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Asset allocation restrictions and pension funds' performance in Southern Africa

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UNIVERSITY OF WITWATERSRAND

WITS BUSINESS SCHOOL

Topic: Asset Allocation Restrictions and Pension Funds' Performance in Southern Africa

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DECLARATION

I, the undersigned, declare that the entirety of the work contained herein is my original work, to the extent explicitly otherwise stated, and that I have not previously in its entirety or in part submitted it for obtaining any qualification**.**

Name: Mirjam Mhanda **Signature** 

ABSTRACT

The relationship between asset allocation restrictions and performance of pension funds is critical in determining whether asset allocations as selected by fund managers of pension schemes are critical in influencing the financial performance of pension funds resulting in better retirement benefits for pensioners. The main objective of this study was to determine the effect of assets allocation restrictions on the financial performance of pension schemes. Governments have an obligation towards the pension funds in safeguarding the returns for the members, particularly when the contributions are obligatory. This obligation has been the reason used to justify stringent regulations of pension funds' portfolios, the funds management industry's structure and investment returns but these restrictions have a cost. This research was conducted through a descriptive survey and utilised Primary data given by pension funds managers on monkey survey platform. 20 fund managers from three countries (Zimbabwe, Namibia and South Africa) were used. Survey Monkey tool was used to collect the data and Social Package for Social Science (SPSS) software was used to analyse data. Secondary data was also used in this study which was collected from retirement benefit fund financial reports, journals, newspaper articles, investment reports. The study revealed that there is negative linear correlation between -asset allocation restrictions and the performance of pension funds. The most negative effect of restrictions was felt on the organization's ability to be innovative, the organization's ability to diversify risk and the organisations and investment opportunities for pension funds. As restrictions increased, innovation of pension funds decreased the most. The study recommended that quantitative restrictions should be replaced with prudent person rule to be implemented with corresponding strengthening of regulatory capability.

Keywords: **Asset allocation, Regulatory restrictions, Pension funds' performance, Asset management**

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LIST OF ABBREVIATIONS & ACRONYMS

AuM *Assets under Management*

CAPM *Capital Asset Pricing Model*

DEA *Data Envelopment Analysis*

DSR Down-Side Risk

EME *Emerging Market Economy*

FMF *Foreign Member Funds*

FSB *Financial Services Board*

GDP *Gross Domestic Product*

GE/IPF *Government Employees/Institutions Pension Fund*

IPEC *Insurance and Pensions Commission*

MPT *Modern Portfolio Theory*

NAPSA *National Pension Scheme Authority*

NBFIRA *Non -Bank Financial Institutions Regulatory Authority*

NAMFISA *Namibia Financial Institutions Supervisory Authority*

NSSA/F *National Social Security Authority/Fund*

NSE *Namibia Stock Exchange*

OECD *Organization for Economic Cooperation and Development*

PENCOM *Pension Commission*

PFA *Pension Fund Administrators*

PPR *Prudent Person Rule*

PSRA *Pension Scheme Reform Act*

PWC *Price Water House Coopers*

RBA *Retirement Benefits Authority*

QAR *Quantitative Asset Restriction*

CHAPTER 1

1 STUDY INTRODUCTION

1.1 Introduction
1.2 Background of the study
1.3 Problem statement
1.4 Research question(s)
1.5 Objectives of the study
1.6 Significance of the study
1.7 Delimitations of the study
1.8 Definitions of key terms
1.9 Structure of the study

1.1 Introduction

Pension funds form an integral part in African economies. It is of utmost importance that the pension funds' performance is enhanced to ensure maximisation of the stakeholders' wealth. It is widely agreed that asset allocation accounts for a large part of variability in the return on a typical investor's portfolio (Sharpe, 1992). Pension funds' performance is constrained by the fact that they do not operate in the vacuum. Ikhide & Moleko (2017) argued that the extent to which pension savings induce behaviour on capital markets is determined by the structure of pension systems and in many instances enhanced by pension fund reforms undertaken. In emerging markets, the pension fund industry is rapidly becoming a major source of domestic financing and has the potential to shape the future evolution of domestic markets (Chan-Lau, 2004). Their operations are highly affected by the financial markets developments, change in demographics and most of all regulatory reforms. These parameters define the way in which pension funds invest and allocate their assets considering the risks and returns. By virtue of their operations, pension funds take in savings from households and firms, and invest them in money market and capital market instruments and other assets through asset management companies. Their value proposition is to aid the pension funds to reach their investment objectives and to intensify their financial prosperity for their clients. It is generally argued that asset managers are advantageous in terms of risk reduction through diversification, liquidity provision by investing in relatively high liquid assets to meet net outflows, and transaction costs reduction as a result of trading in large blocks of securities.

Regulations have been proclaimed to enable an efficient domestic pension fund industry management of the assets. The World Bank (n.d.) identified three (3) forms of pension funds regulation, that is, firstly, there are restrictions on industry structure. Reforming governments to establish a new pension fund management industry, separated from other financial institutions. Secondly, there is regulation of pension funds' performance. According to World Bank, (n.d) this restriction requires that a fund must earn an absolute return relative to the average portfolio returns (benchmark) and the restrictions permitted. Thirdly, there are quantitative restrictions on the types of assets of the fund. This type of restriction can be beneficial to the defined contribution pension funds but detrimental to defined benefit funds where the fund has limited portfolios (World Bank, n.d.)

This study focused on the quantitative limits imposed on pension funds in three Southern African countries (South Africa, Zimbabwe and Namibia). The aim of the study was to establish the types of restrictions in three Southern African countries and determine the impact of such regulations on the performance of pension funds. The study sought to ascertain whether the argument that investment based on regulation protects pensioners' rights more than investment based on the prudent man rule was true[1]. The study explored the performance of the pension funds within three markets. An online questionnaire was used to collect quantitative and qualitative data from pension funds' managers and secondary data was also collected from annual reports from the regulator's websites, research institutions, statistics agencies and international economic bodies to be able to entice conclusions on the implications of investment regulations for the pension funds' performance. The study is distinctive in that it covered the under-studied area of pension funds' performance in Southern Africa and used more than one country data to substantiate the subject matter, using a different approach of both qualitative and quantitative hence contributing to the limited literature in the field.

1.2 Background of the study

[1] Chau-Lau (2004), Pg.21

1.2.1 Introduction of regulatory restrictions on asset allocation

Over the years, there has been a concern surrounding the misappropriation and underfunding of the public pension funds' assets and this has attracted the attention from regulatory bodies (World Bank, n.d.). A Wall Street Journal (2004) commented that trustees tend to take advantage of their obligation towards managing the pension funds and this can lead to low performance which could require state intervention, costing the taxpayer's money. What's more, Hess (2005) also raised a point on governance and the effectiveness of the public pensions towards stimulating growth of the retirement funds. "From the perspective of emerging market economy, the two motivations for regulatory maximums in pension fund asset allocation are; ensuring a diversified portfolio and limiting exposure to risky assets and ensuring that retirees do not become dependent on government grants as a result of poorly managed retirement investment funds" (Erasmus & van Huyssteen, 2016:491).

Assets under Management by the most African countries pension industry are largely made up of Government Pension Funds. In light of this, governments often regulate pension funds to protect vulnerable investors from risky investments by asset managers. Countries that have introduced mandatory funded pensions have consumers with less skills of investing and limited contact with financial services and providers. The World Bank (n.d.) posits that before regulation was imposed, financial services in developing countries industries were under-developed. "The lack of experience of investment, particularly, of managing risk, might lead to poor portfolio decisions and hence the need to regulate pension funds" (World Bank, n.d:1). This point is supported by Erastus & Huyssteen (2016) who says that due to the market structure of the emerging countries coupled with characteristics of being fragile and illiquid, such economies are regarded as more risk than the developed countries.

On the contrary, defined benefit funds (provided by employer) have gained popularity as portfolios are less restricted relative to when the fund is a 'defined contribution'. If the quantitative investment (regulative portfolio) limits succeed in reducing the riskiness of investments, it might help supress public intervention whereas if pension funds make unduly risky investments, it can risk the government's funds.

Though the quantitative portfolio restrictions (limits) approach appears to be common, some countries favour a 'prudent person' rule as an alternative. This approach allows the fund managers

to invest with more flexibility but still requires legal practices and prudence standards. A prudent fund manager is required to invest with the care, skill, prudence and diligence under the circumstances then prevailing (World Bank, n.d.). However, some countries may still opt to rely on systems and properly defined regulations. It is argued that, it can be difficult for countries implement the prudent principle, as it requires that the principle is well established and accepted. Some unskilled managers may still make risky investments in spite of the prudent person rule.

Historically, public pension fund boards have been comprised of conservative investors, which have led to low returns. According to Coronado (2003), until the mid-1990s, many pension funds had little equity investments in their portfolios which contributed to private pensions outperforming the public pensions.

Boon, et al., (2014) [2] identified two (2) concepts of financial regulation: rule-based and risk-based. Where, rule-based regulation refers to stringent requirements (direct restrictions) on investments whereas the risk-based regulation relies on quantitative financial models used to assess capital needs that responds to the financial market movements (Bohl, et al., 2008). The complexity of the financial market instruments has necessitated the need for imposing risk-based restrictions (World Bank, n.d.). However, for the regulatory environment to remain competitive and sound, a financial model should be systematic. Shi and Werker (2012) demonstrated that imposing shorter-dated regulatory risk constraints on pension funds cause substantial economic costs than the long investment horizon. Accordingly, the risk concept should be embraced with the main aim of promoting financial performance of the pension funds.

1.2.2 Highlights on some of the Asset Allocation Restrictions across the Globe

i. Europe, Latin America, Asia

Asset allocation restrictions are quantitative prescribed limits applying to specific asset classes. "Restrictions in OECD countries are less severe as compared to Restrictions in Latin America and Africa (Yermo & Severinson, 2010). "OECD countries like, Denmark, Germany, Japan and Switzerland, have a ceiling on the amount that can be invested in equities typically 30% to 40%

[2] In Nespar Discussion Paper, (Boon, et al., 2014) discussed that another reason for risk based regulation is the merging of supervisory agencies for pension funds with those for banks and insurers. 'The aim of introducing this type of regulation is to ensure that institutions establish a sound risk management framework'.

of total assets and impose a minimum investment in public sector bonds between 15% and 50%"[3]. Around third of the OECD countries adopted prudent person rule to protect their members' funds. "In countries like Australia, Ireland, New Zealand, the United Kingdom and the United States plus Austria, Spain and the Netherlands governments impose few rules on pension funds' asset allocation[4]".

According to the World Bank (n.d.) OECD countries restrict foreign investments to 16% of total pension assets whereas in Latin American countries it ranges from a 5%-12%. "The first economic rationale behind these limits is that pension funds' liabilities are domestic and so, by investing at home, assets and liabilities are denominated in the same currency whereas investing abroad, in contrast, incurs exchange rate risk" (World Bank, n.d.). Although currency movements can be hedged to reduce exchange rate risk, this often comes at a cost and hedging experience[5]. A second motive is to limit capital flows by limiting overseas investment, this brings positive results because it deepens domestic capital markets.

ii. South Africa Asset Allocation Restrictions

In South Africa, Regulation 28 (revised effective July 2011) regulates a pension funds investment which places specific limits and proportions on the asset classes that pension funds are allowed to invest in. South Africa manages the largest scale of AuM with a sound financial market in Southern Africa.The revised regulation allows pension funds to invest 25% (from 20%) of the fund's assets in foreign assets and an additional 5% in African assets.

Main limits of investment:

▪ No more than 75% invested in equities (local and offshore)
▪ No more than 25% invested in foreign assets (excluding African investments)
▪ No more than 25% invested in properties (local and offshore)
▪ up to 10% in commodities, and a limit of 5% in other commodities

[3] siteresources.worldbank.org/Resources
[4] As above, PP.2
[5] As above, PP.3

▪ No more than 5% invested in African investments (excluding South African)
▪ up to 15 % in alternative investments, hedge funds and private equity funds are limited to 10%
▪ 100% in cash. 25 % on local bank deposits and 5 % with foreign banks.

Source: www.gov.za/sites/default/files/gcis_document/201409/

The revision of the regulations which saw private equity (PE) being increased to 10%, has significantly increased pension funds' assets in South Africa and improved PE investment (PWC, 2015).

According to Erastus & Huyssteen, 2016, "the South African economy and pension fund regulation augmented the problem of having a required maximum prescribed asset allocation for the pension fund market". The regulation had unintended consequences on the pension funds' returns. They illustrated these regulation consequences by constructing a portfolio (R1) based on the preservation provident fund investment. The results showed that, a fund could breach the allowed foreign asset allocation due to foreign exchange movements, requiring rebalancing and led to deterioration in returns due to the downward adjustment pertaining from a depreciated exchange rate. The writers used descriptive statistics to show the effect on the returns with no regulatory constraints on a portfolio investments in foreign assets relative to a portfolio with regulatory limits as prescribed. Another interest finding was that, the fluctuations in the exchange rate would affect the growth (R1) by approximately 130% over a period of four (4) years, keeping all other factors the same.

iii. Namibia Asset Allocation Restrictions

In Namibia, the pension funds are managed under the Pension Funds Act of 1956 enacted in 1994, with the aim to boost the contractual savings and investments in Namibia (Christoph & Robin, 2004)[6]. This regulation required the Asset Managers to allocate their pension assets in a proportion of 35 % (domestic portfolio) and 65% (foreign portfolio of which up to 15% can be invested

[6] "Prior to 1994 Namibia's contractual savings were managed by asset management companies in South Africa" (Christoph & Robin, 2004).

outside the CMA[7]). Around 62% of the pensions assets held are accounted for pension funds (Bank of Namibia, 2015). "A fund must keep invested in domestic assets, not less than the following percentages of the market value of its total assets at all time": 40% by August 2018, 42.5% by November 2018 and 45% by March 2019[8]. The policy intention is for Namibia as a Developmental State to effectively mobilize domestic resources to fund socio-economic development needs and investment opportunities (Rasmeni, 2017).

Limits of investment

▪ No more than 75% invested in equities (local and offshore)
▪ No more than 95% invested in Government Bonds
▪ No more than 25% invested in properties
▪ No more than 50% invested in Foreign bonds
▪ No more than 50% invested in Corporate bonds
▪ A fund may invest up to 15% in alternative investments
▪ 95% of retirement fund assets may be invested in credit balances

Source: www.lac.org.na

"The GIPF estimates that between 1995 and 2001 the average annual return on the Namibian portion of its portfolio has been 11.1% compared to 12.8% for the South African portfolio and 23.7% for the offshore portfolio. If these historic returns were applied to a portfolio of $52 million over a period of five and ten years, pension assets would be $2.5 million and $8.5 million lower respectively than they would have been without the domestic asset requirement" (Christoph & Robin, 2004).

iv. Botswana asset allocation restrictions

In 1996, Botswana enacted the asset requirements regulation for pension funds which obliges the pension funds to invest 30% of their assets in domestic assets and 70% in foreign assets (Christoph & Robin, 2004).

