



Unlocking the Potential of Pension Funds for Private Equity Investment in East
Africa: A Data-Driven Analysis of Allocation Trends and Strategies

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Admission Number: 146196

Submitted in partial fulfillment of the requirements for the Degree of
Bachelor of Business Science (BBS): Actuarial Science at Strathmore University

Strathmore Institute of Mathematical Sciences (SIMS)

Strathmore University

Nairobi, Kenya

December 2024

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ABSTRACT

This study critically examines the under-allocation of pension funds to private equity in East Africa, a region with a growing private sector and underdeveloped stock markets. It explores the potential of private equity to enhance portfolio diversification, mitigate foreign exchange risks, and provide stable returns in volatile markets. The research also assesses the strategic role of fund-of-funds models in optimizing portfolio performance and facilitating private equity exits.

A mixed-methods approach is employed, combining quantitative analysis of secondary data from Preqin, Bloomberg and regional financial institutions with primary data from surveys of pension fund managers and private equity firms. The findings highlight disparities in private equity allocations across the region, driven by regulatory constraints, market maturity and risk perceptions. The study recommends increasing private equity allocations through strategic reforms and multi-pillar pension systems to improve financial performance and ensure long-term sustainability, contributing to East Africa's economic development.



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CHAPTER 1: INTRODUCTION

1.1 Background of the Study

The financial landscape of East Africa is characterized by a unique blend of opportunities and challenges. As economies in this region continue to grow and diversify, there is an increasing need for innovative investment strategies to ensure the sustainability and robustness of financial institutions, particularly pension funds. Pension funds are a critical pillar in East Africa's financial ecosystem due to their substantial role in capital accumulation, market stability, and social security. Kenya, Tanzania, Rwanda and Uganda pension funds manage assets worth approximately \$23 billion (Kenya taking lead in assets under management approximated to \$12 billion) and have an aggregate CAGR of 12.6% as of 2023 reports. Pension funds are crucial in providing financial security for retirees, but they face significant hurdles, including economic volatility, currency risks, and limited vibrant stock markets with the average growth rate of around 3% and below. On the contrary, the performance of private companies across the region is tremendously promising the technology, agribusiness, manufacturing, financial services, mining, tourism, energy, and services sectors have shown an aggregate growth of 17% in revenue as of 2022. Thus, the performance of private companies in East Africa is generally positive, with notable growth in key sectors despite facing several challenges. The region continues to attract investment, driven by its strategic position and growing markets.

Private equity (PE) investments have emerged as a potential solution to these challenges. Unlike traditional investments in public equities and bonds, private equity offers the opportunity to invest in privately held companies, which often show substantial growth potential and provide higher returns. Furthermore, private equity can play a critical role in diversifying investment portfolios, thereby reducing risks associated with market volatility. However, despite these benefits, there is a noticeable under-allocation of funds to private equity by pension funds in East Africa. Such that in Kenya, pension funds actual allocations typically range between 2-5%. Uganda's NSSF and Tanzania's pension funds have allocations estimated between 1-3%, reflecting cautious investment strategies. Rwanda's RSSB also likely allocates 1-5%

to private equity. These low thresholds indicate a generally cautious approach to private equity investments in the region.

1.2 Problem Statement

The financial landscape in East Africa is undergoing transformation, with pension funds emerging as critical players in economic growth. The allocation of pension funds to private equity remains low, typically less than 5%, with Kenya having the highest allocation at approximately 2%. Pension funds in the region predominantly invest in traditional asset classes like government bonds, listed equities, and property due to their perceived safety and liquidity. These conservative strategies ensure stability but limit the potential for higher returns and portfolio diversification. Private equity, on the other hand, presents an opportunity to achieve these objectives by offering higher returns, diversification, and the ability to support high-growth sectors. East African pension funds remain reluctant to increase their allocations due to concerns over volatility, foreign exchange risks, and the illiquid nature of private equity investments.

The growth of private equity in Africa, which has seen a compound annual growth rate of 7% between 2015 and 2020, shows its potential as a viable investment option for pension funds. The fund managers in East Africa face challenges, including a lack of expertise, inadequate market depth, and regulatory constraints, all of which contribute to the under-allocation of funds to private equity. Fund-of-funds models offer a promising solution to these challenges by providing professional management, enhanced diversification, and access to a broader range of private equity opportunities. These models can help overcome the risks associated with limited liquidity and exit options, while also mitigating the impact of foreign exchange losses.

Existing research has not adequately explored how fund-of-funds models can support increased allocations to private equity by pension funds in East Africa. Current studies largely focus on the broader challenges of investing in emerging markets but fail to address the specific barriers faced by pension funds in this region. The potential of fund-of-funds models to address issues such as high management fees, risk aversion, and regulatory limitations remains underexplored. This study seeks to bridge this gap by analyzing the strategies through which pension funds can integrate private equity into their portfolios using fund-of-funds models. The research aims to provide

actionable insights that promote sustainable financial growth for pension funds in East Africa.

Increasing the allocation of pension funds to private equity through fund-of-funds models has the potential to improve portfolio performance and support economic development in East Africa. This research will examine how fund-of-funds models can overcome the challenges of low private equity allocations while ensuring efficient portfolio management. Through statistical analysis and practical recommendations, the study will highlight the strategic role of private equity in enhancing returns, diversifying portfolios, and mitigating risks, contributing to the long-term financial sustainability of pension funds in the region.

1.3 Research Aims and Objectives

This research aims to critique the current under-allocation of funds to private equity in East Africa and to explore the potential benefits of investing in private equity for pension funds. The study will focus on the following objectives:

1. To evaluate the current allocation of pension funds to private equity across East Africa (Kenya, Uganda, Tanzania, and Rwanda) and its impact on portfolio performance.
2. To develop an evidence-based framework for determining the appropriate asset allocation ratio for pension funds in East Africa that balances risk, return, and diversification.
3. To assess the viability of the fund-of-funds model as a strategic vehicle for enhancing pension fund participation in private equity within the region.
4. To identify and analyze regulatory, structural, and operational barriers to private equity investments by pension funds and propose actionable strategies to address these barriers.

1.4 Research Questions

To achieve these objectives, this study will address the following research questions:

1. What is the current state of pension fund allocation to private equity in East Africa, and how does it affect their overall portfolio performance?

2. How can pension funds in East Africa optimally allocate their portfolios to private equity while maintaining a balance between risk, return, and diversification?
3. How effective is the fund-of-funds model in overcoming challenges associated with private equity investments for pension funds in East Africa?
4. What are the key regulatory, structural, and operational challenges that hinder pension fund investment in private equity, and what practical strategies can address these challenges?

