

## EFFECT OF LONG-TERM ASSETS ALLOCATION STRATEGIES ON THE FINANCIAL PERFORMANCE OF SOCIAL SECURITY FUNDS

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### ABSTRACT

This study examines the effect of long-term asset allocation strategies on the financial performance of the Rwanda Social Security Board (RSSB). The research is motivated by the critical role of strategic asset allocation in ensuring the financial sustainability of social security funds, particularly in meeting long-term obligations such as pensions and healthcare benefits. The study addresses gaps in existing literature by focusing on Rwanda's unique economic context and providing empirical evidence on the effectiveness of RSSB's investment strategies. Findings reveal that RSSB's asset allocation is diversified across equities, fixed income, real estate, and alternative investments, with respondents expressing strong agreement on the effectiveness of these strategies (mean scores ranging from 4.60 to 4.80 on a 5-point scale). Financial performance indicators, such as Return on Investment (ROI), Fund Solvency Ratio (FSR), and Liquidity Ratio (LR), show variability over the study period. Notably, ROI peaked at 14.22% in 2023, while the FSR declined from 32.9 in 2021 to 24.93 in 2023, signaling potential liquidity challenges. Regression analysis confirms a significant positive relationship between asset allocation strategies and financial performance ( $R^2 = 0.625$ ,  $p < 0.05$ ), with alternative investments emerging as the most influential driver ( $\beta = 0.641$ ). The study concludes that RSSB's diversified asset allocation strategies enhance financial performance but highlights the need for improved risk management frameworks and stakeholder communication. Recommendations include strengthening risk assessment practices, expanding alternative investments, and fostering transparency to ensure long-term sustainability. This research contributes to the academic discourse on asset allocation in emerging markets and provides actionable insights into policymakers and fund managers to optimize RSSB's investment strategies. By aligning asset allocation with long-term goals, RSSB can better safeguard the financial security of its beneficiaries.

**Keywords:** Asset allocation, financial performance, social security funds, investment strategies.

### 1.0 INTRODUCTION

The allocation of long-term assets is fundamental in determining the performance and sustainability of social security funds. Strategic long-term asset allocation is a critical determinant of the financial health of social security funds. According to Sharpe et al. (2020), long-term asset allocation strategies play a central role in portfolio returns, risk management, and meeting future liabilities. Unlike short-term investments, long-term asset allocations in social security funds aim to secure stable income over extended periods, ensuring the fund's ability to meet its obligations to beneficiaries. The authors argue that a well-balanced asset

allocation model, incorporating equities, fixed income, and alternative assets such as real estate, is essential for achieving optimal performance.

In the context of social security funds, Koli et al. (2021) emphasize the importance of matching assets to liabilities. They highlight that social security funds have long-term liabilities, and therefore, their investment strategies should focus on assets with long durations. For instance, long-term bonds and real estate investments are aligned with the fund's obligation to provide retirement benefits, as they tend to generate steady income over time. The study concludes that a mismatch between assets and liabilities could lead to liquidity issues, jeopardizing the financial health of the fund.

The United States Social Security Trust Fund primarily invests in U.S. Treasury securities, taking a conservative approach to asset allocation. According to Munnell and Chen (2021), this strategy has provided stability and security for the fund, ensuring that the fund is able to meet its obligations without significant exposure to market volatility. However, in a prolonged low-interest-rate environment, the fund's returns have been below expectations, raising concerns about long-term solvency as the population ages and more beneficiaries draw from the system. The U.S. case highlights the challenge of relying on low-risk, low-return assets to fund long-term liabilities. Munnell and Chen (2021) suggest that a more diversified portfolio, including equities and real estate, could improve returns while maintaining a manageable level of risk. This finding is significant for Rwanda's RSSB, as it may explore options for improving its long-term asset performance through diversification.

The Canada Pension Plan Investment Board (CPPIB) adopts a globally diversified investment strategy, allocating funds across equities, bonds, real estate, and private equity. Beath and Gauthier (2020) argue that the CPPIB's strong performance is attributed to its focus on maximizing risk-adjusted returns through diversification. Between 2019 and 2023, the CPPIB consistently outperformed benchmarks due to its balanced asset allocation approach. Norway's Government Pension Fund Global (GPF) is one of the largest sovereign wealth funds, and its heavy reliance on equities has allowed it to generate high returns over time. According to Haugen and Pedersen (2022), around 70% of the fund's assets are allocated to global equities, with the rest in bonds and real estate. While this aggressive strategy has resulted in significant returns, it also subjects the fund to high levels of volatility during periods of global financial instability. The experience of GPF shows that while equity-heavy portfolios can boost returns, they also come with increased risk.

Singapore's Central Provident Fund (CPF) is globally recognized for its robust asset allocation strategy that prioritizes safety and sustainable growth. According to Tan and Ang (2021), CPF employs a conservative investment strategy by directing contributions to government securities. Although this strategy limits exposure to volatile assets like equities, it provides stability and guarantees returns to contributors. CPF also allows individuals to invest part of their funds in a range of financial products, offering an opportunity for higher returns through equities and bonds. Singapore's model highlights the importance of maintaining a balance between low-risk assets that secure guaranteed returns and optional higher-risk investments for individuals seeking to increase their fund growth.

The Government Employees Pension Fund (GEPF) of South Africa has adopted a diversified investment strategy, with a significant portion of its portfolio in domestic equities, bonds, and property. According to Makhuvha et al. (2021), the GEPF has increasingly focused on infrastructure investments, aligning its strategy with national development goals while seeking higher returns. However, the fund has also faced challenges due to economic volatility and political risks within the country. South Africa's case is particularly relevant for Rwanda's RSSB, which may face similar challenges as a developing economy. The GEPF's strategy of combining traditional asset classes with infrastructure investments offers a model for how the RSSB could allocate part of its portfolio toward projects that support national development while generating returns.

In Togo, the National Social Security Fund (CNSS) faces significant challenges related to low returns on its assets due to limited diversification. A 2020 study by Agbo and Kpotogbé (2020) points out that the CNSS heavily invests in government bonds and real estate, which offer stability but relatively low returns. The lack of exposure to equities and international markets has hampered the fund's ability to generate higher yields that can support growing future liabilities. Togo's experience underscores the risks of over-reliance on conservative assets. The CNSS struggles to meet the rising demands of its beneficiaries due to slow asset growth, a situation Rwanda's RSSB could avoid by exploring more diversified investment options, including international markets and alternative assets such as infrastructure and private equity.

Kenya's National Social Security Fund (NSSF) has adopted a more diversified investment strategy, allocating assets across equities, government securities, real estate, and fixed deposits. According to Wanjiru and Muturi (2022), the NSSF's move towards equities and real estate has significantly improved its returns, particularly between 2019 and 2023. However, the fund has also been criticized for being overly exposed to real estate, which is sensitive to economic downturns and liquidity risks. Kenya's NSSF demonstrates the advantages and risks associated with real estate-heavy portfolios. While these assets have delivered substantial returns, the market's volatility presents challenges.

Uganda's National Social Security Fund (NSSF) has shown impressive growth through strategic asset allocation, with a large portion of its portfolio in real estate, equities, and fixed-income securities. Mugisha and Kyamugambi (2021) argue that the NSSF's focus on equities has been a key driver of its high returns, especially in recent years. However, the Ugandan NSSF also faces challenges, particularly in managing liquidity and balancing long-term assets with short-term liabilities. Uganda's example is highly relevant for Rwanda, as both countries have rapidly growing economies with increasing demand for infrastructure investments.

Rwanda's Social Security Board (RSSB) plays a critical role in ensuring the financial security of its citizens through pension schemes, health insurance, and other social benefits. Like many social security institutions worldwide, RSSB faces the challenge of optimizing its long-term asset allocation strategies to meet increasing obligations amid a rapidly growing population and economic shifts. This section examines the current asset allocation strategies of RSSB, their impact on the fund's performance, and potential areas for improvement based on global best practices.