[7] Common Monetary Area
[8] Namibia Government notice No:6697 of 31 August 2018, pp.11

Limitation on Foreign Investments

Pension funds shall comply with the following limitations on assets invested outside Botswana until 30 June 2050, where-after the provisions in section 4.7 shall apply:

▪ In the period ending 30 June 2020 70%
▪ In the period from 1 July 2020 to 30 June 2030 60%
▪ In the period from 1 July 2030 to 30 June 2040 50%
▪ In the period from 1 July 2040 to 30 June 2050 40%
▪ In the period from 1 July 2050 onwards 30%

Source: www.dpf.co.bw

On December 1, 2000, an Investment Rule which restrict the Pension Funds to invest up to 70% of their assets outside the country was introduced through a Directive by the then Ministry of Finance and Development Planning (NBFIRA, 2018)[9]. "The Retirement Funds Sector continues to contribute significantly to the economy of Botswana, with total assets to GDP ratio of 45% as at December 2017. The growth in retirement funds assets was mainly due to an increase in the performance of investment markets, together with the growth in membership and contributions. Offshore cash assets increased due to introduction of offshore limits within the Pension Fund Rule 2 (PFR2)" (NBFIRA, 2018). There was an increase in allocation to offshore investments mainly due to expansion in the global economy which resulted in an improvement in performance of offshore equity. This reflected growth across the global economy compared to the local market whereby the offshore investments were 65% of total pension assets in 2017 while local assets accounted for 35% relative to 63% of offshore investments of total pension assets and local assets of 37% in 2016 (NBFIRA, 2018).

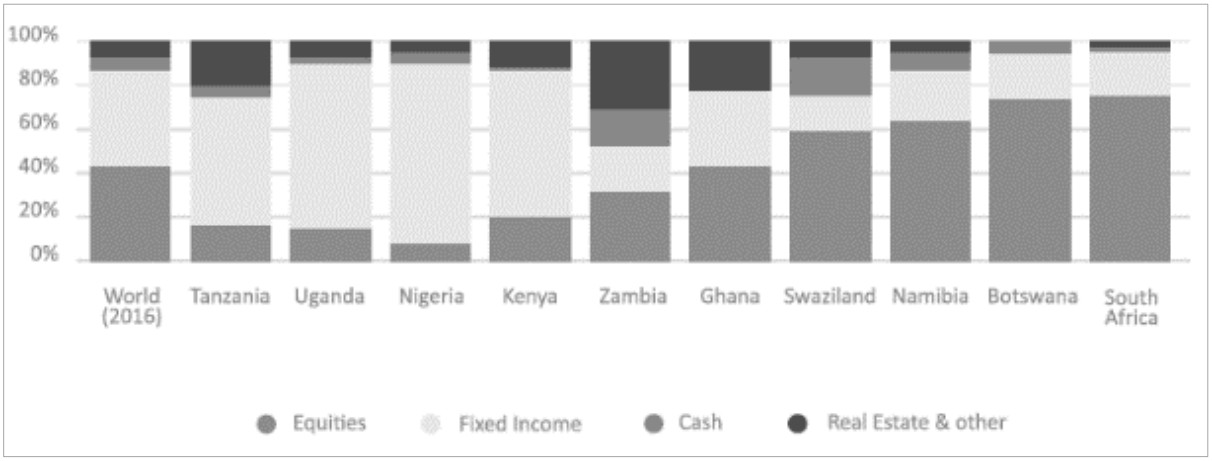
Figure 1.1 Pension Assets as % of GDP 2015/2016

[9] www.nbfira.org.bw/sites/default/files/2017%20NBFIRA%20ANNUAL%20REPORT.pdf

Country	Region	Year	AUM (USD million)	GDP (IMF 2016) USD million	AUM as % GDP
SouthAfrica	Southern Africa	2016	306 653	294 132	104%
Swaziland	Southern Africa	2015	1 721	3 770	46%
Botswana	Southern Africa	2016	7 191	15 018	48%
Mauritius	Southern Africa	2015	4 604	11 950	39%
Namibia	Southern Africa	2016	10 497	10 646	99%
Zambia	Southern Africa	2016	567	21 310	3%

Source: Own from (Riscura, 2018)

Figure 1.2 African Pension Funds' Asset Allocations 2015/2016



Source: (Riscura, 2018)

iv. Effect of legal restrictions performance of pension funds

Writers have varied opinions on the effect of legal restrictions on performance of pension's funds. Ashiagbor, et al., (2014) argued that the reforms are undertaken to effectively transform financial markets and mobilise the domestic resources to support private sector development and encourage infrastructure and social service investment. A study in OECD countries showed that Regulation coupled with market dynamics may cause the asset allocation to differ from the target allocation. This may leave the trustees of a pension fund exposed to more risk or opportunities than they

desired or intended. Oluyeju (2017)[10] supported this theory that stringent regulation on the pension assets can hamper stock market finance requirements for development and recommended that pension funds investment regulations should be revised to enforce the fiduciaries (PFAs) responsibility of retirement assets to improve pension funds governance and the investment assets.

Pension reforms have become common in a number of emerging markets, with the aim to increase the assets under management (AUM) of private pension funds (IMF Rodlos, 2004). Countries such as Chile in Latin America, has reached AUM of 54% of GDP after 20 years of operation of the fully funded system[11]. Regulations resulted in change in pension funds asset prices in Chile which is by far the country with the largest investors in the economy. Restrictions are often associated with a cost substantiated by the findings that constrained pension funds tend to underperform the less stringent investment schemes. IMF Rodlos (2004) supported this by stating that the fiscal costs of the transition constitute a major risk to the survival of pension reforms and should there be cost underestimation, it could lead to macroeconomic instability and halt the pension reforms benefits.

Study by Srinivas, Edward, & Juan (2000) showed that regulation of privation pension funds and performance had adverse effects on asset allocation regulations. They have argued that regulation expose the pension funds to systematic market risk where they can only achieve better returns at a high level of risk. These writers also added that restriction may result in pension funds controlling large investment shares of the markets, creating liquidity problems and lastly (Srinivas, et al., 2000) reasoned that regulations may hinder capital market development.

In a different study, Antolin (2008) did a comprehensive study on the OEDC pension funds' performance which is more closely linked to the objectives of this study. The study shows that investments restrictions had a negative impact on performance of pension funds in a number of countries. Bohl, et al. (2008) study did a comparison of their results with studies on the performance of pension funds operating in less stringent regulatory environments find implications and make inferences on investment regulations for the pension funds' performance. They support the argument that there is scarcity of empirical literature discussing the pension funds investment

[10] "Pension Funds' Assets Investment: A Case for Change in Regulation to promote Stock Market Development. Pretoria: Faculty of Law, University of Pretoria" (Oluyeju, 2017).
[11] See (IMF Rodlos, 2004), IMF Policy discussion paper

regulation and the effects on performance in terms of investment behaviour and portfolio returns. They have established that the type of the performance evaluation used by the regulation, influence and determine the level of impact on a funds' performance.

A study on the Namibian stock market by Christoph & Robin (2004) maintained that "the Namibian asset requirement has failed to achieve its objective of channelling contractual savings in productive Namibian investments to promote growth and employment". In contrast to the above writers, Noland (2015) found that asset investment restrictions have not statistically affect long-term returns, though they reduced return volatility and this gave an indication that regulations are achieving their purpose as anticipated. A study by Njeru (2014)[12] results also indicated that the regulatory changes have positive effects on the performance of pension schemes in general.

The current study is considering these dominant pension funds managed through trustees to capture a broad view of the pension reforms influences in the economies in southern Africa. Several economies revised their pension funds regulations: Botswana in 1996, South Africa in 2011, and Namibia in 2018. In essence the revised regulations postulate the asset classes' proportions that pension funds trustees are permitted to invest in and the limitation placed on the domestic and foreign asset requirements.

1.3 Problem Statement

According to Hinz (2010) the market mechanisms currently focus too much on the short-term returns and that there is a should be balance between the main role players (the market and government) in order to enhance the pension funds' performance and reduce the risk of individuals' retirement with insufficient income due to the misallocation of their pension assets. Hence, the need to contrast and validate this statement in relation to the regulation imposed by the government. The focus of this study is to ascertain if the current asset restrictions are beneficial or deterrent in terms of the risk-return trade off of the investors, determine whether pension funds

[12] The relationship between regulatory changes and financial performance of pension schemes in Kenya is unidirectional and runs from regulatory changes to performance and not vice versa, thus the study concludes that 'there exists a positive relationship between regulatory changes and financial performance of pension schemes in Kenya'.

reforms have an impact on their performance and accordingly demonstrate how the asset managers can restructure their allocations to ensure that performance is optimised.

Existing literature is of the opinion that there is a need to move away from quantitative investment restriction and adopt prudent person rule. Srinivas, et al. (2000) study added that the introduction of reforms necessitates the restrictions to strengthen confidence in the system but suggested that the idea should be to transition to a 'prudent-person' approach in a long-term. Though this kind of regulation also has its shortcomings, its benefits are considered to outweigh a long-term quantitative restrictive policy.

On the other hand, Hu (2006) claimed that, the need for government intervention is of vital importance to avoid market failure which can be derived from the free market forces, and also to ensure economic efficiency. This is mainly applicable to developing countries that have immature capital markets and less understanding of investments dynamics. There is an overall finding that asset allocation restrictions have adverse effects on the performance of the pension funds, yet Bohl, Lischewski, & Voronkova (2008) concluded not to find empirical evidence confirming this statement that strict regulatory framework weakens the performance of pension funds.

Many studies focused on the performance of the pension funds and optimal allocation of assets thereof (e.g. (Antolin, 2008), (Hu, 2006), (Koegelenberg, 2012), (Mjebeza, 2016), (Oluyeju, 2017), (Wepener, 2014).). The studies that are more on the subject based their findings on international context but very limited on African countries (Masinde & Olukuru, 2014), (Bradfield & Munro, 2015), (Noland, 2015)). Consequently, very little is known on the effects of asset allocation restriction on pension funds' performance.

This paper used data from several countries and will assist policy makers in African countries with finding a better balance between the market and the government in enhancing pension funds' performance and reducing the risk of individuals' retirement. This is in order to inform the early identification of both positive and negative outcomes of the regulations as well as to inform risk management and mitigation strategies and government policy not only to South Africa but to the rest of Southern African countries considering that South Africa is the leading country in Africa in terms of emerging markets.

1.4 Research Question (s)

The study's main research question pursued was: what is the impact and effectiveness of the regulatory-induced investment limits on the performance of the pension funds operating in shallow, deeper and concentrated markets?

This study also attempted to address this sub-question: What forms of restrictions used in Southern Africa and are these restrictions being abided by? Furthermore, what lessons can the interlinked jurisdictions within Southern Africa acquire from other regions in the terms of pension regulatory reforms and overall administration of pension assets with the aim of improving investment returns?

1.5 Objectives of the study

Pension funds provide a crucial source of capital in financial markets that can be used to drive national priorities; however, the emphasis lies on the regulatory framework and management of these institutions. These are enablers that can exhibit positive effects if they encourage increasing levels of capital allocation to productive investments in capital markets (Ikhide & Moleko, 2017).

The study's primary objective was to identify and determine the actual impact that the constraints of Regulation has on the Southern African countries' pension funds' performance. The study further examined the pension funds' performance in Southern Africa within regulatory constraints to demonstrate how the regulatory reforms can affect pension funds' performance.

The specific objectives are:

i. To determine the effect of regulation on the performance of Southern African countries' pension funds.
ii. Indicate the forms of restriction on Asset Allocation used in the Southern African region and to establish if pensions are actually abiding by the restrictions imposed on them.
iii. To explore similar regulations in selected external financial markets as a way to substantiate the subject matter and to provide lessons for other Southern African countries.

1.6 Significance of the Study

Regulatory restrictions on pension fund performance may distort the portfolio allocation that could be achieved through a competitive framework. These regulatory frameworks have an influence on the investment returns when countries impose limits by instrument, category, risk on the domestic and foreign holdings (World Bank, n.d.). The study will unpack the reality of the asset allocation restrictions effect on asset returns and the risk exposure thereof through stakeholder's perspectives. This study is will be important to the following groups of people:

1.6.1 Policy Makers in Southern African countries

The research would provide the policy makers with a basis to structure the asset allocation restrictions according to the nature of the economy and the risk associated with such restrictions. The paper will compare and contrast pension funds' performance operating under different regimes and market sizes which will provide other jurisdictions policy makers in Africa with a better view of the impact of a rigid or flexible regulation has on the retirement returns and the economy at large.

1.6.2 Investors and managers of pension funds

The results of the study would also provide direction to the investors and asset managers on the significance of the regulation on the performance to help them restructure their funds and portfolios accordingly.

1.7 Delimitations / scope of the study

Geographically, the study will be restricted to the Southern African region and only pension funds in the Southern African countries will be considered. No other region will be considered. Theoretically, the study seeks to examine the effect of regulatory constraints on performance of pension funds in southern African countries. The effect of market forces will not be the major priority in this study. The effect of market forces will be looked at briefly in literature. The study will consider only regulatory restrictions on pension funds. No other regulatory restrictions will be considered.

1.8 Definition of key terms

Pension

Pension is the amount paid to an employee (beneficiary) after working for some specific period of time and made proportion contributions into a pension fund during his employment tenure. These contributions are paid to a beneficiary when such beneficiary is considered old or ill to work or have reached the statutory retirement age. A pension is usually a regular payment made by the government or by private companies or organizations to their retirees as a form of social security against old-age risks and uncertainties.

Pension Funds

Okeyo (2016) defines pension funds are funds set up so as to gather usual contributions from a company, state agency, or businesses so as to offer post-retirement incomes for entitled workers. Pension funds are invested with the objective of securing employees with either lump-sum compensation or the undertaking of an income stream after retirement. These occupational pension plans operate on either a defined benefit ("DB") or a defined contribution ("DC") basis.

Pension reform

The pension reform refers to a set of actions taken to restructure the administration of old age security device of retirees. The rationale behind pension reforms is to ensure economic and social sustainability of a country's pension system. The changes in countries' demographic aging and mismanagement of the pension funds largely contributed to the need for pension sector reform (Oluyeju, 2017).

Asset Allocation Restrictions

These are prescribed limits on specific investments which impose a maximum or minimum allowable threshold in certain classes of assets. These regulations are to ensure that funds accumulated back the obligations of pension funds to their beneficiaries to provide a source of

future retirement income, are managed in a prudent manner and in the best interests of beneficiaries to prevent “excessive” risk exposure in pension plans.

1.9 Structure of the study

This study is presented in six (6) chapters.

Chapter 1 elaborates on a general overview of the study and addresses the general study matters such as the problem statement, research questions, study objective, significance and delimitations of the study and key concepts definitions.

Chapter 2 discusses the literature review which provides for an in-depth understanding of previously documented literature on impact of regulation of the Pension Funds’ Industry.

Chapter 3 provides a detailed discussion and overview on the research design and methodology employed in this study

Chapter 4 considers and analyses the countries industry pension funds laws and regulations that govern and administer the pension assets in Southern Africa. It also provides a snapshot of other African and OECD countries pension systems for comparative purposes with a view to draw lessons in terms of public policy initiatives and regulatory reforms.

C**hapter 5** reflects on a comprehensive details and statistical data of the study findings and data analysis.

Finally, **Chapter 6** summarizes findings, and makes conclusions and recommendations.

