Unmasking the drivers of equity asset allocation: the case of Tanzanian pension funds

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Abstract
The role of this research manuscript was to examine the drivers or determinants of pension funds’ investment in risky assets, particularly the paper analyzed Tanzanian pension funds investment in equities as a risky asset proxy variable. Since the financial crisis of 2007 exposed the globe into a painful pension crisis culminated by the dominance of risk shifting investment incentives over risk management once in most pension plans, until to date the information about which incentives characterize Tanzanian pension funds investment practices was simply not adequate.

Using both quantitative and qualitative research approaches, the later employing interview, observations, and survey questionnaires to collect primary data from a sample of 100 stakeholders, while the former supplemented the missing qualitative information and involved a panel of four pension funds’ secondary data from 2003 through 2011 obtained from their audited annual reports. Upon econometric analysis using R-software, risk bearing capacity, funds maturity, and a share of active employees were the explaining variables towards pensions’ investment in equities, concurrent with risky shifting hypothesis. The Tanzanian social security regulatory authority (SSRA) should intervene and advice the plans to tilt their investment strategies towards safe assets for the benefit of current and future tax payers.

Keywords: Pension Fund, Risk Shifting, Risk management, Equity and Multi-Index model.

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1.0 Introduction

Since the introduction of pension systems in Tanzania, the Tanzanian pension industry has grown steadily and at June 2011 the pension plans under study controlled over Tshs 4.0879 trillion in pension savings, accounting for one firth of total assets in the Tanzanian financial system. Almost all Tanzanian employees and employers are continuously required to contribute a minimum of 10% of their gross salary to an eligible pension plan. Despite the pension fund industry size and its importance, public policy settings that virtually guarantee the industry to grow at a minimum pace rate, up to date little empirical econometric analysis of the overall investment practice of Tanzanian pension industry, or relative performance of various units within the pension industry. The current study seeks to evaluate the investment practice of Tanzanian pension funds by analyzing the relationship between risk taking (equity investment), and pension funds investment characteristics from 2003 up to 2011. This research work attempts to address two important Tanzanian public policy questions: firstly how Tanzanian pension industry performed in terms of risk taking (equity investments as a proxy variable) and (ii) the significant drivers of pension funds risk taking, for example, are factors like fund maturity, risk bearing capacity and the demographic profile of pension funds participants, influence risk shifting investment practice as opposed to risk management practice?

The motivation of putting forth the first question was to impart a clear awareness of the risk taking investment behavior for Tanzanian pension funds. Existing world studies have provided evidence that pension funds around the world are indeed pursuing risk shifting investment strategies instead of risk management once at the expense of future tax payers, Bodie, Light, Morck and Taggart (1985) and Joshua Raul (2008). Whereas using an equity percent as a measure of risk taking, conclusions by Nancy Mohan and Ting Zhang (2011), Janko Gorter and Jacob A. Bikker (2011) and Divya anantharaman (2011) supported the argument that pension plans follow risk off setting strategies in bad times as opposed to risk shifting theories. However, their analysis is limited to the developed nations equity investments managed. A limitation of the above studies is that they just focused on only pension plans residing in developed nations where the levels of plan sophistication are to the extreme. Unlike the existing literature, this research work dives on equity investment practice of Tanzanian pension plans as one of developing nations. Hence, an important contribution of this research work is the utilization of a large panel data covering the big four pension funds in Tanzania. The main evidences of the study are that Tanzanian funds pursued risk shifting investment strategies, when their liabilities came due, share of active employees increased and during their risk bearing capacity stability, they tended to invest heavily in equities consistent with the risk shifting hypothesis. The climax of this paper comes with the following caveats; the risk taking practice could be influenced by plan sponsor directed investments. A second explanation is that risk taking by pension plans in Tanzania could be overestimated due to omitted variable bias. A final explanation for the presence of risk shifting investment practice could lie in the possibility that data-reporting methodologies systematically differ across pension funds in Tanzania.