The Rwanda Social Security Board (RSSB) manages a diversified investment portfolio comprising government bonds, real estate, equity, and other financial instruments. As of 2023, RSSB's total assets were valued at over RWF 1.5 trillion (approximately USD 1.3 billion) (RSSB, 2023). The board primarily invests in domestic markets, with a significant portion of its portfolio allocated to government bonds and real estate, which provide stable, low-risk returns. However, this conservative approach has limited the fund's ability to generate higher yields in comparison to funds that diversify into riskier assets like equities and international markets. A report by RSSB (2022) indicates that around 55% of its investments are in fixed-income assets such as government bonds, while approximately 20% are allocated to real estate. The remaining portion is spread across equities, both domestic and regional, and alternative investments such as infrastructure. The fund has achieved modest annual returns of around 7-8% in recent years, which has been sufficient to cover short-term obligations but raises concerns about long-term sustainability given Rwanda's young and rapidly aging population.

Therefore, the study of long-term asset allocation strategies is essential for Rwanda's RSSB to remain sustainable and provide the necessary social security benefits to its population. By learning from global best practices and adapting to local conditions, the RSSB will position itself to meet the growing demands of its beneficiaries and ensure financial security for future generations.

## 1.1 Statement of the Problem

Investing in long-term assets is considered essential for social security funds, as such investments can provide stable and substantial returns over time. Long-term assets such as government bonds, real estate, and equities are fundamental in generating consistent income, preserving capital, and ensuring social security institutions meet their obligations to beneficiaries. For social security funds with long-term liabilities like pensions, healthcare, and social benefits, a well-structured asset allocation strategy is critical for maintaining financial health (Beath & Gauthier, 2020; Tan & Ang, 2021). These funds can navigate economic cycles, capitalize on growth periods, and maintain resilience during downturns by focusing on long-term investments.

However, long-term investments come with their own set of risks. Empirical studies from countries such as Singapore, Togo, Kenya, and Uganda have demonstrated that poor diversification, inflationary pressures, and market volatility significantly undermine the performance of long-term asset portfolios. For instance, an over-concentration in government bonds in some funds has resulted in lower returns during inflationary periods (Niyonsenga, 2022). Additionally, while real estate is traditionally seen as a stable asset, market downturns and overvaluation risks were evident in Kenya's social security fund when real estate prices stagnated (Makhuvha et al., 2021). These risks underscore the importance of a diversified investment strategy that balances return and risk across different asset classes.

In Rwanda, the Rwanda Social Security Board (RSSB) has predominantly allocated its assets to low-risk, conservative investments such as government bonds and real estate. While these investments have yielded stable returns, there are growing concerns about their sufficiency in meeting the increasing demands on the fund. Rwanda's population is rapidly growing, with the number of retirees drawing pensions projected to increase by 5% annually over the next decade

(NISR, 2023). Furthermore, inflation in Rwanda has averaged 5.3% annually over the past five years (NISR, 2023), eroding the real value of investments in low-yield government bonds. Additionally, the depreciation of the Rwandan Franc has further compounded the risk to RSSB's asset base. In light of these challenges, the question arises whether RSSB's asset allocation strategy is sufficient to sustain the fund's financial health while meeting its long-term obligations.

This study aims to evaluate the impact of RSSB's current long-term asset allocation strategy on its financial performance. By analyzing the balance between low-risk, low-return investments (such as government bonds) and potential high-return assets (like equities and diversified international portfolios), the study seeks to identify opportunities for optimization. The ultimate goal is to recommend a more diversified investment strategy for RSSB that enhances its ability to meet future obligations while ensuring long-term sustainability.

## 1.2 Conceptual framework

A conceptual framework is a systematic representation of the relationships between various concepts, variables, and constructs within a research study. It serves as a foundational structure that guides the research process, helping to clarify the key elements of the study and how they interconnect. By visually or descriptively organizing these elements, a conceptual framework enables researchers to understand the underlying theories and principles that inform their study, facilitating the formulation of hypotheses, research questions, and methodologies. In essence, it acts as a roadmap for research, providing clarity and direction while ensuring that all relevant factors are considered.

**Figure 1: Conceptual framework**

### Independent variables

<b>Long term assets allocation</b> Equity Investments Allocation Fixed Income Investments Real Estate Investments Alternative Investments Risk Diversification Strategies
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### Dependent variables

<b>Financial performance</b> Return on investment Fund solvency ratio Assets growth rate Liquidity ratio Investment yield
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## 1.3 Literature review on long term assets allocation

Long-term asset allocation is a strategic investment approach that involves distributing an investor's capital across various asset classes with the aim of achieving optimal returns while managing risk over an extended period. This strategy is fundamental for both individual and institutional investors, as it allows for a diversified portfolio that can withstand market volatility and economic fluctuations. By considering the risk-return profiles of different asset classes, such as equities, bonds, real estate, and alternative investments, investors can create a tailored asset allocation that aligns with their financial goals, risk tolerance, and investment horizon. Long-term asset allocation is particularly crucial for entities like social security funds,

which must balance the need to grow their assets with the obligation to provide stable benefits to their members over time (Bodie, Kane, & Marcus, 2021).

The essence of long-term asset allocation lies in the principles of diversification and the time value of money. Diversification reduces the overall risk of the portfolio by spreading investments across multiple asset classes, minimizing the impact of poor performance in any single category (Ippolito, 2020). The time value of money highlights the potential for investments to grow over time, allowing investors to benefit from compounding returns (Khan & Ali, 2021). In practice, a well-executed long-term asset allocation strategy not only enhances returns but also helps manage risks associated with economic cycles and market dynamics. This approach is vital for social security funds like Rwanda's RSSB, which must ensure the sustainability of their investment portfolios to fulfill their long-term financial commitments to beneficiaries (Börsch-Supan et al., 2021).

## 1.4 Literature on financial performance

Financial performance represents a comprehensive assessment of how well an organization utilizes its assets to generate revenue and create value for its stakeholders (Brigham & Ehrhardt, 2019). It encompasses various metrics and indicators that provide insights into a company's financial health, efficiency, profitability, and overall effectiveness in achieving its strategic objectives. Financial performance is crucial for institutional investors like social security funds, as it directly influences their ability to meet obligations to beneficiaries and ensure long-term sustainability.

Several key indicators commonly measure financial performance, including return on investment (ROI), profit margins, asset turnover, and liquidity ratios (Ross, 2020). These metrics facilitate a thorough analysis of how effectively an organization allocates its resources and manages its operations. For social security funds, understanding financial performance is essential not only for evaluating current operations but also for making informed decisions regarding asset allocation and investment strategies.

In the context of long-term asset allocation strategies, financial performance becomes particularly relevant. The allocation of assets among various investment vehicles, such as equities, bonds, real estate, and other instruments, significantly impacts the overall returns and risk profile of the fund (Stice, 2021). By focusing on optimizing financial performance through strategic asset allocation, social security funds like the Rwanda Social Security Board (RSSB) can enhance their capacity to fulfill obligations to beneficiaries, support social programs, and contribute to the broader economic stability of the region.

As a critical aspect of financial management, assessing financial performance enables organizations to identify areas for improvement, benchmark against peers, and develop strategies for growth and resilience. For RSSB, robust financial performance not only ensures sustainability but also fosters trust and confidence among stakeholders, reinforcing the importance of effective asset allocation strategies in achieving long-term financial goals.

## 2.0 THEORETICAL FRAMEWORK

Modern Portfolio Theory (MPT) was introduced by economist Harry Markowitz in his seminal 1952 paper, "Portfolio Selection," which laid the foundation for understanding investment risk and return (Markowitz, 1952). Markowitz's groundbreaking work proposed that investors could construct optimal portfolios by considering the correlation between different asset classes rather than merely focusing on individual assets. This innovative approach to portfolio management emphasized the importance of diversification in reducing risk while maximizing returns. Over the years, MPT has evolved and gained traction in both academic and practical applications, leading to the development of various portfolio optimization techniques and models.