CHAPTER 2

2 LITERATURE REVIEW

2.1 Introduction
2.2 Regulation Overview: Asset allocation restrictions
2.3 Pension Funds' Performance Measurement
2.4 Home Bias: Domestic Asset Allocation
2.5 Asset Allocation Restrictions: Offshore
2.6 Literature Summary

2.1 Introduction

There is a limited study on the pension funds specifically focusing on the performance of pension funds in Africa relative to asset allocation restrictions. However, there is a considerable number of articles on international pension funds which are quiet extensive but the findings could be invalid taking into account that most of them were concluded on before regulatory reforms. In addition, the existing literature broadly focused on the performance of pension funds in general, optimal allocation of pension funds' assets and the private equity as an alternative asset class but not necessarily on the effects of pension funds asset allocation restrictions on their performance.

2.2 Regulation Overview: Asset allocation restrictions

Asset Allocation is defined by Sharpe (1992) as "the distribution of an investor's portfolio amongst a number of major asset classes". Asset allocation is perceived to be the most fundamental decision of investing and accounts for an astonishing 94% of the differences in total returns achieved by institutionally managed pension funds. Ashiagbor et.al (2014) support regulation of assets under management (AUM). These writers argue that AUM in Africa are growing rapidly and this places a burden on the regulators to maintain sufficient and appropriate instruments to absorb these funds and generate the desired returns. They continued to substantiate their idea of regulatory reform by saying that "in Africa, some of the smaller markets are leading the pack in terms of opening their regulations in favour of international diversification."

In particular, IMF Rodlos (2004) has shown that pension funds tend to exhibit herding behaviour and if the main industry player switch to foreign assets is likely to cause strong pressures in the foreign exchange market, which requires close monitoring of funds and an appropriate regulatory changes timing in investment limits.

Hence, Erastus & Huyssteen (2016) recommended that it will be highly beneficial for the Regulators to consider the results of the supporting preceding literature before imposing maximum limits on pension funds offshore investment. In addition, they have further advised that to stimulate pension funds returns, the Regulators should aim to maximise the benefits that emerging market economies can earn from the developed economies by increasing this allocation.

2.3 Pension Funds' Performance Measurement

The return earned by assets in the pension fund depends upon the investment strategy and asset allocation decisions of the pension fund. In making the comparison in terms of realised returns it is important to make an adjustment for the risk of the portfolio.

2.3.1 Modem Portfolio Theory (MPT)

MPT provides the most critical perspective on portfolio limits (Srinivas, et al., 2000). Their study supported the idea of using a capital-asset-pricing model (CAPM) to demonstrate the asset restrictions effect fund managers to attain a higher risk-adjusted return such as the Sharpe ratio. They argued that in developing countries, to achieve average returns in line with the fund managers that are in the less confined regime, it comes with a greater risk. Policy implication of the evidence presented in their paper suggested that investment systems should be directed by the market forces to allow diversification. "It is critical that governments evaluate carefully the impact of the regulations they impose, since they can undermine many of the objectives of pension reform limits"[13].

Even so, Antolin (2008) claimed that this is only valid under certain assumptions which are not always fulfilled and added that it's important for these assumptions to hold for investors to view risk in the same way and to get a significant Sharpe ratio which allows investors to maximize their

[13] See (Srinivas, et al., 2000), PP.41

expected returns. He further highlighted the limitation of the Sharpe ratio as measure of pension funds' performance by stating that "comparing pension funds that have invested differently or comparing different time frames may not always be meaningful, just as it cannot be meaningfully said ex-ante that investing in stocks is better or worse than investing in bonds, as it depends, among other things, on risk aversion and the investment horizon". However, literature found that the pension funds with an investment strategy with the highest Sharpe ratio are the best performers.

Koegelenberg (2012) assessed the traditional Mean-Variance model by Markowitz to measure performance by questioning if we should replace parametric optimization models with non-parametric models. The study further critisised the use of Markowitz models that "they follow the same principle where the risk to an investor is captured by the standard risk measures of risk but not by the risk of beating inflation". The pension fund investor's interest is the assurance that his money is safeguarded from the inflation, hence Markowitz models may not be the best model in this case (Koegelenberg, 2012). The results was that the Historical Resampled Mean Variance optimization provided the highest probability of out-performing the benchmark.

On the contrary, while the investment world was developed by the use of modern portfolio theory of Markowitz, it has also received considerable criticisms. Ben Salah, et al. (2018) identified the main criticism being the concerns around the use of the variance as a measure of risk. The writers argue that variance measure gives the same importance and the same weights to gains and losses and assumes that returns are normally distributed[14]. An alternative suggested by Markowitz is the Semi-variance[15] which takes into consideration the asymmetry and the risk perception of investors (Ben Salah, et al., 2018).

2.3.2 The Efficient Frontier

Aygoren, Uyar, & Kelten (2017) study proposed a new approach of the efficient frontier to measure pension fund companies' performances. In their paper, to measure the performance of

[14] "New Approach in Nonparametric Estimation of Returns in Mean-Down-Side Risk Portfolio frontier*"* (Ben Salah, et al., 2018)

[15] "The Semi-variance is often considered as a more plausible risk measure than the variance. However, academics and practitioners are still using the Mean-Variance approach for portfolio optimization as it is easier to compute, have well-known closed-form solutions and deals with a symmetric and exogenous covariance matrix, whereas Mean Semi-variance optimal portfolios cannot be easily determined" (Ben Salah, et al., 2018).

pension fund companies, all individual pension funds are grouped in terms of their own companies and created optimal portfolios for different levels of risks i.e. efficient frontiers. Then efficient frontier of each company is compared to the benchmark efficient frontier. According to the comparison of efficient frontiers, the companies' performances are discussed from the closest to the most distant. This was further discussed in Davis (2000) paper which started off by stating that it is evident that the influence of any binding quantitative portfolio regulations may be to constrain the optimal portfolios and potentially prevent the institution from achieving via strategic asset allocation the point on the frontier of efficient portfolios that is appropriate for the institution's liabilities - or it may even force the institution to hold an inefficient portfolio which is below the frontier.

Portfolio restrictions are likely to prevent managers reaching the frontier of efficient portfolios, which indicates where return is maximised for a given risk. Again, if national cycles and markets are imperfectly correlated, international investment will reduce otherwise undiversifiable or "systematic" risk (Davis, 2000). Even so, the purpose of measuring portfolio performance is to determine whether portfolio managers add value with respect to passive or naïve investment strategies, typically represented by feasible and hopefully well diversified benchmarks. So the question is whether regulation and portfolio decisions, have generated positive results with respect to other possible investment strategies, argued (Walker & Iglesias, 2007)

Bradfield & Munro (2015) criticises the efficient frontier framework that it considers point estimates only which violates the reliability of the estimates and further supported Ben Salah, et al. (2018) on the argument that the mean-variance framework which assumes that 'returns are normally distributed' and ignores the 'skewness' features. For this reason, they adopted a non-parametric optimisation technique (as discussed under 2.3.3) which takes account historical data and requires no distributional assumptions.

2.3.3 Non-Parametric Methods

In his study, Koegelenberg, 2012 defined non-parametric statistics as the "branch of statistics dealing with variables without making assumptions about the form or the parameters of their distribution". The scholar further argued that most portfolio construction methods assumes that an

investor prefers an optimal asset portfolio that yields the 'highest return' coupled with a 'lowest risk'. But some investors' risk are not captured by the volatility of returns or the VaR. In recent years, high volatility in the equity markets has shifted the focus in an interest of beating inflation[16]. To address the shortcomings of Markowitz M-V model, Ben Salah at.al (2018) study explored an alternative of non-parametric Mean-Downside Risk (MDSR) as an appropriate investment risk measure as it considers losses below a target returns, estimate continuous distributions of the portfolios and with this construct a new portfolio frontier[17]. Non-parametric methods have proven to provide lower portfolio risk compared to the classical Mean-Variance and Mean-Semi variance model (Ben Salah, et al., 2018).

Traditional statistical methods require an assumption of normality in the distribution of the population or sample, however if such assumptions are not satisfied parametric statistical techniques cannot be used (Nahm, 2016). It's empirically argued that non-parametric analysis has more statistical power than parametric analysis when the data are not normally distributed by reducing the risk of drawing incorrect conclusions as these methods do not make any assumptions about the population, whereas can have lower statistical power argues Nahm (2016).

2.3.4 Data Envelopment Analysis (DEA)

On the other hand, Zamuee (2015) took a different approach and used Data Envelopment Analysis (DEA) to measure and evaluate the relative financial efficiency of pension funds in Namibia and the research findings reveal that most of the Namibian pension funds are operating below the efficiency frontier set by the efficient peers. The efficiency scores revealed that Namibian pension funds are not congruent in terms of performance and urgent management intervention is required to improve levels of efficiency. So the question still remains, could regulation improve the efficiency of the pension funds in Namibia?

Recent years have seen many countries applying DEA in evaluating the performances of different kinds of entities engaged in different contexts (Cooper, et al., 2011). DEA requires very few assumptions which has opened up possibilities for use in cases which have been resistant to other

[16] (Koegelenberg, 2012)
[17] (Ben Salah, et al., 2018)

approaches because of the complex nature of the relations between the multiple inputs and outputs involved in evaluations. Cooper, et al. (2011) further argued that DEA has been recognised by many researchers in different fields as an excellent and easily used methodology for modelling operational processes for performance evaluations. DEA's empirical orientation and the absence of a need for the numerous a prior assumptions that accompany other statistical approaches have attracted a number of studies involving efficient frontier estimation (Cooper, et al., 2011). In his book Zhu (2014) introduced DEA as a multiple-measure performance evaluation and benchmarking tool that focus on performance evaluation and benchmarking shifting from characterising performance in terms of single measures to evaluating performance as a multi-dimensional systems perspective.

2.4 Home Bias: Domestic Asset Allocation

Domestic resources drives the African investments for local economy development, hence the need for Africa to invest in its own development to sustain its domestic growth. Ashiagbor, et al., (2014) added that it is ideal for countries to protect their domestic resources and to restrict the pension funds to plough back into their economies for local growth and development. However, regulations may negatively affect less diverse economies due to a limited number of investment options.

According to (Hu, 2006:10) "modern portfolio investment theory suggests a globally diversified portfolio construction, and any other under-diversified portfolios are subject to unnecessary unsystematic risk which could have been removed". He further argued that on average investors tend to invest more in the domestic markets and most countries pension fund portfolios are made up of high assets proportions in domestic bonds and equities than in foreign assets. This is also claimed by Oluyeju (2017) that investors bias towards their home intruments/products can lead to the underperformance of its stock market.

By studying portfolio managers' investments over time, the authors concluded that investors tend to favour domestic securities over foreign. These findings indicate that investors have other preferences than pure rational risk and return and thus the diversification in their portfolios remains slightly lower than expected by the prevailing portfolio theories. The proven lack of diversification seems to depend on investor preferences rather than the factors examined. These factors include

institutional constraints, e.g. ownership barriers and taxes, transactions costs, or explicit limitations of portfolios, e.g. mutual fund regulations limiting the size of foreign holdings.

On a more specific finding, Christoph & Robin (2004) argued the development of asset management industry that introduced the restrictions on the domestic asset requirements, has imposed a cost to Namibian contractual savers as a result of limited assets choices available to asset managers. Theoretically, asset allocation restrictions hampers performance and consequently, diminishes returns[18]. To estimate the impact of the Namibian asset restrictions, the researcher created unrestricted portfolio and restricted portfolio using daily trading figures from the NSX from 1st January 1999 to 31st May 2002.

First approach (Unrestricted Portfolio)[19]:

$$JSEROI + \sum_{i=I,j=1}^{n,m} \left\{ \frac{tradevalue_{ij}}{AllshareIndexI} \right\} \times AllshareIndex_n - tradevalue_{ij}$$

Second Approach (Restricted Portfolio)[20]:

$$NSXROI + \sum_{i=I,j=1}^{n,m} tradevolume_{i,j} \times stockprice_{n,j} - tradevalue_{ij}$$

These considerations revealed that:

•With the restricted portfolio, the market drives the returns whereas the unrestricted portfolio would enable investors to take advantage of the different market performance (Christoph & Robin, 2004).

[18] 'Basic economic principles suggest that imposing restrictions on the investment choices made by asset managers and raising the costs of investment should lead to lower returns' (Christoph & Robin, 2004)

[19] 'If unrestricted, asset managers would at least have the choice of all the stocks traded on the JSE, with i denoting the date, starting with 1=6th January 1999 and ending with n=31st May 2002 and j denoting particular stocks' (Christoph & Robin, 2004).

[20] 'Calculated the returns for all investments made on the NSX assuming that they would be held until the 31st May 2002'.

In an attempt to fill gaps in literature, Namukwambi (2017) did a study to identify the main factors that prevents the pension funds' assets from being invested in local economy and further identified financial instruments available in the Namibian markets but have not considered the asset restrictions. Many pension funds in Sub-Sahara Africa are constrained by the limits placed on the foreign investment which makes it difficult to invest in anything other than domestic funds. The study found the following as inhibiting factors: Shallow capital markets, investment skills gap, lack of published track records of the local assets performance, trustees risk averseness and the illiquidity of the secondary market. The pension funds reforms and asset allocation restriction was not concluded as one of the factors that could hinder investing in domestic economy.

The findings on the related African literature were country specific; it remains unclear if the findings are a true representation of the reforms impact on the overall southern African pension funds' performance.

2.5 Asset Allocation Restrictions: Offshore

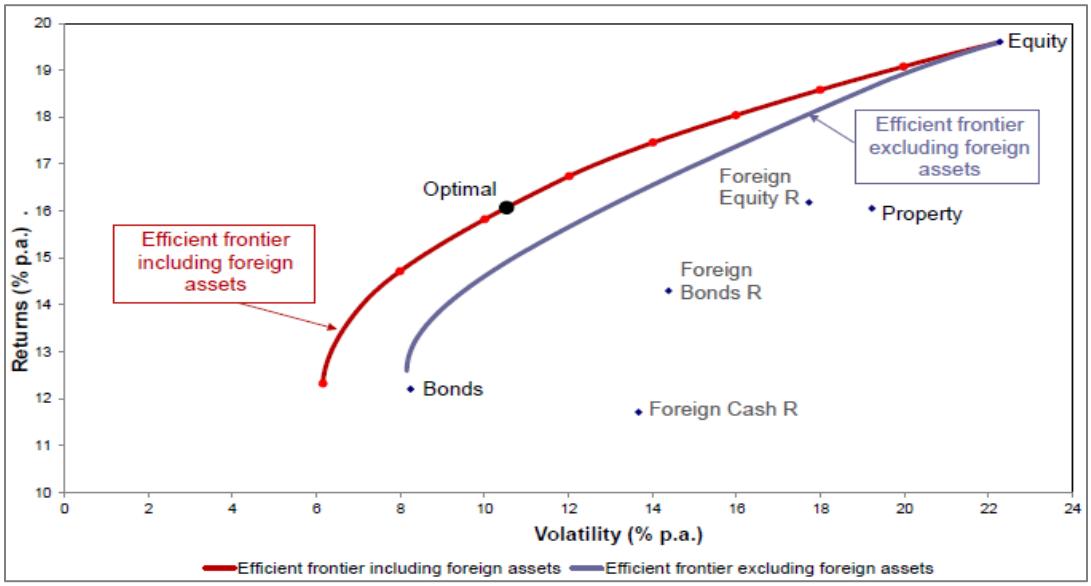
Koegelenberg (2012) recently carried out a study on the South African pension funds' assets optimal allocation using different optimisation models for different time intervals. The study was motivated by the need to understand the role regulatory constraints plays on pension fund performance. The writer sought to analyse the optimal effect of the revised Regulation 28 (a portfolio made up of 75% South African Assets and 25% foreign assets) and a portfolio of South African asset classes only. The objective was to generate the optimum portfolios that achieve statistically significant results using seven different static optimisation methods. The writer considered 10, 20 and 30-year investment concluded that "Over the longer investment periods (20- and 30-year periods) mixed results were obtained, but it seems that the majority of optimisation strategies lean towards foreign-allocation portfolios when the investment horizon is increased." The study did not however reveal how the revised regulation 28 affected the performance of the pension funds in South Africa.

