PENSION FUND REGULATION: UNINTENDED CONSEQUENCES OF FOREIGN INVESTMENT RESTRICTIONS IN AN EMERGING MARKET ECONOMY

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Abstract

Retirement savings allow investors to earn income after retirement by saving while being part of the workforce. Retirement savings comprise the largest portion of retirement savings and should be safeguarded by effective regulation. To safeguard retirement savings, exposure to foreign asset investments is limited. However, in an emerging economy, limiting foreign asset investments, especially investment in developed markets, could hamper the potential investment returns due to the translation risk. To assess the effect of translation risk, a preservation provident fund was used in the present study to determine whether the returns of this preservation provident fund would be adversely affected by investment allocation regulation. The findings indicated how the translation effect affected the preservation provident fund, illustrating the adverse unintended consequences of investment regulation in emerging market economies. Consequently, regulators should reconsider the maximum allowed foreign asset investment in pension fund regulations to enhance investment returns from foreign asset investments.

Keywords: Asset Allocation, Investment Returns, Longevity, Regulation, Retirement Funds
JEL Classification: E21, E44, E61, G38, I39

1. INTRODUCTION

The life expectancy of people is increasing, with a corresponding increase in spending on medical and health-related services, which makes the provision for old age important (National Treasury, 2012:4). Pension funds allow individuals to retire at a certain age provided the individual has made sufficient financial provision for his or her retirement. In some instances, the pension fund of an individual is also the largest portion of his or her financial provision for retirement. It is paramount that retirement funds grow at a consistent rate in order to ensure that individuals have sufficient savings at retirement. Recently, it was highlighted that individuals in South Africa do not save adequately for their retirement, with only approximately 6% of South Africans being able to maintain their current lifestyles at retirement (Erasmus, 2015; Financial Services Board [FSB], 2015). Currently, legislation allows investors the option to receive the full amount of savings of their provident fund upon resignation or retirement (South African Pension Funds Act, No. 56 of 1956). However, to encourage retirement savings, the South African government attempted to impose a compulsory partial annuitisation retirement savings of a pension or provident fund upon individuals who resign or change employment (Gordhan, 2016). Capital invested in preservation provident funds is limited to the initial amount, after which only investment returns may be reinvested.

Regulation 28 of the South African Pension Funds Act, No. 56 of 1956, prescribes the maximum allowed investments[6] in different asset classes. Gibson (2011:9) presents additional information on the amendments to Regulation 28, informing investors that Regulation 28 does not only prescribe a maximum foreign asset exposure of 25% but also that the "look-through principle"[7] was applied, removing the possibility of circumventing Regulation 28. Bradfield and Munro (2015:417) found that pension funds in South Africa would only enjoy an absolute benefit in their returns if the funds invested the maximum of their allowance in foreign assets. Bradfield and Munro (2015:422) however conclude that, due to drifting, it is possible that funds breach the 25% foreign asset investment limit due to different rates of return of the foreign and domestic portfolios. An unintended consequence of Regulation 28 might be that portfolios have to be restructured if a component in a preservation provident fund significantly outperforms the rest of the components and the asset class limit set by Regulation 28 is breached.

6 See Regulation 28 in the Pension Funds Act, No. 24 of 1956. For this research, it is important to note that only 25% may be allocated to foreign assets.

7 This principle essentially prescribed that funds and individuals within funds should be compliant with Regulation 28. See National Treasury (2011) – Explanatory memorandum on the draft Regulation 28 that gives effect to section 36(1)(BB) of the Pension Funds Act 1956.

The change in the value of a component, such as the portfolio's foreign component, could be due to an exogenous factor, such as a weakening in the exchange rate in the local currency and, due to the translation effect, the 25% foreign investment limit might be breached. The problem this study investigated was to which extent the optimisation of investment returns may be hampered by the limits set by Regulation 28 in the case of preservation provident funds where the investor follows a passive investment strategy. As a result of drifting, Regulation 28 limits could potentially reduce the growth of an investment portfolio as the regulation requires divestment from foreign equities within a year after the limits had been breached (Cairns, 2016).

The remainder of this article will present a discussion of literature on regulation and asset allocation from an international and domestic perspective in section 2. Section 3 will provide a methodological approach in determining the effect that Regulation 28 has on preservation provident fund returns, while section 4 will report on the results of the empirical findings after executing the methodology. Section 5 will bring the article to a close with a conclusion and recommendations for further research.