Following its introduction, MPT was further developed through the work of scholars like William Sharpe, who introduced the Capital Asset Pricing Model (CAPM) in the 1960s, extending MPT's principles by incorporating the relationship between risk and expected return (Sharpe, 1964). The introduction of the Efficient Frontier concept allowed investors to visualize the trade-off between risk and return for various portfolio combinations. Since then, MPT has become a cornerstone of modern finance, influencing investment strategies across institutional and individual investors.

MPT is widely applied in various investment contexts, including mutual funds, pension funds, and institutional investing. It serves as a framework for constructing diversified portfolios that optimize returns while minimizing risk. Portfolio managers utilize MPT to evaluate the performance of asset classes, adjust allocations based on market conditions, and manage risk (Elton & Gruber, 2019). Additionally, MPT's principles have been integrated into portfolio management software and quantitative models, allowing for more sophisticated analyses and decision-making processes.

The merits of MPT are numerous. By diversifying investments across different asset classes, MPT helps mitigate risk, leading to a more stable investment performance. The theory provides a systematic approach to portfolio construction, allowing investors to identify optimal asset allocations that align with their risk tolerance and return objectives. MPT employs quantitative measures such as standard deviation and correlation coefficients, enabling investors to make data-driven decisions. Furthermore, the theory offers a robust framework for evaluating portfolio performance against the Efficient Frontier, helping investors assess whether they are achieving desired returns relative to the level of risk undertaken (Bessembinder & Zhang, 2020).

Despite its advantages, MPT has several limitations. The theory assumes that investors are rational and risk-averse, which may not accurately reflect real-world behavior, as behavioral finance suggests that psychological factors often influence investment decisions (Baker & Ricciardi, 2020). Also, MPT relies heavily on historical data to predict future returns and risks, which can be problematic in volatile markets where past performance may not be indicative of future results. The reliance on standard deviation as the sole measure of risk overlooks other important factors, such as liquidity risk and tail risk, which can significantly impact portfolio performance (Pham, 2021). Finally, MPT assumes that correlations between asset classes remain stable over time, which may not hold true in rapidly changing market environments.

Modern Portfolio Theory is particularly relevant to the study of long-term asset allocation strategies and the performance of social security funds, such as Rwanda's RSSB. By applying MPT principles, the RSSB can optimize its investment portfolio, ensuring that it balances risk and return while meeting future obligations to its beneficiaries. Furthermore, understanding the dynamics of diversification and asset correlation can help the RSSB develop strategies that enhance financial performance over the long term. Despite its limitations, MPT provides a valuable framework for guiding investment decisions and assessing the effectiveness of asset allocation strategies within social security funds.

## 2.1 Asset liability management theory

Asset Liability Management (ALM) is a strategic approach that financial institutions and organizations use to manage risks that arise from mismatches between assets and liabilities. The origins of ALM can be traced back to the banking sector, where institutions recognized the need to balance their assets and liabilities to ensure financial stability and meet their obligations to depositors and creditors. Over the years, the concept has evolved to encompass a broader range of financial institutions, including insurance companies, pension funds, and social security funds. ALM seeks to optimize the financial performance of an institution while maintaining an acceptable level of risk, particularly interest rate risk, liquidity risk, and credit risk.

ALM has developed into a sophisticated discipline that integrates various financial tools and techniques to assess and manage the risks associated with asset and liability portfolios. Institutions utilize models and simulations to analyze potential future scenarios, helping them make informed decisions regarding investment strategies, funding sources, and risk mitigation measures (Harris, 2020). Moreover, regulatory frameworks such as the Basel Accords have further emphasized the importance of effective ALM practices, prompting financial institutions to adopt more rigorous approaches to risk management.

The application of ALM is crucial in managing the financial performance of institutions, particularly in ensuring that they can meet their obligations without compromising their capital base. One of the key merits of ALM is its ability to enhance long term assets allocation by aligning the timing of cash inflows and outflows. This alignment helps institutions avoid liquidity crises and reduces the need for costly short-term borrowing. Additionally, ALM provides a structured framework for measuring and managing interest rate risk, which is particularly important in a fluctuating economic environment (Klein, 2021). By employing ALM strategies, institutions can also enhance their investment decisions, optimize their capital structure, and improve overall profitability.

Despite its advantages, ALM is not without limitations. One major challenge is the complexity involved in accurately modeling the relationships between assets and liabilities, particularly in the face of uncertain economic conditions. Furthermore, the reliance on historical data to forecast future scenarios can lead to inaccuracies if past trends do not hold in the future (Harris, 2020). Additionally, ALM requires ongoing monitoring and adjustments, which can be resource-intensive for organizations, particularly smaller institutions with limited resources. Finally, regulatory changes can also impact the effectiveness of ALM practices, as institutions must continuously adapt to new requirements and guidelines.

The relevance of ALM to the study of long-term asset allocation strategies in social security funds, such as Rwanda's RSSB, is significant. Effective ALM practices can help the RSSB ensure that its assets are appropriately allocated to meet its long-term obligations to beneficiaries while maintaining a stable financial position. By analyzing the relationship between assets and liabilities, the RSSB can develop investment strategies that optimize returns while managing risks effectively. Additionally, incorporating ALM principles into the fund's operations can enhance its ability to withstand economic fluctuations, ensuring the sustainability of the social security system for future generations.

## 2.2 Life-Cycle Theory of Investing

The Life-Cycle Theory of Investing, rooted in economic theory, was developed primarily by economists Franco Modigliani and Richard Brumberg in the 1950s. This theory posits that individuals make investment and consumption decisions based on their expected lifetime income, aiming to smooth consumption over their lifetime. According to Modigliani and Brumberg (1954), individuals save during their working years to prepare for retirement, allowing them to maintain a stable standard of living even when their income decreases post-retirement. This theory has significantly influenced personal finance and investment strategies, as it encourages investors to consider their life stages when making investment decisions.

Over time, the Life-Cycle Theory has been expanded to incorporate various factors, including changes in income, risk tolerance, and investment opportunities. The theory suggests that as individuals age, their investment strategies should evolve, transitioning from higher-risk investments, such as equities, to more conservative options, such as bonds and fixed-income securities, as they approach retirement (Dushi & Iams, 2020). This strategic shift aims to protect accumulated wealth while ensuring that retirees can meet their financial obligations and expenses. Furthermore, the theory has been applied to the design of target-date funds, which automatically adjust the asset allocation based on the investor's age and retirement date, providing a practical application of Life-Cycle investing principles.

The merits of the Life-Cycle Theory include its emphasis on the importance of planning for the future and the need to adapt investment strategies over time. By aligning investment decisions with individual life stages, the theory promotes a balanced approach to risk management and encourages individuals to save for retirement more effectively (Börsch-Supan et al., 2021). Additionally, the theory provides a framework for understanding the relationship between age, risk tolerance, and investment behavior, which can aid financial advisors in developing tailored investment strategies for their clients.

However, the Life-Cycle Theory is not without its limitations. One significant criticism is that it assumes individuals have perfect foresight regarding their future income and expenses, which is rarely the case in reality. Furthermore, the theory may not account for external factors that can impact an individual's financial situation, such as economic downturns, health issues, or unexpected life events (Brown et al., 2023). Additionally, the theory's reliance on the notion of smooth consumption may not accurately reflect the behavior of all individuals, particularly those with different cultural backgrounds or financial literacy levels.

The relevance of the Life-Cycle Theory of Investing to the study of long-term asset allocation strategies in social security funds, such as Rwanda's RSSB, is notable. By applying the principles of the Life-Cycle Theory, the RSSB can develop investment strategies that align with the financial needs of different demographic groups within its beneficiary population. Understanding the life-cycle stages of its members can help the RSSB optimize its asset allocation to ensure that it meets its obligations while managing risks effectively. Furthermore, the theory can guide the fund in designing products and services that cater to the diverse financial needs of individuals throughout their life cycles.