The remainders of this research work are structured as follows. In the following section the paper summarizes the empirical drivers of risk taking investment strategies in pension funds. Section three describes the data and econometric methodologies adopted. The results are reported in section four; conclusion and recommendation are in section 5.

2.0 Literature review

Huang et al. (2010) investigated mutual fund risk shifting with respect to fund performance, motivations and mechanisms. They found that funds that increased risk had lower returns than those with stable risk levels. In addition, those funds expecting higher returns from risk shifting are more likely to do so and to suffer from especially lower returns. Agency conflicts rather than investment opportunities most likely motivated fund risk-shifting behavior in these funds. Funds shift risk levels due to, First if there is a general agency conflict between fund advisers and shareholders. Second, mutual funds also change risk levels by adjusting portfolio compositions to capitalize on time varying
investment opportunities. Unlike skilled Portfolio managers those with inferior skills are more likely to shift risk because they think they have market-timing abilities or they lack confidence in their stable portfolio trading strategy. A mutual fund has defined positive risk-shifting behavior if its most recently acquired securities are more risky than those acquired earlier. Funds that increase risk the most, perform significantly worse with negative risk-adjusted returns than funds with stable risk levels. Risk-shifting behavior is the result of poor portfolio manager skill or of agency conflicts in delegated investment management.

The potential role of mutual fund agency conflicts in risk-shifting behavior differs across funds with different shifting benefits. Expected fund adviser profits increase with higher expense ratios and assets under management. First, funds change equity securities cash allocations, and second, they change exposure to systematic risk (low to high betas). Then, funds change exposure to idiosyncratic risk (concentrated portfolios and/or industries). All those mechanisms are important in explaining risk-shifting behavior, but the negative performance consequences are primarily significant because they increase idiosyncratic risk. Reductions in cash holdings and increases in systematic risk only lead to mild performance reductions. Nancy Mohan and Ting Zhang (2011) using 2001 up to 2009 public plans data obtained from center for retirement research at Boston College and a sample of 126 pension systems for 50 states and District of Columbia. Regressing percentage of total plan assets invested in the equity markets and the pension asset beta as measures of investment risk on funding ratios, lagged plan asset returns, percent of other asset class allocations (%real estate, %fixed income, %alternatives and %international equities) and plan demographics (ratio of active employees to annuitants), while controlling for other variables such as plan size, herding effect and political influence (proxy for economically targeted investments, i.e. ETI), found that unlike private pension plans, public funds undertake more risk at the expense of future tax payers if they are underfunded and have lower investment returns in the previous years, consistent with the risk transfer theory or hypothesis.

Financial constraints strongly affect public fund investment risk, as higher return assumptions (used to discount pension liabilities) are associated with higher equity allocation and beta. Furthermore, pension funds in states facing financial constraints allocate more assets to equity and have higher pension asset betas. They further acknowledged the presence of herding effect, in that a change in CalPERS portfolio beta or equity allocation was mimicked by other pension funds under study. However these findings are similar to that of Bodie, Mørck, and Taggart (1987), Andrade and Kaplan (1998) and Cocco and Volpin (2007), but in general run contrary to that of Petersen (1996) and Joshua Rauh (2007) who found presence of risk management practices in unfunded plans, that is to say financially constrained pension funds tend to tilt their portfolios toward risk free assets while minimizing investments in risky securities. Alexander Dyck and Lukasz Pomorski (2011) using an international survey based response of 842 distinct pension plans sample with 5008 observations and data given by CEM benchmarking, inc. (CEM) a Toronto based global benchmarking firm from 1990 to 2008 found that returns of large funds outperformed small funds by 43-50 basis points yearly, they acknowledged that the outperformance of the large pension funds were mainly due to their huge resource allocation in alternative investments (particularly investments in private equity and real estate) cost savings (via internal management of portfolios) and effective plan governance. Msina Andrew (2011) using qualitative methodology research approach and data from 2008 to 2010 the author found that inflation rate, corporate governance practices, mandatory investment policies, and fluctuating interest rates played a role in explaining the negative investment performance of PSPF and GEPF public pension funds in Tanzania. The author acknowledged the presence of conflict of interest between the pension fund trustees, fund advisers and participants (shareholders) as members of the funds are unaware of the investment strategies, investment performances of every asset class and benefits offered since even Board’s Chairperson and Chief Executive Officers (CEOs) positions of those pension funds are presidential appointees. The findings though can’t be generalized since the study used only three years (2008-2010) study length and just two funds leaving four other pension funds’ useful information unexplored; conversely the research work didn’t show the
sensitivities of the stipulated factors on investment returns performances overtime. Hence the current study intends to cover the gaps identified by extending the analysis across four pension funds in Tanzania, particularly on identifying the primary drivers of risk taking investment practice.