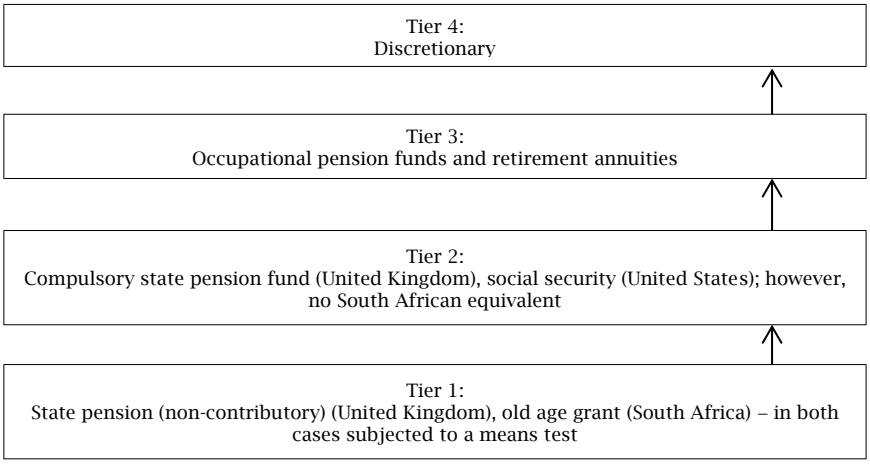
2. LITERATURE REVIEW

The life expectancy of people in the United States of America has consistently increased over a number of decades (Bokemeier, Whitaker & Wilson-Rood, 2011:3). Although South Africans experienced a decline in life expectancy in the 1990s due to high mortality as a result of HIV/Aids, the trend was reversed a decade later with the introduction of an antiretroviral programme by the South African government (Geffen, 2013). According to Wubulihasimu, Brouwer and Van Baal (2015:1), the increase in life expectancy in Europe may be described to progress made in health care, which unfortunately puts significant pressure on the ability of people to fund the increase in health care after retirement. The authors further point out that the increase in life expectancy also accelerates the growth of the elderly population, which puts an additional burden on retirement funds. Although Munnell, Webb and Chen (2015) indicate that individuals can extend the number of years they are able to work due to better health and less physically demanding jobs, people with a low socioeconomic status are in general less likely to be in good health or to be prepared for early retirement due to suboptimal savings and labour choices.

South Africans nearing retirement are unfortunately not in a advantageous position as the country has an official unemployment rate of 26.6%, which indicates that a large component of the population does not have sufficient means to prepare for retirement (Statistics South Africa, 2016). The National Treasury (2011) acknowledges the low savings rate in South Africa and emphasises the important role of pension funds in preparation for retirement and old age. Another concern is that more than 50% of the unemployed is below the age of 35, due to inter alia, a lack of skills and the low economic growth rate and as such, people are dependent on government for social grants, not only in their old age, but also during what should be their most economic productive years. Vivian (2007:679) points out that South Africans generally do not have a safety net to enjoy a reasonable quality of life on retirement if they themselves do not provide for retirement. The contributions and return on the investment of a pension fund are for many people the only provision for pension and old age, which makes the protection of pension fund members that more important (National Treasury, 2012:4).

Provision for retirement differs among countries, and a glaring omission in the South African framework, as pointed out by Vivian (2007:689), is the lack of a state pension fund, comparable with the state pension fund in the United Kingdom and social security in the United States. Figure 1 illustrates the hierarchy of sources of retirement fund income, based on different tiers of investment of a pensioner relying totally on an old age grant or non-contribution state pension compared to discretionary investments to enhance retirement income.

Figure 1. Sources of retirement funding



Source: Own composition

At the first tier, a person with own income below the threshold as set by government, qualifies for an old age grant (South Africa), state pension (non-contributory) in the United Kingdom, or social security (United States) (GOV.UK, 2016b & Social Security Administration, 2016). At the second tier, employees and the self-employed contribute to a state pension fund or social security fund, which provides retirement income on retirement or disability (GOV.UK, 2016a & Social Security Administration, 2016). People can also contribute towards an occupational pension fund and retirement annuities to supplement the national pension fund at the third tier, with discretionary savings on top of the occupational pension fund (GOV.UK, 2016c & IRS, 2016). In the South African context, there is currently no provision for a national pension fund, with the effect that people have to provide for their own retirement (National Treasury, 2011). Although the aged can apply for an old age grant, this is, under current legislation, subjected to a means test, which places the person with some form of retirement savings at risk when the return on the savings amount is too small to ensure a reasonable standard of living, but too high to qualify for an old age grant. The unintended consequence is that people tend to withdraw their savings when leaving employment or retirement, which results in an increased reliance on the government (National Treasury, 2011).