On the other hand, Mjebeza (2016) evaluated some of the Regulation 28 constraints) the efficient frontier and a non-parametric model. The study's non-parametric analysis showed low returns for constrained funds in comparison to the unconstrained funds and that the returns for the latter were

achieved at high risk. It also showed that Regulation 28 diminishes the benefits emanates from international markets when there are no restrictions.

Wepener (2014) also explored the South African retirement funds in terms of asset allocation optimisation under the constraints of Regulation 28. The study aimed to assess the performance of the South African pension funds in the context of equity foreign allocation between developed and emerging markets. The study embraced the mean variance and the Omega ratio to test optimal significance. The results were that both models revealed that it's beneficial and optimal for the pension funds to allocate the full 25% to foreign assets as prescribed by the Regulation. In a different study, Bradfield & Munro (2015) used two different methodologies (Mean Variance and Non-parametric) to assess the implications of raising the foreign portfolio to 25% for South African investor and also put forward a supporting evidence in favour of the 25% foreign allocation.

Figure 2.1 SA Unconstrained efficient frontiers – (Jan 1971 to Dec 2010)



***Source*:** (Bradfield & Munro, 2015).

Srinivas, et al. (2000) carried out a related study on regulation of privation pension funds and performance. They found two common arguments for international investment controls that "they limit volatile capital flows and hence achieve monetary sovereignty and macro-economic stability

and secondly, that they reduce capital flight and deepen domestic financial markets". Developing countries mainly experience these problems, and in general the ceiling on foreign investment is minimal compared to the OECD countries (Srinivas, et al., 2000).

A study by Reisen (1997) found that the diversification broadens market accessibility thereby increasing benefits and minimizes the risk, taking advantage of the different markets dynamics in terms of correlation. Domestic instruments tend to be strongly correlated as they are exposed to the same local shocks (Reisen, 1997). The study established that to exclude pension funds from the domestic stock market by instructing them to hold the global portfolio implies denying to the holders of pension rights the strong capital gains that are likely to arise in the early stages of pension reform.

2.6 Literature Summary

The literature analysis above shows that regulatory restrictions have diverse effects on performance of pension funds, depending on the level of restrictions imposed. Pension funds seem to thrive in relaxed regimes which impose fewer restrictions and laws than in regimes with tighter restrictions. However, most of the studies mentioned above were country specific and confirmed a statement by (Reisen, 1997) that "none of the mentioned studies have accounted for the presence of diverse investment and performance regulations in these capital markets and no comparative analysis on the performance implications of these regulations has been achieved". Taking into account the above literature review, this paper seeks to contribute to the current growth and fill the gap in the pension funds literature in the Southern Africa context.

CHAPTER 3

3 RESEARCH METHODOLOGY

3.1 Introduction
3.2 Research Design
3.3 Data and Research Instrument
3.4 Data Analysis
3.5 Conclusion

3.1 Introduction

This chapter provides the methodology of how the research was conducted. The reliability results of this study is highly dependable on the appropriate design and method of collecting the data that to adequately substantiate the findings and address the research problem. Methodology is defined by Ramos, Bryman and Teevan (2007) as a comprehensive and intricate range of principles, opinions, structures as well as concepts which border on use of various methods to produce information. The chapter outlines the research design, data sample, data collection and data analysis.

Khan (2011) explains that research approach refers to the methodology that has been adopted to conduct the research. Research approaches vary from quantitative to qualitative. However, in some circumstances a researcher can involve both approaches commonly known as the mixed approach. The technicality of this study required that both qualitative and quantitative research methods if it is to achieve the intended objective. The qualitative method was employed through open-ended questions in the questionnaires. These open-ended questions allowed the researcher to get different perspectives from asset/fund managers, while quantitative data were collected through closed-ended questions on the questionnaire. The pension fund managers were reached out to using Survey Monkey tool. There was also an extensive use of secondary data by means of reports and Finance websites.

3.2 Research Design

This study adopted the descriptive research design. According to Craig and Douglas (2000) research design is when information on the present condition of the subject matter is gathered whilst making use of a multitude of people that stand for the population without transforming the setting. A research design provides the link between the questions that the study is asking, the data that is to be collected and the conclusions drawn (Robson, 2014). This mixed-method descriptive research design was chosen because it matched the research's study inquiries as well as helped to explain the variables under study. The mixed-method research design permits generalizability of study results to a population (Hendrick, 2011). The research design adopted allowed for questionnaires to be used with the aim of generalising information obtained from a sample of fund managers from three different countries. The questionnaires were administered to the respondents through online survey platform Survey Monkey.

The population of relevance for the qualitative component were pension fund managers (20). These stakeholders were used because they are perceived to have information on how regulatory restrictions in their respective countries affect the performance of their pension funds. Twenty (20) Fund /Asset Managers were randomly selected from three randomly selected Southern African countries.

3.3 Data and Research instrument

Both primary and secondary data were collected. Primary data were sourced from pension fund organisations through the questionnaires. The questionnaire had both open and close ended questions. The questionnaire was used to capture the pension funds'[21] perspectives and insights on the asset restrictions allocation (reforms). In addition, the study embraced secondary data from reviewing journal articles, annual reports from the regulator's websites, research institutions, statistics agencies and international economic bodies.

Questionnaire Method: This method is very convenient because the data were collected from a diverse population using the same questions and hence they could be compared. Open questions allowed the respondents to answer on the basis of their knowledge and experience with the issue concerned.

[21] Pension funds Regulator, Government Perspective and Practitioner (Asset Manager)

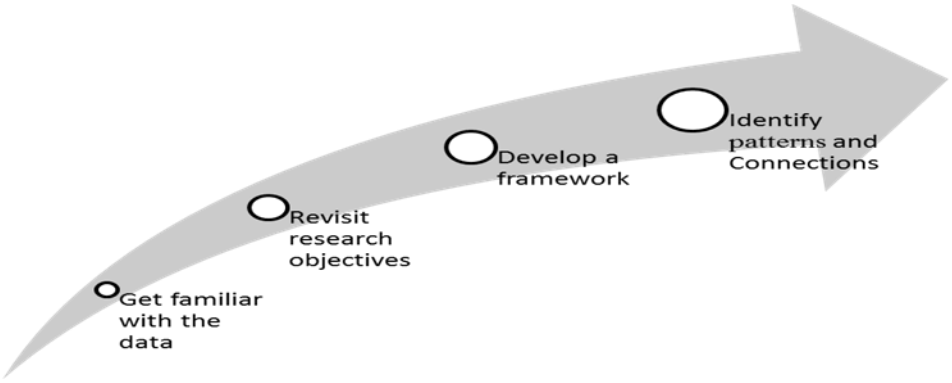
3.4 Data Analysis

The major purpose of analysing data is to highlight useful information. It is a process of inspecting, cleaning, transforming, modelling data with the goal of capturing useful information. Data analysis can be referred to as the application of specific tools to understand the data that have been gathered. Creswell (2014) posits that data analysis is the process of systematically searching and arranging the interview transcripts, field notes, sources and materials that can accumulate to increase one's own understanding of them and to enable one to present what has been discovered to others. The aim of the analysis and interpretation of qualitative data is to discover common patterns within the responses, ideas, explanations and understanding. Therefore, data analysis is a process of simplifying and analysing data to make it comprehensive in order to achieve research aims and objectives.

Qualitative research can help researchers to access the thoughts and feelings of research participants, which can enable development of an understanding of the meaning that people ascribe to their experiences (Sutton & Austin, 2015). Qualitative approach is used to examine the perceptions of key stakeholders regarding the regulation of pension funds. Qualitative data analysis works different from quantitative data, primarily because qualitative data is made up of words and observations which make deriving absolute meaning from such data nearly impossible; hence, it is mostly used for exploratory research. In quantitative research there is a clear distinction between the data preparation and data analysis stage, analysis for qualitative research often begins as soon as the data are available.

This study employs **Narrative analysis** which is used to analyse content from various sources, such as interviews of respondents, observations from the field, or surveys. It focuses on using the stories and experiences shared by people to answer the research questions (Bhatia, 2018). Analysis and preparation was performed simultaneously and included the following steps (Bhatia, 2018).

Figure 3.1 Qualitative data preparation and analysis followed the process flow



(Source: (Bhatia, 2018)**, Picture: Own)**

3.4.1 Secondary Data (Document analysis)

The study collected data from several sources which include institutional reports, newspaper articles, survey data; and annual reports on different regulator's websites, research institutions, statistics agencies and international economic bodies. Statistical data were identified from these sources which work as evidence to support theoretical literature. This analysis of such data helped to identify trends in pension funds' performance after the introduction of regulatory restrictions. Document analysis is often used in combination with other qualitative research methods as a means of triangulation—'the combination of methodologies in the study of the same phenomenon (Bowen, 2009). These documents serve as a complement to the study to uncover meaning, develop understanding, and discover insights relevant to the research problem. When there is convergence of information from different sources, readers of the research report usually have greater confidence in the credibility of the findings (Bowen, 2009).

3.4.2 Analysis of Primary Data

Data collected from the field was both quantitative and qualitative in nature. Quantitative data was analysed through the SPSS (Statistical Package for Social Science). Descriptive statistics were used and data was presented in the form of means and standard deviation. Qualitative data from open-ended questions were analyzed using key word analysis and key word frequencies (Denzin & Lincoln, 2000). To determine the extent to which asset class limits contributes to the overall

financial performance of the fund, a multiple regression model was used. The researcher adapted a multiple regression model.

The regression model:

The regression model used was:

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

The same model was used by Njeru (2014) which was used to evaluate the effect of regulation on financial performance of pension schemes in Kenya using multiple linear regressions from year 2004 to 2013. The primary data was limited to 38 schemes less than the number of observations initially planned and secondary data was limited to the degree of precision of the data obtained from the secondary source.

Y: Represents dependent variable (Pension funds' performance- which was measured by profitability of pension fund.

α: is the constant (the average financial performance accounted for by other factors)

β: is the regression coefficient

χ_1: Restrictions on of foreign assets

χ_2: Restrictions on foreign bonds

χ_3: Restrictions on commodities

χ_4: Restrictions on corporate bonds,

χ_5: Restrictions on African investments

χ_6: Restrictions on properties

χ_7: Restrictions on domestic assets

χ_8: Restrictions on alternative assets

χ_9: restrictions on equities

3.4.3 Test of Significance

The test of significance for the regression model used t-statistics and p –value to test if the coefficient of the explanatory variables is statistically significant in causing a variation in the dependent variable. The determination coefficient, (R^2) is the square of the test correlation coefficient between outcomes and predicted values. As such, it clarifies the extent to which

transformation in the dependent variable (Fund performance) can be explained by the change in the independent variables (asset allocation) or the percentage of variation in the dependent variable that is explained by all the included independent variables.

3.5 Chapter Conclusion

This chapter presented the methodology. It explained the research approach used, the research design, the research instrument used and the model that was used to calculate the relationship between fund performance and variables. The next chapter will look at the presentation and the analysis of the results.

CHAPTER 4

4 PENSION FUNDS LAWS AND REGULATIONS: SOUTHERN AFRICA

4.1 Introduction

4.2 Objectives of pension funds regulation

4.3 Pension Funds Asset Management

4.4 Lessons from further afield

4.5 Conclusion

4.1 Introduction

This chapter investigates the Sothern African pension funds laws and regulations that administer pension funds' assets. The study further reviews the investment limits regulatory reforms of the pension funds' assets and the proportional effect on assets invested with the aim to promote the domestic market deepening and liquidity. This is followed by discussions around South Africa pension fund being a leading economy in Southern Africa and also, assessed some developed countries. "Countries can learn a great deal from one another as they move toward greater implementation of policies geared toward pension funds 'reforms'" (Ashiagbor, et al., 2014:10).

4.2 Objectives of pension funds regulation

Making up the largest part of the financial institutions, pension funds attract the need for regulation based on the country's regulation regime. Since they affect people's livelihood, national governments have a concern about their overall performance and associated risk. Literature identified two types of regulation that countries can use to control pension funds, one being the quantitative asset restrictions (QAR) and the second one is the prudent person rule (PPR). Under the QAR form, the government makes specific regulations prescribing investment asset limits and allocations (Hu, 2006). On the other hand, the PPR approach set minimum specific investment regulations, "whereby pension funds are invested prudently as someone would do in the conduct of his or her own affairs" (Hu, 2006). It differs from the QAR approach on the basis that it focuses

on the fund managers' behaviour but not necessarily on the allowed specific investment restrictions or investment category.

If pension funds are managed poorly, it may lead to performance losses and inability to pay the retirees in due time leading to governments to step in and incur fiscal costs to absorb the losses (Hu, 2006). Hence, the increase in government intervention and regulation to ensure the efficient management of pension funds and to mitigate the adverse impacts of risk taken by the fund managers.

4.2.1 The Prudent Person Rule

This is alternative approach to quantitative investment limits which allows pension fund managers to be more flexible but prudent (World Bank, n.d.). "For example, the United States requires fund managers to invest 'with the care, skill, prudence and diligence under the circumstances then prevailing that a prudent person, acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims"[22]**.** There are guidelines set out by OECD on how to apply the prudent person principle (Yu-Wei, et al., 2007). According to Antolin (2008) the prudent person principle avoids the imposition of stringent portfolio limits and focuses on regulating the behaviour of investment managers**.** The PPR is criticised in the context that the rule is prone to misinterpretation and manipulation and this requires intervention of regulators and supervisors (Antolin, 2008)**.**

Successful implementation evidence of the Prudent Person Rule[23]

Although several studies concluded that the prudent person rules enable improved returns than under quantitative limits, "empirical data also suggests that pension funds subject to prudent person principles do invest cautiously" (Antolin, 2008). Yu-Wei et.al (2007:9) highlighted four points to provide some guide towards successfully implementing PPR:

- "Regulatory role – to ensure that the regulatory environment encourages new investment instruments / practices.

[22] www.worldbank.org/pensions
[23] http://www.oecd.org/finance/private-pensions/39604854.pdf (Yu-Wei, et al., 2007)

- Supervisory role – make sure the supervisory authority can monitor investment management activity via the supply of adequate information
- Governance framework – supervisory authorities should ensure that the governance framework of pension funds is sufficiently robust to produce optimal decision making and
- Sanctions framework: the weight of sanctions needs to be carefully balanced (not so strict as to stop innovation / not so weak as to allow reckless investment".