Divya Anantharaman (2011) using 255 unique firms or pension plans and a total of 1469 observations on control variables from 10-K filings by S&P 500 covering year 2002-2008 found that plan sponsors making alternative investments have volatile performance and poor growth expectation suggesting that their move to this assets is probably the last resort to boosting returns and minimizing pension contributions, the author also found a non linear relationship between funding status and alternative investing; in that very underfunded and very well funded plans are less likely to undertake alternative investments (invest in risky assets) than moderately underfunded once contrary to the risk shifting theory or hypothesis. The findings though contradict with that of Bodie, Light, Morck and Taggart (1985) who found that poorly funded plans are more likely to invest in risky assets (equities) but are slightly in line with Frieman (1983), Amir and Benartzi (1999), and Rauh (2008) who re-examined the problem using a panel of data from 1987-2003 ending up with similar evidence rejecting the risk shifting theory or hypothesis. The results can’t be generalized since the paper ignored pension plans from utilities and financial services together with firms’ plans that had insufficient observation for the control variables.

Evan Gatev and Christina Atanasova (2010) using four sources of data and a sample of 355 corporate defined benefit of both privately and publicly sponsored United States (US) defined benefit plans from 1995 up to 2006 found that funded status (a ratio of plan assets over liabilities) had a higher positive impact on risk taking upon publicly owned plans than privately owned once. Their findings were in line with risk management incentives dominating risk shifting incentives in pension plans as documented by Raul (2009). Though they ignored equity investment, which is among, popular risk measures in the reviewed literature such as Nancy Mohan and Ting Zhang (2011), Janko Gorter and Jacob A. Bikker (2011) and Divya anantharaman (2011), and relied on fund’s return volatility and range as a measure of risk taking while controlling for plan size, funded status, benefit level (ratio of benefit paid over total plan assets), plan’s age (log of one plus plan age in years) share of active participants (ratio of active participants over total participants) and others in their cross sectional as well as panel regressions.

Janko Gorter and Jacob A. Bikker (2011) using 18416 observations of pension and insurance funds annual data in the Netherlands over a period of fifteen years (1995-2009) examined the relevance of risk management and risk shifting incentives in these institutional investors. Regressing equity as a percentage of total investment on lagged capital ratio (a proxy for fund’s risk bearing capacity- ratio of net asset value to total asset value), fund size, share of active participants-as argued by Zeldes (2009), Sundaresan and Zapatero (1997) and Bikker et al. (2011) that active participants usually call for fund’s risk taking incentives as a hedge for wage growth of beneficiaries and other control variables found that on average neither risk shifting nor risk management seemed relevant in Dutch pension funds while documenting a positive relationship between capital and asset risk for insurers suggesting dominancy of risk management over risk shifting incentives.

Hypotheses development

Petersen (1996), Christina Atanasova and Evan Gatev (2010) taking benefits (a ratio of total benefit payments over average pension assets) and age (log of one plus fund age in years) as proxies for due liabilities and mature plans, provided evidence that mature funds with large amount of liabilities coming due tend to invest less of their assets in risky assets and allocate more assets in bonds, which assures them of accurately matching the liabilities when realized in the near future. The hypothesized relation here is negative,

Hypothesis 1: Pension funds with more liabilities coming due invest less in risky assets

