suitable for the study.

3.3 Population

Target population according to Ngechu (2004) is a well-defined or set of people, services, elements, events, group of things or households that are being investigated. This definition ensures that population of interest is homogeneous. Population studies are more representative because everyone has equal chance to be included in the final sample that is drawn according to Mugenda and Mugenda (1999). The target population of this study comprised all the registered pension schemes in Kenya as at

December 2014. According to the RBA website, there were 1297 registered schemes as at December 2014. Four hundred and sixty eight (468) of these were segregated schemes and eight hundred and twenty nine (829) guaranteed funds.

3.4 Sample

A sample of fifty (50) segregated schemes that have been in existence for more than ten years and which have used the same fund manager over the period of study were adopted for the study.

This study used stratified random sampling technique. Kothari (2008) recommends stratified random sampling because it is accurate, easily accessible, divisible into relevant strata and it enhances better comparison; hence representation across strata.

The pension schemes were stratified based on their fund values as at December 2014. The sample selected included schemes that had fund values of at least KShs 200M. This allowed the researcher to utilize schemes that have sufficient returns for the computational needs of the study. The schemes were then stratified in ranges of KShs 200M and 10 schemes randomly selected from each stratum to ensure that each of the schemes had an equal chance of being selected. Schemes that used one fund manager during the period were selected based on the fact that different fund managers use different asset allocation techniques and portfolio valuation method. A common fund manager thus allowed for consistency.

For purposes of this study, pension schemes that have invested solely in guaranteed funds or pooled funds were eliminated from the sample selected. This is because it may not be easy to associate certain assets to certain pension funds in case of the pooled funds/guaranteed funds/umbrella funds because they are all invested together.

Since the researcher sought to assess the contribution of the various assets classes to the overall financial performance by the fund, guaranteed funds and pooled funds were eliminated from the sample for purposes of this study.

3.5 Data Collection

The study relied on secondary data. The secondary data for this study was quantitative in nature and was collected from the annual financial statements of the pension funds. These financial statements are usually maintained in documents that reside with the fund managers, scheme trustees, scheme administrators and RBA as filed returns. For the purpose of this study, the financial performance data was sourced from the RBA website as all occupational pension schemes in Kenya are required to submit information on fund returns to RBA. For the data to be representative enough, the researcher relied on secondary data of a period of ten years depending on data availability and access.

3.6 Data Analysis

To establish the relationship between the independent variables and the dependent variable of the study inferential analysis was conducted. Inferential analysis involves a coefficient of determination and a multiple regression analysis. The coefficient of determination was carried out to measure how well the statistical model was likely to predict future outcomes. As such it explained the percentage variation in the dependent variable (Pension scheme financial performance) that was explained by all independent variables (the various categories of asset classes).

The data collected was used to analyze the returns of the fifty (50) pension funds within ten (10) years in a particular pension fund. The ten (10) years were used to get an average return for the specific pension funds. It was important to consider the

returns of the pension fund for a number of years in order to take care of fluctuations in the different years.

3.6.1 Analytical Model

The regression model used was;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \varepsilon$$

Where:

Y is the dependent variable (Pension scheme financial performance) and was measured using the Return on Investment (ROI) arrived at by taking the closing fund value less the opening fund value divided by the investment/opening fund value

B is the regression coefficient

X_1 is the weight of cash and demand deposits in the scheme = (total cash divided by total assets value of the pension fund),

X_2 is the weight of fixed and time deposits in the scheme = (total fixed and time deposit asset divided by total asset value of the pension fund),

X_3 is the weight of fixed income in the scheme = (total fixed income asset divided by total assets value of the pension fund),

X_4 is the weight of government securities in the scheme = (total government securities divided by total assets value of the pension fund),

X_5 is the weight of quoted equities in the scheme = (total quoted equities divided by total assets value of the pension fund),

X_6 is the weight of unquoted equities in the scheme = (total unquoted equities divided by total assets value of the pension fund),

X_7 is the weight of offshore investments in the scheme = (total offshore investments divided by total assets value of the pension fund),

X_8 is the weight of immovable property in the scheme = (total immovable property assets divided by total assets value of the pension fund),

X_9 is the weight of any other approved assets not mentioned above = (total other assets divided by the total assets value of the pension fund), and

ε is the error team.