1.5 Significance of the Study

This research is significant for several reasons. Firstly, it provides a comprehensive analysis of the potential for private equity to transform pension fund investment strategies in East Africa. Secondly, it contributes to the limited body of literature on private equity investments in the region, offering valuable insights for policymakers, financial regulators, and investment managers. Thirdly, by exploring the concept of fund of funds, the study introduces a strategic approach that could facilitate more effective and diversified investments in private equity. Ultimately, this research aims to offer practical recommendations that can help pension funds achieve higher returns and greater financial stability, thereby enhancing the financial security of retirees in East Africa.

1.6 Summary

In conclusion, the under-allocation of funds to private equity by pension funds in East and Central Africa represents a significant missed opportunity for enhancing financial returns and diversifying investment portfolios. This research aims to address this gap by exploring the benefits and mechanisms of private equity investments and proposing strategic solutions to overcome existing barriers. Through a comprehensive analysis and practical recommendations, this study seeks to contribute to the financial sustainability and growth of pension funds in the region.

CHAPTER 2: LITERATURE REVIEW

2.1 Theoretical Framework

Private equity and its role in economic development and pension fund performance has garnered significant attention from scholars and practitioners alike. This chapter reviews the existing literature on various facets of private equity, its impact on economic growth, and its influence on pension funds, particularly in emerging markets and developing countries. Through an exploration of various studies, this review aims to provide a comprehensive understanding of the mechanisms through which private equity operates and its broader economic implications.

2.2 Financial Sustainability of Social Security Schemes

William Ambaka Akwimbi (2008) conducted a critical review of literature addressing the financial sustainability of social security schemes, including pension funds. The study highlights the challenges faced by financially troubled social security systems and suggests reforms such as but not limited to improved investment practices. Moreover, the study highlights a causal relationship between pension fund viability and factors like corporate governance, economic growth, and financial market performance it underscores the importance of considering country-specific conditions when designing pension reforms. While the research predominantly focuses on developed countries, it identifies a significant gap in the context of developing nations, particularly in Africa. Future studies could enhance the knowledge base by providing comparative analyses and insights to improve policy and management in these regions.

2.3 Upgrading Investment Policies of Public Pension Funds

Dimitri Vittas, Gregorio Impavido, and Ronan O'Connor (2008) analyzed the investment policies of public pension funds in countries like Norway, Canada, Ireland, and New Zealand. Their research demonstrates that pension funds can achieve economies of scale but often suffer from poor investment performance due to weak governance and lack of independence from government interference. Vittas et al. (2008) emphasized the importance of robust regulatory frameworks in ensuring the success of fund-of-funds models, especially in emerging markets. Recent reforms in these countries have focused on improving governance and diversifying investment strategies to enhance returns. These reforms have included shifts from passive indexed investments to more active management, including investments in private equity.

While the study emphasizes developed countries, similar approaches could be explored in developing nations to improve governance and investment outcomes.

2.4 Marginal Diversification Benefits of Private Equity Funds

Mancuveni and Cornelius (2015) investigated the marginal diversification benefits of private equity funds in South African pension funds. Their study aimed to reduce information gaps that undermine fiduciary efforts of pension fund decision-makers. Mancuveni and Cornelius (2015) observed that South African pension funds adopt fund-of-funds models for private equity investments, allowing for more aggressive allocations. These models provided marginal diversification benefits and improved portfolio performance, demonstrating their effectiveness in emerging markets. By constructing an objective marginal portfolio diversification framework, they provided insights into how SA pension fund decision-makers can make more prudent investment decisions. The research highlights the use of Pearson ratios, p-values, and normality tests to devise strategies for mitigating risks while investing in private equities. Although the study is limited to South African high equity funds, its methodologies could be applied to other nascent but promising African markets, such as East Africa, to explore diversification benefits further.

2.5 Impact of Private Equity

Morten Sorensen and Ayako Yasuda (2022) delved into the academic literature surrounding the effects of private equity investments on the broader economy. They examined how private equity fund managers, driven by high-powered incentives, seek to maximize shareholder value through various strategies. Sorensen and Yasuda (2022) highlighted that fund-of-funds structures provide diversification and professional management, making them ideal for regions lacking expertise in private equity. The literature distinguishes between public-to-private deals, which focus on cost reduction, and private-to-private deals, which emphasize growth-oriented strategies. The study underscores the importance of regulatory frameworks in shaping the impact of private equity investments. However, the research faces limitations in data availability and the complexity of regulatory environments, highlighting the need for further exploration into governance mechanisms that align private equity incentives with public interests.

2.6 Private Equity and Economic Growth

James Gichuki Gatauwa and Simon M. N. Kungu (2021) reviewed the relationship between private equity investments and economic growth. Their findings indicate that private equity impacts economic growth through improved corporate governance, innovation, and operational efficiency in portfolio companies. Despite mixed empirical evidence, the review highlights significant regional differences in the impact of private equity, influenced by regulatory frameworks and financial market maturity. Data constraints and methodological differences pose challenges in establishing causal relationships, suggesting the need for more longitudinal and sector-specific studies to understand the long-term effects of private equity on economic growth. Gichuki Gatauwa and Kungu (2021) found that private equity drives economic growth in emerging markets by funding high-growth sectors like technology and infrastructure. However, limited capacity and regulatory hurdles among fund managers restrict its full potential.

2.7 Private Equity in Emerging Markets

Alexander Groh and Heinrich Liechtenstein (2009) examined the factors that make emerging markets attractive for private equity investments. Their study identifies key determinants such as economic growth, market size, legal environment, and investor protection. While the analysis primarily relies on quantitative data, it may overlook qualitative factors like cultural aspects and local business practices. Groh and Liechtenstein (2009) highlighted that weak institutional frameworks and shallow financial markets hinder private equity investments in emerging markets. They emphasized the need for reforms to attract institutional investors, including pension funds. Future research could explore the impact of political stability and corruption on private equity attractiveness, as well as provide more case studies of successful investments in emerging markets to offer deeper insights.

2.8 Innovative Finance for Private Sector Development in Africa

United Nations Economic Commission for Africa (ECA) (2020) addressed the need for innovative financial strategies to bolster private sector development in Africa. The report emphasizes leveraging new financial technologies and instruments to provide

greater access to capital, encouraging private sector investment, and implementing policies to improve regulatory frameworks and financial inclusion. The report also highlights the ongoing impact of the COVID-19 pandemic on economic stability and growth, identifying areas for further research and action, such as technological adoption and long-term economic resilience strategies.