## 2.3 Conceptual review

This conceptual review delved into the theoretical frameworks and empirical studies examining the interplay between long-term asset allocation and financial performance. By exploring various asset allocation strategies and their impacts on investment portfolio performance, particularly in the context of social security funds such as Rwanda's RSSB, the review aims to provide insights that inform the development of effective investment strategies. Understanding these dynamics is essential for ensuring the long-term viability and success of social security funds, enabling them to fulfill their obligations to future generations of beneficiaries (Börsch-Supan et al., 2021).

## 2.4 Empirical review

Ruth (2023) conducted a study on the impact of long-term asset allocation strategies on the financial performance of pension funds in Ghana. The objective of the study was to analyze how different asset allocation strategies affect the overall returns of pension funds. The research employed a quantitative research design and utilized a sample size of 150 pension fund managers across the country. Data was collected through structured questionnaires, and statistical analysis was conducted using descriptive and inferential statistics, including regression analysis.

The findings revealed that strategic asset allocation significantly impacts the financial performance of pension funds, with an average annual return of 8% for funds that diversified their portfolios across multiple asset classes. In contrast, funds with a concentrated asset allocation strategy recorded an average annual return of only 5%. The study concluded that diversification in long-term asset allocation leads to better financial outcomes for pension funds. Ruth (2023) recommended that fund managers adopt diversified asset allocation strategies to enhance performance and mitigate risks.

Adams (2022) examined the role of equity exposure in enhancing the financial performance of retirement funds in South Africa. The study aimed to determine the optimal level of equity exposure that maximizes returns while minimizing risk. Using a mixed-methods research design, the researcher surveyed 100 fund managers and analyzed secondary data from financial reports. The analysis indicated that retirement funds with an equity exposure of 60% or more achieved higher returns, averaging 10% annually, compared to those with lower equity exposure, which yielded an average of 6%. The study concluded that an appropriate level of equity exposure is crucial for maximizing financial performance. Adams (2022) recommended that retirement fund managers carefully evaluate their equity allocation to optimize returns.

Baker (2021) focused on the impact of bond allocation on the financial performance of social security funds in Kenya. The objective of this study was to assess the effectiveness of bond investments as a strategy for long-term growth. A descriptive research design was utilized, with a sample size of 200 social security fund managers. Data collection involved questionnaires and interviews, complemented by financial performance data from the funds. The findings revealed that funds with a higher bond allocation (above 40%) recorded a stable average return of 7%, while those with lower allocations experienced more volatility and lower average returns of 4%. The study concluded that a strategic bond allocation contributes to stability in financial performance. Baker (2021) recommended that social security funds increase their bond allocations to enhance stability and overall returns.

Karanja (2020) explored the relationship between diversification level and the financial performance of mutual funds in Uganda. The study aimed to evaluate how diversification impacts returns and risks in mutual fund investments. A quantitative research design was employed, with a sample size of 80 mutual fund managers. Data was collected through questionnaires and analyzed using correlation and regression analysis. The results indicated a positive correlation between diversification and financial performance, with diversified mutual funds achieving an average return of 9% compared to 5% for less diversified funds. The study concluded that diversification enhances financial performance by spreading risk. Karanja (2020) recommended that mutual fund managers pursue diversification strategies to improve returns and reduce risks.

Nguyen (2019) investigated the effect of real estate investments on the financial performance of pension funds in Vietnam. The objective was to determine the contribution of real estate assets to overall fund performance. The research utilized a case study approach, focusing on three large pension funds with a sample size of 50 fund managers. Data collection involved interviews and analysis of financial reports. Findings indicated that pension funds with a real estate allocation of at least 20% achieved higher average returns (12%) than those with lower allocations (7%). The study concluded that real estate investments significantly enhance the financial performance of pension funds. Nguyen (2019) recommended that pension fund managers consider increasing their real estate investments to achieve better financial outcomes.

## 2.5 Research gap

The existing literature on the impact of long-term asset allocation strategies on the performance of social security funds provides valuable insights but also reveals several gaps that warrant further investigation, particularly concerning the Rwanda Social Security Board (RSSB). Most studies, such as those conducted by Ruth (2023) and Adams (2022), focus primarily on the effectiveness of asset allocation strategies in various countries, but they often lack specificity regarding the unique context of social security funds in Rwanda. These studies predominantly employ qualitative methodologies or mixed methods, which may not fully capture the statistical relationships between asset allocation strategies and fund performance.

One critical gap lies in the limited understanding of how different asset classes such as equities, bonds, and real estate interact within the unique economic and regulatory environment of Rwanda. For instance, while Baker (2021) explored bond allocation in Kenya, it did not consider the implications of local market conditions and regulatory frameworks that could

influence RSSB's investment strategies. Additionally, Karanja (2020) emphasized diversification but did not provide empirical evidence of its direct impact on the financial performance of social security funds, particularly within the Rwandan context.

Furthermore, existing studies predominantly focus on annual returns without adequately addressing other dimensions of financial performance, such as fund solvency ratios, liquidity ratios, and investment yields, which are critical for social security funds like RSSB. For example, Nguyen (2019) examined real estate investments but did not explore how these investments affect the fund's ability to meet its long-term obligations to beneficiaries. This oversight underscores the need for a comprehensive quantitative study that examines various performance metrics in conjunction with long-term asset allocation strategies.

Moreover, there is a scarcity of research that utilizes quantitative methodologies exclusively, particularly using secondary data to analyze the performance of social security funds over time. The application of robust statistical techniques to analyze historical data from RSSB will yield insights into the effectiveness of its asset allocation strategies and their impact on financial performance. Therefore, this study aims to fill this research gap by quantitatively assessing the impact of long-term asset allocation strategies on the performance of RSSB, utilizing secondary data from financial reports and performance metrics from 2019 to 2023. This focus will enhance the understanding of how these strategies contribute to the sustainability and effectiveness of social security funds in Rwanda, providing actionable insights for policymakers and fund managers.

## 3.0 RESEARCH METHODOLOGY

### 3.1 Description of the study area

The Rwanda Social Security Board (RSSB) is a government institution responsible for managing social security and pension funds in Rwanda. Established through the merger of various social security schemes, RSSB oversees pension funds, medical insurance, occupational hazard benefits, and maternity leave benefits. The institution plays a crucial role in ensuring social protection for Rwandan citizens by administering contributions from employees, employers, and self-employed individuals while investing these funds to generate sustainable returns. Its investment portfolio spans multiple asset classes, including equities, fixed income, real estate, and alternative investments, with the objective of ensuring long-term financial stability and adequate benefits for its members.

As a key institutional investor in Rwanda, RSSB actively participates in national economic development by financing infrastructure projects, housing developments, and other strategic investments. The organization adheres to investment policies designed to balance risk and return while safeguarding contributors' funds. Over the years, RSSB has faced challenges such as market volatility, regulatory changes, and the need for portfolio diversification to enhance fund performance. However, continuous reforms and strategic investment approaches have strengthened its financial position, ensuring the sustainability of Rwanda's social security system. By optimizing asset allocation strategies, RSSB aims to maximize returns while securing the welfare of pensioners and beneficiaries across the country.

### 3.2 Research Design

Research design serves as the foundational blueprint for systematically addressing research questions and objectives. In this study on the effect of long-term asset allocation strategies on the financial performance of RSSB, a mixed-methods research design was employed. This approach integrated both quantitative and qualitative methods to provide a comprehensive understanding of the research problem (Creswell & Creswell, 2017). The combination of numerical analysis and qualitative insights ensures a more holistic evaluation of the relationship between long-term asset allocation and financial performance.

The quantitative approach was used to measure and statistically analyze the relationship between long-term asset allocation strategies and financial performance. Multiple regression analysis was the primary method for examining the impact of different asset allocation indicators such as equity investments, fixed income investments, real estate, and alternative investments on financial performance metrics (Hair et al., 2018). This statistical technique allowed hypothesis testing and the identification of significant predictors, ensuring objective and data-driven conclusions.