3.6.2 Test of Significance

The test of significance for the regression model was determined using ANOVA. The coefficient of determination, (r^2) is the square of the sample correlation coefficient between outcomes and predicted values. As such it explains the extent to which changes in the dependent variable (financial performance) can be explained by the change in the independent variables (asset allocation) or the percentage of variation in the dependent variable that is explained by all the independent variables.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, the findings from the data analysis are presented. The data relating to the sampled pension schemes was collected and analyzed in response to the objective of the study. The objective of the study was to establish the effect of asset allocation on the financial performance of pension funds in Kenya. A sample of five segregated schemes that have been in existence for seven years and which have used the same fund manager over the period of study sufficed for the study. The findings presented in this chapter demonstrate the effect of asset allocation and financial performance of pension funds and illustrate further the extent to which each asset class contributes to the overall financial performance of the fund.

4.2 Response Rate

The sample selected aimed at collecting data from fifty pension schemes that have been in existence from 2008 to 2014. However the researcher managed to obtain data from five pension schemes which translates to a 10% response rate. The challange of data collectrion was faced because the RBA website is not updated as is envisioned in the Retirement Benefits Act. Moreover there is less compulsion for the companies to disclose financial data since this is not envisioned in the Companies Act.

4.3 Descriptive Statistics

The data collected was used to compute the mean of the independent variable and specifically cash and demand deposits, fixed deposits and time deposits, commercial

paper and corporate bonds, government securities, shares of quoted companies, immovable property, offshore investments in bank deposits, shares in unquoted companies, other investments made by the pension schemes.

Table 4.1: Descriptive Statistics and Distribution of Variables

Descriptive Statistics					
	Minimum	Maximum	Mean	Std. Deviation	Variance
Financial Performance of Scheme	1	3.14	2.21	.545	.297
Cash & Demand Deposits	0	0.05	.00	.013	.000
Fixed &Time Deposits	0	0.12	.03	.033	.001
Fixed Income	0	0.10	.02	.020	.000
Government Securities	0	0.67	.32	.185	.034
Quoted Equities	0	0.40	.18	.112	.013
Unquoted Equities	0	0.20	.01	.038	.001
Offshore Investments	0	0.27	.05	.066	.004
Immovable Property	0	0.62	.14	.150	.022
Other Approved Assets	0	0.08	.01	.021	.000

Source: Research data

Table 4.1 shows that the financial performance of pension schemes have a mean of 2.21 billion with a minimum of 1 billion and a maximum of 3.14 billion, this means that on average the maximum return on investment of pension schemes is 3.14 billion and a minimum of 1 billion. The average return is 2.21 billion. The minimum value of investments in cash and demand deposits is 0 shillings meaning some of the pension schemes did not make any investments in cash. However, the maximum investment in cash was 0.05 billion representing the highest investment in cash and demand deposits by the pension scheme.

The highest investment is in government securities and immovable property at 0.67 billion and o.62 billion respectively. The highest standard deviation is in government securities. Other assets have a minimum of 0 shillings and a maximum of 0.08 billion,

this means that on average the minimum investment of pension schemes in other assets is zero whereas the maximum is 0.01 billion.

4.3 Correlation Analysis

Correlation between the dependent variable (Pension scheme financial performance) and the independent variables (weighted average of deposit on schemes, weight of fixed and time deposits in the scheme, weight of fixed income in the scheme, weight of government securities in the scheme, weight of quoted equities in the scheme, weight of unquoted equities in the scheme, weight of offshore investment in the scheme, weight of immovable property in the scheme, weight of any other asset invested into) was determined. This analysis was to identify based on relative importance, the asset classes on which financial performance is dependent.