Share of active employees

According to Sundaresan and Zapatero (1997), Lucas and Zeldes (2009), Bikker et al (2011) as well as Janko Gorter and Jacob A. Bikker (2011),
the share of active employees positively influence the risk taking behavior of funds, simply because the accruing pension liabilities due to real wage growth can better be hedged by funds investing in assets that tend to positively move together with salary increases such as equities and other risky assets. And lastly the higher the number active employees the higher the amount of contribution wealth accumulated by pension funds. Whence the following hypothesis is formulated,

Hypothesis 2: Pension funds with more active employees invest highly in risky assets

Risk bearing capacity

Theory and empirical literature above highlighted the two main competing hypotheses or theories in managing pension funds, one being the risk shifting theory; which argues that managers of financially distressed funds will have an incentive of investing in risky assets. While the second risk management hypothesis or theory argues contrary to the risk shifting, it emphasizes that funds tend to invest in risky securities only when they are financially sound and they ultimately take less risk assets when underfunded due to the fear of bankruptcy costs and in ability of capitalizing on future potential projects when they show up. The hypothesized relation here holds positive impact and it boils down as follows,

Hypothesis 3: Pension funds with more capital take more risky investments

3.0 Research methodology

A statistical study approach as opposed to case study was adopted, together with a panel data of over 64 pension funds branches from four pension funds in Tanzania from 2003 to 2011. This research work is a causal field study since it analyzed the relationship among hypothesized variables. This design is preferable simply because it is less expensive compared to other designs like experiments and simulations. This approach, allowed for an intensive and integrated investigation of a definitive units such as work place or departments in search for comprehensive information. But also the field study helped the researcher use several of data collection methods such as observations, guided interview, survey questionnaires, and archival data.

The significant development of collective investment institutions has aroused major interest among the financial community in general and scholars in particular. This has given rise to numerous studies related to portfolio management in which fund performance has a more prominent role. In this vein, studies by Sharpe (1966), Treynor (1966) and Jensen (1968), pioneers in the assessment of fund performance, proposed various measurements that they apply to a mutual fund. However, several authors, such as Coggin (2000), Collins and Fabozzi (2000) used these methods to measure pension fund performance, finding empirical evidence of positive risk adjusted returns. Nevertheless, these measures have shortcomings detailed in Cumby and Glen (1990), Ferson and Schadt (1996), Sharpe (1992) and Israelsen (2005). To avoid these, Gruber (1996) proposed models that integrate benchmarks representing the type of assets in which the sample funds could invest. In this respect, Cremers et al. (2010) show that models based on benchmarks outperform models based on factors proposed by Fama and French (1993) and Carhart (1997). The recently reviewed literature shows that research studies dealing with pension fund industry tend to use multi-index models rather than factor models proposed by Fama and French (1993) and Carhart (1997) as the norm. Hence this paper intends to build on the same methodologies.

3.1 Camouflage and reckless risk taking

Equity investments theoretically expose liability-driven investors such as pension funds, to considerable income and balance sheet actual volatilities and have therefore been frequently used as measures of risk taking. Building on other prior scholars for example Lee et al. (1997), Cummins and Nini (2002), De Haan and Kakes (2010) who used this measure for insurers, Lucas and Zeldes (2009), Bikker et al. (2011) who used this measure in a study of respectively US and Dutch pension funds, as well as Janko Gorter and Jacob A. Bikker (2011) who used it for an analysis of Dutch’s insurance and pension funds jointly, to the best of researcher’s knowledge, this paper is

4 Share of active employees is the ratio of active members to annuitants (retired) Nancy Mohan and Ting Zhang (2011).

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the first to provide cross sectional analysis of equity allocations for four Tanzanian pension funds from 2003-2011. The empirical model trickles down as follows,

\[
\text{Eq}_{i,t} = \alpha + \alpha_1 \text{Cr}_{i,t-1} + \alpha_2 \text{FS}_{i,t-1} + \alpha_3 \text{Pbr}_{i,t-1} + \alpha_4 \text{ADEX} + \alpha_5 \text{BSIZE} + \alpha_6 \text{LNPlansize}_{i,t-1} + \alpha_7 \text{Sa}_{i,t} + \alpha_8 \text{YD}_{i,t} + \alpha_9 \text{Age} + \beta \text{P}_{it} + \epsilon_{it}
\]

\[\text{.................................(1)}\]