The Relationship between literature review and research objectives

The literature presented serves as a foundation for the research objectives by highlighting the existing knowledge and gaps in private equity's role in pension fund performance, particularly in emerging and developing markets such as East Africa. Studies like those by Akwimbi (2008) and Mancuveni and Cornelius (2015) provide insights into the challenges and opportunities of pension fund investments, emphasizing the importance of governance, diversification, and innovative strategies such as private equity. Akwimbi (2008), however, argued that the financial sustainability of pension schemes depends on reducing costs, which is challenging due to the high fees associated with fund-of-funds structures. These findings directly inform the research objectives, which aim to critique the under-allocation of funds to private equity in East Africa, formulate an optimal asset allocation ratio, explore the concept of fund of funds, and identify barriers to private equity investments. By aligning the research objectives with the gaps identified in the literature, this study aims to construct upon existing knowledge and provide practical recommendations for enhancing pension fund performance in the East Africa region.

2.8 Research Gap

This research contributes to the existing body of knowledge by addressing a critical gap identified in the literature: The under-allocation of funds to private equity within the East Africa pension funds. While previous studies have focused on developed markets and specific aspects of private equity investments, there is limited research on the application of these investment strategies in the East Africa region. The study not only explores the potential benefits of private equity investments in the region but also provides a nuanced understanding of the barriers and risks associated with such investments. By offering a region-specific analysis and proposing tailored strategies, this research enhances the literature by providing insights that are directly applicable to East African pension funds, thereby addressing the unique challenges of the region's economic volatility and regulatory environment.

2.9 Conceptual Framework

The conceptual framework of this research revolves around key variables such as asset allocation ratios, private equity investments, and the performance of pension funds. The relationship between these variables will be examined to understand how increasing the allocation of pension funds to private equity can potentially enhance returns and portfolio diversification, portfolio diversification in this case refers to the standard deviation/ risk of the portfolio. Additionally, the study will explore the role of governance, economic volatility, foreign exchange risks as moderating variables that influence the effectiveness of private equity investments in the East Africa region. By clearly articulating these variables and their interactions, the research aims to provide a comprehensive framework for evaluating and optimizing pension fund strategies in the region, contributing to sustainable financial growth.



CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology employed to investigate the under-allocation of funds to private equity in East African pension funds more specifically Kenya, Uganda, Tanzania, and Rwanda and to explore the role of fund of funds strategies in addressing this issue. This methodological framework enables a comprehensive exploration of the research problem by integrating quantitative analysis of asset allocation strategies with qualitative insights from key stakeholders in the region. The chapter will detail the research design, sampling methods, data collection instruments, and analytical techniques used to achieve the study's objectives.

3.2 Research Design

The study employs a mix of two methods as its research design, combining experimental design with case study analysis. The experimental design focuses on manipulating the independent variables, specifically pension fund allocation percentages across asset classes; to observe their impact on return-to-risk ratios. Additionally, the study incorporates a case study approach, utilizing questionnaires to gather qualitative and quantitative data from private equity players and pension funds in the East Africa region. This duality in approach allows for a comprehensive exploration of the research problem, combining quantitative simulations with insights from industry practitioners.

3.3 Choice of Design and Justification

The experimental design is purposely chosen to quantitatively assess the impact of varying asset allocation strategies on pension fund performance under different economic conditions. The experimental approach is ideal for identifying optimal allocation strategies that maximize returns and manage risks. On the other hand, the case study design is added to provide a more qualitative dimension, particularly in understanding the feasibility of more active management particularly in the fund of funds strategy in the East Africa region. By directly engaging with private equity firms

and pension funds, the study can gather nuanced insights into the practical challenges and opportunities of implementing such a strategy in East Africa.

3.3 Population and Sampling

3.3.1 Population

The population for this study includes data from pension fund regulatory authorities, National Statistics Bureaus, Central Banks and BNR websites, International Organizations such as World Bank database, IMF Website, and OECD Pension Markets in Focus Reports, financial market reports such as AfDB Website, and private equity firms operating in the East Africa region.

3.3.2 Sample

For the experimental design, the study will use percentages allocation as described in the pension fund regulatory authorities across the region and data from all the relevant pension funds in East Africa. Key sources included the National Pension Fund Authority (2023), which provided detailed statistics on pension fund allocations and performance within the region. Bloomberg (2024) offered financial market data, including risk-return profiles and investment trends for various asset classes. Sanlam Investments East Africa contributed region-specific reports on investment performance, particularly within the East African pension sector. These sources ensured that the study was grounded in accurate, up-to-date, and contextually relevant information.

3.4 Sampling Technique and Procedure

The case study component employs purposive sampling, selecting private equity firms and pension funds that are key players in the East African market. This technique ensures that the sample is representative of the entities most likely to provide relevant insights into the feasibility of the fund of funds strategy in the region.

3.5 Representativeness of Sample

The purposive sampling technique for the case study ensures that the selected private equity firms and pension funds are representative of the key stakeholders in the East

African market through various criteria such as significance of private equity money raised from pension funds in the region, number of investments deployed by the private equity firm in the region, the number of pensioners the pension funds serve. This enhances the relevance and applicability of the study's findings to the broader population of private equity players and pension funds in the region.

3.6 Type of Data

The study will utilize both quantitative and qualitative data. Quantitative data includes financial performance metrics, asset allocation percentages, and projected returns, while qualitative data will be gathered through questionnaires administered to private equity firms and pension funds.

3.7 Sources of Data

Data for the experimental design will be sourced from official reports, databases, and publications by pension fund regulatory authorities, National Statistics Bureaus, Central Banks, and international organizations. For the case study, data will be collected directly from private equity firms and pension funds through questionnaires.

3.8 Data Collection Methods

Data collection for the experimental design involves extracting historical and projected financial data from relevant sources. For the case study, data will be collected through structured questionnaires administered to a purposive sample of private equity firms and pension funds.

3.9 Data Collection Instruments

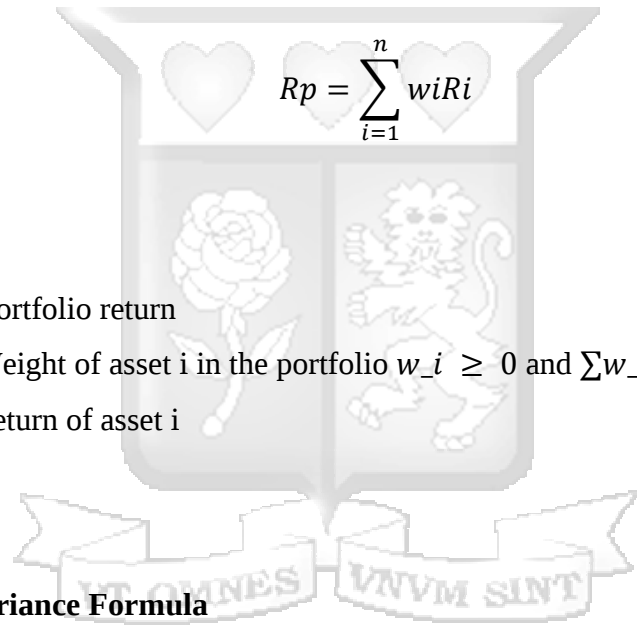
The primary data collection instruments will include structured data extraction templates for the quantitative component and structured questionnaires for the qualitative component. These instruments are appropriate as they are tailored to capture the specific data required for both the experimental and case study components of the research.

