EVALUATION OF FINANCIAL PERFORMANCE ON PORTFOLIO HOLDINGS HELD BY PENSION FUNDS IN KENYA

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Abstract

Pension funds are established with the sole purpose of ensuring that contributors have access to regular or lump sum income upon retirement. However, the financial performance of pension funds in Kenya seems wanting thus raising doubts whether they can be able to achieve their primary objective. This study was carried out to evaluate the effect of financial performance on portfolio holdings held by pension funds in Kenya. The study took the form of a survey involving 1,262 pension funds in Kenya. A sample of 35 pension funds was selected for this study through judgmental sampling. The study utilized secondary data from pension fund administrators. The data collected relates to pension fund portfolio, the price schedules, the investment reports, advisory from the fund advisor and the audited financial accounts. The data was analyzed using inferential statistics to determine if there is a significant statistical difference in the asset classes using the p-value <0.05. Comparisons between composition of the various pension fund portfolio and the weighting of the various asset classes vis a vis the returns declared were also made to find out if diversification of the portfolio affects the financial performance of the pension funds. The research findings reveal that discretionary and non discretionary investment mandates to the fund managers affect the performance of the pension funds. The most pertinent concern was lack of trustees to clearly understand and put proper benchmarks to monitor the performance of the funds.

Keywords: Portfolio holding, pension funds and financial performance

145

Introduction

In constructing a portfolio of assets, pension funds seek to maximize the expected return from their investment given some level of risk they are willing to accept. Portfolios that certify this requirement are called efficient portfolios. Fabozzi and Modigliani (2009). An investor holding a portfolio of treasury securities until the maturity date faces no uncertainty about monetary outcome. The value of the portfolio at maturity of the securities will be identical with the predicted value; the fund bears no price risk. In the case of a portfolio composed of common stocks, however it will be impossible to predict the value of the portfolio at any future date. The best a pension fund can do is to make a best guess or most likely estimate, qualified by statements about the range and likelihood of other values.

Van Horne et al (2010) assert that a portfolio holding is a combination of two or more securities or assets, the various asset classes that a fund has invested in. These are guided by the Retirement Benefits Authority (RBA) guidelines on the maximum percentages of asset classes that a Scheme may hold. These are; Local equities 70%, Cash and demand deposits 5%, Fixed deposits 30%, treasury bonds 90%, Offshore 15%, Unquoted equities 5% and property 30%. Genesis Kenya (2013).

There are various theories used in portfolio management. The theory of liquidity preference holds that long-term securities should provide higher returns than short-term obligations because investors are willing to sacrifice some yields to invest in short-term maturity obligations to avoid the higher price volatility of long term bonds. The segmented market/preferred habitat/institutional or the hedging pressure theory, asserts that different institutional investors have different maturity needs that lead them to confine their security selections to specific maturity segments. Other theories include total portfolio theory, capital market theory, capital asset pricing model (CAPM) and the Markowitz portfolio theory. Reilly and Brown (2006).

According to Chandra (2009), the most important decision in portfolio management is the asset mix decision. This is concerned with the proportions of stocks (equity shares and units/shares of equity oriented mutual funds) and bonds (fixed income investment vehicles in general) in the portfolio. The appropriate stock-bond mix depends mainly on the risk tolerance and investment horizon of the pension fund. Generally pension funds pursue an active stance with respect to security selection. For stock selection, pension funds commonly go by fundamental analysis and/or technical analysis. The factors that are considered in selecting bonds (or fixed income instruments) are yield to maturity, credit rating, term to maturity, tax shelter and liquidity.

Pension Performance

Van Horne et al (2010) define pension performance as the earnings that members receive after investment of their contributions. These vary from one pension fund to another. A portfolio return is 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). Sharpe, et al (2003), superior performance in a pension fund may resort from good luck in which such performance may not be expected to continue in the future. On the other hand, superior performance in the past may have resulted from the actions of a highly skilled investment manager. Conversely, inferior performance in the past may have been the result of bad luck, but it may also have resulted from excessive turnover, high management fees or other costs associated with an unskilled investment manager.

