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

BY

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D63/71443/2014

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE IN FINANCE, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

OCTOBER 2016

DECLARATION

I declare that this research project is my original work and has not been submitted for an award of a degree in any other University for examination/academic purposes.

SIGNED:………………………   DATE:……………………………

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This research project has been submitted for examination with my approval as the University Supervisor

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ACKNOWLEDGEMENT

DEDICATION

I dedicate this study to my dear wife for her encouragement, inspiration and support accorded to me throughout the research process and to my colleagues, friends for their support.

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LIST OF ABBREVIATIONS

ANOVA   Analysis of Variance

CAPM   Capital Asset Pricing Model

CMA   Capital Markets Authority

EMH   Efficient Market Hypothesis

IPS   Investment Policy Statement

MPT   Modern Portfolio Theory

NSE   Nairobi Securities Exchange

PMPT   Post Modern Portfolio Theory

REITS   Real Estate Investment Trusts

RBA   Retirement Benefits Authority

UK   United Kingdom

USA   United States of America

ABSTRACT

The relationship between asset allocation and financial performance of pension funds is critical in determining whether asset allocations as selected by fund managers of pension schemes is critical in influencing the financial performance of pension funds resulting in better retirement benefits for pensioners. The main objective of this study was to determine the effect of assets allocation on the financial performance of pension schemes. This research was conducted through a descriptive survey and utilized secondary data available from RBA and Fund Managers. From the study, it was 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 overall fund performance and returns in Equities, fixed deposit and Government securities. From a population of 1297 schemes in Kenya, the findings of the study showed that asset allocation explained 89.5% of the variability of fund performance and that 10.5% was due to other factors such as the manager's selection, timing of investments and securities selection within as asset class and the management style adopted by the fund managers of the fund. The study recommended that a related review 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.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The Trustees of Pension Schemes are mandated to hold the assets of the scheme under the trust and ensure prudent investment decisions for the benefits of the members of their schemes. The Trustee duties comprise but are not limited to, developing investment practice that will guide the investment process and determine whether to invest in a segregated fund or guaranteed fund. In Kenya, segregated funds account for 41% of the pension schemes but 88% of the overall assets. The Trustees monitor fund manager's actions and investments to see if the schemes objectives are being met and evaluate the manager's performance (Were, 2012).

Trustees are required to develop and Investment Policy Statement (IPS) to guide them in the allocation of assets of pension scheme funds. All asset allocation in the IPS must be within the prescribed limits set by the RBA regulations. Trustees often engage investment advisors to provide technical advice on the investment policy and later mandate the fund managers to implement these policies. Having developed the IPS, the Trustees of a pension fund will rely on it to supervise, monitor and evaluate the performance of the schemes investment assets.

The IPS will dictate what proportions of the various asset classes available will the Fund managers invest in. Pension fund trustees as well as fund managers, therefore, have a vital role to oversee that regulation, investment policies, and asset allocation classes adopted encourage increased financial performance of pension funds to conform to the retirement income objectives of the pension plan (Bikker & Dreu, 2009). Trustees are expected to

engage the practice of investment prudence and exercise care, skill, and caution when dealing with scheme's investments.

1.1.1 Asset Allocation

Based on the study by Gibson (2000), allocation of the asset refers to execution of an investment strategy attempting to contain the risk involved by checking on the percentage of the assets of an investment based on the directions, objectives and the period set by the investor. Most of these strategies adopted in allocating assets have varying effects on the returns for pension schemes.

Asset allocation is a time-honoured investment strategy showing how managers of mega pension funds and numerous other professional investors pursue their target of outperforming the market or counterchecking their investment assets to their anticipated liabilities. In addition, it serves investors well since plenteous evidence exists showing the soundness of the method. In the ideological space of the strategy, Meucci (2007) argues asset allocation does not provide real answers in selecting one investment over another and does not necessarily protect investors from an economic catastrophe.

The relationship between asset allocation and financial performance of pension funds is critical in determining whether asset allocations as selected by Trustees of pension schemes is critical in increasing pensioners' wealth in Kenya. Given that the primary reason for the establishment of pension schemes is to alleviate old age poverty for their members, it is paramount that the pension funds be invested in manner that is consistent with the spirit of increased performance of the fund (Were, 2012).

In Kenya, the RBA Act sets out maximum limits for which a pension fund can invest in a particular asset class. The limits specified are as follows; East Africa government securities 90%, Fixed and Time deposits 30%, Fixed income 30%, listed Equities 70%, unlisted equities 5%, offshore investments 15%, property 30%, private equity 10% and any listed derivatives or REITS. The Act does not, however, place a floor for asset allocation (RBA, 2000).