Also, to quantitative analysis, a qualitative approach was incorporated to gain deeper insights into investment decision-making processes, challenges, and strategic considerations at RSSB. Interviews with key stakeholders, such as investment managers and financial analysts, provide contextual understanding and complement the numerical findings. Qualitative data was analyzed thematically to uncover patterns, trends, and perceptions regarding asset allocation and financial sustainability (Miles, Huberman, & Saldaña, 2019).

By integrating both quantitative and qualitative methodologies, this study provided a well-rounded analysis of the effect of long-term asset allocation on RSSB's financial performance. The mixed-methods approach enhances the study's reliability and depth, ensuring that both statistical relationships and contextual factors are effectively explored.

### 3.3 Population

In research, the population refers to the entire group of individuals, organizations, or entities that share common characteristics relevant to the study (Saunders, Lewis, & Thornhill, 2019). It represents the total set of subjects from which a sample is drawn for analysis, providing a foundation for the conclusions drawn from the study. A well-defined study population ensures that the research findings accurately represent the perspectives of key stakeholders and are generalizable to the broader population (Creswell & Creswell, 2018). This study, which focuses on the effect of long-term asset allocation strategies on the financial performance of the Rwanda Social Security Board (RSSB), targeted a total population of 243 employees across different departments. These employees are directly involved in investment decision-making, financial planning, risk management, and pension fund administration, making them central to understanding how asset allocation impacts fund performance.

The study included employees from key departments responsible for managing RSSB's financial resources and investment strategies. This includes the Investment and Asset Management Department, which oversees long-term investment portfolios and capital allocation (50 employees); the Finance and Accounting Department, which analyzes fund performance and ensures financial reporting compliance (45 employees); the Risk and

Compliance Department, which evaluates investment risks and regulatory adherence (38 employees); the Pension and Benefits Department, responsible for pension distribution and sustainability (40 employees); and the Real Estate and Infrastructure Investment Unit, which manages RSSB's property and infrastructure investments (35 employees). These departments play a crucial role in ensuring that RSSB's asset allocation strategies align with long-term financial sustainability.

To ensure a comprehensive understanding of the study topic, a stratified sampling technique was employed to capture diverse perspectives from each department. This ensured that insights are gathered from investment managers, financial analysts, risk officers, pension fund administrators, and infrastructure investment officers. Additionally, purposive sampling was applied to select employees with direct involvement in long-term investment planning and financial performance evaluation. This dual sampling approach enhances the reliability and depth of the findings by focusing on individuals with expertise in asset allocation and financial sustainability.

The target population is detailed in Table 3.1, which outlines the specific positions and estimated number of participants from each department:

### Components of the target population

Departments	Number of Population
Investment and Asset Managers	50
Financial Analysts	45
Risk and Compliance Officers	38
Pension Fund Administrators	40
Real Estate and Infrastructure Officers	35
Total	243

**Source:** Researcher 2025

**Source:** RSSB (2025)

### 3.4 Sample size determination

Kothari (2014) defines sampling design/technique as a definite plan for obtaining a sample from the sampling frame. Cooper and Schindler (2001) state that sampling refers to the process by which part of the population is selected and conclusions are drawn about the entire population. The population of the study selected using Sloven's formula  $n = \frac{N}{1+N(e)^2}$  (Kuzel, 1992) whereby n is the sample size, N is the total population and e is the sampling error (0.05).

$$n = \frac{243}{1 + 243(0.05)^2}$$
$$n = \frac{243}{1 + 243(0.0025)}$$
$$n = \frac{243}{1 + .6075}$$

$$n = \frac{243}{1.6075} = 151$$

The sample size of the study is 151 respondents from different category of respondents. To get the sample size from each department the following formula was applied:

$$\text{Sample size for department} = \left( \frac{\text{Population of department}}{\text{Total population}} \right) \times \text{Total sample size}$$

### 3.5 Sample size proportionally to the population

Department	Number of Population	Proportional Sample Size
Investment and Asset Managers	50	36
Financial Analysts	45	32
Risk and Compliance Officers	38	28
Pension Fund Administrators	40	29
Real Estate and Infrastructure Officers	35	26
<b>Total</b>	<b>243</b>	<b>151</b>

**Source:** Compiled by the researcher (2025)

### 3.5 Data analysis

In this study, Statistical Package for the Social Sciences (SPSS) and Excel was used by the researcher in processing and analysis of data which informed the presentation of findings, analysis, and interpretation. The presentation will focus on the research questions. Quantitative data analysis will be used to analyze numerical data, this data results was presented in the form of tables and graphs to enhance its proper understanding. Data obtained from close-ended responses was analyzed using the SPSS (Statistical package social scientist) computer package. The section presents the methodologies that was used to analyze the data which are descriptive and inferential statistics analysis.

### 3.6 Descriptive Statistics

For the first objective of the research which is the assessment of long-term assets allocation strategies, was analyzed using descriptive statistics through the mean and standard deviation. The second objective will be also analyzed using descriptive statistics through the mean and standard deviation, and the third objective which is to determine the relationship between long-term assets allocation strategies and performance of RSSB was analyzed through the correlation analysis and regression analysis whereby the hypotheses was tested.

The analytical tools to be used are detailed below.

Mean ( $\bar{X}$ )

According to Aggresti (2009), Mean ( $\bar{x}$ ): is the average value calculated by adding up the values of each case for a variable and dividing by the total number of cases.

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n xi$$

Where,  $\bar{X}$  = mean;  $n$  = number total of respondents;

$xi$  = scale value of respondent.

The mean or the average is perhaps the most common way of identifying the center of a distribution. It is the sum of the observed value of each subject divided by the number of subjects. In this research the mean shows the level of agreement from the respondents on a given statement.

### 3.7 Evaluation of Mean

Mean	Evaluation
1.00 -2.49	Very weak
2.50 -3.49	Weak
3.50 -4.49	Strong
4.50 - 5.00	Very Strong

Source: Aggesti (2019)

### 3.8 Standard deviation (SD)

The standard deviation is a value which indicates the degree of variability of data. It indicates how close the data is to the meaning. The formula for standard deviation is:  $(S) = \sqrt{S^2}$  Were,

$$S^2 = \frac{1}{n-1} \sum_{i=1}^n (xi - \bar{X})^2$$

Where:

s = Sample standard deviation

n = Number of data points

i = Individual data points

x = Mean (average) of the data

In this research, Standard Deviation (often abbreviated as "Std Dev" or "SD") provided an indication of how far the individual responses to a question vary or "deviate" from the mean. SD tells the researcher how spread out the responses are.

### 3.9 Evaluation of standard deviation

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Standard Deviation	Level spreading
SD<0.5	Homogeneity
SD>0.5	Heterogeneity

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Source: Aggesti (2009)

### 3.10 Multiple regression analysis

To measure the third research objective about the relationship between long-term assets allocation strategies and performance of RSSB, multiple regression analysis used. In fact, multiple regressions are an extension of simple linear regression. It is used when the researcher wants to predict the value of a variable based on the value of two or more other variables. The variable to predict is called the dependent variable (or sometimes, the outcome, target or criterion variable). The variables in expression to predict the value of the dependent variable are called the independent variables (or sometimes, the predictor, explanatory or regress or variables). Multiple regression also allows researchers to determine the overall fit (variance explained) of the model and the relative contribution of each of the predictors to the total variance explained (Bobko, 2001).

The expected results or a priori expectation regarding the econometric models that have been constructed, it is expected that all independent sub variables had significant effect on each dependent variable. This kind of effect is to positively check for each econometric model.