2.1. Types of funds

The South African regulatory framework for occupational pension funds provides for two investment vehicles for pension funds, namely retirement funds and provident funds (South African Pension Funds Act, No. 56 of 1956). Both pension and provident funds can be defined as contribution funds, where the contributions to the funds are invested on behalf of the member. The investment risk resides with the member, which means that in the event that the amount invested is insufficient to provide for a reasonable comfortable pension, the member would need social support or would have to rely on family to make ends meet. In contrast, defined benefit funds guarantee payments on retirement calculated on a set formula, with the risk for the solvency of the fund remaining with the employer.

When people change employment, they have a choice of withdrawing from their existing pension fund, or transferring the whole or a portion of the fund to the retirement fund of the new employer, or into a preservation provident fund. The transfer into the preservation fund is exempted from income tax, and a member is not allowed to make additional transfers into the preservation provident fund. The balance of the fund can thus only grow by capital appreciation and reinvestment of the interest and dividends (Pension Funds Act of 1956).

The South African National Treasury (2011) recognises the importance of retirement savings by individuals as a medium to protect the elderly against poverty and in doing so, to reduce the pressure on the fiscus. The National Treasury further acknowledges the effect that social security transfers and expenditure on public health may have on the solvency of the public sector, which may also induce macroeconomic and financial instability, based on the 537.5% growth in social welfare spending from 1996 to 2011 (National Treasury, 2011). This view is also supported by a study by the South African Department of Social Development on the effect that a large, under-skilled and unemployed youth population may have on the provision of an educational and health infrastructure and other social services and perpetuating intergenerational poverty (Department of Social Development, 2009).

As can be deducted from the discussion above, provision for old age is a concern in developed and emerging countries, and for this reason, the European Insurance and Occupational Pensions Authority (EIOPA) stipulates that the objectives of pension supervisory authorities should at least cover two aspects, namely to protect scheme members and beneficiaries, and to promote sound and prudent management of the Institutions for Occupational Retirement Provision (IORPs) (EIOPA, 2013). EIOPA further indicates that pension supervisory authorities should also consider the potential effect of their decisions on the stability of the financial systems in the European Union, and in time of exceptional movements in financial markets, the potential pro-cyclical effects of their actions. The South African National Treasury (2011) highlights the importance of a sound pension fund industry, and indicates that regulation fulfils an important function to accomplish the objective. The National Treasury (2011) indicates that the South African regulatory environment is focused on protecting the elderly against poverty, facilitating investment, and reducing systemic risk. The South African National Treasury (2011) also indicates in an explanatory memorandum changes to Regulation 28 of the Pensions Fund Act, No 56 of 1956. Generally the rules governing the investments of retirement funds (Investment Policy Statements) stated that that capital growth should exceed inflation for younger members, and income received by older and retired members should at least be equal to inflation. Another concern raised by the authorities is the cost structure of pension funds, as the fees charged by the participants in the value chain could have a significant effect on the return of the pension funds (National Treasury, 2015:3).

2.2. Protection of pension fund members

The members of pension funds are protected by introducing a regulatory framework for the administration and investment of pension funds (OECD 2009). The regulatory framework provides, inter alia, for the registration, governance requirements and investment guidelines for pension funds (OECD, 2009). The regulations of the different OECD countries identify the different asset classes, but do not necessarily place limits on the different investment classes (OECD, 2015:33–34). In contrast, the South African Pension Funds Act of 1956 as amended determines in Regulation 28 that investments should be diversified into different asset classes, with a prescribed maximum percentage per asset class. The classes and limits prescribed in Regulation 28 consist of equities excluding listed property (75%), listed property (25%), offshore assets (25%), commodities (10%),

hedge funds (10%), bank debt (75%), government debt (100%), and cash (100%).