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. Buying undervalued stocks and selling overvalued stocks and locking gains on interest bearing assets like government's securities and corporate bonds. Some of the errors made by pension funds during investments include; inadequate comprehension of returns and risk, vaguely formulated investment policies, naive extrapolation of the past, cursory decision making (base their decisions on tips and fads , rather than on thoughtful, quantified assessment of business), untimely entry and exits, high costs (trading excess fully and spending a lot on investment management) over-diversification and under-diversification and having wrong attitude towards losses and profits (Chandra, 2009).

For pension funds to maximize returns, they may need to adopt some good traits of successful investing; Have patience, contrary thinking (they may go with the market during incipient and intermediate phases of bullishness and bearishness but go against the market when it moves towards extremes but never follow the crowd or a wave), have composure (relying more on hard numbers and less on judgment influenced by emotions of greed and fear), be flexible and open to the macroeconomic conditions. Trustees also need to be decisive. For measuring or evaluating the performance of a portfolio it is necessary to consider both risk and return.

Kenya pension industry has heavily invested in the Nairobi Stock Exchange (NSE). (FSSR, 2013), in 2013, the pension funds in Kenya were 1,262 in number with a membership of 17 million members. The pension coverage stood at 15% the total formal labour force. The assets held by the funds stood at Kshs. 548.8 billion, of this Kshs. 436.7 billion were managed

by fund managers and Kshs. 82.1 billion held by the National Social Security Fund (NSSF), the balance being invested in properties managed by the Schemes. According to RBA Act 197, it is a requirement that all pension funds in Kenya must have a fund manager, a custodian and an administrator. The fund must have a minimum of four (4) trustees, and a maximum of nine (9) trustees for a Defined Benefits (DC) scheme. The member elected trustees must not be less than half of the board composition. The remaining are sponsor nominated trustees. The minimum number of trustees for the Defined Benefit (DB) scheme is three (3) trustees, two thirds of which must be sponsor nominated trustees with a maximum number of nine (9) trustees. The Pension fund must be registered with RBA. They must have an Investment Policy Statement (IPS) and the policy must be reviewed every three (3) years. The fund must appoint an auditor.

Research Problem

Jones (1994) asserts that evaluating portfolio performance is about considering how well the various portfolios have performed. If pension A consistently outperforms pension B, other things being equal, then members in pension A are better off. Alternatively if neither A nor B outperforms an index fund, other things being equal, neither pension fund is better off. The performance of a pension fund is mainly measured by the return generated by the fund. This return is generated from the various assets in the portfolio. Chandra(2009) argues that based on the pension fund objectives and constraints, the pension fund has to specify the asset allocation, that is, the pension fund has to decide how much of the portfolio has to be invested in each of the following asset categories, cash, bonds, stocks, real estate, precious metals and others. It is not clear if the choice of the assets in a portfolio affects the performance of the pension fund.

Available research reveals that there are variations in the returns declared to members of pension funds every year. Bulow (1982) conducted a research to try and establish what the corporate pension liabilities are. As much as he looked at the pension liabilities, he did not dwell much on the investments of the portfolio holdings and the returns made by the pension funds. Wambua (2010) surveyed pension coverage of informal sector workers in Nairobi County. He did not look at how the pension funds invest the contributions. The survey was limited to Nairobi County. Mwangi (2011), focused on risk management strategies and returns by pension funds in Kenya. The researcher concentrated on the strategies and returns. Karanja (2011) looked at the competitive strategies applied by fund managers in Kenya. The research was on the fund managers and not the specific pension funds.

Kairu (2011) researched on the impact of risk management on profitability of the Kenya Power and Lighting Company Staff Retirement Benefits Scheme. This was a case study of a specific pension fund and did not spread the research across the various pension funds in Kenya. Were (2011) researched on the determinants of the amount of benefits accessed before retirement age in Kenya. She did not look at the contribution of each of the asset classes to the overall benefit received by the pension fund members. (Onyango 2011) researched on the relationship between investment strategies and financial performance of pension funds in Kenya but did not look at the contribution of the specific asset classes to the overall performance of the Scheme. Based on the available literature, there seems to be a gap to address the effect of financial performance on portfolio holdings which this study seeks to bridge.