3.10 Data Analysis

This section explains the methods and formulas used to analyze the data collected for this study, focusing on the relationship between pension fund allocations to private equity and portfolio performance. It covers the key formulas for weighted return, portfolio variance, Sharpe ratio, and correlation, as well as their applications in scenarios involving increased allocations to private equity. The statistical techniques used in the analysis are also discussed in detail.

Weighted Return Formula

The weighted return of a portfolio, which measures the combined returns of all assets based on their weights, is calculated as:


$$R_p = \sum_{i=1}^n w_i R_i$$

Where:

- R_p : Portfolio return
- w_i : Weight of asset i in the portfolio $w_i \geq 0$ and $\sum w_i = 1$
- R_i : Return of asset i

Portfolio Variance Formula

This formula is used to calculate the expected return for each portfolio configuration (Portfolios A, B, and C) based on their asset allocation strategies. For example, in Portfolio A, private equity has a weight of;

$$w_{PE} = 0$$

while in Portfolio C, w_{PE} increases to 10%-15%.

Portfolio Variance Formula

The portfolio variance, which measures the risk of the portfolio, is calculated as:

$$\sigma_p^2 = \sum_{i=1}^n w_i * w_j * Cov(R_i, R_j)$$

Where:

- σ_p^2 : Portfolio variance
- w_i, w_j : Weights of assets i and j in the portfolio
- $Cov(R_i, R_j)$: Covariance between the returns of assets i and j

Covariance represents how two assets move relative to each other and is calculated as:

$$Cov(R_i, R_j) = \rho_{ij} * \sigma_i * \sigma_j$$

Where:

ρ_{ij} : Correlation coefficient between assets i and j

σ_i, σ_j : Standard deviations of assets i and j

This formula is essential for understanding the overall risk of the portfolio, especially when private equity allocations increase.

Sharpe Ratio Formula

The Sharpe ratio measures the risk-adjusted return of a portfolio and is calculated as:

$$S = (R_p - R_f) / \sigma_p$$

Where:

S: Sharpe ratio

R_p : Portfolio return

R_f : Risk-free rate of return

σ_p : Portfolio standard deviation

This ratio is used to compare the performance of Portfolios A, B, and C in terms of risk-adjusted returns, highlighting whether the additional returns from private equity justify the associated risks.

Application of Formulas to Portfolio Configurations

Three portfolio configurations are analyzed using these formulas:

1. **Portfolio A:** No allocation to private equity, focusing solely on traditional assets like bonds, stocks, and property.
2. **Portfolio B:** Moderate allocation to private equity (5%-10%), aligning with current regulatory limits in East Africa.
3. **Portfolio C:** Increased allocation to private equity (10%-15%), representing a more aggressive strategy.

The weighted return formula is used to compute the expected return for each portfolio, while the variance formula is applied to determine the risk. The Sharpe ratio is then calculated to assess risk-adjusted performance. Increased private equity allocations in Portfolio C are expected to yield higher returns but with an increase in risk.

Statistical Techniques

1. **Descriptive Statistics:** Descriptive measures, including means, variances, standard deviations, and correlations, are computed for each portfolio configuration. These provide a summary of the key characteristics of the data.
2. **Regression Analysis:** Regression models are employed to analyze the relationship between private equity allocations and key performance metrics, such as returns, variance, and Sharpe ratios. This helps identify the impact of increasing private equity allocations on portfolio performance.
3. **Scenario Analysis:** Scenarios are created to simulate the impact of different private equity allocations on portfolio performance. This includes analyzing the tradeoff between risk and return under varying market conditions.
4. **Risk-Return Analysis:** The risk-return profiles of Portfolios A, B, and C are compared, emphasizing the effects of private equity allocations on overall portfolio efficiency.

Presentation of Results

The results of the analysis are presented in tabular and graphical formats for clarity. Key metrics, such as expected returns, portfolio risks, and Sharpe ratios, are summarized for each portfolio configuration. Graphs illustrate the risk-return tradeoffs and show how private equity allocations impact portfolio performance.

For the case study, qualitative data from the questionnaires will be analyzed using thematic analysis to identify common themes and insights related to the feasibility of the fund of funds strategy. See the questionnaire for the design at the index.

3.11 Analytical Techniques

The combination of quantitative and qualitative analytical techniques ensures a comprehensive understanding of the research problem. Optimization modeling and hypothesis testing will quantify the effects of asset allocation changes, while thematic analysis of the questionnaire responses will provide qualitative insights into the practical implementation of the fund of funds strategy in East Africa.

The test was conducted at a significance level of 0.10, corresponding to a 90% confidence level. This significance level reflected the acceptable probability of rejecting the null hypothesis when it was actually true (Type I error).

To carry out the hypothesis test, the first step involved calculating the risk-adjusted returns for both funds using their average returns and standard deviations over the study period. Next, the test statistic was computed as the difference between the risk-adjusted returns of the two funds, divided by the pooled standard error of the difference. The standard error was derived from the variances and sample sizes of the two datasets.

Once the test statistic was determined, it was compared to the critical value from a t-distribution table, based on the degrees of freedom and the 90% confidence level. If the absolute value of the test statistic exceeded the critical value, the null hypothesis was rejected, indicating a significant difference in the risk-adjusted returns between the two funds. If the test statistic did not exceed the critical value, the null hypothesis could not be rejected, suggesting that the performance of Pension Fund B and Pension Fund C was statistically similar.

The results of this test provided insights into whether one fund outperformed the other when accounting for the risk taken. Where a significant difference was identified, it

justified a reallocation of assets to the better-performing fund to enhance portfolio performance.

Hypothesis Test for Pension Fund B vs. Pension Fund C

- Null Hypothesis (H_0): Sharpe ratio B / Risk B = Sharpe ratio C / Risk C
- Alternative Hypothesis (H_1): Sharpe ratio B / Risk B $\neq$ Sharpe ratio C / Risk C
- Significance Level: $\alpha = 0.10$ (90% Confidence Level)

3.12 Rationale for Techniques in Achieving Study Objectives

The use of experimental design and case study approaches allows for a thorough exploration of both the theoretical and practical aspects of the research problem. The quantitative techniques provide a data-driven basis for assessing optimal asset allocation strategies, while the qualitative analysis offers real-world insights from industry practitioners. This combination ensures that the study's findings are robust, actionable, and directly relevant to the objectives of enhancing pension fund performance through private equity investments and fund of funds strategies in East Africa.