Strategic and tactical asset allocations are the main types of asset allocation strategies. Strategic asset allocation portfolio funds will be divided through set directives given by the managers (Sharpe, 1996). It involves the asset managers deciding on the asset classes as well as the specific securities with superior performance in invest in. Tactical asset allocation involves division of funds with regards to investor's short-term forecasts (Lofthouse, 2001).

Asset allocation lies on the principle that different assets operates distinctively in a different economic conditions of the market (Besley & Prat, 2003). These researchers further indicate that the notion that different classes of the asset translates into returns that don't link fundamental is a justification for asset allocation, thereby it can be realised that diversification reduces the overall risk in terms of the variability of returns for a given level of expected return.

1.1.2 Financial Performance of Pension Schemes

Van Horne et al. (2010) defined that pension performance is the earnings that members receive after an investing their contributions. Portfolio return refers to the overall reward that an investor gets by investing in a certain pool of assets or securities within a given

environment or market risk. With individually acceptable levels of portfolio risk (Modigliani & Pogue, 1974), Investors try to maximize their expected portfolio returns. A high-level portfolio is one that gives the best or optimum return.

1.1.3 Asset Allocation and Financial Performance of Pension Schemes

Several studies have recorded diverse conclusions. One argument is that diversification has no significant impact on performance though it has an impact on risk-adjusted performance (Chang & Elyasiani, 2008).

Another view is that diversification has had a significant effect on the performance of financial institutions especially during economic crisis (Kuppuswany & Villalonga, 2010). Among the effects on performance is that it increases efficiency (Rotich, 2011). With those of the argument that diversification is inefficient saying that additional product come with additional cost hence they do not increase on performance. The extent to which diversification increases or decreases shareholders value in profit-oriented firms is still unclear. This clings on performance (Goddard et al., 2008).

1.1.4 Pension Schemes in Kenya

The Retirement Benefits Authority does not specify the assets in which scheme should invest in but rather provides guidelines on the asset classes. The pension scheme has the discretion to select the assets that they deem best suitable to give the best optimal return in accordance to the scheme's fundamentals. The investment regulation in Kenya requires that unless a scheme opts to invest in a guaranteed fund (deposit administration) or pooled fund, investments of pension scheme funds require to be allocated guided by a stipulated

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percentage limit for each asset class. Pension schemes are also required to rebalance their investment portfolio within the ninety days (Retirement Benefits Regulations, 2000).

1.2 Research Problem

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 give the link between asset allocation and financial performance of pension funds Kiplagat (2014) sought to explain the 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.

However, there have not been any studies done locally that explain the nature of the relationship between asset allocation and financial performance of pension schemes clearly showing the effect of inclination to the broader asset class categories. This study intends to address the research question: is there a relationship between asset allocation and financial performance of pension funds in Kenya?

1.3 Objectives of the Study

To determine the effect of asset allocation on the financial performance of pension schemes

1.4 Significance of the Study

The study will help Board of Trustees of Pension schemes to know the extent to which investing in various asset classes have an effect on the performance of their funds. The

investment guidelines issued by the Retirement Benefits Authority give limits to investments within certain classes of assets. It is yet to be evaluated whether these rules are optimal. Findings of this study will be helpful to the regulator (RBA) as it will contribute towards the formulation of better policies and rules that will be relevant in guiding investment of pension funds in various asset classes in Kenya.

Researchers within the pension industry will also find the study useful as it will increase the existing body of knowledge and provide a basis for carrying out further research in Kenya. Its results will be utilised as reference materials in advanced research in the same field in future. Future studies will rely on qualitative information that shall be obtained to conduct an extensive quantitative research in a similar area.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter will discuss an overview of the literature reviewed providing a basis for the study and the concepts. The chapter also highlights theories guiding the study, previous studies conducted and new developments related to the study and provide an overview of key ideas for the study.

2.2 Theoretical Review

Asset allocation and pension fund management are based on a number of theories upon which the proposed study is anchored on.

2.2.1 Modern Portfolio Theory

The modern portfolio theory is rooted to mean-variance portfolio analysis. This theory was championed by Markowitz (1952) through his paper "Portfolio Selection". Markowitz realised different correlations between assets could be utilised to minimise the risk in a portfolio or to obtain additional return with reduced risk. He developed a model, which unified the interactions between different investment opportunities, and the correlation between them, and with an aim of optimizing the ratio between risk and return.