Literature review
Theoretical Review
This research was based on the following theories, namely Markowitz portfolio theory, Capital market theory and the total portfolio theory.

Markowitz Portfolio Theory
It's one of the theories used in portfolio management. It is based on several assumptions regarding investor behavior, that investors consider each investment alternative as being represented by a probability distribution of expected returns over some holding period, that investors maximize one period expected utility and their utility curves demonstrates diminishing marginal utility of wealth, that investors estimate the risk of the portfolio on the basis of the variability of expected returns, that investors base decisions solely on expected return and risk, so their utility curves are a function of expected return and the expected variance (or standard deviation) of returns only, that for a given risk level, investors prefer higher returns to lower returns, similarly, for a given level of expected return , investors prefer less risk to more risk. The fund manager has to have a very good understanding of the member's age profile in a pension fund before determining the asset classes to expose them. This is also determined by the risk appetite of the trustees.

Younger staff will be exposed to risky assets with higher returns like equities while older members will be exposed to less risky assets with higher certainty of returns like government and corporate bonds. The coupon payments will act as good cash flows to pay the members resigning and the pensioner's liability. Reilly et al (2006), under this assumptions a single asset or portfolio of assets is considered to be efficient if no other asset or portfolio

of assets offers higher expected return with the same (or lower) risk or lower risk with the same (or higher) expected return.

Capital Market Theory

It contends that there should be an upward-sloping market line, meaning that greater return should be accompanied by greater risk. Van Horne et al (2010) showed that during periods of high economic uncertainty, such as recessions, the risk premiums on bonds increased substantially because the risk of default for low-rated obligations increased. Capital market theory also relates the risk-return behavior of fixed income securities to other financial assets. This is key to pension funds investments when determining the asset class mix. Fixed-income securities are considered relatively conservative investments, we would expect them to be on the lower end of the capital market line.

The Total Portfolio Theory

It confirms that the performance of bonds has improved even more than indicated by returns alone because bonds offer substantial diversification benefits. In an efficient market, neither stocks nor bonds should dominate a portfolio, but some combination of them should provide a superior risk-adjusted return compared to either one (assuming low correlation between stocks and bonds). Reilly and Wright (2004) showed that, due to the low correlation between bonds and equities (about 0.27), the combination of stocks and bonds in a portfolio vastly improved the return per unit of risk. This would end up maximizing the overall return to pension fund members. The bond portfolio balances both the liquidity and return in the portfolio. The Scheme purchases long term bonds that yield high returns and also purchases shorter bonds that can easily be sold to lock in gains and provide the required liquidity.

 (IPS. 2012), the maturity of the assets is timed to match the maturity of the Scheme liabilities. Genesis (2012), the bonds yield varies from day to day depending on the current market conditions.

Portfolio Holdings and Pension Performance

Bodie, Kane and Marcus (2008) indicate that the expected return of a portfolio is the weighted average of the component security expected returns with the investment proportions as weights. Sharpe et al (2008), bonds and stocks are different kinds of securities, with quite different characteristics. Making an investment decision between them should not be based on some simple one-dimensional comparison. In many cases this decision, known as asset allocation will involve investing in both bonds and stocks.

Sharpe et al (2003) assert that the returns show the results obtained by purchasing a long-term government bond, holding it for a period of time then replacing it with another long term government bond. The total returns include both income and capital gains or losses. The correlation between stocks and bond returns has been low, and during various multiyear sub periods it has even had negative values. This low correlation indicates that portfolios combining both stocks and bonds benefited considerably from diversification. More recently however, correlations have been considerably more positive than in the past, owing in part to common reactions to changes in inflationary expectations. Consequently, the gains from diversification have recently been reduced substantially. Nevertheless, from the historical record it would be reasonable to expect that, in future bonds will offer diversification benefits.