As indicated above, a person who changes employment can transfer a portion or the whole of his or her pension fund contributions and investment income to the retirement fund of the new employer or a provident fund, with the intention to preserve the retirement savings. The risk to the owner of the preservation provident fund is that if the composition of the asset classes performs suboptimally, thus eroding the value of the fund, this might result in lower income at retirement. The value of the fund can further be eroded by transaction costs due to active management of portfolios as indicated in a review of the effect of management fees on the value of New York City pension funds conducted by the Bureau of Asset Management (Evans, 2013:1). The report highlighted that managers of private asset classes, such as private equity, hedge funds and real estate, had a shortfall of $2.6 billion after fees, while a combination of private and public asset class managers net of fees resulted in a shortfall of $2.4 billion (Evans, 2013:1). The South African National Treasury published a technical discussion paper for public comment on the level of charges during the contribution phase in South African pension funds (National Treasury, 2013:3). The concerns raised in the discussion paper relate to the different types, the complexity and the lack of disclosure of charges. The discussion paper also illustrates that recurring fees have a significant effect on reducing retirement benefits. The South African National Treasury (2015:3) issued a press release on the technical discussion paper in which the causes for the high level of charges were discussed, but which also confirmed the negative effect of charges on the retirement funds over the term of the investment.

2.3. Diversification of investments

Markowitz (1952), known for his contribution to modern portfolio theory, highlighted the importance of portfolio diversification. Markowitz (1952) suggests that for a specific level of risk, an investor would expect a specific return and that, if a portfolio is not constructed to attain the specific reward for the risk, another portfolio exists that would provide a higher reward for the same level of risk. Moosa, Tawadros and Hallahan (2015:621) justify the importance of diversification and conclude that risk is reduced when –

- there is a low correlation between portfolios;
- portfolios are better diversified when only assets from developed economies are included;
- multiple assets are included in the portfolio; and
- diversification is better when portfolios are constructed to contain multiple assets from different markets rather than different assets in one market although they may be from different sectors.

Van Heerden and Koegelenberg (2013:51) found from a South African perspective and depending on the time horizon, that a 100% 10-year domestically diversified portfolio would outperform a portfolio of 20 years or 30 years when a maximum of 25% of assets in the portfolio were invested in an internationally diversified portfolio. Bradfield and Munro (2015:417) rejected the findings by Van Heerden and Koegelenberg (2013) when concluding that from a South African perspective, foreign asset allocation of 25% would reduce risk and increase returns, indicating a shift to the left in the efficient frontier when pension funds make use of the maximum allowed foreign asset allocation in a portfolio. Thus, if the prescribed maximums improve the portfolio on the efficient frontier, should emerging market economies with limits in investment in foreign asset classes not remove the restrictive regulation[8] and promote investment in foreign assets in developed economies?

The focus of this study was on Regulation 28 and focused on the diversification of the investment portfolio of a preservation provident fund and not on the regulatory framework in general or on the roles of trustees, although the whole framework is critical in ensuring the protection of members of pension funds. The argument for focusing on a preservation provident fund is that the owner of the fund is allowed to make one contribution only, and has to rely on the capital appreciation and return on investment to ensure a reasonable income from the fund at retirement. Pickworth (2013) reports that Stephen Nathan, chief executive officer of a low-cost investment house, 10X, indicates that passive managers of investment funds can bring fees down from 3% to below 1%, with a significant increase in the value of the fund at retirement. As indicated, the cost can also erode the value of the fund, especially over a long period, while it is assumed that the owner of the preservation provident fund wants to minimise cost by limiting the active management of the fund.

3. METHODOLOGY

A preservation provident fund can be measured by its performance or by the actual fund values. This valuation or performance measure is presented as quantitative data. This research was thus conducted in a non-experimental form, and the data was used to describe a current phenomenon (Kalaian, 2008). The research attempted to explain the effect that regulations on enforcing foreign asset allocation limits have on the performance of a preservation provident fund. To describe the effect of the regulations, the research used a single variable, the dollar/rand (USD/ZAR) exchange rate. This variable was obtained from the South African Reserve Bank (SARB) and is secondary data measured on a ratio scale, allowing the data to be subjected to descriptive and inferential statistical tests (Cooper & Schindler, 2008; Gill & Johnson, 2010; Remenyi et al., 1998). The analysis of descriptive statistics can be in form of measures of central tendency or measures of dispersion (Boslaugh, 2013), while inferential statistics describe the relationship between variables (Heiman, 2011).