The importance of MPT in this study is that it implies a rational investor will not invest in a portfolio if a second portfolio exists with a more favourable risk-expected return profile. The Pension Scheme fund managers will, therefore, assemble assets in their portfolio that are likely to record high portfolio return within any given level of risk.

2.2.2 Post Modern Portfolio Theory

Recent advances in portfolio and financial theory, together with today's increased electronic computing power, have overcome these limitations. The resulting expanded risk/return paradigm is known as Post-Modern Portfolio Theory (PMPT). Thus, MPT becomes nothing more than a special (symmetrical) case of PMPT, (Sortino & Satchell 2001).

2.2.3 Capital Asset Pricing Model

The concept of the 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). This theory is relevant in that as it implies Pension Scheme fund managers should institute efficient portfolios that offer maximum returns and minimum risks.

2.3 Determinants of Financial Performance of Pension Funds

Various factors determine the performances of pension funds. These are discussed below:

2.3.1 Securities Selection

Security selection is the construction of a portfolio of individual securities that are perceived to have the potential to outperform the average security within an asset class. It is, however, extremely difficult to consistently pick the best or worst securities.

2.3.2 Portfolio Weights

Block & French (2002) showed 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 discovered that fund managers held consistency in constructing and maintaining equal weights in management on retirement benefits funds.

2.3.3 Variability of Returns

French (2012) stated that volatility (risk) of an asset class affects the returns of an investment. Low volatility is associated with potential low returns while the vice versa is also true. The researcher advocates the asset allocation for retirement savings should consists of a wide range of assets including cash, bonds, property and equities (shares), whose overall impact will be to have a medium risk portfolio. The age profile of a pension scheme contributes to the degree of risk that a pension scheme would be willing to take in order to realize optimum returns.

2.4 Empirical Review

According to the study by Gibson (2000) done on the importance of the strategic asset allocation decision on pension fund performance in the United Kingdom (UK), a determination that 96% of the total variation in monthly portfolio returns could be explained by the normal asset class holdings across funds on average.

More importantly, the normal asset class holdings explained more than half of the variability in portfolio returns for the fund with the smallest contribution to return variability from this component as was regarded in the study.

Based on other researches done by Isbitts (2010), it was found that the aggregate fraction of the total of pension fund performance variation attributable to the strategic asset allocation at 93.6%. Therefore, it was summarized that an investment policy (i.e.
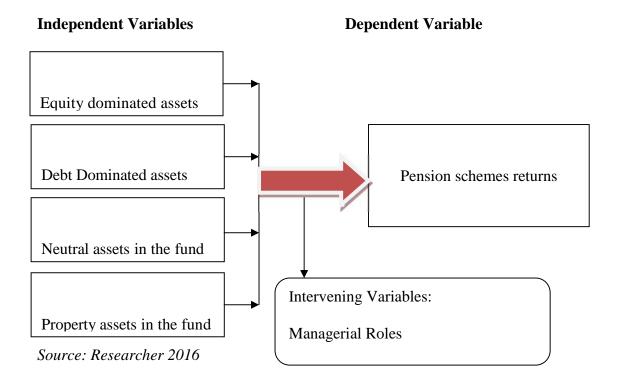
the strategic asset allocation) dominates investment strategy (market timing and security selection). These studies prove the positive relationship that exists between these two variables, asset allocation, and pension fund performance.

Mutuku (2011) conducted a study to determine the relationship between portfolio composition and risk and return among fund management firms in Kenya. The research was studied with a descriptive survey. The population of the study was 18 registered fund managers operating in a Kenya at that time. Both secondary data and primary data were used to carry out this study. The secondary data was collected from the registered fund managers' financial statements, other published sources and annual returns to regulatory authorities like Capital Markets Authority and Retirement Benefits Authority. Primary data was collected by a drop and pick questionnaire. The study concludes that the fund management firms determine the percentage return of the investment portfolio. The method used by the firms in determining percentage rate of return was geometric or time-weighted returns.

Omonyo, (2003) observed that risk and return are the key considerations in investment practices of Pension Fund Managers in Kenya. Current income is not their fund objective; however, the most predominant objective will be capital preservation. Pension schemes also differ from collective investment schemes as they have a minimum funding requirement and they are established to invest funds to meet pension liabilities. That is they are invested with the expectation that they will be sufficient to pay pension entitlements when these are due.

Nguthu (2009) in his research to establish how much asset allocation policy contributed to the returns level retirement benefit fund in Kenya found 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, the timing of investments and managers' selection explained the remainder. The study was done on 40 segregated occupational schemes in Kenya and returns analysed using regression analysis and descriptive statistics.