According to Jones (1994), investing is a two-dimensional process based on return and risk. When a portfolio performance is evaluated, the total return to the investor is relevant. A proper measure of this return is the total return (TR), which captures both the income component and the capital gains (or losses) component of return. Forbes (2013), a survey conducted by Alexander Forbes Consulting Actuaries in December 2013 had 30 Schemes participating. The analysis was based on returns of pension funds invested in segregated vehicles with both discretionary and non discretionary mandates.

Levy (2008), the higher the variance (or standard deviation) of the return on an asset, the higher the risk and therefore the higher the required risk premium. Hence the variance of the returns on an asset appears to measure the risk of that asset. Although this is true if an investor holds only one asset, the variance is not the sole measure of risk if the investor holds more than one risky asset in his or her portfolio (like the case of pension funds), in a portfolio, the risk of an individual asset is a function not only of its own variance but also of its degree of dependency with the other assets in the portfolio.

The degree of dependency measures how the returns on two assets move together. If both go up or down together, they are said to have a positive dependency, if one asset goes up when the other goes down, or vice versa, we say they have negative dependency. Sharpe et al (2003), the more negative the degree of dependency between the assets in a portfolio, the lower the risk of the portfolio, and hence the lower the required risk premium for each specific asset. Risk averse trustees will require a risk premium on the risky portfolio held. That decreases as the degree of dependency between the risky assets in the portfolio decreases.

Bodie et al, (2008) argue that to obtain reasonably reliable performance measures, we need to maximize the number of observations by taking more frequent return readings and specify the exact makeup of the

portfolio to obtain better estimates of the risk parameters at each observation period. Rather than focus on risk adjusted returns, practitioners often want simply to ascertain which decisions resulted in superior and inferior performance.Levy and Thierry (2005), superior investment performance depends on an ability to be in the "right" securities at the right time.

Empirical Review

Different scholars have studied different aspects on portfolio holdings on pension funds. Local studies done on pension schemes include; Karanja (2011), objective of his study was to identify competitive strategies and challenges faced by the fund managers in Kenya. The study found out that most fund managers were offering similar products with a higher concentration on equity funds. The study concluded that none of the firms was a distinct market leader in application of competitive strategies. Fund managers applied a mix of competitive strategies which were in line with the porters (1980) generic strategies. The study focus was on the investment managers and not the specific individual pension funds that they manage. Wamagata (2011) study sought to establish whether risk management practices at the Kenya Power and Lighting Company Staff Retirement Benefits Scheme (KPLC SRBS) has had an impact on profitability of KPLC SRBS.

Onyango (2011), researched on how investment strategies affect financial performance in Kenya pension funds. Pension funds are managed in diverse ways, with governance policies distinguished according their board composition and size, how the trustees structure their investment decisions, what restrictions are placed on their investments and whether they have independent performance evaluations.

Wambua (2010), sought to establish the extent of coverage by retirement benefits schemes of informal sectors in Nairobi County and to investigate the factors that determine the coverage by retirement benefit schemes of informal sector workers in Nairobi County, Kenya. The study revealed that only a small extent of the informal sector workers in Nairobi County was covered by retirement /pension schemes. Mwangi (2011) study was to determine the various risk management strategies given the different investment returns reported by various schemes considering the prevailing Kenyan environment.

Were (2011), discussed the determinants of the amount of benefits accessed before retirement age in Kenya but did not confirm if members accessed the best value of their benefits. The research was carried out from the existing pension administrators across Kenya. So far I have not come across a study that has looked at an evaluation of financial performance on portfolio holdings held by pension funds in Kenya. It will therefore be

interesting to do an evaluation on the financial performance of portfolio holdings held by pension funds in Kenya.

However, various studies (Grubel and Fadner, 1971; Lessard, 1974; Solnik, 1973) have shown that there are significantly lower correlations among returns on securities in different national markets. International diversification of pension funds may reduce risk, or increase returns, or both. The intention of the study was to bring an argument to the Canadian government to increase the 10% limitation on pension funds investments offshore. He zeroed on the offshores and not the entire pension fund portfolio. Strzeleckib (2013) looks at pension reforms as an instrument of poverty protection in old age in Poland, a case of the defined contribution system. This is similar to what the Kenyan government is doing through the NSSF Act 2013. However Strzeleckib does not give details of how pension is invested in Poland.