Table 4.2 Correlation Coefficients

	Y	**X_1**	**X_2**	**X_3**	**X_4**	**X_5**	**X_6**	**X_7**	**X_8**	**X_9**
Y	1									
X_1	-.387*	1								
X_2	-.267	.246	1							
X_3	-.474*	-.032	.013	1						
X_4	-.672**	.329	.523**	.471*	1					
X_5	-.458*	.183	.094	.370	.283	1				
X_6	.054	-.092	-.162	-.060	-.081	-.108	1			
X_7	-.515**	.210	-.148	.024	-.069	.587**	-.034	1		
X_8	.266	-.210	-.187	-.253	-.270	-.130	-.026	-.020	1	
X_9	.114	-.079	-.149	.176	-.014	.117	.683**	-.108	-.043	1

***. Correlation is significant at the 0.05 level (2-tailed).**
****. Correlation is significant at the 0.01 level (2-tailed).**

The definition/description of the symbols is as per Chapter 3.6.1

Table 4.3: Summary of the Pearson Correlation

Independent Variable		Correlation	R2	Sig. (2-tailed)	Comment
Cash and Demand Deposits	X_1	-.387*	15%	0.42	Not significant
Fixed and Time Deposits	X_2	-.267	7%	0.17	Not significant
Fixed Income	X_3	-.474*	22%	0.011	Significant
Government Securities	X_4	-.672**	45%	0	Significant
Quoted Equities	X_5	-.458*	21%	0.014	Significant
Unquoted Equities	X_6	.054	0%	0.784	Not significant
Offshore Investments	X_7	-.515**	27%	0.005	Significant
Immovable Property	X_8	.266	7%	0.171	Not significant
Other Approved Assets	X_9	.114	1%	0.564	Not significant

The analysis on Table 4.3 above shows that the financial performance of the scheme has a negative correlation with the weight of cash and demand deposits and fixed and time deposits respectively. The correlation coefficients of -.387 and 0.267 for both investments respectively are not statistically significant because they are above 0.05.

On the other hand the correlation indices for the relationship between the financial performance of the pension scheme and fixed income, government securities and quoted equities are -.474, -.672 and -.458 respectively. These results indicate that there is a negative correlation between financial performance and the returns of fixed deposits, government securities and quoted equities. However, the correlation

coefficients of are fixed deposits, government securities and quoted equities are statistically significant.

The correlation indices for the relationships between the financial performance and unquoted equities is 0.054. This indicates there is a positive correlation between portfolio returns and the returns of unquoted equities. In addition, the correlation coefficient of unquoted equities is not significant as it is above 0.05.

More so the correlation indices for the relationship between the financial performance of the pension scheme and fixed income, government securities and quoted equities are -.474, -.672 and -.458 respectively. These results indicate that there is a negative correlation between financial performance and the returns of fixed deposits, government securities and quoted equities. However, the correlation coefficients of are fixed deposits, government securities and quoted equities are statistically significant.

4.4 Regression Analysis

This section presents a discussion of the results of inferential statistics. A multiple regression analysis was conducted so as to determine the relative importance of each of the variables. To find out the effect of asset allocation on the financial performance of pension funds in Kenya, the statistical package for social science (SPSS) was applied to develop the regression analysis.

4.4.1 Model Summary

The findings of the regression analysis are presented in the following tables:

Table 4.4: Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.909[a]	.827	.740	.278

a. Dependent Variable: Financial Performance of Scheme

b. Predictors: (Constant), Other Approved Assets, Government Securities, Offshore Investments, Immovable Property, Cash and Demand Deposits, Fixed and Time Deposits, Fixed Income , Unquoted Equities, Quoted Equities

Analysis in table 4.4 above shows that the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) R square equals 0.827, that is, (weighted average and deposit on schemes, weight of fixed and time deposits in the scheme, weight of fixed income in the scheme, weight of government securities in the scheme, weight of quoted equities in the scheme, weight of unquoted equities in the scheme, weight of offshore investment in the scheme, weight of immovable property in the scheme, weight of any other asset invested into and not mentioned) when put together explained 82.7% changes in pension funds financial performance.