In order to determine the effect of regulations on the foreign equity exposure of a preservation provident fund, a fictitious R1 (one rand) portfolio was used. This R1 portfolio was assessed based on

8 Although reference is made to restrictive regulation, the South African banking sector was to some extent resilient against the global financial crisis as a result of the conservative approach of banks to the use of derivatives and the adoption of Basel II at that stage (Erasmus & Makina, 2014).

the changes in growth of the portfolio due to exchange rate fluctuation by introducing two measures: one measure of the portfolio where there is no regulation on the foreign asset exposure (variable: No_Limit_Portfolio) and another variable that was subject to the limit on foreign asset investments (variable: With_Limit_Portfolio). The R1 was the initial investment and also the fictitious maximum exposure to the foreign assets. According to the South African regulations, this would be the maximum invested 25%. Bradfield and Munro (2015:422) argue that it is in the best interest of the fund to make use of the maximum limit (25%) allowed foreign asset exposure as this would result in higher portfolio returns.

The USD/ZAR was used only to explain the translation risk that an investor faces when the investment is subject to maximum foreign asset allocation regulation. The USD/ZAR was obtained for the period 1 April 2011 up to end of 2015. This period is significant as the developing economy on which this research is based adopted new foreign asset allocation regulation on 1 April 2011, when the maximum limit for investment in foreign assets changed to 25% of the total provident fund. The USD/ZAR data was exported from the SARB website to Microsoft Office Excel 2010. The R1 portfolio was assumed to be at the maximum level of foreign asset allocation on 1 April 2011, and the exchange rate was set to the base value of 100 for the same date. By using the base value, a daily growth rate was calculated. This growth rate was multiplied by the R1 to simulate the new investment fund value for the variable No_Limit_Portfolio. The variable With_Limit_Portfolio was calculated by using the same growth rate multiplied by the R1 portfolio with the exception that when the portfolio increased in value to a value above R1, the portfolio was immediately adjusted by subtracting the amount by which the portfolio had grown and restarting the fund at a R1 value. The subtracted amount was assumed to be added to a different asset class within the prescribed investment regulations.

The two variables (With_Limit_Portfolio and No_Limit_Portfolio) were analysed by making use of EViews 9. EViews was used to construct a graph of the two variables, graphically illustrating the performance of the two variables. Thereafter the descriptive statistics were generated, providing the user with the mean, median, mode, maximum, minimum, standard deviation, skewness and kurtosis. These statistics were used to create a box-and-whisker plot, graphically depicting the statistics. Covariance analysis was conducted to determine the relationship between the two variables. The final statistical test was done by conducting inferential statistical analysis.

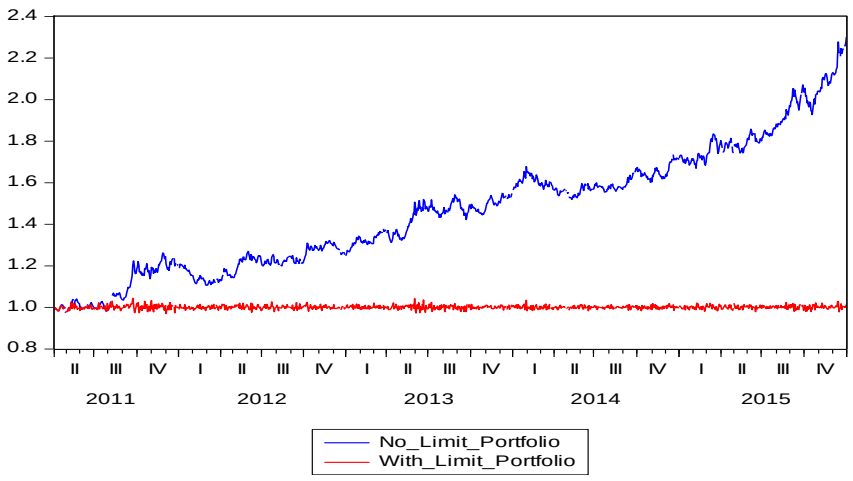
The inferential statistical analysis aimed to determine the Granger causality for the two variables by hypothesising H_0: An increase in the no limit portfolio (L_Nlim) did not cause an increase in the with limit portfolio (L_Wlim). The variables were created by applying the log form to the two firstly explained variables. Thus, L_Nlim = Log(No_Limit_Portfolio) and L_Wlim = Log(With_Limit_Portfolio). The log form was used to adjust skewed data to present it as a normal distribution when reviewed graphically (Benoit, 2011).

The methodology as explained was used to obtain the research results that will be reported in the next section of this research article.