Arno and Franziska (2013) research on the preferences for redistribution and pensions. The researcher indicates that, people do not prefer the maximin rule, but rather favor a utilitarian justice concept appended with a safety net for the poorest. Another result is that people are willing to accept income inequalities as long as these are due to choices for which people can be held accountable. In the second type of situation, individuals make choices in front of the veil of ignorance and know their position. Experiments show that preferences for redistribution are strongly dependent on a person's own position.

Forman and Murrah (2006), the retirement system can be thought to have four pillars. These four pillars each contribute to a standard of living for households throughout their retirement. The first pillar, Social Security, will be unable to pay full benefits as scheduled in law without additional financing after 2041. The second pillar, employer-provided pensions, currently covers less than half of U.S workers, and the extent to which these pensions replace career wages in the future is uncertain. Meanwhile, private wealth, which is the third pillar, is being called upon to stretch over a longer and longer spans of life spent in retirement.

## Research Findings
Portfolio Holdings Performance

The study sought to establish the performance of pension funds based on an analysis per asset classes. The results are illustrated in table 1 below.

Table 1: Fixed Income

Size of the fund	3 months (%)	1 year (%)	3 year (%)
Small	0.6%	6.4%	9.6%
Medium	1.1%	8.8%	11.2%
Large	0.5%	8.1%	12.0%

The findings as illustrated in table 1 above reveal that large pension funds earned the highest returns on fixed income with a return of 12.0% over a 3 year period. Small pension funds performed least over the entire period under consideration. Over 3 month period and 1 year period medium funds earned the highest return of 1.1% and 8.8% respectively but with a small range of 0.6% and 0.7% respectively against the large funds. There was less range on returns across the small, medium and large schemes over a 3 month period at 0.6%, 1.1% and 0.5% respectively.

Figure 1: Equities
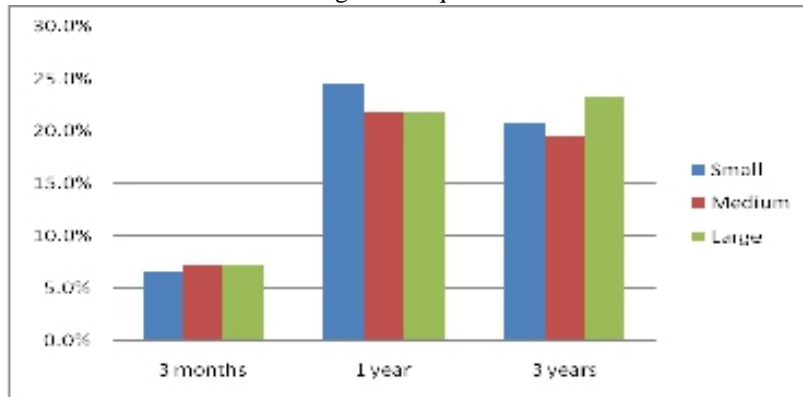
The findings from the study established that both small and large pension funds experience high return on equity than medium size pension funds. This is supported by the results in figure 2 where small pension funds registered approximately 24% return on equity and large pension funds registered approximately 22% return on equity.

Table 2: Offshore

Size of the fund	3 months (%)	1 year (%)	3 year (%)
Small	4.3%	20.3%	5.7%
Medium	4.5%	16.9%	2.7%
Large	5.1%	19.1%	2.5%

The study further revealed that there was a big range in performance of off shore over the various financial periods under consideration. The best performance was noted at 1 year period for all funds. Small funds earned the highest return at 20.3% and 5.7% over one and three year period respectively. Large funds earned the least return of 2.5% over a 3 year period. Medium and large funds performed worst with a return of 2.7% and 2.5% respectively over 3 year period. Small fund performance was worst over 3 month period with a return of 4.3%. Generally performance over 3 month and 3 year period was dismal.