Yu-Wei, et al., (2007) further recommended that, considering that pension funds regulators experience challenges in transitioning from QAR to the PPR approach, "it is advisable that such regulatory relaxation should be matched by a corresponding strengthening of regulatory capability".

4.2.2 Quantitative Asset Restrictions (QAR)

The quantitative approach prescribes various investment limits which fund managers should adhere to in their portfolio allocation (Antolin, 2008).

QAR drawbacks

The OECD guidelines advise that due care should be taken when applying quantitative limits. "For example, minimum investment limits are not recommended – as these force pension funds to invest specified portions of their portfolios in particular asset categories, leaving pension fund asset managers no or little ability to walk away from what they might determine to be unwise or inappropriate investments and may artificially inflate asset prices" (Yu-Wei, et al., 2007)[24]. The guidelines recommend regular assessment of quantitative limits to ensure their relevance and validity for optimum investment, and amend as necessitated. The guidelines further recommend a limited use of quantitative limits and to complement such limits with a prudent person rule.

Yu-Wei, et al. (2007:5) identified some drawbacks of quantitative limits that:

- "they failed to take into account the contribution of any specific security or asset class to the overall risk in the pension fund's portfolio.

[24] http://www.oecd.org/finance/private-pensions/39604854.pdf

- they can be difficult to change and adapt to new market environments to the extent of hampering diversification, performance and even asset liability management.
- they cannot effectively regulate the manner in which pension fund asset management decisions are made within the boundaries of different asset classes, as a result, countries that rely primarily on portfolio limits it is advisable at a minimum, also set forth prudent person standards for pension fund governing bodies".

For countries to fully understand and apply the best approach, they should consider setting forth the answers to "who should be responsible for making the initial, broad determination of an asset allocation policy for a pension fund – the state or each fund's trustees"? (Yu-Wei, et al., 2007).

4.3 Pension Funds' Asset Management

4.3.1 Investment of Pension Funds' Assets in Namibia

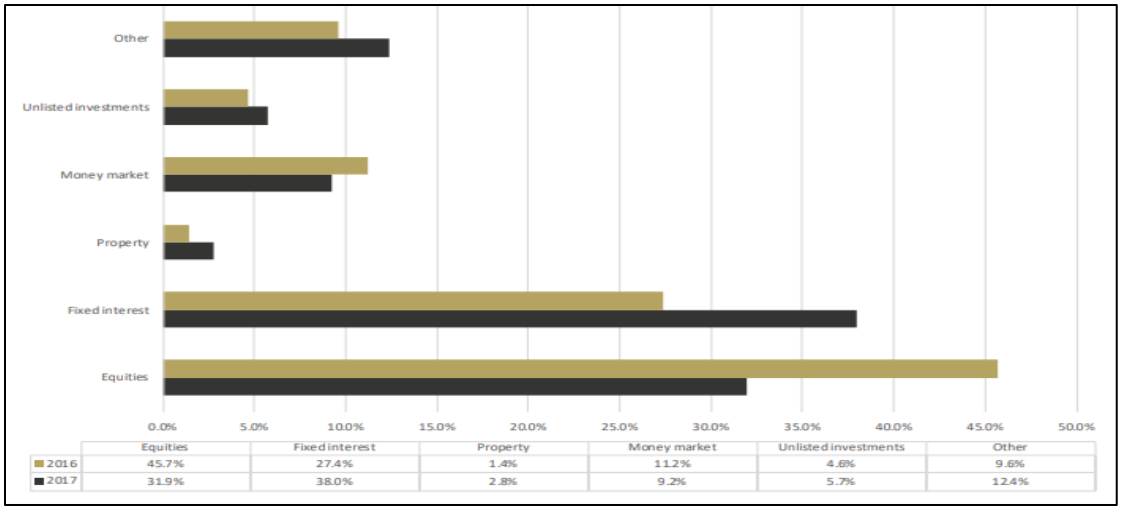
There were 138 pension fund schemes, 26 investment managers and 22 unlisted investment managers registered with NAMFISA by the end of December 2018 valued at $0.73 billion and $10 million respectively[25]. The pension funds consisted 136 defined contribution funds and 2 defined benefit funds (NAMFISA, 2018). The Government Institutions Pension Fund (GIPF) manages the large portion of the retirement assets (NAMFISA, 2018).

According to (NAMFISA, 2018), in terms of domestic asset allocation, equities comprised 31.9% of local asset investments whereas fixed interest bearing assets increased to 38%. Equities appears to be an attractive investment instruments to pension funds as they sustain long-term growth further provide dividend income and capital gains from growth in the underlying assets (NAMFISA, 2018).

"While it is unusual for pension funds to hold more investments in fixed interest bearing assets, it is normal for Namibia by virtue of its shallow market for equity instruments and the illiquid nature of actively traded shares on the Namibian Stock Exchange" (NAMFISA, 2018).

Figure 4.1 Namibia Domestic Asset Allocation as at December 2017

[25]https://www.namfisa.com.na/wp-content/uploads/2018/08/Namfisa_Annual_Report-2018.pdf



Source: (NAMFISA, 2018)

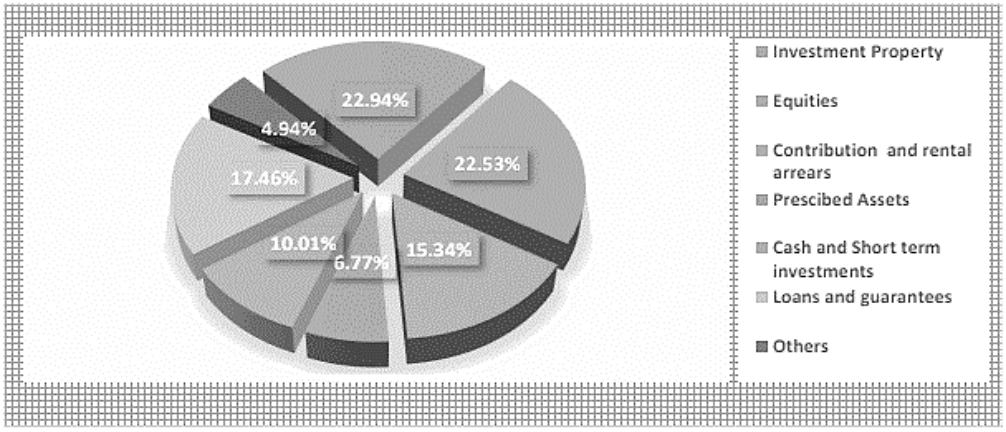
4.3.2 Investment of Pension Funds' Assets in Zimbabwe

In Zimbabwe the statutes governing pension funds are Pension and Provident Funds Act of 1976, Insurance and Pensions Commission Act of 2000, and the NSSA Act of 1989 upon which NSSA is established. The Pension and Provident Funds Act Chapter 24:09 states that "a registered fund shall at all-time hold its assets in Zimbabwe in investments which are realisable in Zimbabwe" (Richard & Taonaziso, 2014). Furthermore, Section 18 of the Act allows 10% of the aggregate cost value of all the fund assets to be invested in prescribed assets (Mazviona, 2013). IPEC's 2013 investment guidelines for life companies and self-administered funds proposed the following ceilings in asset allocations; prescribed assets – 70%, property – 40%, quoted shares – 40%, money markets – 70%, cash – 10% and not more than 5% in unquoted shares (Richard & Taonaziso, 2014). Zimbabwe's asset allocation guidelines on foreign investment allowance appears to be lagging behind its SADC peers that have set pension funds ceilings for foreign investments at 25% for South Africa, 30% for Zambia and 70% for Botswana (Richard & Taonaziso, 2014).

The pensions industry had 1,552 registered occupational pension funds as at 31 December 2016 which were administered through 6 of the 11 registered life assurers, 5 pension fund administering firms and 16 were stand-alone pension funds. The pensions industry had a total asset base of $3.43 billion as at 31 December 2016, made up of 45.5 % invested in property and equities. The industry had an average prescribed asset ratio of 6.77%, which was below the regulatory requirement of

10%. The industry's reported asset base of $3.43 billion as at 31 December 2016 with an average assets per member of $4,471.

Figure 4.2 Zimbabwe Pension Funds' Asset Allocation



Source: (IPEC, 2016)

Zimbabwe Financial Market performance

The Zimbabwe Stock Exchange, which is a major investment destination for insurance companies and pension funds exhibited an optimistic trend at the end of 2016 with a total market capitalisation of US$4 billion. On the other hand, Government securities, which dominated the bond market, in the form of Treasury bills and bonds were the main debt instrument available in the market owing to Government borrowing to support recurring budget deficits and securitisation of parastatal debts, as well as some Government arrears to service providers. The bonds were traded on the secondary market through over the counter transactions at discounts ranging from 7% for short dated paper, to 40% for long dated paper of 5 years and above (IPEC, 2016). However, the approval of the debt market listings requirements by the Securities and Exchange Commission of Zimbabwe is expected to pave way for formal trading of debt instruments on the Zimbabwe Stock Exchange and ensure price discovery in the trading of such securities[26]. The industry had 6.67% of its assets invested in prescribed assets, which was below the minimum requirement of 10%. Insured, self-administered and stand-alone pension funds had prescribed asset ratios of 7.99%, 9.48% and 3.89% respectively[27]. The penetration ratio of the country as measured by the total

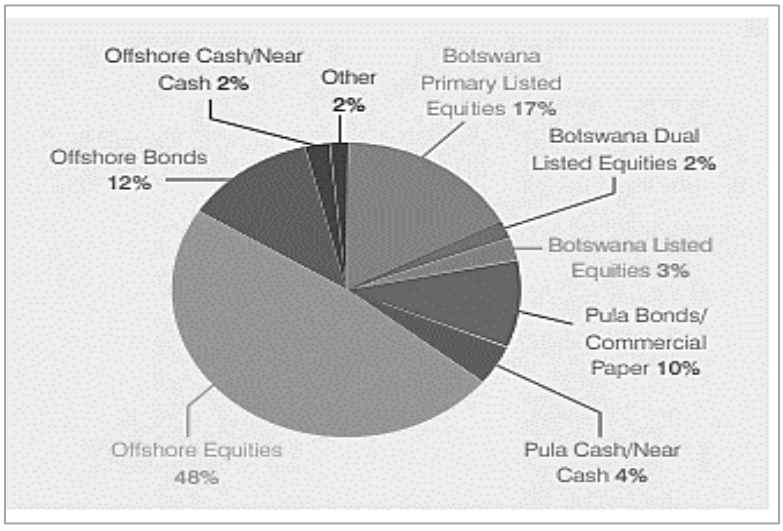
[26] ipec.co.zw/findata
[27] As above

pension industry assets as a percentage of GDP was 21.06% as at 31 December 2016 which compares favourably to that of Kenya and Nigeria, which were estimated to be at 14% and 6% for the same period respectively. Zimbabwe's Pension and Provident Funds Act is considered as outdated and not in sync with the global trends in corporate governance, financial management and accounting and actuarial reporting best practice.

4.3.3 Investment of Pension Funds' Assets in Botswana

The pension funds are regulated and supervised in terms of the NBFIRA Act (2016); the Retirement Funds Act (2014) and its Regulations of 2016, which repealed the Pension and Provident Funds Act (1987). The Retirement Funds Act (2014) and its Regulations were effected in April 2017[28]. The number of licensed Retirement Funds were 86 of which 6 are umbrella funds and pension fund administrators operating in Botswana as at December 2017. The total membership of Retirement Funds was 259,301 comprising of 230,006 active members, 17,326 deferred members and 11,969 pensioners (NBFIRA, 2018).

Figure 4.3 Botswana Pension Funds' Assets Allocation (2018)



Source: (NBFIRA, 2018)

The Retirement Funds Sector contributes significantly to the economy of Botswana, with total assets to GDP ratio of 45%. The assets held by Retirement Funds amounted to $4.8 billion, offshore Cash assets increased by 9 fold due to introduction of offshore limits within Pension Fund

[28] www.nbfira.org.bw/sites/default/files/NBFIRA%20ANNUAL%20REPORT%202018_0.pdf

Rule 2 (PFR2). The provisions of the PFR2 allow Retirement Funds to invest up to 70% of their assets in offshore markets. Total equities accounted for 70% of the pension fund assets under management, comprising Botswana listed equities of 17%, Botswana unlisted equities of 3%, Botswana dual listed equities of 2% and offshore equities of 48% whereas bonds accounted for 21.9% comprising of domestic Bonds of 9.8% and offshore bonds of 12.1%. The offshore investments of retirement funds make up 65% of total pension assets while local assets stand at 35%. NBFIRA has proposed a timetable for the reduction of the offshore limit to 30% by 2050 (Ashiagbor, et al., 2014).

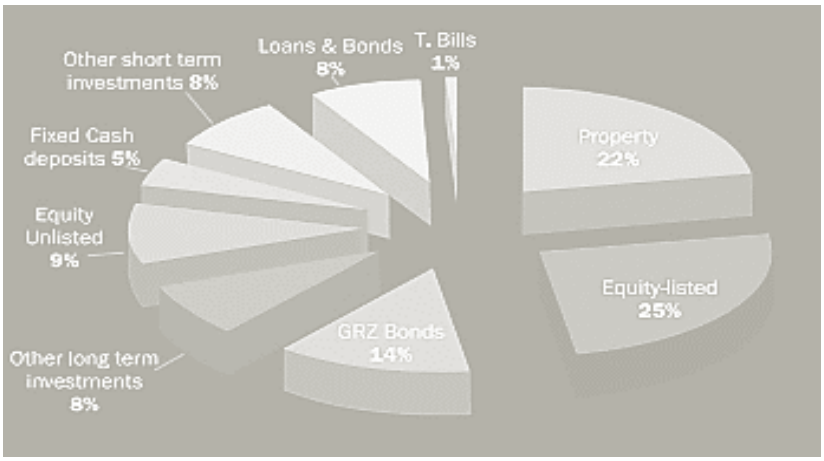
4.3.4 Investment of Pension Funds' Assets in Zambia

The pension funds in Zambia are regulated and supervised by PIA in terms of Pension Scheme Regulation Act (PSRA) of 1996, which applies to all pension schemes except the National Pension Scheme Authority (NAPSA), to which contributions are compulsory. The PSRA requires that all pension schemes be established under an irrevocable trust, and acceptable protection of the rights and interests of the sponsors and members of the scheme (Ashiagbor, et al., 2014).

The legal framework for retirement and pension benefits in Zambia is dispersed in different legislations which made it complex and led to some contradictions and conflicts in application of the law (Ashiagbor, et al., 2014). "Current pension sector reforms are aimed at the public pension schemes with the government collaborating with key stakeholders in order to attempt to address certain challenges, namely the low levels of pension fund contributions, actuarial deficits of the funds and the consequent delayed or non-payment of pension benefits" (Ashiagbor, et al., 2014). In Zambia, a fund may not invest more than 30% of its fund size outside of Zambia. The number of registered service providers and pension entities was as follows: 239 pension schemes, 7 pension fund managers, 6 pension administrators. The total number of members in the registered pension schemes was 112,260 in 2015[29].