3.13 Conclusion

The research methodology presented in this chapter provides a robust framework for addressing the research objectives and questions. By combining experimental design with case study analysis, the study effectively balances quantitative rigor with qualitative depth. The detailed exploration of asset allocation strategies through experimental design, coupled with insights gathered from private equity firms and pension funds via case studies, ensures that the study captures both theoretical and practical dimensions of the research problem. The subsequent data analysis will yield findings that contribute to a deeper understanding of how pension funds in East Africa can optimize their investment strategies, particularly in relation to private equity, thereby enhancing their financial sustainability and performance.

CHAPTER FOUR: RESEARCH FINDINGS AND PRESENTATION

4.1 Introduction

This chapter outlines the analysis conducted to address the research questions and objectives. The findings are presented in alignment with the study's objectives to ensure clarity and coherence. The chapter is structured to present the results, interpret their implications and link them to the research objectives.

4.2 Qualitative Analysis Results

4.2.1 Sample Representation

The response rate reflects the level of engagement from the targeted sample of 30 industry professionals and players. The response rate of 60% demonstrates a strong engagement level among the targeted sample, providing a reliable foundation for the analysis.

Table 4. 1 Survey Response Rate

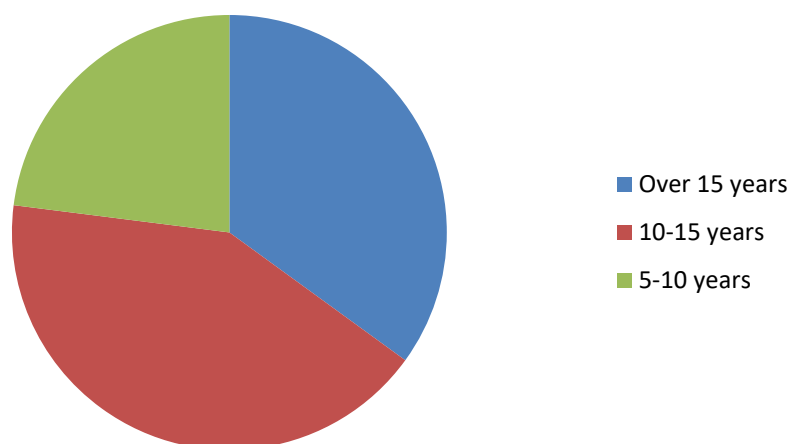
Total Targeted Sample	Responses Received	Response Rate (%)
30	18	60%

4.2.2 Professional Experience of Respondents

The respondents' professional experience varied across different time frames. As shown in the table, the majority of respondents (42%) have between 10 to 15 years of experience, followed by 35% with over 15 years and 23% with 5 to 10 years. This distribution highlights the depth of knowledge within the industry.

Figure 4.1 Professional Experience of Respondents

Experience of Respondents



4.2.3 Investment Strategies

The analysis of private equity (PE) firms' investment strategies showed a strong inclination towards seeking pension fund investments. From the table, it is evident that 72% of private equity firms actively seek pension fund investments, with a typical fund size ranging between USD 50-200 million. The exit strategies primarily involve trade sales (45%), followed by IPOs (30%) and secondary sales (25%), showcasing the various paths these firms take to liquidate their investments.

Table 4. 2 Investment Strategy

Investment Strategy	Percentage of Respondents	Observations
Actively seek pension fund investments	72%	A large portion of PE firms prioritize pension fund investments
Average fund size	USD 50-200 million	Indicative of the typical scale of operations for these firms
Typical investment holding period	5-7 years	Reflects standard timeframes for holding investments
Primary exit strategies	- Trade sales (45%) - IPOs (30%)	Trade sales were the most favored exit strategy

	- Secondary sales (25%)	
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4.2.4 Fund of Funds Strategy

The study sought to understand whether respondents were familiar with the fund of funds strategy and their belief in its viability in East Africa. The data shows that all respondents were familiar with the fund of funds strategy (100%), indicating a high level of awareness. However, when it comes to the viability of such a strategy in East Africa, 45% of respondents were uncertain, answering "Maybe", 35% considered it "Highly Viable", and 20% believed it was "Not Viable". This indicates a mixed view, with a slightly more optimistic outlook towards the potential for fund of funds in the region.

Table 4. 3 Familiarity and Belief in Fund of Funds Strategy Viability

Question	Yes (%)	No (%)	Maybe (%)
Are you familiar with the fund of funds strategy?	100%	0%	0%
Do you believe that a fund of funds strategy could be viable in East Africa?	35%	20%	45%

Respondents identified the main benefits of implementing a fund of funds strategy in East Africa, focusing on diversification, professional management, and risk control. The strategy allows investors to spread risk across multiple funds, thus reducing exposure to individual asset performance. Professional fund managers are seen as essential for navigating the complexities of the market, improving investment outcomes. Investing in a variety of funds provides better risk mitigation by balancing different risk profiles.

Regulatory constraints were a primary challenge, with respondents suggesting that existing frameworks could hinder the strategy's implementation. The relatively small and shallow market in East Africa could limit investment opportunities and reduce the strategy's effectiveness. High management fees were also cited as a potential deterrent,

as they could diminish returns. Limited exit options were seen as a challenge, as the ability to liquidate investments efficiently is crucial for the strategy's success.

4.2.5 Economic Scenarios

Respondents were asked how their organizations adjust their investment strategies in response to different economic conditions, including periods of boom, stagnation, and recession. The qualitative analysis revealed that most organizations tailor their strategies based on the prevailing economic climate. During periods of economic growth, the majority of respondents reported adopting an aggressive private equity allocation, aiming to capitalize on higher growth opportunities. During stagnation, organizations tend to shift toward a balanced approach, carefully assessing risk while maintaining diversified portfolios. In times of recession, the strategy becomes more conservative, with a focus on preserving capital and reducing exposure to high-risk assets.

When asked whether a fund of funds strategy could help mitigate risks during an economic downturn, a majority of respondents believed that it could offer valuable protection. The majority of responses indicated "Yes" or "Maybe". The respondents favored an aggressive private equity allocation during growth phases (75%), a balanced approach during stagnation (65%), and a conservative allocation during recessions (85%). Regarding the fund of funds strategy, the majority believed it could help mitigate risks during both growth and recession periods, with 75% supporting its effectiveness during growth and 80% during recessions. The belief in its potential for mitigating risks during stagnation was lower, with only 15% indicating strong support.

Table 4. 4 Investment Strategy Adjustments and Fund of Funds Risk Mitigation

Economic Condition	Preferred Strategy	Percentage Support	Fund of Funds as Risk Mitigation	Percentage Support
Growth Phase	Aggressive PE Allocation	75%	Yes	75%
Stagnation	Balanced Approach	65%	Maybe	15%

Recession	Conservative Allocation	85%	Yes	80%
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4.2.6 Outlook on Private Equity and Pension Funds

As shown in the table below, 85% of respondents agreed that regulatory reforms, improved liquidity, and better transparency are the changes needed to make private equity more attractive to pension funds. There were 90% of respondents who foresee private equity having a major role in the future growth of pension funds in emerging sectors like technology and infrastructure.