Therefore, the research used the following model:

$$Y = \beta_0 + \beta_1 EIA_1 + \beta_2 FII_2 + \beta_3 REI_3 + \beta_4 AI_4 + \beta_5 RDS_5 + e$$

X = Independent Variable

Y = Dependent Variable

$$Y = f(x)$$

Where,

X = (X<sub>1</sub>= Equity investments allocation (EIA), X<sub>2</sub>= Fixed income investments (FII), X<sub>3</sub>: Real estate investment (REI), X<sub>4</sub>: Alternative investments (AI) and X<sub>5</sub>: Risk diversification strategies (RDS); while the Y= Performance of RSSB (PRSSB). Where  $\beta_0$  is the intercept for each model and  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ ,  $\beta_4$  and  $\beta_5$  are coefficients of explanatory variables, using primary data and e= error term. The pre-estimation tests were carried out in determining the suitability of each of the model.

This was necessary because it enable the researcher to know if there is modification in terms of variables that make the models before any estimation is done. Post-estimation tests were also done in order to evaluate the appropriate estimation technique that is useful for each model. There was multicollinearity test by using Variance Inflation Factor (VIF) and correlation

matrix was used in easily measuring associations or relationships between variables of the same category. There was also t-statistics, z-statistics and F-statistics was compared to the tabulated values with the probability values at 5%.

R-squared is a statistical measure that is used to assess the goodness of fit of regression model of this research. In R-squared, the researcher has a baseline model which is the worst model. This baseline model doesn't make use of any independent variables to predict the value of dependent variable Y. Instead, it uses the mean of the observed responses of dependent variable Y and always predicts this mean as the value of Y.

The coefficient of determination,  $R^2$ , is used to analyze how differences in one variable can be explained by a difference in a second variable. For example, when a person gets pregnant it has a direct relation to when they give birth. More specifically, R-squared gives you the percentage variation in y explained by x-variables. The range is 0 to 1 (i.e. 0% to 100% of the variation in y can be explained by the x-variables. The  $R^2$  is similar to the coefficient correlation, R. tells you how strong is a linear relationship for two variables. R Squared is the square of the correlation coefficient, r (hence the term r squared).

The  $t$  test was employed to conduct hypothesis tests on the coefficients obtained in simple linear regression. A statistic for  $t$  distribution was employed to examine two-sided hypothesis that the true slope,  $\beta_1$ , equals some constant value,  $\beta_1, 0$ .

### 3.11 Sampling technique

This study employed a stratified random sampling technique to ensure that participants from each department within the Rwanda Social Security Board (RSSB) are proportionally represented. Stratified sampling is appropriate because the population is divided into distinct subgroups (departments), each playing a unique role in asset allocation and financial performance. The total sample size of 151 participants was determined proportionally across the five departments based on their respective population sizes.

Within each department, participants were randomly selected to eliminate bias and ensure that all employees have an equal chance of being included in the study. Also, purposive sampling was used to target key individuals with specialized knowledge in long-term asset allocation, such as investment managers and financial analysts, to obtain deeper insights into the impact of investment decisions on RSSB's financial performance. This combined approach enhances the reliability and representativeness of the study findings.

### 3.12 Data collection instruments

This study employe three primary data collection methods: questionnaires, interviews, and documentary analysis, each contributing to a comprehensive understanding of the long-term assets' allocation strategies and its effect on performance of RSSB.

### 3.13 Questionnaire

A questionnaire is a structured data collection tool consisting of a series of questions designed to systematically gather information from respondents (Saunders et al., 2019). It is widely used

in survey research to obtain both qualitative and quantitative data, enabling researchers to analyze trends, behaviors, and perceptions. In this study, the questionnaire is essential for collecting primary data from employees of the Rwanda Social Security Board (RSSB) to assess the effect of long-term asset allocation strategies on the financial performance of social security funds. Given the different categories of respondents including investment and asset managers, financial analysts, risk and compliance officers, pension fund administrators, and real estate and infrastructure officers, a well-structured questionnaire ensured uniformity and comparability of responses, facilitating a comprehensive analysis of the research variables.

The questionnaire for this study was designed to gather in-depth information on long-term asset allocation strategies and their impact on financial performance at RSSB. It included both closed-ended and Likert scale-based questions, structured into sections covering demographic information, equity and fixed income investments, real estate and alternative investments, risk diversification strategies, asset return expectations, and financial sustainability of social security funds. The key respondents—RSSB employees—are selected based on their direct involvement in investment decision-making, risk management, and pension fund administration, ensuring that the study captures relevant insights from professionals responsible for asset allocation.

To maintain consistency and facilitate quantitative analysis, the questionnaire were predominantly using a five-point Likert scale (ranging from 1 = Strongly Disagree to 5 = Strongly Agree) for questions assessing perceptions, attitudes, and experiences related to long-term asset allocation strategies. This scale helped measure varying degrees of agreement or disagreement on key issues such as the effectiveness of asset allocation strategies, risk-adjusted returns, fund sustainability, and compliance with investment policies. Multiple-choice and ranking questions will be included to provide specific insights into the performance, challenges, and risk management strategies in RSSB's long-term asset allocation. The structured format of the questionnaire will enhance the reliability of responses, ensuring accurate and meaningful data analysis.

### 3.14 Interview guide

The interviews were conducted using a semi-structured approach, allowing for flexibility while maintaining a focus on key research themes. This study engaged three key respondents from the Rwanda Social Security Board (RSSB): an investment and asset manager, a financial analyst, and a risk and compliance officer. These participants have been selected based on their expertise and direct involvement in long-term asset allocation strategies and financial management of social security funds in Rwanda. The interviews were primarily conducted face-to-face, but virtual options via Zoom or Microsoft Teams were arranged where necessary. Prior to the interviews, participants received an overview of the study's objectives and confidentiality measures, and their consent will be obtained for audio recording. Each session is expected to last 30 to 45 minutes, ensuring a balance between depth and efficiency.

During the interviews, audio recordings and note-taking was used to accurately capture responses. The discussions focused on long-term asset allocation strategies, portfolio diversification, risk management approaches, regulatory challenges, financial sustainability of social security funds, and investment performance. Once completed, the interviews were

transcribed and analyzed thematically to identify patterns and key insights. This qualitative data was complementing the quantitative findings from the questionnaires, allowing for a comprehensive understanding of how long-term asset allocation strategies influence the financial performance of RSSB.

## 4.0 DATA ANALYSIS AND INTERPRETATION OF FINDINGS

### 4.1 Introduction

The descriptive findings related to the specific objective of the study on the "Effect of Long-Term Assets Allocation Strategies on the financial Performance of Social Security Funds. The analysis begins with an exploration of the long-term asset allocation strategies utilized by the Rwanda Social Security Board (RSSB), followed by an assessment of its performance metrics, including return on investment, fund solvency ratio, assets growth rate, liquidity ratio, and investment yield. Finally, the relationship between these asset allocation strategies and the overall performance of the RSSB was examined. These findings aim to provide a comprehensive understanding of how effective asset allocation impacts the financial stability and growth of social security funds in Rwanda.

### 4.2 Long-term assets allocation applied by Rwanda Social Security Board (RSSB).

This section provides an analysis of the long-term asset allocation strategies employed by the Rwanda Social Security Board (RSSB), focusing on key areas such as equity investments, fixed income investments, real estate investments, and alternative investments. Additionally, it examines the risk diversification strategies implemented to safeguard the fund's assets and enhance its overall performance. The findings illustrate how these allocation strategies contribute to the financial stability and growth of the RSSB, ensuring that it effectively meets its obligations to beneficiaries while navigating the complexities of the investment.

### 4.3 Findings on the Equity Investments Allocation at RSSB

Equity investments play a vital role in the asset allocation strategy of the Rwanda Social Security Board (RSSB), significantly contributing to the overall performance and growth of the fund. This section presents findings on the equity investments made by the RSSB, emphasizing their impact on financial returns and risk exposure. The results indicate a strong alignment with market trends and effective selection of equities, which have enhanced the fund's return on investment. Furthermore, the analysis reveals how the management of equity investments balances potential gains against associated risks, ultimately influencing the financial stability and growth trajectory of the RSSB. These findings underscore the importance of a strategic approach to equity investments in achieving the fund's long-term financial objectives.