[29] http://www.pia.org.zm/insurance_annual_reports

Figure 4.4 Zambia Pension Funds' Assets Allocation as at 31 December 2015



Source: www.pia.org.zm/insurance_annual_reports

4.4 Lessons from further afield

4.4.1 Pension Funds' Assets Investment in Nigeria

The Nigerian pensions system were reformed in 2004 leading to the Pension Reform Act 2004, which established PenCom as the independent regulator of the pensions industry (Oluyeju, 2017). This Act brought into limelight the new pension scheme in Nigeria which is a defined contribution scheme unlike the old scheme which was largely defined benefits which led to massive accumulation of pension debt. Oluyeju (2017) did a comprehensive study on the Nigerian financial system and discussed that it's the most diversified system in sub-Saharan Africa (SSA), though very unstable and inefficient. "The Nigerian stock market trades approximately 300 companies with a capitalization of 35% of GDP whereas its bond market trades in securities with maturities of up to 20 years" (Oluyeju, 2017).

4.4.2 Pension funds' assets investment in Kenya

Kenya being a former British colony has adopted so much from the British system of saving. Among many savings avenues is the formation of the National Social Security Fund (NSSF), which is similar to the state pension fund of the United Kingdom (UK) (Masinde & Olukuru, 2014). In addition, the setting up of occupational pension funds in Kenya is borrowed from the UK. A new Retirement Benefits Act was enacted in 1997 and a comprehensive framework of

regulations was implemented three years later in 2000. A regulatory authority, the Retirement Benefits Authority ('the RBA') was established at the same time to regulate, supervise and promote the retirement benefits sector in Kenya. Recent reforms to Kenya's pension fund regulations, announced in mid-2015, have opened up more diverse avenues for investment and increasing prospects for growth. There were 19 fund managers and 11 approved issuers managing 1271 schemes worth of a total fund value of $8.9 billion of the total assets under fund management[30] as at December 2017.

The Pensioner Magazine 2018 reported that overall, the retirement benefits assets under management stood at $9.8 billion in December 2017. The growth of the assets can be attributed to improved compliance, stock market recovery after the bank crisis in 2016, and the aftermath of the 2017 lengthy elections (RBA, 2018). The fund managers' total of $0.65 billion of investments was internally administered by the National Social Security Fund (NSSF) of which $1.07 billion of property investments was directly managed by the schemes trustees. The assets under management of NSSF mainly included immovable property, quoted equities, fixed deposits and unquoted securities. The government securities[31] made up 36.49% of the total assets under management.

4.4.3 Pension Assets Investments outlook in OECD countries

The OECD conducted an annual survey of pension funds regulation in 2017 and found that most countries have quantitative limits on the investments of pension funds as of the end of 2016. Only eight countries do not impose any ceiling to pension fund investment for the asset classes: Australia, Belgium, Canada, the Netherlands, New Zealand, the United Kingdom, the United States in the OECD, and Malawi. In Australia, even though no specific portfolio limits are prescribed, trustees must consider diversification in their asset allocations. Investments in equities, in particular in unlisted equities, are capped in most countries regulating pension funds' investments. There is an upper limit on equities in 22 OECD countries. Many OECD countries have minimised the use of quantitative restrictions. Canada eliminated its 30% cap on foreign investment in February 2005 (Yu-Wei, et al., 2007). The same article highlighted that in Germany,

[30] http://www.rba.go.ke/index.php/en/publications/category/78-newsletters-2018

[31] Section 37 (1) of RB No.3 of 1996 states that "every scheme shall have a prudent investment policy on the investment of the funds of the scheme so as to maintain the capital funds of the scheme and generally to secure market rates of return on such investment: Provided that a scheme with a fund value of one hundred million Kenya shillings or less may invest up to one hundred per centum of its scheme funds in Government securities".

"while restrictions remain for the 'Pensionskassen', a new type of financing entity, the 'Pensionsfonds', was introduced in 2002 which is not subject to any quantitative restrictions on investment by asset class other than currency matching requirements and a 5% limit on investment in a single issuer"[32].

Meanwhile in Japan, pension funds are subject to the restrictions based on the PPR introduced in 1999, Korea introduced regulations in September 2003 which increased the foreign investment to 20 %, Mexico revised their regulation in 2002 and Switzerland surpassed its quantitative limitations with prudent investment policy in 2000 (Yu-Wei, et al., 2007). The writers further indicated that all these countries have shifted to PPR with the aim of improving governance and enhance risk management models to assess portfolio risks.

4.5 The Financial System: South Africa

South Africa's pension funds are monitored and supervised by a separate entity[33], an approach compared to that of Latin American (Noland, 2015). These funds are regulated under section 36 of the Pension Fund Act which was updated in July 2011 by increasing the foreign investments from a limit of 20% to 25% and African investments from 5% to 10%. The government imposes these limits to protect investors against risky investment, however (Wepener, 2014) argues that it may negatively affect the performance in the long run. There were 5 119 registered retirement funds in South Africa in 2017, of which 1,758 funds are active.

The rationale for the policy[34] is to strike a balance between diversification of investments by institutional investors and to manage (excessive) foreign risk. The challenge, however, with the current institutional investment framework is that all institutional investors of South African origin are subject to a foreign investment limit. This limit makes it difficult and uncompetitive for local fund managers to be used by foreign investors to manage foreign sourced funds using South Africa

[32] (Yu-Wei, et al., 2007), PP 6.
[33] Financial Sector Conduct Authority
[34]

(SA) as a domestic base to invest in Africa and internationally. This is also in the context of SA not having capital controls on non-residents.

To promote SA as an investment management hub for investment into Africa and the rest of the world, the Minister of Finance announced the introduction of another class of investment vehicles, called Foreign Member Funds (FMF) during the 2014 Budget. The FMF will be exempted from the applicable macro-prudential foreign exposure limit. Against this background the Financial Services Board (FSB), and the South African Reserve Bank (SARB), in consultation with the National Treasury have developed a framework that sets out the proposed framework for establishing regulation for FMFs in South Africa. The policy objective of the FMF framework is to enable and encourage foreign investors to use South Africa and its investment management industry as a hub and gateway for investments into Africa and the rest of the world. Secondly, the objective is to also provide a domestically regulated channel for local investors to obtain foreign exposure, subject to the applicable macro prudential limits and to attract foreign capital.

Table 4.1 Top 20 asset managers (minimum R5 billion) in South Africa by asset-weighted rating

Rank		Asset Manager	Rated Assets Bn ZAR	Equal Weighted Rating	Asset Weighted Rating	Equity	Fixed Income	Allocation	% Assets 4 & 5 star
–	1	Allan Gray Unit Trust Mgmt	267.1	4.67	4.84	4.31	4.00	5.00	100%
–	2	Fairtree Capital	7.7	4.33	4.99	5.00	5.00	3.00	100%
↑	3	Prudential Investment Managers	75.3	3.90	4.80	4.48	3.05	4.99	96%
↑	4	Coronation Management Co	244.3	3.65	4.05	4.06	4.72	3.91	88%
↑	5	Sygnia Collective Investments	12.5	3.64	3.98	3.16	-	4.22	74%
↑	6	PSG Collective Investments	33.1	3.63	4.61	3.92	3.00	4.79	93%
↓	7	Nedgroup Collective Investments	142.3	3.54	3.44	3.11	3.25	3.80	44%
↑	8	Discovery Life Collective Inv	34.6	3.50	3.78	3.37	3.00	3.97	80%
↓	9	First Global Group	6.0	3.50	3.76	3.00	3.00	3.89	76%
↓	10	PSG Multi-Management	47.3	3.50	3.88	3.94	3.48	3.94	88%
↑	11	Personal Trust Intl Mgmt Co	6.9	3.40	4.21	2.00	2.00	4.57	67%
↓	12	Rezco Collective Investments	8.2	3.33	3.88	3.00	-	3.91	88%
↑	13	Prescient Management Co	34.9	3.29	4.00	3.36	3.90	4.49	86%
↑	14	STANLIB Multi-Manager	26.1	3.25	3.12	3.02	3.00	3.31	12%
↑	15	ABSA Multi Management	12.2	3.20	3.24	-	5.00	2.97	13%
↓	16	Momentum Collective Investments	39.1	3.18	3.69	3.92	3.69	2.98	60%
↓	17	Boutique Collective Investments	7.3	3.17	3.19	2.33	3.81	3.00	21%
↓	18	Foord Unit Trusts	72.3	3.17	3.21	3.00	-	3.25	23%
↑	19	Ashburton Management Company	7.8	3.15	3.15	3.42	3.41	2.88	35%
↑	20	Old Mutual Unit Trust Mgrs	88.3	3.15	3.60	3.43	3.37	3.84	53%

Source: https://businesstech.co.za/news/business/219861/these-are-the-20-best-performing-asset-managers-in-south-africa 18 January 2018

The asset-weighted ranking gives an assessment of an asset manager's weakness and strength, in light of how investors allocated assets between available investment options within the fund range.

4.5.1 Existing findings on Regulation 28[35] from the related preceding literature

i. A comparison of the returns of 'Regulation 28' compliant and noncompliant Funds in South Africa (Noland, 2015)

The study was conducted "to infer whether current South African retirement fund members' are being prejudiced on a risk-weighted basis, by being limited to invest in Regulation 28 compliant retirement funds" (Noland, 2015). The study assessed 27 compliant funds and 21 non-compliant funds over the period January 2002 to 2014 using the MSCI world index as a benchmark. The study found that the risk-weighted returns showed no statistical difference, though the compliant funds slightly outperformed the non-compliant funds. However, "regulations did appear to reduce return volatility, which suggests that these regulations are operating as intended by the regulators"[36].

ii. Raising the bar on the Foreign Portfolio to 25 Per Cent: Strategic Implications for South African Investors (Bradfield & Munro, 2015)

This paper used mean-variance (efficient frontier) and non-parametric method to justify the strategic allocation to the foreign portfolio with a limit set at 25%. The study utilised data since 1971 with the intention of capturing different economic regimes. "The mean-variance efficient frontier analysis found that an unconstrained foreign allocation resulted in excess of 25% across risk spectrum beginning with the minimum variance portfolio up to high portfolio risk and thereafter the foreign allocation dropped to below 25% as risk targets were raised to higher levels" (Bradfield & Munro, 2015). The non-parametric targeting absolute return mandates based on a CPI+ framework yielded the same supporting results.

iii. Optimal Asset allocation for Retirement Funds: A South African Perspective (Wepener, 2014)

[35] "Retirement Fund industry regulation in terms of the Pension Funds Act of 1956, and compliance with this act is monitored and controlled by the FSB".
[36] " (Noland, 2015)

This study collected data from 1995 to 2013 and used two optimisation models (mean variance and Omega ratio) to determine the optimal portfolio for retirement funds in South Africa under Regulation 28 of the pension fund act. Both models found it beneficial to allocate full 25% to offshore assets being the determined optimal portfolio. The study[37] established that the constrained mean variance optimisation model found that the optimal asset allocation was: 24% to developed market equities, 1% (offshore bonds), 31% (local equities), 42% (local bonds) and 2% (local property). Meanwhile using the constrained Omega Ratio found the optimal asset allocation as: 6% (developed market equity), 19% (global bonds), 5% (local equity), 55% (local bonds) and 15% (local property).

Both models favoured developed market equities over emerging market equities and the full 25% allowed foreign weighting was allocated, therefore supporting the regulation. However, this study[38] also found that "while Regulation 28 is meant to protect investors, the constraints lead to sub-optimal portfolios as investors are able to achieve a higher expected return with the same level of risk if the constraints are relaxed".

iv. Optimal Asset allocation for pension funds under the revised Regulation 28 (Koegelenberg, 2012)

This study analysed statistically the optimal allocation in the context of the revised pension funds' Regulation 28. "This was done for three time periods, 10, 20 and 30-years and paired t-tests were done to determine if there is a significant difference in returns for each time period" (Koegelenberg, 2012)**.** The study adopted six (6) optimisation methods that is Traditional Markowitz Mean-Variance (MV) model, Equally Weighted Portfolio (EW), Equally-Weighted Risk Contribution Portfolios (ERC), Re-sampled Mean-Variance Optimization (RMV), nonparametric optimization method and C-VaR (Koegelenberg, 2012)**.**

The findings were that[39]:

- "The EW and ERC portfolios provided statistically significant results that favor the SA only portfolio for the 10-year period, but not for the longer periods.

[37] (Wepner, 2014), PP.44
[38] As above, 45
[39] "Optimal Asset allocation for pension funds under the revised Regulation 28" (Koegelenberg, 2012)

- The MV, RMV and C-VaR methods achieved the same results favoring the SA only portfolio for the 10 and 20-year period, but not for the 30-year period. For the risk-adjusted returns the SA portfolios were again preferred for the 10-year data period, but not for the 20 and 30-year data periods, which indicates the benefit provided by international diversification.
- Optimization by fitting an Extreme Value distribution did not provide significant results when only the returns were considered, but for the risk-adjusted returns it achieved significant results favoring the SA only portfolio for all three data periods.
- The non-parametric approach of portfolio optimization did not provide any statistically significant results for any of the data periods" (Koegelenberg, 2012)**.**

And on the best optimisation method, the results gave a definite yes to the historical RMV method, constructed from the 20-year data period as it outperformed the rest of the portfolios in four out of the six cases (Koegelenberg, 2012)**.**

v. Industry Commentaries on Regulation 28

According to Lamprecht (2018), discussions with fund managers suggests that most managers believe the market allows for a global exposure of 30%, but even the current exposure of 25% is still not fully utilised (Lamprecht, 2018). However, only a handful of managers that have started moving closer to the 30% allocation. Analysts are also of the opinion that with regards to Africa, there hasn't historically been an appetite to invest aggressively into the continent and some managers have made small allocations to Africa from time to time. African investments are new territory to most local managers since they don't have sufficient resources to analyse opportunities on the continent. Currency, political and liquidity risk should also be considered and it may be expensive to trade and transact[40]**.**

It is estimated that at least 50% of the earnings of locally listed stocks are derived from abroad of which a share like Naspers has the highest weighting in the JSE All Share Index at about 18%. Through its holdings in offshore businesses, a vast majority of Naspers' income is now

[40] https://www.moneyweb.co.za/in-depth/stanlib-multi-manager/what-a-revised-regulation-28-means-for-investors (Lamprecht, 2018)

derived from abroad. Thus, if investors utilise a higher offshore allocation, their portfolios will increasingly be exposed to a foreign earnings stream and will therefore be important to consider potential mismatches between assets and liabilities. Some global exposure could be helpful to hedge liabilities and provide diversification, but too much might not be appropriate. Alternatively, investors could invest as much offshore as they require for maximum diversification and hedge out the currency risks, but hedging is typically complex when many currencies are involved and comes at a cost. Global exposure offers great diversification options and provides exposure to shares and instruments that can't be accessed locally. However, it's expected for South African stocks to marginally outperform global equities (as measured by typical global indices like the MSCI World) in the very long run due to the developing attributes of South Africa versus the developed markets bias of global equities.