Table 4. 5 Changes Needed and Role of Private Equity in Future Growth

Aspect	Changes Needed/Role	Percentage Support
Changes Needed to Attract Pension Funds	Regulatory reforms, improved liquidity, better track records, enhanced transparency	85%
Future Role of Private Equity	Role in diversification, higher returns, growth in technology, healthcare, infrastructure	90%

4.3 Quantitative Analysis Results

This section presents the findings from the quantitative analysis, which utilized secondary data sourced from financial reports, databases and publications by pension fund regulatory authorities. Microsoft Excel was used for data organization and analysis specifically on scenario analysis and optimization modeling.

4.3.1 Historical Returns Analysis

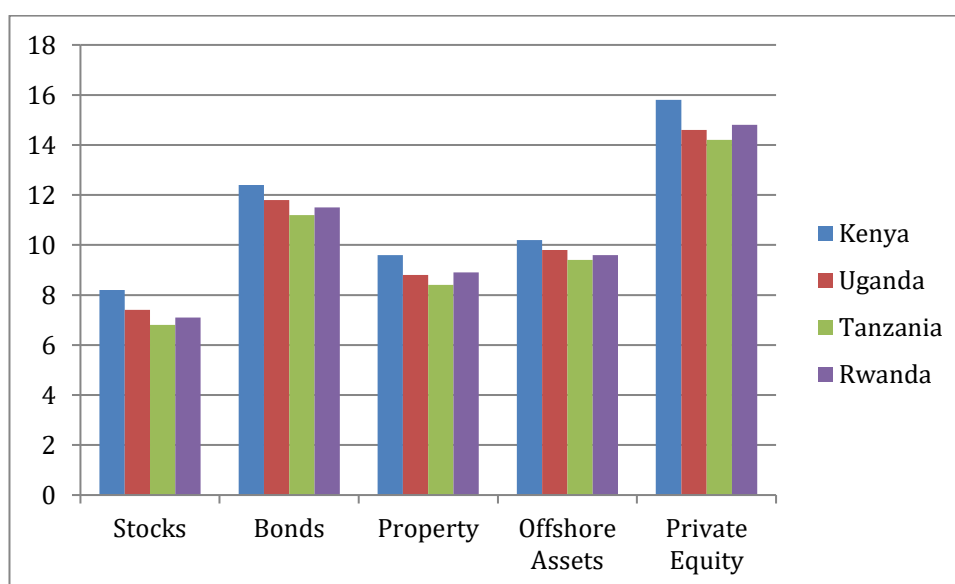
The analysis examined historical returns across different asset classes in East Africa over a 10-year period (2014-2024). Table 4.1 shows that private equity consistently outperformed other asset classes across all four countries, with Kenya showing the highest returns in each category. Government bonds provided the second-best performance, likely due to their favorable yield curves and the high interest rate

environment in East Africa during this period. Stock market returns were comparatively lower, reflecting the limited depth and liquidity in regional exchanges.

Table 4. 6 Aggregate Returns by Asset Class and Country (%)

Asset Class	Kenya	Uganda	Tanzania	Rwanda
Stocks	8.2	7.4	6.8	7.1
Bonds	12.4	11.8	11.2	11.5
Property	9.6	8.8	8.4	8.9
Offshore Assets	10.2	9.8	9.4	9.6
Private Equity	15.8	14.6	14.2	14.8

SOURCE: National Pension Fund Authority (2023)



4.3.2 Risk Analysis

Risk analysis revealed that while private equity offers higher returns, it also carries the highest volatility. Bonds demonstrate the lowest risk profile, making them attractive for risk-averse investors. The standard deviation calculations indicated that stocks and private equity exhibit the highest volatility, while bonds provide the most stable returns.

Table 4. 7 Risk Metrics by Asset Class (2014-2024)

Asset Class	Variance	Standard Deviation
Stocks	0.0324	18.0%

Bonds	0.0081	9.0%
Property	0.0144	12.0%
Offshore Assets	0.0196	14.0%
Private Equity	0.0400	20.0%

The covariance matrix (Table 4.3) shows strong positive correlation between stocks and private equity (0.600), indicating that these assets tend to move together. The bonds show negative correlation with stocks (-0.300) and private equity (-0.200), suggesting their potential as a diversification tool.

Table 4. 8 Covariance Matrix

Asset Class	Stocks	Bonds	Property	Offshore	PE
Stocks	1.000	-0.300	0.400	0.500	0.600
Bonds	-0.300	1.000	0.200	0.100	-0.200
Property	0.400	0.200	1.000	0.300	0.400
Offshore Assets	0.500	0.100	0.300	1.000	0.500
Private Equity	0.600	-0.200	0.400	0.500	1.000

4.3.3 Portfolio Performance Analysis

The analysis of three portfolio configurations revealed notable differences in performance based on the level of private equity allocation. Portfolio A, which excluded private equity and focused on traditional asset classes including bonds, stocks, and property, achieved the lowest expected returns ranging from 10.1% to 11.2%. Portfolio B, with a moderate allocation to private equity of 5%-10%, performed better, achieving expected returns of 11.3% to 12.4%. Portfolio C, which allocated 10%-15% to private equity, demonstrated the highest expected returns of 12.2% to 13.5%. The increased returns in Portfolio C came with a higher level of risk, with

portfolio risk ranging from 13.0% to 14.2%, compared to 12.2% to 13.1% in Portfolio B and 11.8% to 12.6% in Portfolio A.

Table 4. 9 Portfolio Performance Metrics

Metric	Portfolio A (0%)	Portfolio B (5%-10%)	Portfolio C (10%-15%)
Expected Return (%)	10.1 - 11.2	11.3 - 12.4	12.2 - 13.5
Portfolio Risk (%)	11.8 - 12.6	12.2 - 13.1	13.0 - 14.2
Sharpe Ratio	0.62 - 0.68	0.70 - 0.76	0.74 - 0.80

Despite the higher risk in Portfolio C, the Sharpe ratios, which measure risk-adjusted performance, indicated that this portfolio outperformed the others. Portfolio C achieved Sharpe ratios of 0.74 to 0.80, compared to 0.70 to 0.76 in Portfolio B and 0.62 to 0.68 in Portfolio A. This suggests that the additional returns in Portfolio C more than compensated for the higher risk, highlighting the potential benefits of increasing private equity allocations within a diversified portfolio.