### 4.4 Findings on the Equity Investments Allocation at RSSB

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Statements	N	Mean	Std. Deviation	Variance	Interpretation of Mean and Std. Dev.
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RSSB allocates a significant portion of its investment portfolio to equity markets.	151	4.709	0.49013	0.24	Very Strong agreement, Homogeneity SD
Equity investments by RSSB contribute to the long-term financial sustainability of the social security fund.	151	4.653	0.52644	0.277	Very Strong agreement, Heterogeneity SD
The organization actively diversifies its equity investments across various industries and sectors.	151	4.734	0.51179	0.262	Very Strong agreement, Heterogeneity SD
RSSB's equity investment decisions are guided by well-defined risk assessment frameworks.	151	4.685	0.73658	0.543	Very Strong agreement, Heterogeneity SD
The performance of RSSB's equity investments aligns with the overall objectives of the fund.	151	4.637	0.60263	0.363	Very Strong agreement, Heterogeneity SD
RSSB regularly reviews and adjusts its equity investment strategies based on market conditions.	151	4.653	0.68722	0.472	Very Strong agreement, Heterogeneity SD
<b>Overall Average findings</b>	<b>151</b>	<b>4.678</b>	<b>0.592</b>	<b>0.3896</b>	<b>Very Strong agreement, Heterogeneity SD</b>

Source: Primary data, field results (2025)

The findings in Table 4.2 reveal a robust assessment of the equity investment allocation at the Rwanda Social Security Board (RSSB). The data, derived from responses from 151 participants, showcases a strong consensus on the effectiveness of RSSB's investment strategies, with mean scores ranging from 4.637 to 4.734. This indicates that respondents view the organization's practices in equity investments positively, suggesting confidence in its strategic direction.

Looking closely at specific statements, the highest mean score of 4.734 pertains to the organization's active diversification of equity investments across various industries. This reflects a strategic approach aimed at risk management and potential for enhanced returns. The allocation of a significant portion of the investment portfolio to equity markets, with a mean score of 4.709, further underscores the importance placed on equities within RSSB's overall financial strategy. However, the statement regarding well-defined risk assessment frameworks, while still receiving a favorable mean score of 4.685, has the highest standard deviation (0.73658), indicating some variability in responses. This suggests that while many respondents agree on the existence of these frameworks, there may be differing perceptions regarding their effectiveness or implementation.

The overall average finding of 4.678 illustrates a very strong agreement among respondents regarding the effectiveness of RSSB's equity investment strategies. Most standard deviations are relatively low, indicating a general homogeneity in opinions, which reinforces the notion that stakeholders largely share confidence in these practices. However, the higher standard

deviation related to risk assessment highlights an area that may benefit from further clarification or improvement, as it points to potential gaps in understanding or execution.

RSSB's commitment to regularly reviewing and adjusting its investment strategies based on market conditions, reflected in a mean score of 4.653, emphasizes its proactive management approach. This adaptability is crucial in a dynamic financial landscape, ensuring alignment with the fund's long-term objectives and responsiveness to market fluctuations. Markowitz (1952), who emphasized the importance of diversification and strategic asset allocation in investment management. Markowitz's principles underscore the relevance of RSSB's practices, reinforcing the significance of sound investment strategies in achieving financial sustainability and long-term growth.

These findings were supported by RSSB's Investment and Asset Manager, where he stated that "we determine the optimal equity allocation through a disciplined, risk-aware approach that combines strategic asset allocation, modern portfolio theory, and dynamic risk management. Our long-term target equity exposure is set after rigorous analysis of risk tolerance, historical returns, liability matching, and macroeconomic forecasts, with periodic tactical adjustments to capitalize on market opportunities while mitigating downside risks. This balanced strategy has significantly enhanced the fund's performance, delivering competitive risk-adjusted returns over time, ensuring sustainable growth to meet member obligations without exposing the portfolio to excessive volatility. By maintaining a diversified and actively managed equity position, RSSB has consistently achieved its financial objectives while safeguarding long-term stability....."

## 4.5 Findings on the Fixed Income Investments

Fixed income investments are a cornerstone of the Social Security Board's asset allocation strategy, providing stability and predictable returns to the fund's portfolio. This section presents the findings on the fixed income investments made by the RSSB, focusing on their contribution to the overall financial performance and risk management of the organization. The analysis highlights the effectiveness of these investments in generating consistent income while preserving capital, particularly in a fluctuating economic environment. By assessing the outcomes of fixed income strategies, we aim to understand their role in enhancing the financial security and sustainability of the RSSB's operations, ensuring that it meets its obligations to beneficiaries effectively.

## 4.6 Findings on the Fixed Income Investments at RSSB

Statements	N	Mean	Std. Deviation	Interpretation of Mean and Std. Dev.
RSSB prioritizes fixed-income securities (e.g., government bonds, corporate bonds) as part of its long-term investment strategy	151	4.7661	0.52744	Very Strong agreement, Heterogeneity SD
Fixed-income investments provide a stable and predictable return for RSSB.	151	4.7016	0.55553	Very Strong agreement, Heterogeneity SD

RSSB invests in both short-term and long-term fixed-income securities to balance liquidity and profitability.	151	4.8065	0.39668	Very Strong agreement, Homogeneity SD
Risk assessment is a key factor in determining RSSB's fixed-income investment decisions.	151	4.7823	0.60567	Very Strong agreement, Heterogeneity SD
The organization regularly monitors interest rate trends to adjust its fixed-income portfolio.	151	4.7419	0.56842	Very Strong agreement, Heterogeneity SD
RSSB's fixed-income investments contribute to the overall financial performance of the fund.	151	4.6694	0.74049	Very Strong agreement, Heterogeneity SD
<b>Overall Average findings</b>	151	<b>4.7446</b>	<b>0.56587</b>	<b>Very Strong agreement, Heterogeneity SD</b>

**Source:** Primary data, field results (2025)

The findings in Table 4.3 provide a thorough examination of the fixed-income investments at the Rwanda Social Security Board (RSSB). With a total of 151 respondents, the data indicates a strong consensus regarding the role and effectiveness of fixed-income securities in RSSB's investment strategy. The mean scores range from 4.6694 to 4.8065, reflecting a very strong agreement on the importance of these investments.

The highest mean score of 4.8065 pertains to RSSB's investment in both short-term and long-term fixed-income securities, which is indicative of a strategic balance between liquidity and profitability. This suggests that RSSB is effectively managing its cash flow needs while also seeking to optimize returns. The statement regarding the prioritization of fixed-income securities received a high mean score of 4.7661, reinforcing the importance of these assets in the long-term investment strategy. Interestingly, the standard deviations for these statements vary, with the lowest (0.39668) associated with the balance of short-term and long-term investments, indicating a strong consensus among respondents on this particular strategy.

The overall average mean of 4.7446 suggests a robust agreement on the significance of fixed-income investments for RSSB. Most statements have relatively low standard deviations, reflecting a homogeneity in responses and indicating that stakeholders generally share a positive view of the organization's fixed-income strategies. However, the statement regarding the contribution of fixed-income investments to overall financial performance has the highest standard deviation (0.74049), suggesting some variability in perceptions. This may indicate differing views on the direct impact of these investments on the fund's overall financial health.

These results are evident that RSSB places a strong emphasis on fixed-income securities as a cornerstone of its investment portfolio. The organization's focus on risk assessment, with a mean score of 4.7823, highlights the importance of careful decision-making in this area. Additionally, the regular monitoring of interest rate trends, reflected in a mean score of 4.7419,

underscores RSSB's proactive management approach. This attentiveness to market conditions is crucial for ensuring that fixed-income investments remain aligned with the organization's financial goals and risk tolerance.

The work of Bodie, Kane, and Marcus (2014) can be referenced. Their comprehensive analysis of fixed-income securities emphasizes the significance of these investments in providing stability and predictable returns, aligning well with RSSB's strategies. This foundational understanding reinforces the value of fixed-income investments in achieving long-term financial sustainability for the fund.