2.5 Conceptual Framework

Independent Variables   **Dependent Variable**

| Equity dominated assets |

| Debt Dominated assets | Pension schemes returns

| Neutral assets in the fund |

| Property assets in the fund |

Intervening Variables:

Managerial Roles

Source: Researcher 2016

2.6 Summary of Literature Review

Knight (2002) discusses two different techniques usually used in managing funds, passive and active. Passive portfolio management entails a "buy and hold strategy" whereby the weights on the securities constituting the portfolio are set at the beginning

of the investment period and are held constant until the end with only minor changes. The assumption is that the market is efficient and there is the homogeneity of expectations. In contrast, the assumption of active management is that they expect the markets to give them best returns.

Both the theoretical and the empirical theory indicate a need for further research to be done on asset allocation and return for pension schemes. Fund managers are required to strike a balance between risk and return and on choosing the most efficient investment vehicle; they can put in place in order to realize optimal returns. There has not been a conclusive study that has been carried out that advice them on the ideal portfolio mix from the allowable asset classes, which earn the highest return.

There has therefore not been any conclusive study carried out on pension schemes in Kenya to determine the extent to which asset class allocation contribute to the overall performance of pension schemes in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The section plots the strategy, techniques, and modalities that were utilized in information gathering. It likewise covers look into outline, assurance and distinguishing proof of the populace, test estimate, inspecting plan, examining methodology, the instruments of information accumulation, legitimacy and dependability of information gathered, wellsprings of information, techniques for information gathering and strategies for investigating the information. Look into technique, as indicated by Kothari (2004), is an efficiently approach to take care of the examination issue

3.2 Research Design

The study will be conducted through descriptive survey technique because it is more effective and efficient in collecting bulk information in the shortest time possible. The utilization of reviews in social monetary truth discovering, Kerlinger (1978) argues that information given is more exact. Moreover, Cohen and Manion (1980) express that the goal of review research is to accumulate information at a specific point in time and utilize it to depict the way of existing conditions. Since the point of this study was to research impact resource allotment on the monetary execution of benefits supports in Kenya, an overview plan was most appropriate for the study.

3.3 Population

Ngechu (2004), states that target population refers to a collection of specimens under study. From the above definition, it is ensured that interest population is homogeneous. The group

targeted for this test comprised all of the registered pension schemes in Kenya as at December 2015. According to the RBA website, there were 1297 registered schemes as June 2015. Four hundred and sixty-eight (468) of these are 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 used for the study.

This study used stratified random sampling technique. The technique is more preferred because it's more to the point and very versatile (Kothari, 2008). The pension schemes were divided based on their fund values as at December 2015. The sample selected included schemes that had fund values of at least Kshs 250M. 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 250M 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 because different fund managers use different asset allocation techniques and portfolio valuation method. A common fund manager will thus allow 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 was 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 was assessing the contribution of the various assets classes to the overall financial performance of the fund, guaranteed funds, and pooled funds were eliminated from the sample for purposes of this study.

3.5 Data Collection

The test depended on secondary data. The secondary data for this study was quantitative in nature and was gathered from the yearly financial statements of the pension funds. These statements are normally maintained in documents kept by the fund managers, scheme Trustees, scheme administrators and RBA as filed returns. For the intention of this test, the financial performance data was sourced from the RBA 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 study reviewed secondary data for any three years depending on data availability and access.

3.6 Data Analysis

Inferential analysis was carried out to find out the relationship between the independent variables and the dependent variable of the test. This involves determining a coefficient and multiple regression analysis. The coefficient of determination was conducted to measure the wellness of statistical model in predicting future outcomes. That 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 analyse the returns of the fifty (50) pension funds within three (3) years in a particular pension fund. The three (3) years was used to get an average return for the specific fund. The returns of the pension fund for a number of years was considered 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 represents 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,

β is the regression coefficient

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

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

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

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

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

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

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

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

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X9 represents weight of any other approved assets not mentioned above = (total other assets divided by the pension fund total assets value), and

is the error term.

3.6.2 Test of Significance

The test of significance for the regression model was determined using ANOVA. The determination coefficient, ($r2$) being the square of the test correlation coefficient between outcomes and predicted values. As such, it clarifies the extent to which transformation 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 AND FINDINGS

4.1 Introduction

In this chapter, the data analysis findings are presented. The data of the sampled schemes was collected and analyzed in response to the objective of the study. The objective of the study was to establish the relationship between asset allocation and financial performance of pension funds in Kenya. 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 sufficed for the study. The findings presented in this chapter demonstrate the relationship between asset allocation and financial performance of pension funds and illustrates further the extent to which each asset class contributes to the overall financial performance of the fund.