Performances Based on Asset Allocation

Table 3: Average Returns based on asset allocation

	Fixed income			Equities			Offshore		
	SF	MF	LF	SF	MF	LF	SF	MF	LF
Average	4%	11%	12%	21%	19%	23%	6%	3%	3%
Range of returns	8%	9%	16%	11%	5%	13%	6%	7%	6%
Lowest	4%	8%	9%	18%	18%	17%	3%	-1%	0%
25th Percentile	10%	10%	10%	18%	18%	20%	4%	0%	1%
Median	11%	11%	11%	21%	19%	23%	4%	2%	3%
75th Percentile	11%	11%	11%	22%	21%	24%	8%	5%	3%
Highest	12%	17%	26%	29%	23%	30%	9%	6%	6%

The findings reveal that the average return for small funds was 4% on fixed income, 21% on equities and 6% on offshore. Equities had the highest range on returns with the highest return being 29% and the least being 18%. However overall the least return on equities of 18% was higher than the best return on offshore and fixed income at 9% and 12% respectively. The range on returns for both offshore and fixed income was modest at 6% and 8% respectively. Fixed income highest return was 12% and offshore 9%. The median return was 11% on fixed income, 21% on equities and 4% on offshore.

The average return on medium funds was 11% for fixed income, 19% for equities and 3% for offshore. Equities recorded the highest return on medium funds at 23% return. Offshore earned the least return of -1%. The range on returns was most significant in fixed income at 9%, recording a high of 17% and a low of 8%. Equities least return of 18% was higher than the highest return recorded by all other asset classes. The median return was 11% for fixed income, 19% for equities and 2% for offshore. The average return for large funds was 12% for fixed income, 23% for equities and 3% for offshore. Equities recorded the highest return at 30% with offshore recording the least return at 0%. The highest range on returns was on fixed income with a range of 16% and the least was on offshore at 6%. The median return was 11% on fixed income, 23% on equities and 3% on offshore.

Comparisons

The study sought to compare the means of the asset classes and returns based on a three year period. The findings are presented in table 4.

Table 4: Means of the Asset Classes Returns

Asset class	Return 3 months	Return 1 year	Return 3 years	Weighted Average
Fixed income	0.70%	7.60%	10.82%	6.37%
Equities	6.94%	22.93%	21.31%	17.06%
Offshore	4.69%	18.86%	3.57%	9.04%
Average return	4.11%	16.46%	11.90%	10.82%

The results above indicate that fixed income which is considered a long term asset, earned better returns when invested in long term at 10.82% compared to 0.7% return earned over a 3 month period. Return over a 1 year period for fixed income was moderate at 7.60%. Equities which are considered a short term asset gave a higher return of 22.93% over a one year period. Return over a 3 year period for equities was 21.31%. There was a significant range on the return by off shores. One year period gave the highest return at 18.86% compared to 3 year period at 3.57% and 3 months 4.69%. Overall one year period gave the highest return at 16.46% for the entire portfolio holdings. For the asset classes weighted average returns, equities gave the highest return at 17.06% with fixed income earning the least return at 6.37%. In all the periods 3 month, 1 year and 3 year, equity gave the best returns at 6.94%, 22.93% and 21.32% respectively. Offshore gave a better return, 4.69% and 18.86% than fixed income, 0.70% and 7.60% for the 3 month and 1 year period respectively. However fixed income had a better return 10.82% over 3 year period compared to offshore at 3.57%. The range in offshore and fixed income returns was significant in all periods.

Pension Funds Performance

Table 5: distribution of returns

	3 months (%)	1 year (%)	3 year (%)
Average	3%	13%	13%
Range of returns	4%	15%	16%
Lowest	1%	7%	9%
25th Percentile	2%	12%	11%
Median	3%	13%	13%
75th Percentile	3%	14%	14%
Highest	6%	22%	25%

It is evident from the research findings that the weighted average return of the participating pension funds was 3% quarterly, 13% over one year and annualized 13% over three years. However an interesting observation was the significant range in returns with the lowest one year return being 7% and the highest being 22%. The same was observed with the

three year return, the lowest being 9% and the highest 25%. The median was 3% over 3 month period, 13% for both 1 year and 3 year return. Three year period gave the highest return at 25%. Quarterly return gave the least return of 1%.