This thinking is based on STANLIB Multi-Manager's long-term equilibrium asset class return expectations which suggest that a 25% global allocation is probably sufficient for investors in a typical high-equity balanced fund with inflation plus 6% target[41]. Their initial analysis shows that a high- or medium-equity balanced fund doesn't necessarily need more than 25% global exposure in the long run. In a low equity portfolio, 20% is probably enough to provide investors with enough diversification and an appropriate return over time. STANLIB Multi-Manager modelling suggests that in the long run, global exposure should primarily focus on equities and that fixed income assets like cash and bonds should primarily be accessed in the local market. However, from a qualitative perspective global bonds can be a great diversifier during a financial crisis and should not be dismissed as an investment when constructing a portfolio[42]. In contrast to the above, BNP Paribas illustrated that for real return mandates from inflation plus 4%, a strategic allocation of at least 28% to foreign assets, rising to 50% as the required return above inflation rises, is optimal (Hutchinson, 2018). Therefore, it is evident from the studies that many institutional investors still favour South African-domiciled assets with differing degrees of offshore returns[43].

[41] https://www.moneyweb.co.za / (Lamprecht, 2018)
[42] As above
[43] https://www.fin24.com/ (Hutchinson, 2018)

4.6 Conclusion

This chapter has analysed the countries pension system laws, administration and reforms specifically on the asset management framework, identified pension system strengths and shortcomings. The pension funds' performance in general was also explored. Furthermore, pension funds' assets investments were also examined by cross-examining the pension reforms effects on the capital markets across Southern Africa and few other countries. The two approaches to pension funds' investment restrictions were assessed and empirical data suggests a more prudent person approach as opposed to the quantitative rule, given the drawbacks on potentially damaging effects on diversification and performance.The conclusion therefore is that the introduction of asset allocation restrictions has to a certain extent positively affected the performance of the pension funds around the globe.

In the next chapter, the study provides the summary of findings, conclusions and recommendations.

CHAPTER 5

5 FINDINGS AND ANALYSIS OF DATA

5.1 Introduction

5.2 Analysis and Interpretation of the data

5.3 Summary of the data Analysis

5.1 Introduction

In this chapter, the data findings are presented and analysed. The data collected from the field was analysed in response to the objective of the study. The data which were analysed in this chapter was collected from pension funds managers through questionnaire. The major objective of the study was to establish the impact of asset allocation restrictions on the performance of pension funds. The specific objectives were: To establish the relationship between asset allocation restrictions and performance of Southern African region pension funds; to establish main forms of restriction on Asset Allocation; and, to establish if pensions are actually abiding by the restrictions imposed on them.

5.2 Analysis and Interpretation of data

5.2.1 Respondent's profile

All respondents that answered the questionnaire from the survey monkey platform were pension fund managers. 7 respondents were from Zimbabwe, 8 from Namibia and 5 from South Africa. The total number of respondents was 20 as shown in Table 5.1.

Table 5.1 Respondents Profile

	Country of origin	Frequency	Percent
	Zimbabwe	7	35
	Namibia	8	40
	South Africa	5	25
	total	20	

5.2.2 Major types of restrictions imposed

The study sought to establish the main form of restrictions used in the three countries. The results showed that legal restrictions on amount of money invested was the most common form of restriction (identified by of 95%), while 25% of respondents noted that the form of restrictions most common were laws on decision making processes and 30% said that there were laws regulating to industry structure. These findings align with World Bank (2003) study which shows that in less developed countries, the most prominent regulations in pension fund industry were limitations on amount of pension fund to be invested and that these types of restrictions are meant to protect the consumers who do not have much knowledge on investments compared to consumers in developed countries.

Table 5.2 Forms of Restriction on Asset Allocation used

			Country			Total
			Zimbabwe	Namibia	South Africa	
Forms of restriction on Asset Allocation used in your country	There are regulations restricting the amount of pension fund money that can be invested in specific assets	Count	7	7	5	19
		% within country	87.5%	100.0%	100.0%	95.0 %
	There are regulations on the decision-making process and behaviour of investment managers (PPR)	Count	2	3	0	5
		% within country	25.0%	43%	0.0%	25.0 %
	There are regulations on industry structure	Count	1	5	0	6
		% within country	0.0%	12.5%	100.0%	30.0 %

5.2.3 Pension Managers' views on Effect of Asset Allocation Restrictions on pension funds' performance

The study sought to establish respondents' perceptions on effect of asset allocation restrictions on pension funds' performance. Respondents were asked to rate the statements using a five-point scale; where 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree and 5 = strongly agree. Mean and standard deviations were computed for each perception. For the purpose of clarity, below is the scale (mean range) used to interpret the results;

Very high effect = 4.45-5.00; High effect = 3.45-4.44; Moderate effect = 2.45-3.44; little effect = 1.45-2.44; Very little effect = 1.00-1.44 (Saunders, et al., 2012).

Table 5.3 Effect of Asset Allocation (Descriptive Statistics)

	N	Mean	Std. Deviation
Restrictions lead to higher risks for pension funds	20	2.95	1.317
Restrictions lead to less risky investments by pension funds	20	3.90	.788
Restrictions cause actual asset allocation to differ from the target/optimal allocation	20	3.85	1.268
Restrictions decrease investment opportunities for pension funds	20	3.65	1.089
Restrictions lead to liquidity management problems in the pension fund industry	20	3.15	1.387
Restrictions hinder capital market development for pension funds	20	2.90	1.294
Restrictions reduce return volatility for pension funds customers	20	3.45	1.099
Restrictions reduce risk diversification for pension funds	20	3.90	1.021
Restrictions limit portfolios choices of pension funds	20	3.55	1.050
Restrictions affect ability of pension funds to maximize portfolio performance	20	2.15	.933
Regulations cause managers to retain inefficient portfolios	20	3.50	1.469
Restrictions hamper strategic innovation in pension fund industry	20	3.95	.999
Regulations encourage innovation in the Pension Fund Industry	20	3.55	1.050
Regulations lead to increased investments by pension funds	20	2.25	1.020
Restrictions leads to inefficiency in asset allocation	20	3.00	.918

The results, presented in Table 5.3, show that allocation restrictions had highest effect on strategic innovation of pension funds (μ=3.95). Thus most respondents agreed that regulation hampered strategic innovation of their pension funds. The second highest number of respondents said that regulation reduced risk diversification for pension funds. This aspect had a mean of (μ =3.90). This however contrast with Stuart (2015) who says that "asset investment choice limitations did not statistically affect long-term retirement savings".

Regulations were also seen as having high effect on the balance between asset allocation and target/optimal allocation (μ=3.85). This aligns with study by then World Bank (2003) which says that Regulation coupled with market dynamics may cause the asset allocation to differ from the

target allocation. On the other hand, a high number of respondents also agreed that restrictions led to decreased investment opportunities for pension funds, led to increased return volatility, led to inefficient portfolios and resulted in limited portfolio choices, with means of μ=3.65; 3.45; 3.50 and 3.55 respectively. This result that restriction lead to decreased investment opportunities is at variance with Srinivas, Edward and Juan (2000) who argued that restriction may result in pension funds controlling large market shares, creating liquidity problems and that regulations may hinder capital market development. Results showed that restriction had only moderate effect on liquidity management, capital market development, and efficiency in asset allocation with a mean of 3.15, 2.90 and 3.00 respectively. This showed that though pension funds' liquidity, capital development and efficiency were affected, it was only affected to a minor extent.

Lastly, regulation was seen to have little effect on ability of pension fund to maximize portfolio performance and on pension funds investment opportunities which had a mean of less than 2.44 but more than 1.44 (2.25 and 2.15).

Table 5.4 Effects of restrictions (ANOVA Analysis)

ANOVA						
		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Restrictions lead to higher risks for pension funds	Between Groups	27.161	2	13.580	39.878	.000
	Within Groups	5.789	17	.341		
	Total	32.950	19			
Restrictions lead to less risky investments by pension funds	Between Groups	8.143	2	4.071	18.926	.000
	Within Groups	3.657	17	.215		
	Total	11.800	19			
Restrictions decrease investment opportunities for pension funds	Between Groups	19.961	2	9.980	65.526	.000
	Within Groups	2.589	17	.152		
	Total	22.550	19			
Restrictions hinder innovation in pension funds	Between Groups	21.171	2	10.586	16.931	.000
	Within Groups	10.629	17	.625		
	Total	31.800	19			
Restrictions reduce risk diversification for pension funds	Between Groups	14.068	2	7.034	20.861	.000
	Within Groups	5.732	17	.337		
	Total	19.800	19			

The table above shows that even at country level, the results show that most respondents believed that asset allocation restriction hampered strategic innovation.

5.2.4 Correlation analysis

The relationship between the type of restrictions and performance of pension funds

Correlations between pension fund performance and weight of investment in the pension fund shows the restriction that affects pension funds the most. Correlations between the dependent variable (pension fund performance) and the independent variables (restrictions on equities, restrictions on properties, restrictions on domestic assets, restrictions on foreign assets, restrictions on African investments, restrictions on commodities, restrictions on alternative investments restrictions on corporate bonds, restrictions on foreign bonds). This analysis was to locate the critically important restriction on which performance is dependent.

Table 5.5 Correlation Matrix

Restrictions	on equities	on properties	on domestic assets	on alternative investments	on African investments	on commodities	on foreign assets	on corporate bonds	on foreign bonds
on equities	1								
on properties	-0.331	1							
on domestic assets	-0.351	-0.651	1						
on alternative assets	-0.411	-0.491	-0.613	1					
on African investments	-0.657	-0.538	-0.878	-0.745	1				
on commodities	-0.894	-0.814	-0.768	-0.392	-0.742	1			
on foreign assets	-0.834	-0.642	-0.745	-0.734	-0.513	-0.774	1		
on corporate bonds	-0.764	-0.592	-0.501	0.733	-0.619	-0.894	-0.975	1	
foreign bonds	-0.693	-0.782	-0.848	-0.949	-0.889	-0.962	-0.841	-0.833	1
Pension fund performance	**-0.424**	**-0.468**	**-0.451**	**-0.446**	**-0.601**	**-0.727**	**-0.958**	**-0.862**	**-0.875**

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

The analysis above shows that restrictions on foreign assets holdings have the strongest negative correlation (coefficient =-.958) to the pension schemes financial performance measured by profitability of the pension schemes. In addition, the restriction on foreign bonds has a strong negative correlation (coefficient =-0.875) to pension schemes performance. This was followed by restrictions in domestic corporate bonds which was -0.862. Also the restrictions on commodities have a very strong negative correlation with performance of pension funds (=-0.727). A correlation coefficient =-0.601 was established between investing in African assets and pension schemes financial performance.

5.2.5 Regression Analysis

The regression analysis results are shown in Table 5.6:

Table 5.6 Model Summary

Model	Adjusted R Square	Std. Error of the Estimate	**Change Statistics**				
			R Square Change	F Change	df1	df2	Sig. F Change
1	0.726	0.35471132	0.794	4.039	9	10	0.004

The above tables analysis shows that the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables), adjusted R-square is equivalent to 0.726, as to say, (restrictions on equities, restrictions on properties , restrictions on domestic assets, restrictions on foreign assets ,restrictions on African investments, restrictions on commodities, restrictions on alternative investments restrictions on corporate bonds restrictions on foreign bond) when put together explained 72.6% changes in pension funds financial performance. The result is statistically significant as shown by the statistical significance p-value 0.004, showing a significant level of 0.4% which is less than 5%. Thus, the model is significant.

ANOVA results (P-value of 0.004) at F statistic value of 4.039 implies an existence of correlation between the predictors' variables (restrictions on equities, restrictions on properties, restrictions on domestic assets, restrictions on foreign assets, restrictions on African investments, restrictions

on commodities, restrictions on alternative investments, restrictions on corporate bonds, restrictions on foreign bonds and Pension funds' performance.

Table 5.7 Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	8.208	.682		12.035	.000
Restrictions on foreign assets	-.879	.212	-.856	-4.146	.009
Restrictions on foreign bonds	-.453	.178	-.423	-2.545	.012
Restrictions on commodities	-.734	.134	-.682	-5.478	.008
Restrictions on corporate bonds	-.334	.256	-.253	-1.305	.023
Restrictions on African investments	-.656	.233	-.590	-2.815	.002
Restrictions on properties	-.355	.132	-.234	-2.690	.006
Restrictions on domestic assets	-.724	.312	-.597	-2.321	.020
Restrictions on alternative investments	-.821	.279	-.712	-2.943	.003
Restrictions on equities	-.547	.312	-.484	-1.753	.018

a. Dependent Variable: pension fund performance

The following regression result was obtained as:

$$\mathbf{Y= 8.208– 0.879\,\chi_1 - 0.453\,\chi_2 - 0.734\chi_3 - 0.334\,\chi_4 - 0.656\chi_5 - 0.355\chi_6 - 0.724\chi_7 - 0.821\chi_8 - 0.547\chi_9}$$

From the estimated model, when other factors (restrictions on equities, restrictions on properties, restrictions on domestic assets, restrictions on foreign assets, restrictions on African investments, restrictions on commodities, restrictions on alternative investments, restrictions on corporate bonds, restrictions on foreign bond) are at zero, the pension schemes average financial performance will be at 8.208% profitability.

Holding other factors constant, an increase in restrictions in foreign assets would lead to a decrease of 0.879 (p=.009) in pension scheme financial performance. Also noted is that holding other factors constant, a unit increase of restrictions on foreign bonds investments would lead to a decrease of 0.453 (p=0.012) in the pension funds financial performance and a unit increase in commodities

restrictions would result in a decrease of 0.734 (p=0.008) in pension schemes financial performance. The findings, further, shows that if alternative investments restrictions rise per unit, it would result in a 0.821 (p=0.03) decrease in pension schemes financial performance. A unit increase in restrictions African investments would result in 0.656 (p=.002) decrease in pension fund performance. Moreover, a unit increase in restrictions of domestic assets will results in 0.724 (p=.020) decrease in pension scheme financial performance. A unit increase in equities restrictions will lead to 0.547 (p=.018) units decrease in the profitability of pension funds. These results show that restrictions reduce performance of pension funds. Overall increase in foreign assets and alternative investments restrictions had the highest effect on the financial performance of pension funds whereas restrictions in property investments and corporate bonds showed the lowest effect with a unit decrease of 0.355 and 0.334 in pension fund financial performance.

These findings were in line with STANLIB Multi-Manager modelling which suggested that "in the long run, global exposure should primarily focus on equities and that fixed income assets like cash and bonds should primarily be accessed in the local market" [44].

5.2.6 Do pension funds abide by the investments limits imposed on them?

The study also sought to establish the extent to which pension funds abided by the different asset allocation restrictions imposed. Respondents were asked to rate the statements using a five-point scale; where 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; and 5 = strongly agree. Mean and standard deviations were computed for each major principle. For the purpose of clarity, below is the scale (mean range) used to interpret the level of abiding;

Very large extent = 4.45-5.00; Large extent = 3.45-4.44; Moderate extent = 2.45-3.44; little extent = 1.45-2.44; Very little extent = 1.00-1.44 (Saunders, Louis and Thornhill, 2012).

The results shown in Table 5.9 show that most respondents believed that pension funds complied to a moderate extent with restrictions relating to equities, properties, domestic assets, African investments and alternative investments (mean ranging from 2.44-3.44). However, respondents also responded that pension funds complied to a large extent with restrictions relating to foreign investments, commodities and corporate bonds (mean ranging from 3.44 to 4.44). Thus these

[44] (Lamprecht, 2018)

results show that there are some pension funds that are not abiding with the restrictions imposed on different categories of investment.