Where, \(\text{Eq}_{i,t} = \) the equity allocation of fund \(i\) in year \(t\). \(\text{Cr}_{i,t-1}\) and \(\text{LNPlansize}_{i,t-1}\) are the lagged capital ratio (which is the difference between fair value of plan assets and projected benefit liabilities divided to total assets) and lagged fund size (measured by total assets size) in logarithms. Lags are included to avoid simultaneity bias problem or feedback effects if any. Ceteris paribus, higher equity in the investment portfolio would prompt pension funds to reserve more capital to attain its solvency risk acceptable level. \(\text{Sa}_{i,t}\) measured the share of active participants (the ratio of active employees to annuitants), \(\text{Pbr}\) is the ratio of benefit payments over average pension assets and \(\text{Age}\) stands for log of one plus fund age in years. \(\text{FS}_{i,t-1}\) stands for lagged funded status measured by the deference between asset and liabilities divided by liabilities. Year dummies (\(\text{YD}_{i,t}\)) were employed to account for equity market developments over the sample period. \(\text{Bsize}\) is the number of board members while \(\text{Adex}\) and \(\text{Fsq}\) are the administrative expenses and funded status squared. Finally, the error term (\(\epsilon_{it}\)) was not allowed to correlate with any of the independent variables above.

### 4.0 Data analysis and discussion of the findings

**Table 1: Empirical evidence of pension funds’ risk taking drivers**

<table>
<thead>
<tr>
<th>Predictives</th>
<th>Dependent variable</th>
<th>Random effect ols Coefficients</th>
<th>Fixed effect ols Coefficients</th>
<th>Random effect ols Coefficients</th>
<th>Fixed effect ols Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNPLANSIZE (-1)</td>
<td>0.159298*</td>
<td>0.125979</td>
<td>0.186118*</td>
<td>0.167659</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.424911)</td>
<td>(0.965681)</td>
<td>(2.679725)</td>
<td>(1.220476)</td>
<td></td>
</tr>
<tr>
<td>BSIZE</td>
<td>-0.012394</td>
<td>-0.01133</td>
<td>-0.013971</td>
<td>-0.014137</td>
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</tr>
<tr>
<td></td>
<td>(-1.118244)</td>
<td>(-0.967144)</td>
<td>(-1.258679)</td>
<td>(-1.170918)</td>
<td></td>
</tr>
<tr>
<td>CR(-1)</td>
<td>0.118053</td>
<td>0.094372</td>
<td>0.170941**</td>
<td>0.169164</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.082044)</td>
<td>(0.71132)</td>
<td>(1.44763)</td>
<td>(1.103835)</td>
<td></td>
</tr>
<tr>
<td>ADEX</td>
<td></td>
<td></td>
<td>-1.53279</td>
<td>-1.579366</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-1.128809)</td>
<td>(-0.978192)</td>
<td></td>
</tr>
<tr>
<td>PBR</td>
<td>0.088951</td>
<td>0.320536</td>
<td>0.004686</td>
<td>-0.085427</td>
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</tr>
<tr>
<td></td>
<td>(0.235975)</td>
<td>(0.446674)</td>
<td>(0.012272)</td>
<td>(-0.102968)</td>
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</tr>
<tr>
<td>SA(-1)</td>
<td>1.09775*</td>
<td>1.453636**</td>
<td>1.302554*</td>
<td>1.256087</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.113154)</td>
<td>(1.336473)</td>
<td>(2.381014)</td>
<td>(1.134255)</td>
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<tr>
<td>AGE</td>
<td>-0.456406*</td>
<td>-0.337306</td>
<td>-0.511662*</td>
<td>-0.435381</td>
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<td></td>
<td>(-1.734559)</td>
<td>(-0.67793)</td>
<td>(-1.923884)</td>
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<tr>
<td>FS(-1)</td>
<td>-0.016751</td>
<td>-0.008658</td>
<td>-0.037562</td>
<td>-0.038243</td>
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<td></td>
<td>(-0.415917)</td>
<td>(-0.172028)</td>
<td>(-0.852596)</td>
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<tr>
<td>FSQ(-1)</td>
<td>-0.006654</td>
<td>-0.005205</td>
<td>-0.006551</td>
<td>-0.006959</td>
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<td></td>
<td>(-0.925808)</td>
<td>(-0.623366)</td>
<td>(-0.917475)</td>
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<tr>
<td>C</td>
<td>-4.606321*</td>
<td>-4.19889</td>
<td>-5.385185*</td>
<td>-4.90654**</td>
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</tr>
<tr>
<td></td>
<td>(-2.505014)</td>
<td>(-1.225013)</td>
<td>(-2.757666)</td>
<td>(-1.399165)</td>
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</tr>
<tr>
<td>R-squared</td>
<td>0.387888</td>
<td>0.397204</td>
<td>0.424807</td>
<td>0.426106</td>
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<tr>
<td>F-statistic</td>
<td>1.821851</td>
<td>1.198064</td>
<td>1.805334</td>
<td>1.175595</td>
<td></td>
</tr>
<tr>
<td>Prob (F-statistic)</td>
<td>0.114306</td>
<td>0.34852</td>
<td>0.124333</td>
<td>0.364498</td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>2.735496</td>
<td>2.731257</td>
<td>2.71732</td>
<td>2.727085</td>
<td></td>
</tr>
</tbody>
</table>