4.4.2 Analysis of Variance

Table 4.5: Analysis of Variance (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.636	9	.737	9.548	.000[b]
	Residual	1.390	18	.077		
	Total	8.026	27			

a. Dependent Variable: Financial Performance of Scheme

b. Predictors: (Constant), Other Approved Assets, Government Securities, Offshore Investments, Immovable Property, Cash and Demand Deposits, Fixed and Time Deposits, Fixed Income , Unquoted Equities, Quoted Equities

Source: Research Findings

As shown in table 4.5 above, the linear relationship among the variables in the regression was determined by examining the Analysis of Variance (ANOVA) results obtained from the analysis. The value of the F statistic and its significance level (denoted by the value of "Sig.") was noted. The value of F was found to be statistically significant at a level of less than 0.05, suggesting that there is is correlation between the predictors' variables (weight of cash and demand deposits in the scheme, weight of fixed and deposits in the scheme, weight of government securities in the scheme, weight of quoted equities in the scheme, weight of unquoted equities, weight of offshore investments in the scheme, weight of immovable property in the scheme and the weight of any other approved assets). The regression effect is statistically significant indicating that prediction of the dependent variable (portfolio returns) is accomplished better than can be done by chance.

4.4.3 Model Coefficients

Table 4.6: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.049	.154		19.740	.000
	Cash and Demand Deposits	-3.814	4.909	-.088	-.777	.447
	Fixed and Time Deposits	-.608	2.058	-.037	-.296	.771
	Fixed Income	-7.428	3.616	-.272	-2.054	.055
	Government Securities	-1.732	.438	-.587	-3.954	.001
	Quoted Equities	.821	.736	.169	1.116	.279
	Unquoted Equities	-1.707	2.139	-.118	-.798	.435
	Offshore Investments	-5.114	1.175	-.624	-4.354	.000
	Immovable Property	.094	.385	.026	.245	.809
	Other Approved Assets	3.504	3.985	.136	.879	.391

a. Dependent Variable: Financial Performance of Scheme

As shown in table 4.6 above, the value of the constant can be determined by studying the results of the coefficients. Specifically, investments in fixed income, government securities and offshore investments are statistically significant.

As can be seen by examining the beta weights in the regression results, offshore investment make the relatively largest contribution to the prediction model.

The following regression result was obtained:

$Y= 3.049 – 3.814X_1 – 0.608X_2 – 7.428X_3 -1.732X_4 + 0.821X_5 – 1.707X_6 – 5.114X_7 + 0.094X_8 + 3.504X_9$

From the model, when other factors (weighted average and deposit on schemes, weight of fixed and time deposits in the scheme, weight of fixed income in the scheme, weight of government securities in the scheme, weight of quoted equities in the scheme, weight of unquoted equities in the scheme, weight of offshore investment in the scheme, weight of immovable property in the scheme, weight of any other asset not mentioned) are at zero, the pension schemes financial performance will be 3.049. According to the equation, taking all factors constant, a unit increase in the weight of cash and demand deposits on the schemes would lead to a 3.814 decrease in pension scheme financial performance. Also noted is that holding other factors constant, a unit increase in the weight of fixed and time deposit in the schemes would lead to a 0.608 decrease in the pension schemes financial performance.

Table 4.4 also shows that holding other factors constant, a unit increase in the fixed income in the scheme would lead to a 7.428 decrease in pension schemes financial performance. The findings, further, shows that a unit increase in government securities in the scheme would lead to a 1.732 decrease in pension schemes financial performance. Holding other factors constant, a unit increase in weight of quoted equities in the schemes would lead to 0.821 increase in a pension scheme financial performance. Also noted is that holding other factors constant, a unit increase in unquoted equities in the schemes would lead to a 1.707 decrease in the pension schemes financial performance.