4.2: Discussion of the findings

Quantitative data was collected for each of the pension schemes and analyzed in two stages. First, tests of significance and descriptive statistics, such as correlations, the R-Square (Coefficient of Determination), Analysis of Variation (ANOVA) and Coefficients. The purpose of this stage was to corroborate the findings by Nguthu (2009). The second stage was to determine the extent to which each asset class contributes to the overall financial performance of the fund by estimating the relative importance of the regressors in the linear regression. The output and findings of the analysis have been presented the subsequent sections.

4.3: Correlation analysis

Correlations between the dependent variable (Pension Scheme financial performance) and the independent variables (weight of cash and demand 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) was determined. This analysis was to locate the critically important asset classes on which financial performance is dependent.

Table 4.1: Correlation Coefficients

	the weight of cash and demand deposits in the scheme	the weight of fixed and time deposits in the scheme	the weight of fixed income in the scheme	the weight of government securities in the scheme	the weight of quoted equities in the scheme	the weight of unquoted equities in the scheme	the weight of offshore investments in the scheme	the weight of immovable property in the scheme	Weight of any other approved assets
the weight of cash and demand deposits in the scheme	1								
the weight of fixed and time deposits in the scheme	0.331	1							
the weight of fixed income in the scheme	0.351	0.651	1						
weight of government securities in the scheme	0.411	0.491	0.613	1					
Weight of quoted equities in the scheme	0.657	0.538	0.878	0.745	1				
weight of unquoted equities in the scheme	.894	0.814	0.768	0.392	0.742	1			
weight of offshore investments in the scheme	0.834	0.642	0.745	0.734	0.513	0.774	1		
weight of immovable property in the scheme	0.764	0.592	0.501	0.733	0.619	0.894	0.975	1	

weight of any other approved assets	0.693	0.782	0.848	0.949	.889	0.962	0.841	0.833	1
Pension scheme financial performance	0.424	0.468	0.451	0.446	0.601	0.727	0.958	0.862	0.875

*. Correlation is significant at the 0.05 level (1-tailed).

The analysis above shows that the variable weight of offshore investment in the scheme has the strongest positive (Pearson correlation coefficient =.958) to the pension schemes financial performance. In addition, the weights of any other approved asset had a strong, positive correlation (Pearson correlation coefficient =.875) to pension schemes financial performance.

Also noted from the analysis of the findings was that the weight of immovable property scheme was strongly correlated to pension schemes financial performance. The study also noted that the weight of unquoted equities was strongly correlated (Pearson correlation coefficient =.727) to pension scheme financial performance. A (Pearson correlation coefficient =.601) was established between the weights of quoted equities in pension schemes financial performance.

A strong positive Pearson correlation was established between pension scheme financial performance and the weight of fixed and time deposit in the scheme. Generally, it was seen that for each of the individual variables there was a significantly positive correlation with the dependent variable and pension schemes financial performance.

4.4: Regression Analysis

The regression analysis results are as follows.

Table 4.2: Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.946[a]	.895	0.836	.47344455

a. *Dependent Variable:* pension funds financial performance.

The above tables analysis shows that the coefficient of determination (the percentage variation in the dependent variable being simplified by the changes in the independent variables) R-square is equivalent to 0.895, as to say, (cash weight and demand 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) when put together explained 89.5% changes in pension funds financial performance.

4.5: Analysis of Variance (ANOVA)

The researcher decided to relate means using analysis of variance. ANOVA results (P-value of 0.001) from table 4.3 implies an existence of 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) and pension funds financial performance.

Table 4.3: Analysis of Variance (ANOVA)

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	3.537	9	.393	1.302	.001
Residual	7.56	40	.189		
Total	11.097	123			

Predictors: (Constant),

Dependent Variable: Pension schemes financial performance

The ANOVA statistics are shown in Table 4.3 presented the regression model significance. An F-significance value of p = 0.001 arrived at showing the probability of .1% existed of the regression model signifying false information. Thus, the model is significant.