Table 5.8 Descriptive Statistics on 5.2.6

	N	Mean	Std. Deviation
a) Pension funds in my country actually invest no more than 75% in equities (local and offshore)	20	3.25	1.333
b) Pension funds in my country actually invest no more than 25% in properties (local and offshore)	20	3.10	1.334
c) Pension funds in my country actually invest less than 50% in domestic assets	20	3.10	1.518
d) Pension funds in my country actually invest no more than 25% in foreign assets (excluding African assets)	20	3.60	1.501
e) Pension funds in my country actually invest more than 5% in African investments (excl. South African)	20	2.55	1.050
f) Pension funds in my country actually invest more than 10% in commodities	20	3.70	.801
g. Pension funds in my country actually invest more than 15% in Alternative Investments	20	2.65	.988
h. Pension funds in my country actually invest more than 50% in Corporate Bonds	20	3.50	.946
i. Pension funds in my country actually invest more than 50% in Foreign Bonds	20	3.45	1.234

5.2.7 The ideal strategic asset allocation preferred by fund managers

The respondents were given a table from which they were asked to choose their ideal domestic assets allocation. The results are shown below in Table 5.9.

Table 5.9 Ideal strategic asset allocation from allocations

		Frequency	Percent	Valid Percent	Cumulative Percent
	Domestic Assets 10%-20%Foreign Assets 80%-90%	4	20.0	20.0	20.0
	Domestic Assets 30%-40%Foreign Assets 60%-70%	5	25.0	25.0	45.0
	Domestic Assets 50%Foreign Assets 50%	9	45.0	45.0	90.0
	Domestic Assets 60%-70%Foreign Assets 30%-40%	2	10.0	10.0	100.0
	Total	20	100.0	100.0	

The table shows that at least 45% of respondents prefer a combination of a scheme with 50% foreign assets and 50% domestic assets. While 25% preferred a combination of 10-20% domestic assets and 80%-90% foreign assets, 20% preferred a combination of 30-40 % domestic assets and 60%-70% foreign assets and only 10% of respondents preferred a combination where domestic assets dominated foreign assets (domestic 60%-70%/ foreign 30%-40%). These results show that there was a tendency by respondents to gravitate towards foreign assets investments as only 10% respondents preferred a combination with higher allocation in domestic assets. The respondents' are of the opinion that the global market is bigger with better return potential, various asset vehicles and investment opportunities which in return will allow pension funds to benefit from higher returns from stronger currencies. This finding is also supported by Erastus & Huyssteen, 2016, (Richard & Taonaziso, 2014) and (Wepener, 2014)[45]. Erastus & Huyssteen (2016) supported this finding by recommending the strengthening of foreign asset investment in pension fund regulations in order to boost offshore investment returns. Lessons from the past indicate that local assets face currency changes, limited instruments and high volatility, welcoming foreign investment for hedging purposes, substantiates (Richard & Taonaziso, 2014).

On the contrary, the economic rationale behind the high proportion in domestic assets is supported by World Bank that "pension funds' liabilities are domestic and so, by investing at home, assets and liabilities are denominated in the same currency whereas investing abroad, in contrast, incurs exchange rate risk".

[45] "In order to gain the maximum benefit, investors should invest the maximum into offshore assets"

After choosing their preferred combination of assets allocation, respondents were also asked to explain why they preferred their chosen combination and the most dominant responses were that a higher percentage of foreign assets led to higher returns (7), foreign assets helped to balance risk (4), increased global opportunities (1), domestic markets were very volatile (6), the 2 respondents who preferred domestic markets said that domestic markets encourage growth in the economy.

5.3 Summary of data findings

i. Effect of regulation on the performance of Southern African countries' pension funds.

The results showed that restrictions had negative relationship with pension funds' performance. An increase in pension funds negatively affects the performance of pension funds. These results align with findings of several writers (Christoph & Robin 2004; Oluyeju, 2017, Wepener, 2014. These writers say that binding restriction in asset choice will reduce returns[46].

The findings of this study that asset allocation restrictions negatively affect performance of pension funds are also aligning with results in Oluyeju (2017)[47], who supports that restrictive regulation may hinder access to finance the stock market for development purposes. Mjebeza (2016) also showed that international markets bring about increased benefits to but the benefits lowers when constrained. Lastly the findings in this study show that restrictions lead to higher systematic risk and this supported by Srinivas, Edward, & Juan (2000) who carried out a related study on regulation of privation pension funds and performance and identified that regulatory restrictions lead to the creation of systematic market risk for pension funds. However the results in the study are opposed by Stuart (2015)[48] who carried out a study which concluded that there was no statistically significance effect on the retirement's returns, though the regulations reduced return volatility. A study by Njeru (2014) also indicated that the regulatory changes have positive effects on the performance of pension schemes in general.

[46] "Basic economic principles suggest that imposing restrictions on the investment choices made by asset managers and raising the costs of investment should lead to lower returns" (Christoph & Robin, 2004)
[47] Pension Funds' Assets Investment (Oluyeju, 2017).
[48]"A comparison of the returns of 'Regulation 28' compliant and Non-Compliant Funds in South Africa. Cape Town: University of Cape Town" (Noland, 2015).

ii. The main forms of restriction on Asset Allocation used in the Southern African region

The study showed that the three countries were using all three forms of restrictions, however most respondents (95%) identified restrictions on amounts of monies invested in particular assets as being the common regulation. These findings also align with findings of the World Bank (2003) study, which showed that most countries that are developing impose restrictions on assets to protect the investor who are not well versed in investments.

iii. Are pension funds actually abiding by the restrictions imposed on them

The results showed that pension funds were moderately abiding by the restrictions imposed on them. This implies that at least half of the pension funds were possibly not investing the exact percentage of assets imposed by government. There could be a tendency to invest less or more by the Asset Managers.

CHAPTER 6

6 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction
6.2 Data findings summary
6.3 Conclusion
6.4 Implications of the study
6.5 Limitation of the study
6.6 Suggestions for further studies

6.1 Introduction

This chapter is a union of the entire study and contains a summary of findings, conclusions, and recommendations based thereon.

6.2 Summary of Findings

The main objective to establish whether asset allocation restrictions affected performance of pension funds in three southern African countries; South Africa, Zimbabwe and Namibia All usable data was analyzed and the respective information was discussed in narrative form and the output of the analysis presented in tables.

From the findings of the analysis, exists a negative correlation between asset allocation restrictions and performance of pension funds. This was demonstrated by the results of Correlation, ANOVA and regression analyses. The correlation was found to be strongest between pension schemes financial performance and the weight of offshore investments in the scheme. The R-Squared of the data was found to be 83.6% which indicate that differences in the performance of the pension funds were explained by approximately 83.6% of the independent variables taken into account. The remaining 16.4% was explained by other factors that were not under consideration.

6.3 Conclusion

The aim of the test was to establish the relationship between asset allocation and performance of pension funds in the southern African region. From the study, it was found out that the existence of a negative correlation between legal restrictions and Pension funds' performance with the

strongest correlation being between fund performance and foreign assets restrictions, foreign bonds, corporate bonds and commodities (Table 5.5). Most Pension funds managers who participated in this study showed that restrictions mostly affected the Fund's performance ability to be innovative (Table 5.3). African investments are highly driven by domestic resources for development of the local economy, hence African countries need to invest in its own development to sustain its domestic growth. This is further supported by Ashiagbor, et al., (2014) who argued that countries should strive to protect their domestic resources and restrict the pension funds to plough back into their economies to stimulate local growth and development. However, regulations is found to have a negative effect on less diverse economies due to a constrained investment options.

6.4 Implications of the study

The findings in this study have contributed to the understanding that restrictions of asset allocations hinder the performance the pension funds. The findings concur with literature that pension funds seem to thrive in relaxed regimes which impose fewer restrictions and laws than in regimes with tighter restrictions. The study provide both theoretical and practical implications for both professional practitioners in aiding policy and asset managers as well as individual investors and governments. The implications are as follows:

a. Implications for policy makers

The study finds that there is a need for the countries to relax the quantitative asset restrictions which limit the fund managers' ability to make investment decisions based on the risk-return analysis. This study supports Erastus & Huyssteen (2016) on their suggestion that "Regulators should consider supporting literature when setting maximum limits in foreign investment asset allocation for pension funds and consider relaxing the maximum exposure that emerging market economies may invest in developed economies as this might result in increased pension fund returns". Fund managers should be allowed to fully exercise active management of the funds without strictly adhering to the investment guidelines provided by the policy makers, but only use them as a guide. This is mostly because most of the fund performance is dependent on the manager's selection, the timing of investments and securities selection within as asset class and whether the manager adopts an active style of management of the fund and a few is

dependent on the investment policies. The researcher further argues that pension funds develop sound corporate governance mechanisms that will encourage the best ethical practices among all of their stakeholders. The study finds the prudent person rule as a preferred investment approach to be implemented with corresponding strengthening of regulatory capability.

b. Implications for Asset Managers

The findings provide evidence that some asset managers were not well conversant with applicable asset allocation in their countries. In addition, some asset manager's strongly feel that the current regulatory system needs to be reviewed to capture the changing economic environment upon which pensions funds operate. Research proved that portfolio restrictions are likely to inhibit managers reaching the frontier of efficient portfolios. This is further supported by this study that found a negative impact in manager's strategic innovation and risk diversification. Besides, the findings of this study have indicated that restrictions lead to decreased investment opportunities for pension funds and increased return volatility which results in inefficient portfolios coupled with limited portfolio choices. In terms of the investment preference, asset managers dominantly responded in favour of allocating more in foreign assets arguing that it yields higher returns and helps to balance risk. In contrast, domestic markets are perceived to be volatile though there is a chance that domestic markets encourage economic growth.

6.5 Limitations of the Study

The study used data from three (3) countries only in Southern Africa and hence caution must be taken when applying the results to the whole region. In view of the fact that there are a number of limited Asset Management companies, hence the sample was small, with twenty (20) Asset Managers only participating in the study. Secondary data was collected from different financial reports, there could be data shortcomings.

6.6 Suggestions for Further Studies

The writer suggests that a study be done on the effect of higher domestic assets allocation imposed by policy makers on the country's domestic economic growth to assess its effectiveness and if

such investments have a significant positive impact on the growth of the economy as intended. “Domestic resources are a key part not only of the African investment opportunity, but also of the broader financing for development agenda. Africa can and must invest in its own development if its current growth rates are to be sustained” (Ashiagbor, et al, 2014).

A further study should be on the same subject on the larger population using actual financial performance data of pension funds to increase the scope of the research towards more African countries. Due to the nature of the data that was acquired, this research focussed mainly on the restrictions as perceived by the Asset Managers. It would be interesting to see whether the effects that were found in this study are also observed when taking into account the actual returns of the pension funds. Furthermore, the investment behaviour of pension funds will also be an exciting field of research especially when it can be looked at really closely through actual asset allocation data.

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APPENDICES

APPENDIX A: DATA COLLECTION QUESTIONAIRE

SURVEY ON THE ASSET ALLOCATION RESTRICTIONS AND PENSION FUNDS PERFORMANCE

(To countries—Asset/Fund Managers)

PLEASE NAME THE COUNTRY TO WHICH THE FOLLOWING INFORMATION IS RELATED: _____

1. **Indicate the forms of restriction on Asset Allocation used in your country (You may tick more than one option):**

A. …….	B ……	C. …….	D. …….
There are regulations restricting the amount of pension fund money that can be invested in specific assets	There are regulations on the decision-making process and behavior of investment managers (PPR)	There are regulations on industry structure	Other (please specify) …… ……..

2. **Effect of Asset Allocation Restrictions on pension funds in your country:** Please indicate your level of Agreement with the issues addressed below

	EFFECT OF RESTRICTIONS	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
a.	Restrictions lead to higher risks for pension funds					
b.	Restrictions lead to less risky investments by pension funds					

c.	Restrictions cause actual asset allocation to differ from the target/optimal allocation					
d.	Restrictions decrease investment opportunities for pension funds					
e.	Restrictions lead to liquidity management problems in the pension fund industry					
f.	Restrictions hinder capital market development for pension funds					
g.	Restrictions reduce return volatility for pension funds customers					
h.	Restrictions reduce risk diversification for pension funds					
i.	Restrictions limit portfolios choices of pension funds					
j.	Restrictions affect ability of pension funds to maximize portfolio performance					
k.	Regulations cause managers to retain inefficient portfolios					
l.	Restrictions hamper strategic innovation in pension fund industry					
m.	Regulations encourage innovation in the Pension Fund Industry					
n.	Regulations lead to increased investments by pension funds					
o.	Restrictions leads to inefficiency in asset allocation					

3. Please fill in the gap to indicate the investments limits as addressed in the amended Regulation by ticking the most appropriate box

	By regulation, pension funds in my country may invest:	**5%**	**10%**	**25%**	**35%**	**45%**	**50%**	**55%**	**65%**	**70%**	**75%**	**85%**	**95%**	**100%**
a.	no more than ___ in African investments													
b.	no more than ___ in foreign assets													
c.	no less than ___ in domestic assets													
d.	no more than ___of assets in total Equities													
e.	no more than ___ of their assets in properties													
f.	no more than ___ of their assets in commodities													
g.	no more than ___ of their assets in government bonds													
h.	no more than ___ of their assets in corporate bonds													
i.	no more than ___of their assets in foreign bonds													
j.	___in cash													
k.	up to ___ in alternative investments													

4. Please indicate your level of Agreement or Disagreement whether pension funds abide by the regulations by ticking the most appropriate box as related to the following statements

	Regulation	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
a.	Pension funds in my country actually invest no more than 75% in equities (local and offshore)					
b.	Pension funds in my country actually invest no more than 25% in properties (local and offshore)					
c.	Pension funds in my country actually invest less than 50% in domestic assets					
d.	Pension funds in my country actually invest no more than 25% in foreign assets (excluding African assets)					
e.	Pension funds in my country actually invest more than 5% in African investments (excl. South African)					
f.	Pension funds in my country actually invest more than 10% in commodities					
g.	Pension funds in my country actually invest more than 15% in Alternative investments					
h.	Pension funds in my country actually invest more than 50% in corporate bonds					
i.	Pension funds in my country actually invest more than 50% in Foreign bonds					

5. In your view, do regulations on asset investment choice (limitations) affect returns and risk of long-term retirement savings? (Yes/No, explain in few words).

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6. In your view, how do the current asset allocation restrictions affect the performance of the pension funds? (Explain in few words)

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7. Choose the ideal Strategic Asset Allocation from below. Tick the appropriate box

	Domestic Assets	Foreign Assets	Tick
Allocation 1	10%-20%	80%-90%	
Allocation 2	30%-40%	60%-70%	
Allocation 3	50%	50%	
Allocation 4	60%-70%	30%-40%	
Allocation 5	80%-90%	10%-20%	

Briefly explain why your chosen allocation above is the most ideal:

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8. What are the aspects of the restrictive regulations that you do **not** agree with?

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9. Suggest any improvements to the regulations that you do not agree with?

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THANK YOU