Significant levels are reported with *, and ** corresponding to 5% and 10% significant values.
The values reported in parenthesis are the t-statistics.
4.1 Pension fund maturity and risk taking

**Hypothesis 1:** Pension funds with more liabilities coming due invest less in risky assets

A proxy variable for testing the above hypothesis was pension benefit payment ratio (PBR), the relationship between pension fund maturity (PBR—used as a proxy variable) and risk-taking (EQ), from the analysis in table 14, an insignificant positive relationship on average of about (0.08895) and (0.320536) between pension fund maturity and risk taking in Tanzanian pension plans was found in both random and fixed effect ols panel regressions while ignoring administrative expenses (ADEX) effects as well as controlling for other covariates as stipulated in column 1 and column 2 of table 14. In column two and fourth of the table 14, inclusion of administrative expenses (ADEX) together with other independent variables, pension fund maturity (PBR) negatively associates with pension funds’ risk taking (EQ) but insignificantly with the magnitude of about (-0.085427) in fixed effect ols panel regression approach, on the contrary random effect ols regression shows an insignificant positive association between pension fund maturity and risk taking of about (0.004686). The findings supports the presence of risk shifting hypothesis in the first econometric setting (column one and two) when administration costs are ignored similar to Nancy Mohan and Ting Zhang (2011) who found positive risk taking in US public pension plans, nevertheless the results conflict with risk management theories as evidenced in Dutch pension plans by Janko Gorter and Jacob A. Bikker (2011) using pension funds and insurance annual data in the Netherlands, as well as evidence by Friedman 1983, Amir Benartzi (1999) and Rauh (2008).

In column two and fourth of the table 14, inclusion of administrative expenses (ADEX) together with other explanatory variables, the one period lagged pension funds’ capital ratio (CR) still positively associates with risk taking (EQ) significantly with the magnitude of about (0.170941) in random effect ols panel regression approach, nevertheless fixed effect ols regression shows an insignificant positive association between one period lagged pension funds’ capital ratio and risk taking of about (0.169164).