Table 4.4: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	11.212	.503		8.346	.004
Weight of cash and demand deposit on schemes	.994	.126	.967	5.133	.002
Weight of fixed and time deposits in the schemes	.622	.308	.440	2.351	.007
Weight of fixed income in the scheme	.901	.075	.241	1.273	.013
Weight of government securities in the schemes	.596	.178	.282	2.031	.032
Weight of quoted equities in the schemes	.845	.275	.221	1.073	.003
Weight of unquoted equities in the schemes	.566	.106	.967	5.103	.002
Weight of offshore investments in the schemes	.723	.396	.516	2.321	.007
Weight of immovable property in the scheme	.891	.278	.242	2.331	.002
Weight of any other asset not mentioned	.798	.075	.241	1.273	.013

a. Dependent Variable: pension schemes financial performance

The following regression result was obtained:

$$Y = 11.212 - 0.994X_1 + 0.622X_2 + 0.901X_3 + 0.596X_4 + 0.845X_5 + 0.566X_6 + 0.723X_7 + 0.891X_8 + 0.798X_9$$

From the model, when other factors (weight of cash and demand 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 11.212.

Holding other factors constant, a unit increase in weight of cash and demand deposit on the schemes would lead to 0.994 (p=.002) in pension scheme financial performance. Also noted is that holding other factors constant, a unit increase in weight of fixed and time deposit in the schemes would lead to a 0.622 (p=0.007) increase 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 result in a 0.901 (p=0.013) rise in pension schemes financial performance. The findings, further, shows that government securities rise per unit in the scheme would result in a 0.596 (p=0.032) increase in pension schemes financial performance. Holding other factors constant, a unit increase in weight of quoted equities in the schemes would result to 0.845 (p=.003) in pension scheme financial performance. Also noted is that holding other factors constant, a unit increase in unquoted equities in the schemes would result in a 0.566 (p=0.002) rise in the pension schemes financial performance.

Also noted from the analysis of findings is that holding other factors constant, a unit increase in weight of offshore investments in the scheme would result in 0.723 (p=.007) rise in pension scheme financial performance. Also noted is that holding other factors constant, a unit increase weight of immovable property would result in a 0.891 (p=0.002) rise in the pension schemes financial performance. Lastly, a unit increase in the weight of any other asset not mentioned will result in a 0.798 (p=0.013) unit rise in the pension funds financial performance.

These results shows that when acting jointly, weight of cash and demand 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 would improve pension schemes financial performance.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

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

5.2: Summary of Findings

The test objective to establish the asset allocation effect on the Kenyan financial performance of pension funds. 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, exists a linear correlation between fund execution and the returns of the various asset classes. This was demonstrated by the results of Correlation, ANOVA and Coefficient analyses. The correlation was found to be strongest between pension schemes financial performance and the weight of offshore investments in the scheme.

A further test was performed by analyzing the data using R-Square. The R-Square of the data was found to be 89.5% which indicate that differences in the financial performance of the pension funds were explained by approximately 89.5% of the independent variables taken into account. The remaining 10.5% was explained by other factors that were not under consideration.

The previous study by Nguthu (2009) found that 62% of the return difference was explained by investment policy differences. The increase 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 (weight of cash and demand 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 11.212.

Holding other factors constant, a unit increase in cash and demand deposit on the schemes would result to 0.994 (p=.002) in pension scheme financial performance. Also noted is that holding other factors constant, a unit increase in weight of fixed and time deposit in the schemes would result in a 0.622 (p=0.007) rise in the pension schemes financial performance. Generally, each of the individual variables taken into account influenced the pension schemes financial performance.

5.3 Conclusion

The aim of the test was relationship establishment between asset allocation and financial performance of pension funds in Kenya. From the study, it was found out the existence of a linear correlation between fund execution and the returns of the various asset classes with the strongest correlation being between fund performance and returns in Equities, fixed deposit, and Government securities. The balance of about 10.5% is not accounted for in the model is due to other factors such as the manager's selection, the timing of investments and securities selection within as asset class and whether the manager adopts an active style of management of the fund.

From the findings, it was noted that the easier it is to convert/sell an asset, the most liquid is the asset. Also established is that instruments such as treasury bills and commercial paper from cash and money market 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. Thus, 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.

5.4 Recommendations for Policy

The study finds that there is a need for RBA to relax the quantitative asset restrictions which limit the fund managers' ability to make investment decisions based on the risk-return analysis. Fund managers should be allowed to fully 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 mostly because most of the fund performance is dependent the manager's selection, the timing of investments and securities selection within as asset class and whether the manager adopts an active style of management of the fund and a few is dependent on the investment policies.

From the findings of the study that equities are relatively more important than investments that other asset classes in the determination the overall performance of the pension funds as they were noted to have the highest yield in returns, this study therefore also recommends that fund managers should invest a large proportion the pension funds in equities as they have the most relevance in the determination of fund performance. As per the study fixed deposits are the least significant in the determination of pension fund performance.