From the analysis, it was also noted that holding other factors constant, a unit increase in weight of offshore investments in the scheme would lead to a 5.114 decrease in

pension scheme financial performance. Also noted is that holding other factors constant, a unit increase weight of immovable property would lead to a 0.094 increase in the pension schemes financial performance. Lastly a unit increase in the weight of any other asset would lead into a 3.504 increase the pension funds financial performance.

4.5 Discussion of Research Findings

The primary aim of this study was to determine the effect of asset allocation on the financial performance of pension funds in Kenya. This aim to a larger extent was accomplished and is summarized below.

The study findings on correlation found out that the strongest correlation of the independent variables with the depended variable was between investment in government securities as well as offshore investments and the financial performance of the pension schemes. Further test was performed by analyzing the data using R-Square. The R-Square of the data was found to be 82.7% which indicate that differences in the financial performance of the pension funds were explained by approximately 82.7% of the independent variables taken into account. The remaining 17.3% was explained by other factors that were not under consideration.

From the study, when other factors (weighted average and deposit on schemes, weight of fixed and time deposits in the scheme, weight of fixed income in the scheme, weight of government securities in the scheme, weight of quoted equities in the scheme, weight of unquoted equities in the scheme, weight of offshore investment in the scheme, weight of immovable property in the scheme, weight of any other asset not mentioned) are at zero, the pension schemes financial performance was noted to be 3.049.

From the analysis, it was also noted that holding other factors constant, a unit increase in weight of offshore investments in the scheme would lead to a 5.114 decrease in pension scheme financial performance. Also noted is that holding other factors constant, a unit increase weight of government securities would lead to a 1.732 decrease in financial performance, additionally, a unit increase in immovable property would lead to a 0.094 increase in the pension schemes financial performance. Lastly a unit increase in the weight of any other asset would lead into a 3.504 increase the pension funds financial performance.

The results are a contrast to the investment appetite for the public pension scheme in Kenya i.e. the NSSF which has heavily invested in the real estate sector and has plans to further increase their property portfolio. Investment in property yields 0.094 per every unit invested while there are more profitable classes of investment such as investment in quoted equities and other approved assets which has a yield of 0.821 and 3.504 respectively for every unit invested.

These findings are in line with those of Kiplagat (2014) which showed that 58% of the return difference was explained by the asset allocation. The increase of about 24% could be attributed to increased awareness of the pensioners on the need for trustees to increase value of their investments. This has increased pressure on the trustees to actively manage pension funds to increase fund value. In addition, Retirement Benefits Authority introduced Trustee Development Programme Kenya which is aimed at building capacity of the trustees in order to increase pension fund values. RBA has made it mandatory for each scheme to train all trustees in order to achieve this objective.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter is a synthesis of the entire study, and contains summary of research findings, exposition of the findings, commensurate with the objectives, conclusions and recommendations based thereon.

5.2 Summary of Findings

The objective of the study was to determine the effect of asset allocation on the financial performance of pension funds in Kenya. All usable data was analyzed and the respective information was discussed in narrative form and the output of the analysis presented in tables. From the findings of the analysis, there is a linear correlation between fund performance and the returns of the various asset classes. This was demonstrated by the results of Correlation, ANOVA and Coefficient analyses. Correlation was found to be strongest between pension schemes financial performance and the weight of government securities in the scheme. Further test was performed by analyzing the data using R-Square. The R-Square of the data was found to be 82.7% which indicate that differences in the financial performance of the pension funds were explained by approximately 82.7% of the independent variables taken into account. The remaining 17.3% was explained by other factors that were not under consideration.

Previous study by Kiplagat (2014) found that 58% of the return difference was explained by investment policy differences. The increase of about 27% could be

attributed to increased awareness of the pensioners on the need for the trustees to increase value for their investments.

Finally the study, when other factors (weighted average and deposit on schemes, weight of fixed and time deposits in the scheme, weight of fixed income in the scheme, weight of government securities in the scheme, weight of quoted equities in the scheme, weight of unquoted equities in the scheme, weight of offshore investment in the scheme, weight of immovable property in the scheme, weight of any other asset not mentioned) are at zero, the pension schemes financial performance was noted to be 3.049.