4.2 Risk bearing capacity and investment risk taking

**Hypothesis 2:** Pension funds with more capital take more risky investments

A proxy variable for testing the above hypothesis was pension funds’ capital ratio (CR), the association between pension funds’ capital ratio lagged by one period (CR—used as a proxy variable) and risk-taking (EQ) as seen in table 14, an insignificant positive relationship on average of about (0.118053) and (0.094372) between fund’s capital ratio and risk taking in Tanzanian pension plans was found in both random and fixed effect ols panel regressions when administrative expenses (ADEX) effects were excluded as well as controlling for other covariates as displayed in column 1 and column 2 of table 14, the findings are robustly in line with risk shifting doctrines similar to Joshua Rauh (2010) in US public pension plans, nevertheless the results conflict with risk management theories as evidenced in Dutch pension plans by Janko Gorter and Jacob A. Bikker (2011) using pension funds and insurance annual data in the Netherlands, as well as evidence by Friedman 1983, Amir Benartzi (1999) and Rauh (2008).

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4.3 Demographic profile and pensions’ investment risk taking

**Hypothesis 3:** Pension funds with more active employees invest highly in risky assets

A proxy variable for testing the above hypothesis was pension funds’ share of active employees ratio (SA) lagged by one period. The association between pension funds’ share of active employees lagged by one period (SA) and risk-taking (EQ) as indicated in table 14, upon analysis a significant positive relationship on average of about (1.09775) and (1.453636) between pension fund’s share of active employees ratio and risk taking in Tanzanian pension plans was found in both random and fixed effect ols panel regressions without administrative expenses (ADEX) effects being
accounted for as well as controlling for other covariates as shown in column 1 and column 2 in table 14. In column two and fourth of the table 14, inclusion of administrative expenses (ADEX) together with other explanatory variables, the one period lagged pension funds’ share of active employees ratio (SA) further positively associates with risk taking (EQ) significantly with the magnitude of about (1.302554) in random effect ols panel regression approach, however this time fixed effect ols regression shows an insignificant positive association between one period lagged pension funds’ share of active employees ratio and risk taking of about (1.256087). The evidences in all econometric framing as narrated in table 14 are completely in line with those of Sundaresan and Zapatero (1997), Lucas and Zeldes (2009), Bikker et al (2011) as well as Janko Gorter and Jacob A. Bikker (2011). The analyzed results shows pensions funds’ in Tanzania inclining themselves towards equities overtime, this move is analogous to what portfolio theory and empirical evidences postulated, that accruing pension liabilities in pension funds due to real wage growth could better be hedged by funds investing in assets that tend to positively move together with salary increases such as equities and other risky assets.

5.0 Conclusion and recommendations

In this research work, the researcher employed a comprehensive dataset of Tanzanian pension funds audited annual reports from 2003 up to 2011 and analyzed the drivers of their risk taking focusing particularly on equity investments as a proxy for risk taking. From the analysis Tanzanian pension funds follow risk shifting strategies in line with risk shifting hypothesis. Their investments in equities appears to be driven by demographic profile of its participants mainly as the share of active employees increased overtime, risk bearing capacity and funds’ maturity. The ascribed analysis depicts their different reaction to domestic equities based on maturing of their participant base and strengthening of their capital ratio. Generally according to portfolio theory and other risk management doctrines, as pension fund matures risky offsetting investments should be their first priority right up front.

In conclusion the current paper work provided evidence that the distinct behavior of Tanzanian pension plans by recklessly investing pension assets in risky assets based upon their maturing participants base, demographic profile and risk bearing capacity at the expense of current and future taxpayers could halt the entire pension industry in the near future.

Tanzanian regulatory authorities such as the already working hard social security regulatory authority should intervene and bring the funds’ conflict of interest into a complete stop, and craft mechanisms that will ensure Tanzanian pension plans don’t adopt risky asset allocation strategies that could potentially camouflage the real costs or value of pension promises made to their clients.

The observed phenomenon have been documented even in developed nations such as U.S. public pension evidenced by U.S.A pension funds guru Joshua Raul (2008) and Nancy Mohan and Ting Zhang (2011), similarly in the Netherlands by Janko Gorter and Jacob A. Bikker (2011) as well as elsewhere across the globe. Future research practitioners could examine the relationship between Tanzanian pension funds asset allocations and liability discount rates, as well as the impact of financial crisis of 2007 towards funds’ risk taking.

References