4. FINDINGS

The methodology followed allowed the researchers to deliver insight into and an accurate description of the unintended consequences of foreign asset allocation regulation on the performance of the two fictitious portfolios. These fictitious portfolios were mutually exclusive and fluctuated as the translation effect of the dollar affected the portfolio. One portfolio did not have any regulatory restrictions (No_Limit_Portfolio) while the other was subject to the current 25% maximum exposure to foreign asset investments (With_Limit_Portfolio). To describe the unintended consequences, the data is presented graphically with a line chart. Descriptive statistics were calculated and a Granger causality test was conducted. A box-plot is used here to illustrate the descriptive results and covariance of these variables are provided.

Figure 2. Performance comparison of the No_Limit_Portfolio with the With_Limit_Portfolio



Source: Own composition (Compiled with EViews 9)

Figure 2 is an illustration of the performance of the No_Limit_Portfolio compared to the With_Limit_Portfolio. This illustration shows the potential return of a portfolio that was not restricted to specific foreign asset allocations if funds were to be invested in a preserved provident fund from the date of implementation (1 April 2011) of the 25% maximum limit in foreign assets. On the date of implementation, both portfolios were at R1, but the portfolio without any limit closed out at R2.301662603 while the portfolio with limit closed out at R1.013358145 on 31 December 2015. The difference, assuming no dividends were received, was R1.288304458 more than the portfolio that was constrained by the regulatory limit.

Table 1. Descriptive statistics of the No_Limit_Portfolio and the With_Limit_Portfolio

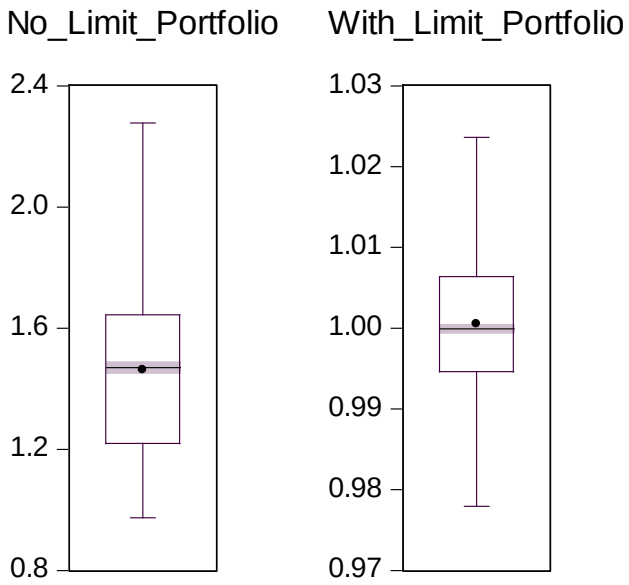
	No_Limit_Portfolio	With_Limit_Portfolio
Mean	1.462705	1.000529
Median	1.472970	1.000029
Maximum	2.301663	1.044051
Minimum	0.974832	0.969506
Std. dev.	0.294204	0.009421
Skewness	0.399348	0.291518
Kurtosis	2.538549	4.055454
Observations	1186	1186

Source: EViews 9 results

The two variables returned the descriptive results listed in Table 1. Over the period 1 April 2011 to 31 December 2015, the average returns on the portfolios were R1.462705 and R1.000529 for the No_Limit_Portfolio and the With_Limit_Portfolio respectively for the 1 186 observations. These observations were the adjustment to the portfolios based on the translation effect of the rand/dollar exchange rate. The No_Limit_Portfolio and the With_Limit_Portfolio returned a maximum of R2.301663 and R1.044051 respectively with a minimum value of R0.974832 and R0.969506 respectively. These results show that the loss per portfolio and the maximum return per portfolio were minimised and maximised when the portfolio was not constrained by foreign asset limitations.

Figure 3 reflects a graphic representation of the descriptive statistics, illustrated with a box-and-whisker plot. The box-and-whisker plot has an independent Y-axis that represents the performance of the No_Limit_Portfolio and the With_Limit_Portfolio over the period.