The investment guidelines provided by RBA were developed in the year 2000 and have not been revised since 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.

Another recommendation of the study is to compel all Trustees of retirement benefits 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 asset allocation impact on the Kenyan financial performance of pension funds; 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. Given test, main purpose is to identify the effect of asset allocation on the financial performance of pension funds in Kenya, Retirement Benefits Authority considered some information sensitive and confidential and thus forced the researcher to convince them that the purpose of the information is for academic research only and no other intentions.

5.6 Suggestions for Further Studies

With the standardization of evaluation 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 study of this kind 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.

REFERENCES

Asebedo, G., & Grable, J. (2010). Predicting Mutual Fund Over Performance over a nine-year period. *Financial Counseling and Planning,* 15 (1), 1-11.

Besley, T., & Prat, A. (2003). Pension Fund Governance and Choice between Defined Benefit and Defined Contribution Plans. *Center for Economic Policy Research.* Discussion Paper 3955.

Bikker, J., & Dreu, J., (2009). Operating Costs of Pension Funds: The Impact of Scale, Governance and Plan Design. *Journal of Pension Economics and Finance*; Volume (8), 63-89.

Black, F. & Litterman, R. (2014). Asset Allocation: Combining Investor views with Market Equilibrium. *Journal of Fixed Income*; Volume (1), 7–18.

Blome, S., (2007). Pension Fund Regulation and Risk Management: *Results from an ALM Optimisation Exercise*. OECD Publishing.

Bodie, Z., (1990). Pensions as Retirement Income Insurance, *Journal of Economic Literature*; Volume (28), 28-49.

Bodie, Z., Detemple, J. & Rindisbacher, M., (2009). Life Cycle Finance and the Design of Pension Plans. 2009. Boston University School of Management

Brady, J., (2009). Can 401 (k) Plans Provide Adequate Retirement Resources. Pension Research Council. PRC WP2009-01.

Brinson, G.P., Hood, L.R. & Beebower, G. L (1986) Determinants of Portfolio Performance, *Financial Analysts Journal*; 42 (4), 39-44.

Brinson, G.P., Singer, B. D. & Beebower, G. L (2014) Determinants of Portfolio Performance II. *An Update, Financial Analysts Journal*; 47 (3), 40-48.

Brunner, G., Hinz, R. & Rocha, R. (2008). Risk Based Supervision of Pension Funds: A Review of International Experience and Preliminary Assessment of the First Outcomes. *World Bank. Policy Research* Working Paper 4491.

Campbell, H., & Viceira R. (2002). Modern Portfolio and Investment Analysis" *Pension Fund Performance Analysis Journal*, 34 (9), 27-51.

Chandra P. (2009). Investment Analysis and Portfolio Management. Third Edition, Tata Mc Graw –Hill Publishing Company Limited, New Delhi.

Chansarn T. (2005). Global Pension Funds Optimization, *Financial Analysts Journal,* 13(4), 10-17

Cheong, S.T. (2007). Effects of expenditures and size on mutual fund performance. Singapore Management Review.

Davis E. P. (2000). Pension Funds Financial Intermediation and The New Financial Landscape. Pensions Institute. Cass Business School. Available: http://www.pensions-institute.org.

Davis E. P. (2005). The Role of Pension Funds as Institutional Investors in Emerging Market Economies. Korean Development Institute Conference. Population Ageing in Korea: *Economic Impacts and Policy Issues*.

Fischer, B. & Litterman, R. (1992) Global Portfolio Optimization. *Financial Analysts Journal*, 1992.

Forbes A. (2016) Pension Schemes Performance Investment Survey Alexander Forbes Consulting Actuaries Schemes Survey

Gitundu, E. (2009) Assessment of Asset Selection and Performance Evaluation: A case of Pension Funds in Kenya. An MBA Research Project submitted to Egerton University.

Hinz, R., Rudolph, H. P., Antolin P. &Yermo, J., (2010). Evaluating Performance of Pension Funds, World Bank.

Ibbotson, R.G. and Kaplan, P. D. (2000). Does Asset Allocation Policy Explain 40, 90 or 100 percent of performance? *Financial Analysts Journal,* 17(9), 54 – 72.

Kagunda, T. (2011). Asset Allocation by Fund Managers and the Financial Performance of Assets in Kenya. Unpublished MBA Project, University of Nairobi".

Kiplagat, M.K., (2014). The Effect of Asset Allocation and Performance of Pension Funds in Kenya, Unpublished MBA Project, University of Nairobi.