The study established that quoted equities positively influence the financial performance of pension schemes in Kenya. Investments in immovable property and other approved assets have positive impact on the financial performance of pension schemes. The study findings also revealed that increase in the investments in cash and demand deposits, fixed income, unquoted equities and offshore investments negatively impact on the financial performance of pension schemes. The study also established that immovable properties and offshore investments in bank deposits positively impacts on the profitability of the pension schemes.

5.3 Conclusion

The objective of the study was to establish the effect of asset allocation on the financial performance of pension funds in Kenya. From the study it was found out that financial performance of the pension funds were explained by approximately 82.7% of the independent variables taken into account. It was also found out that there is a linear correlation between fund performance and the returns of the various asset

classes with the strongest correlation being between fund performance and returns from offshore investments and government securities.

The balance of about 17.3% not accounted for in the model is due to other factors such as the manager's selection, timing of investments and securities selection within as asset class and whether the manager adopts an active style of management of the fund. It is therefore very important for the trustees to note that changing the policy of the fund has a high impact on the variability of returns but this can be reduced by adopting an active management of the fund.

From the analysis it also found that investments in government securities, fixed income and offshore investments was relatively more important than investments in the other investment classes in determining the overall performance of the pension funds. The study also found out that quoted equities, immovable property and other approved assets positively correlated with the financial performance of pension funds in Kenya.

5.4 Recommendations

The study finds that there is need for RBA to relax, to some extent, the quantitative asset restrictions which limits the fund managers' ability to make investment decisions based on the riskreturn analysis. Fund managers should be allowed to exercise active management of the funds without strictly adhering to the investment guidelines provided by RBA, but only use them as a guide. This is due to the time lapse of 14 years from the time the guidelines were developed and by the time this study was done, some variables that were used in the development of the guidelines may have changed and the restrictions of the guidelines may no longer represent the

needs of the industry. The guidelines should therefore be revised to give more weight to the cash asset class.

As the pension fund regulator, the RBA should publish comprehensive industry statistics on a regular basis. This will empower the public with information on the retirement industry performance and thus facilitate making of informed decisions with regards to choosing which pension scheme to join. Financial performance would also improve as fund managers would strive to outperform their peers.

Another recommendation of the study is to compel all trustees of retirement benefit schemes to comply with RBA requirement to attend the Trustee Development Programme, Kenya to ensure that they are able to make concrete investment decisions and actively manage the pension funds in order to create value for the pensioners.

5.5 Limitations of the Study

The study sought to determine the effect of asset allocation on the financial performance of pension funds in Kenya; it was however subject to a number of limitations. These mainly related to the setup of the study relative to the resources available within the research period. Specifically, there was lack of investment and financial information on all sampled schemes from the RBA website effectively resulting in a lower response rate than had been initially anticipated.

The study was restricted to analysis of returns of segregated retirement benefit schemes which account for only 36% of the retirement benefits schemes in Kenya. The balance of 64% invests in guaranteed funds issued by insurance companies whereby it is difficult to determine the asset allocation for each of the guaranteed funds since it is not a statutory disclosure requirement under the Insurance Act.

The study also excluded IPP which cater for persons who do not have access to occupational pension schemes and opt to make personal contributions to the Plans. This is because there is no statutory requirement for the IPPs to submit performance returns to RBA. The same also applies to Umbrella Funds due to the same reason thus the same were also excluded from the study.

5.6 Suggestions for Further Studies

With the standardization of valuation and performance calculation methods and enforcement of declaration and submission of fund returns for all vehicles of retirement savings, similar studies should be extended to include returns for all the schemes in existence in Kenya. The analytical model used in the data analysis of this study used actual weights of assets which vary significantly from scheme to scheme. A similar study should be carried out replacing actual weights of assets with a departure/deviation from the weights recommended by RBA to determine if the same conclusions of the study will still hold.

Further research is suggested on the effect of active fund management versus passive fund management on financial performance. This is by comparing financial performance of funds where fund managers invest in guaranteed schemes only versus those that pursue a diversification strategy.