Figure 3. Independent box-and-whisker plots of the No_Limit_Portfolio and the With_Limit_Portfolio



Source: EViews 9 graph

Table 2. Correlation between the No_Limit_Portfolio and With_Limit_Portfolio

Covariance analysis: Ordinary		
Date: 05/17/16 Time: 17:43		
Sample: 4/01/2011 12/31/2015		
Included observations: 1 186		
Correlation	**With_Limit_Portfolio**	**No_Limit_Portfolio**
With_Limit_Portfolio	1.000000	
No_Limit_Portfolio	0.084829	1.000000

Source: EViews 9 results

The correlation coefficient measures the linear relationship between two variables but it does not imply cause and effect (Gujurati & Porter, 2009:77). The correlation coefficient should be between -1 and 1, where 0 indicates that there is no positive or negative relationship but does not imply

independence (Gujurati & Porter, 2009:77). The correlation coefficient of 0.085 implied that the portfolios were not significantly correlated. To confirm that this coefficient holds, a coefficient was also calculated for the logarithm of two portfolios.

Table 3. Correlation between the variables L_Wlim and L_Nlim

Covariance analysis: Ordinary		
Date: 05/17/16 Time: 17:46		
Sample: 4/01/2011 12/31/2015		
Included observations: 1 186		
Correlation	**L_Wlim**	**L_Nlim**
L_Wlim	1.000000	
L_Nlim	0.087440	1.000000

Source: EViews 9 results

Similar to the results in Table 2, it was found that the logarithm of the two portfolios also did not have a significant correlation. The correlation coefficient of 0.087 did not imply independence of the variables but indicated that there was not a significant linear relationship between the two variables. Although there was no correlation between the variables, there might have been a causal relationship.

Table 4. Pairwise Granger Causality Tests between the L_Nlim and the L_Wlim variables

Pairwise Granger causality tests			
Date: 06/13/16 Time: 08:54			
Sample: 4/01/2011 12/31/2015			
Lags: 5			
Null hypothesis:	**Obs**	**F-statistic**	**Prob.**
L_Nlim does not Granger cause L_Wlim	1181	3.86689	0.0018
L_Wlim does not Granger cause L_Nlim		3.18764	0.0073

Source: EViews 9 results

The results show that after five lags, the null hypothesis remained rejected. Thus, as the F-statistic was larger than 3.84, it was concluded that the null hypothesis L_Nlim does not Granger cause L_Wlim could be rejected. The results indicated that although no correlation existed between the variables, the variables however had a Granger causal relationship.

5. CONCLUSION

For a large number of people, retirement savings are the most important source of income in their old age, and for this reason, regulation aims to protect the funds of individuals, but limits the potential for adverse returns due to poor investment decisions. The regulations may therefore have unintended consequences. In both emerging and developed economies, regulators often prescribe limits when dealing with pension funds that would be used by individuals upon retirement. The effect of this type of regulation is however different amongst developed and emerging economies. From the perspective of an emerging market economy, the two motivations for regulatory maximums in pension fund asset allocation are firstly, ensuring a diversified portfolio, limiting exposure to risky assets and secondly, ensuring that retirees do not become dependent on government grants as a result of poorly managed retirement investment funds.

The South African economy and pension fund regulation amplified the research problem of having a required maximum prescribed asset allocation for the pension fund market, and South Africa was considered to be an emerging market economy. A fictitious R1 portfolio was used to illustrate the unintended consequences that regulation could have on pension fund returns when an investor makes use of a preservation provident fund. The results showed that, due to exchange rate fluctuations, a preservation provident fund could breach the allowed foreign asset allocation, requiring rebalancing and ending up in lower returns due to the downward adjustment that had to be made due to a deteriorating exchange rate. When the exchange rate became beneficial again for the fund, a rebalanced portfolio already reduced the funds available for growth. Descriptive statistics were used to illustrate the difference in returns should it have been that there were no regulatory constraints on a portfolio with regard to investment in foreign dollar-denominated assets compared to a portfolio that had to maintain the current 25% maximum limits as prescribed in the South African regulations. Over a 4-year period, the growth of the R1 due to exchange rate fluctuations, keeping all other factors unchanged, would have been approximately 130%.

This research emphasised the importance of achieving adequate returns on an investment of a pension fund. In order to protect the funds of investors, regulators engage in prescribing maximum asset allocations in different asset classes in order to ensure a properly diversified portfolio. Regulators should consider the results of this research and the supporting literature when setting maximum limits in foreign investment asset allocation for pension funds. This research indicated that regulators should consider relaxing the maximum exposure that emerging market economies may invest in developed economies as this might result in increased pension fund returns. Future research should evaluate up to what percentage an investor should be able to invest in foreign developed economies as the information currently suggests that the maximum amount of assets should always be allocated in foreign dollar-

denominated asset classes, but the exact maximum has yet to be determined.

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