Correlation between asset allocation and returns
  To determine if there is any significant association between the portfolio holdings and the financial performance, a correlation for all the selected variables using the spearman's rank coefficients of correlation was conducted. The findings reveal that there was no significant correlation for fixed income allocation and returns at 3 months, 1 year and 3 years. In Equities, there was significant inverse correlation of -0.339 between the allocation and the returns at 1 year but none at 3 months and 3 years. There was also a moderate positive correlation of 0.461 between offshore and returns.

Regression Analysis
  The study sought to test if there was any significance relationship on financial performance of different asset classes based on the asset allocation. The dependent variables were the returns at third year and the independent variables were the asset allocation on the asset classes.
  The model used was:

$$\text{Return on Asset } (3^{rd} \text{ year}) = \text{Constant} + X_1 \text{ (Fixed income allocation)} + X_2 \text{ (Equities allocation)} + X_3 \text{ (Offshore allocation)} + \mathcal{E}$$

The results are as follows:

Table 6: Regression results

Independent variables	Fixed income returns			Equities returns			Offshore returns		
	Parameter Estimate	Standard Error	P Value*	Parameter Estimate	Standard Error	P Value*	Parameter Estimate	Standard Error	P Value*
Intercept	.011	.050	.825	.296	.102	.009	.048	.084	.574
Fixed income alloc.	.040	.041	.333	-.232	.083	.011	.087	.068	.213
Equities Alloc.	.245	.135	.084	.131	.275	.638	-.141	.225	.537
Offshore Alloc.	-.104	.172	.550	.143	.349	.686	-.363	.286	.219

*P-value figures are the probabilities of significance based on the standard errors.

  From the table above, it is clear that the coefficient indicates that the asset allocation on asset classes will contribute significantly to the returns on equities at the end of three years.

Conclusion

The research findings show that discretionary and non discretionary investment mandates to the fund managers affect the performance of the pension funds. The most pertinent concern was lack of trustees to clearly understand and put proper benchmarks to monitor the performance of the funds. RBA has noted the gap and issued a prudential guideline for capacity building of trustees of pension funds pursuant to section 26(3) and 55(3) of the retirement benefits Act.

Asset allocation requires a sophisticated approach in order to balance between the returns from the asset classes, the period of reporting and the maturity of the pension fund liabilities. Lack of liquidity in a pension fund can be catastrophic especially to a pension fund that pays monthly pension to pensioners. The fund is required at all times to have money to pay pensioners. The alternative is to outsource the service through purchase of annuities from insurance companies to the retiring members. Administration costs of pension funds must also be keenly monitored in order not to erode the returns earned from the investments.

The research highlights the potential to improve the efficiency of pension funds to achieve their ultimate objective of providing income replacement in retirement by choosing the right portfolio holdings that will optimize returns of the pension funds. This is done in consideration of the dynamic pension fund needs and maturity of pension liabilities through member's resignations and retirement. Trustees must also consider the risk exposure to the members of the pension funds and exercise their fiduciary responsibility within the limits of the RBA regulations.

From the research, equities performed better compared to all other asset classes under study. Equities performed better in large pension fund compared to medium and small funds. Offshore performance was the least for all pension funds and especially in the medium pension funds. Pension fund may want to reduce their exposure into offshore unless well convinced of the expected returns. If a pension fund must invest in offshore, it should only be for 1 year period. Equity performed better in 1 year and 3 year period compared to 3 month period. The highest return was from pension funds that invested over long term period of 3 years. This may be because the funds were able to overcome the fluctuations during the other periods. The least return was from the investments over a 3 month period. These clearly inform the pension funds to invest in long term. Small funds performed poorly in fixed income. Generally fixed income performance was best for 3 year period. From the analysis it is clear that portfolio holding has a significant effect on the financial performance of a pension fund in Kenya. Therefore it is very critical for a pension fund to consider the asset mix in the fund.

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