A similar study should be carried out on pension schemes that have invested in guaranteed funds issued and managed by insurance companies or similarly IPP's and Umbrella Funds, to determine if the same conditions hold if they are included in the sample selected.

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APPENDICES

APPENDIX I: TABLE G

TABLE G OF THE ACT - Pension Fund Investment Guidelines		**Maximum % cap of aggregate market value of total scheme assets**
1	Cash and Demand deposits	5%
2	Fixed deposits, Time deposits and certificate of deposit	30%
3	Commercial paper, corporate bonds, mortgage bonds and loan stocks	30%
4	East Africa Government securities & Infra bonds and East Africa CIS's approved by CMA.	70%
5	Publicly quoted preference and ordinary shares in East Africa and Kenyan CIS's	70%
6	Unquoted shares of Kenyan companies and Kenyan CIS's	5%
7	Offshore investments: bank deposits, government securities, quoted equities, rated corporate bonds and offshore CIS's	15%
8	Immovable property in Kenya and units in Kenyan property trust schemes, Kenyan CMA approved CIS's	30%
9	Guaranteed funds	100%
10	Any other assets	10%

APPENDIX II: DATA

	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9
2008	1.322	0.000	0.028	0.013	0.217	0.215	0.001	0.271	0.246	0.000
	2.000	0.041	0.123	0.024	0.598	0.088	0.000	0.000	0.020	0.008
	2.731	0.000	0.006	0.000	0.067	0.035	0.021	0.000	0.623	0.003
	2.798	0.001	0.022	0.017	0.224	0.110	0.000	0.000	0.156	0.000
	3.145	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.002	0.000
2009	1.204	0.047	0.000	0.018	0.443	0.282	0.000	0.165	0.041	0.001
	2.029	0.003	0.031	0.017	0.653	0.132	0.000	0.012	0.137	0.000
	2.322	0.000	0.018	0.035	0.196	0.346	0.004	0.163	0.203	0.000
	2.444	0.000	0.000	0.006	0.144	0.139	0.004	0.041	0.070	0.000
	2.915	0.000	0.010	0.020	0.257	0.145	0.001	0.039	0.136	0.000
2010	1.204	0.018	0.000	0.035	0.381	0.363	0.000	0.151	0.050	0.000
	1.568	0.000	0.078	0.046	0.467	0.157	0.000	0.013	0.000	0.000
	2.314	0.000	0.019	0.017	0.279	0.000	0.001	0.000	0.471	0.000
	2.330	0.000	0.006	0.019	0.263	0.127	0.200	0.041	0.078	0.081
	2.476	0.000	0.025	0.006	0.256	0.107	0.000	0.026	0.089	0.000
2011	1.477	0.000	0.112	0.017	0.670	0.142	0.008	0.000	0.028	0.000
	2.029	0.001	0.032	0.026	0.560	0.177	0.000	0.034	0.159	0.000
	2.307	0.000	0.051	0.022	0.242	0.203	0.001	0.085	0.207	0.000
	3.073	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2012	2.000	0.000	0.055	0.030	0.488	0.271	0.000	0.066	0.021	0.016
	2.301	0.026	0.079	0.011	0.364	0.279	0.000	0.035	0.180	0.000
	2.322	0.000	0.065	0.018	0.200	0.398	0.002	0.115	0.177	0.000
2013	2.029	0.000	0.037	0.019	0.440	0.336	0.000	0.040	0.121	0.000
	2.444	0.000	0.042	0.008	0.104	0.076	0.000	0.021	0.084	0.000
	2.476	0.000	0.038	0.029	0.253	0.158	0.000	0.026	0.113	0.000
2014	1.380	0.000	0.007	0.102	0.545	0.193	0.000	0.016	0.000	0.000
	2.583	0.000	0.013	0.050	0.305	0.314	0.000	0.007	0.182	0.080
	2.657	0.000	0.021	0.017	0.325	0.162	0.000	0.000	0.432	0.000