4.3.4 Return-to-Risk Ratio Analysis

To test whether Portfolio C's superior performance is statistically significant, hypothesis testing was conducted at 90% confidence level:

$H_0: \mu_{pc} - \mu_{pa} = 0$ (null hypothesis) $H_1: \mu_{pc} - \mu_{pa} > 0$ (alternative hypothesis)

Where: μ_{pc} = mean return-to-risk ratio of Portfolio C μ_{pa} = mean return-to-risk ratio of Portfolio A

- Mean difference ($\bar{d}$) = 0.12
- Standard deviation of differences (sd) = 0.04
- Sample size (n) = 40 quarters

Test Statistic Calculation: $t = (\bar{d}) / (sd / \sqrt{n})$ $t = 0.12 / (0.04 / \sqrt{40})$ $t = 2.34$

Decision Rule:

- $\alpha = 0.10$ (90% confidence level)
- Critical value = 1.645 (one-tailed test)

- Reject H_0 if $t > 1.645$

Result: Since $2.34 > 1.645$, we reject the null hypothesis $p\text{-value} = 0.0096$

FX Risk Sensitivity Analysis:

- Base case calculation: Return-to-risk ratio = $(12.85\% - 4.5\%) / 11.3\%$
= 0.74
- +10% FX volatility scenario: Adjusted risk = $11.3\% * 1.10 = 12.43\%$ Return-to-risk ratio = $(12.85\% - 4.5\%) / 12.43\%$
= 0.70
- -10% FX volatility scenario: Adjusted risk = $11.3\% * 0.90 = 10.17\%$ Return-to-risk ratio = $(12.85\% - 4.5\%) / 10.17\%$
= 0.78

The hypothesis testing results provide strong statistical evidence ($p < 0.01$) that Portfolio C's superior risk-adjusted performance is not due to chance. The FX sensitivity analysis demonstrates that the portfolio's performance remains robust even under different currency volatility scenarios.

4.4 Discussion of Findings

The quantitative results show that private equity provided the highest returns among all asset classes in East Africa, with Kenya leading at 15.8%, followed by Uganda (14.6%), Rwanda (14.8%), and Tanzania (14.2%). This matches what industry professionals said in the qualitative findings, where 72% of private equity firms emphasized the importance of pension fund investments due to their high potential returns. However, both data sets highlight the high risk of private equity, which had the largest variability in returns (20% standard deviation). This risk aligns with practitioner concerns about challenges like regulatory barriers, high management fees, and limited market opportunities, which could make it harder to adopt strategies like the fund of funds.

Across the region, the data shows that Kenya's stronger financial systems allow for better private equity returns compared to Tanzania and Rwanda, where markets are

smaller. Industry professionals had mixed opinions on the potential of a fund of funds strategy in East Africa 35% believed it was highly viable, but 45% were unsure. Quantitative findings support this caution, as increasing private equity in portfolios (like Portfolio C) led to higher returns of up to 13.5% but also increased risk to 14.2%. These results suggest that private equity can boost pension fund performance. It requires careful planning and market-specific strategies to manage the risks and make the approach practical for East Africa.



CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the key findings, draws conclusions based on the research objectives, and offers recommendations for practice and policy. It also discusses the study's limitations and suggests areas for future research to address gaps and build on the current findings.

5.2 Summary

5.2.1 Current allocation of pension funds to private equity across East Africa

The study found that pension fund managers in East Africa allocate only a very small portion of their portfolios to private equity. Data collected showed that private equity investments account for less than 5% of total allocations, with Kenya having the highest allocation at approximately 2%. Uganda, Tanzania, and Rwanda lag further behind due to smaller and less developed markets. Respondents noted that despite its potential for high returns, private equity remains underutilized, with key challenges including limited expertise among fund managers and regulatory hurdles.

This aligns with Gichuki Gatauwa and Kungu (2021), who highlighted the role of private equity in fostering economic growth in regions with growing financial ecosystems. The findings also contrast with Groh and Liechtenstein (2009), who noted that private equity allocation in many emerging markets is hindered by weak institutional frameworks and regulatory limitations.

5.2.2 Asset allocation ratio for pension funds in East Africa

The collected data showed that pension funds in East Africa primarily invest in low-risk assets. Government bonds accounted for 50%-60% of allocations, while property investments made up 20%-30%. Offshore assets and private equity represented smaller proportions, typically below 10%. This cautious approach reflects the need for stability and predictable returns. However, the analysis revealed that portfolios with higher private equity allocations achieved better returns, highlighting the potential for improved performance through diversification, despite associated risks.

The findings reflect Markowitz's (1952) portfolio theory, which emphasizes diversification to balance risk and returns. Mancuveni and Cornelius (2015) however

observed that South African pension funds have been more aggressive in allocating to private equity through fund-of-funds models, achieving marginal diversification benefits. This suggests that while East African pension funds adopt a conservative approach, there is potential for improved risk-adjusted returns by gradually increasing private equity exposure within a diversified framework.

5.2.3 Viability of the fund-of-funds model

Data indicated mixed views on the viability of the fund-of-funds model in East Africa. While 35% of respondents believed it was highly viable due to its diversification and professional management benefits, 45% were uncertain, and 20% found it unviable due to high management fees and limited market depth. Respondents highlighted that the model's success would depend on regulatory improvements and the development of deeper financial markets to support private equity growth. Despite concerns, the fund-of-funds approach was seen as a potential solution to help pension funds access private equity more effectively

Sorensen and Yasuda (2022) noted that fund-of-funds structures can offer diversification and professional management, making them suitable for regions with limited expertise in private equity. Vitas et al. (2008) argued that a robust regulatory framework is essential to ensure the success of such models. The current findings align with Merton's (1972) concept of efficient portfolio frontier, where professional management in fund-of-funds structures could optimize returns while managing risks. Contrasting perspectives, like those of Akwimbi (2008), emphasize that financial sustainability of pension schemes depends on reducing costs, which may be difficult to achieve with the higher fees associated with fund-of-funds.

5.2.4 Barriers to private equity investments by pension funds

The data revealed several barriers preventing greater private equity investment by pension funds. Regulatory constraints were identified as the most significant challenge, followed by a lack of expertise among fund managers. High volatility in private equity returns and limited exit options also discouraged investment. Survey respondents emphasized the need for better regulatory frameworks, enhanced market liquidity, and capacity building to address these challenges. These barriers highlight the critical steps required to unlock private equity's potential as a viable investment option for pension funds in East Africa.

These findings echo Akwimbi (2008), who stressed the importance of regulatory reforms and capacity building to enhance financial sustainability. Additionally, the United Nations Economic Commission for Africa (2020) highlighted that underdeveloped capital markets in many African countries limit the scalability of private equity investments. However, contrasting studies, such as Yu and Lee (2012), suggest that adopting innovative strategies like hybrid heuristic models can overcome some of these barriers by optimizing investment decisions. The findings also align with Gichuki Gatauwa and Kungu (2021), who advocate for improving market transparency and liquidity to attract pension fund investments in private equity.