Loft House, J., (2001). Returns-Chasing Behaviour of Mutual Funds, and Beta's Death, *The Journal of Financial and Qualitative Analysis*, 37 (4), 559-594.

Markowitz, H., (1952). Portfolio Selection: *Efficient Diversification of Investments*, John Wiley & Sons, New York.

Mugenda, M., (1999). Research Methods, Quantitative and Qualitative Approach, Nairobi, Acts Press.

Mutuku, N., (2011). Impact of Market Volatility on Kenyan Pension Scheme Long Term Asset Allocation and Risk Tolerance, RBA Research.

Mutuku, N.,(2010). The Impact of Global Financial Crisis on the Kenyan Retirement Benefits Industry, RBA Research.

Nguthu (2009). The Effects of Asset Allocation on Retirement Benefits Fund Performance in Kenya, Unpublished MBA Project, University of Nairobi.

Nicholas A. M., (1984). Pension Funds: More diversification. *Canadian Public Policy and Analyze de Politiques*, 10 (1), 47-53.

Omondi, E.A., (2013). The Relationship Between Asset Allocation and Performance of Pension Funds in Kenya. Unpublished MBA Project, University of Nairobi.

Puttonen,V. (2005). Asset Allocation in Finnish Pension Funds. *Journal of Pension Economics and Finance.*

Reilly, F. K. & Brown, C. K. (1997). Investment Analysis and Portfolio Management. Sixth Edition. Fort Worth: The Dryden Press.

Retirement Benefits Authority (2013). Prudential Guideline for Capacity Building of Trustees of Retirement Benefits Schemes. Available at www.rba.go.ke.

Retirement Benefits Authority (2015) Registered Fund Managers. Available at http://www.rba.go.ke/service-providers/registered-fund-managers

Rudolph, R.D (2010). Foundations of Financial Management. Mc Graw Hill International.

Sharpe, W. F. (1964) Capital asset prices: A Theory of Market Equilibrium Under Conditions of Risk, *Journal of Finance*, 19, (3), 425-442

Sharpe, W. F., (1996), Mutual Fund Performance, *Journal of Business*, 39, 119-138

Tonks, I. (2005) Pension Fund Management and Investment Performance. Clark and Manuel. *The Handbook of Pensions*, 456-480.

Van Horne J.C & Wachowicz J.M Jr. (13th Ed). (2010). *Fundamentals of Financial Management*, 13th Ed. Pearson Education Limited.

Walker, E. & Iglesias, A. (2010). Financial Performance of Pension Funds: An exploratory study.

Were Monica (2012) Role of Trustees in Investments of Retirement Benefits Schemes Assets Seminar, Norfolk Hotel

APPENDIX 1

INVESTMENT GUIDELINES

Item	Categories of Assets	Maximum percentage of aggregate market value of total assets of scheme
1	Cash and Demand Deposits in institutions pooled Banking Act of the Republic of Kenya	5%
2	Fixed Deposits, Time Deposits and Certificates of Deposits in institutions licensed under the Banking Act of the Republic of Kenya	30%
3	Commercial Paper, Corporate Bonds, Mortgage Bonds and loan stocks approved by the Capital Markets Authority non-listed bonds and other instruments issued by private companies, provided that the bond or instrument has been given investment grade rating by a credit rating agency registered with the Capital Markets Authority, and collective investment schemes incorporated in Kenya and approved by the Capital Markets Authority reflecting this category	30%
4	Kenya, Uganda or Tanzania Government Securities and infrastructure bonds issued by public institutions and collective investment schemes incorporated in Kenya, Uganda or Tanzania and approved by the Capital Markets Authority reflecting this category	90%, or 100% in the case of scheme receiving statutory contributions
5	Preference shares and ordinary shares of companies	70%

	quoted on a stock exchange in Kenya, Uganda or Tanzania and collective investment schemes incorporated in Kenya and approved by the Capital Markets Authority reflecting this category.	
6	Unquoted shares of companies incorporated in Kenya and collective investment schemes incorporated in Kenya and approved by the Capital Markets Authority reflecting this category	5%
7	Offshore investments in bank deposits, government securities quoted equities and rated Corporate Bonds and offshore collective investment schemes reflecting these assets	15%
8	Immovable property in Kenya and units in property Unit Trust Schemes incorporated in Kenya and collective investment schemes incorporated in Kenya and approved by the Capital Markets Authority reflecting this category	30%
9	Guaranteed Funds	100%
10	Any other assets	10%

Source: Retirement Benefits Act