5.3 Conclusions

The current state of pension fund allocation to private equity in East Africa is extremely limited, with allocations typically below 5%, and Kenya having the highest at approximately 2%. This underallocation impacts portfolio performance, as private equity offers higher returns compared to other asset classes such as bonds and property. The associated high volatility and limited expertise among fund managers in managing private equity investments constrain its growth within pension fund portfolios. Optimizing private equity allocation could enhance returns, but addressing these challenges, including improving fund manager capacity and creating supportive regulatory frameworks, is essential.

To achieve an optimal allocation to private equity, pension funds in East Africa should adopt a balanced approach that incorporates higher private equity exposure while maintaining diversification to manage risks. Strategies such as increasing professional management expertise and leveraging tools like scenario analysis can help achieve this balance. Evidence from other markets suggests that carefully planned private equity investments, supported by robust risk management, can improve portfolio outcomes without exposing funds to excessive risk.

The fund-of-funds model offers a viable solution to many challenges associated with private equity investments. This model allows pension funds to access diversified private equity opportunities with professional management, reducing the impact of limited expertise and market depth. High management fees and regulatory constraints must be addressed to fully realize the benefits of this approach. With improvements in

these areas, the fund-of-funds model could boost pension fund participation in private equity.

The main barriers to private equity investment include regulatory, structural, and operational challenges. Regulatory frameworks in East Africa require modernization to encourage private equity investments while ensuring investor protection. Structural issues like shallow capital markets and limited exit options, need to be addressed through market development and better infrastructure. Practical strategies include regulatory reforms, capacity building for fund managers and initiatives to improve market transparency and liquidity.

5.4 Recommendations

To enhance pension fund allocation to private equity, policymakers should focus on creating a supportive regulatory environment. Simplifying compliance requirements and introducing incentives for private equity investments can encourage pension funds to increase their allocations. According to Vittas et al. (2008), clear guidelines and robust frameworks are essential for promoting sustainable investment practices.

Pension funds should also invest in capacity-building programs to improve their expertise in private equity investments. This includes training fund managers on risk assessment, portfolio diversification, and exit strategies. As noted by Mancuveni and Cornelius (2015), professional management and informed decision-making are critical for optimizing private equity investments.

The solution to the challenges of high management fees and market limitations, adopting the fund-of-funds model can provide an effective solution. This model enables pension funds to access diversified private equity portfolios while benefiting from professional expertise. However, as Sorensen and Yasuda (2022) emphasized, efforts must be made to reduce fees and improve transparency for this approach to be fully effective.

Efforts to develop capital markets in East Africa should be prioritized to create a more conducive environment for private equity investments. This includes improving liquidity, expanding exit options, and fostering investor confidence. The United Nations Economic Commission for Africa (2020) highlighted the importance of innovative financial solutions and market development in driving private sector

growth. East African pension funds can unlock the potential of private equity as a valuable asset class.

5.5 Suggestion areas of research

The main area of future research should focus on exploring the long-term performance of private equity investments by pension funds in East Africa. This could include examining how private equity returns compare to traditional assets over extended periods and under different economic conditions. The research would help establish the viability of private equity as a core component of pension fund portfolios and inform optimal allocation strategies.

Another area for study is the impact of regulatory reforms on private equity investments in East Africa. The study could assess how changes in policy frameworks influence pension funds' participation in private equity markets and identify specific regulations that encourage or hinder investments. This would provide information for policymakers aiming to create an enabling environment for growth in this sector.

Finally, studies could investigate the effectiveness of fund-of-funds models in addressing the challenges faced by pension funds investing in private equity. This research will include analyzing the cost-effectiveness, risk mitigation benefits, and performance of these models compared to direct investments. The findings would guide pension fund managers in choosing the most efficient investment strategies for maximizing returns while minimizing risks.

5.6 Limitations of the Study

The study relied on data collected from a limited number of countries within East Africa, specifically Kenya, Uganda, Tanzania, and Rwanda. This narrow scope may not fully reflect the diversity of financial markets and private equity dynamics across other African regions. More mature markets such as South Africa or underdeveloped markets in Central Africa could present significantly different findings. Expanding data sources geographically would provide a broader understanding of pension fund investments.

Most data examined in this study covered a 10-year period, which, while useful, may not fully capture the long-term impact of private equity investments. Private equity often requires extended time horizons to realize returns and demonstrate its role in

portfolio diversification. Other research should track pension fund performance over longer periods to better understand the sustainability of these investments.



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APPENDICES

Sample Questionnaire

Below is a sample of the questionnaire that will be used to gather data from private equity firms and pension funds:

Sample Questionnaire: Feasibility of Fund of Funds Strategy in East Africa

The fund of funds strategy can be more elaborated by considering these two factors in play.

- Pension funds and their asset managers look for long-term investments to match their long-term liabilities. Approximately, their liabilities mature in 30 years in average. Thus, assets need to mature close to this period
- Private equity funds despite their ease and improving in access of capital still face uncertain exits which affects their performance

Taking these two factors in play, fund of funds will play a role as an active manager foreseeing its substantial investments in private equity, secondly act as an anchor investor of private equity successful and outperforming portfolios this will help a tap of dividends across time which private equity have less appetite for because of the nature of their fund life. In the period as an anchor investor the fund of funds will slowly cede its shares to the public through listing the portfolio in the respective stock market. A period of 20 years (Minus the Private Equity fund life) is quite enough for a portfolio to be listed in the stock exchange for the Pension funds to meet their liabilities.

With this elaboration the following are the questions to be asked by the stakeholders in the Private equity industry.

General Information

Name of Organization:

Role within Organization:

Years of Experience in Private Equity/Pension Fund Management:

Investment Strategy

What is your organization's current asset allocation strategy?

How much of your portfolio is allocated to private equity investments?

What factors influence your decision to allocate funds to private equity?

Fund of Funds Strategy

Are you familiar with the fund of funds strategy? [Yes/No]

Do you believe that a fund of funds strategy could be viable in East Africa?
[Yes/No/Maybe]

What are the potential benefits of implementing a fund of funds strategy in this region?

What challenges do you foresee in implementing such a strategy?

Economic Scenarios

How does your organization adjust its investment strategy in response to different economic conditions (e.g., boom, stagnancy, recession)?

Would a fund of funds strategy help mitigate risks in times of economic downturn?
[Yes/No/Maybe]

Outlook

What changes do you think are necessary to make private equity more attractive to pension funds in East Africa?

What role do you see for private equity in the future growth of pension funds in the region?

Additional Comments

Please provide any additional insights or comments on the viability of private equity investments and fund of funds strategies in East Africa.