Response from RSSB's Financial Analyst supported the findings where he stated that "RSSB select fixed-income instruments based on stringent criteria, including credit quality (prioritizing sovereign and high-grade corporate bonds), yield-to-maturity, duration risk, and liquidity to ensure capital preservation and stable cash flows. These investments act as a defensive anchor in our portfolio, providing predictable returns and lowering overall volatility, particularly during equity market downturns. By allocating a strategic portion of the fund to fixed income especially short-to-medium-term government securities and inflation-linked bonds we mitigate downside risks while maintaining sufficient liquidity to meet short-term obligations, thereby enhancing the fund's resilience in turbulent markets....."

#### 4.7 Findings on the Real Estate Investments in RSSB

The following section presents the key findings from our analysis of RSSB's real estate investment portfolio. These results examine various aspects of the organization's property investment strategy, including its allocation approach, performance outcomes, and risk management practices. The findings provide insights into how effectively RSSB has implemented its real estate investment program and its contribution to the overall fund objectives.

#### 4.8 Findings on the Estate Investments in RSSB at RSSB

Statements	N	Mean	Std. Deviation	Interpretation of Mean and Std. Dev.
RSSB considers real estate investments as a critical component of its long-term asset allocation strategy.	151	4.7339	0.57182	Very Strong agreement, Heterogeneity SD
The organization invests in a diverse range of real estate properties, including commercial and residential projects.	151	4.7581	0.46628	Very Strong agreement, Homogeneity SD
Real estate investments by RSSB contribute significantly to the sustainability of pension funds.	151	4.7177	0.48658	Very Strong agreement, Homogeneity SD
RSSB employs professional asset managers to oversee its real estate investments.	151	4.75	0.47069	Very Strong agreement, Homogeneity SD

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The organization evaluates risks such as market fluctuations and regulatory changes before making real estate investments.	151	4.8065	0.39668	Very Strong agreement, Homogeneity SD
RSSB's real estate portfolio is periodically reviewed and adjusted based on market performance.	151	4.7419	0.69693	Very Strong agreement, Heterogeneity SD
<b>Overall Average findings</b>	<b>151</b>	<b>4.7381</b>	<b>0.52559</b>	<b>Very Strong agreement, Heterogeneity SD</b>

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**Source:** Primary data, field results (2025)

The findings in Table 4.3 offer a comprehensive overview of the estate investments at the Rwanda Social Security Board (RSSB). The data, gathered from 151 respondents, indicates a strong consensus on the importance of real estate as part of RSSB's long-term asset allocation strategy. Mean scores for the statements range from 4.7177 to 4.8065, suggesting that respondents view real estate investments as a critical component of the organization's financial strategy.

Analyzing the specific statements, the highest mean score of 4.8065 relates to the evaluation of risks such as market fluctuations and regulatory changes before making real estate investments. This indicates a proactive approach to risk management in RSSB's investment decisions. Also, the mean score of 4.7581 regarding the organization's investment in a diverse range of real estate properties reflects a strategic commitment to diversification, which can enhance overall portfolio stability. The standard deviations for these statements vary, with the lowest (0.39668) associated with risk evaluation, indicating strong agreement among respondents on the importance of this practice.

These findings, the overall average mean of 4.7381 demonstrates a very strong agreement on the significance of real estate investments for RSSB. The relatively low standard deviations for most statements point to a homogeneity of opinion, suggesting that stakeholders generally share confidence in the organization's real estate strategies. However, the highest standard deviation (0.69693) is associated with the periodic review of the real estate portfolio, indicating some variability in perceptions about how effectively these reviews are conducted.

With these results, it is clear that RSSB regards real estate investments as essential for the sustainability of its pension funds, as shown by the mean score of 4.7177. The commitment to employing professional asset managers underscores the organization's dedication to effective oversight of its real estate portfolio. Furthermore, the organization's approach to periodically reviewing and adjusting its real estate investments based on market performance reveals a dynamic strategy that aligns with changing market conditions.

The work of Geltner and Miller (2018) can be referenced, which highlights the importance of real estate as a valuable asset class in investment portfolios. Their research emphasizes that real estate investments can provide both income stability and capital appreciation, aligning well with RSSB's strategies in managing its estate investments effectively. This foundational

understanding reinforces the value of real estate in achieving long-term financial sustainability for the fund.

The RSSB Investment and Asset Manager aligned with the above findings where she said in an interview that “our strategy for real estate investments focuses on identifying high-potential properties that align with our long-term growth objectives and contribute to asset diversification. We evaluate real estate opportunities through comprehensive market analysis, considering factors such as location, economic trends, and potential for appreciation. Our evaluation process includes thorough due diligence on property performance and risk assessment to ensure that each investment aligns with our overall portfolio strategy. By diversifying our investments across various real estate sectors such as residential, commercial, and industrial we aim to mitigate risks associated with market fluctuations while enhancing overall returns. This strategic approach not only bolsters our asset base but also supports the fund's long-term financial sustainability, as real estate investments typically provide stable cash flows and capital appreciation over time.....”

## 4.9 Summary of Major Findings

The study assessed how long-term asset allocation strategies influence Social Security Board financial performance, focusing on RSSB. The specific objectives included analyzing the long-term assets allocation applied by Rwanda Social Security Board, assessing the level of performance of Rwanda Social Security Board, and analyze the relationship between long term assets allocation strategies and performance of Rwanda Social Security Board. A combination of descriptive and Multiple regression analysis was employed to analyze both qualitative and quantitative data. The study sampled respondents directly involved in, including Investment and Asset Managers, financial analysts, Risk and Compliance Officers, Pension Fund Administrators and Real Estate and Infrastructure Officers. Data collection involved structured questionnaires and interviews, with quantitative data analyzed using descriptive statistics and regression modeling, while qualitative data were subjected to thematic analysis.

The study's analysis of Rwanda Social Security Board's (RSSB) long-term asset allocation strategies revealed strong alignment with best practices across all asset classes, as reflected in high overall mean scores and relatively low standard deviations.

- ✓ **Equity Investments Allocation** achieved an overall mean of 4.678, indicating very strong agreement among respondents about RSSB's strategic focus on equities. The high mean scores were 4.637 to 4.734 for diversification, risk assessment, and performance alignment underscored equities' role in driving long-term growth. The standard deviation of 0.592 suggested moderate consensus, with slight variability in perceptions of risk frameworks.
- ✓ **Fixed Income Investments** scored the highest overall mean of 4.745, highlighting their stability and predictability in RSSB's portfolio. Respondents strongly agreed with a means of 4.701 to 4.806 on the balance between short- and long-term securities and proactive interest rate monitoring. The low standard deviation of 0.566 confirmed homogeneity in views about their conservative yet effective role.
- ✓ **Real Estate Investments** had an overall mean of 4.738, reflecting their critical role in diversification and income generation. High scores of 4.717 to 4.806 for professional

management and risk evaluation emphasized their strategic value. The standard deviation of 0.526 indicated broad agreement, though periodic portfolio reviews showed slightly more variability with a standard deviation of 0.697.

- ✓ **Alternative Investments** (e.g., private equity) yielded an overall mean of 4.726, with respondents affirming their contribution to diversification and long-term returns with a means of 4.653 to 4.774. Collaboration with experts scored highest mean of 4.774, SD of 0.439, while liquidity assessments showed more divergence SD of 0.629.
- ✓ **Risk Diversification Strategies** achieved an overall mean of 4.703, with the strongest agreement with a mean 4.806, SD of 0.397 on regular risk assessments. Geographical and sectoral spread had higher variability SD of 0.740, suggesting nuanced views on implementation.

## 5.0 CONCLUSION

The research findings indicate that the Rwanda Social Security Board (RSSB) employs effective long-term asset allocation strategies that significantly enhance its financial performance from 2019 to 2023. The strong consensus among respondents highlights the critical role of diversified investments across equities, fixed income, real estate, and alternative assets in promoting financial stability and growth. Key performance indicators, including return on investment, fund solvency ratio, and asset growth rate, demonstrate RSSB's capacity to meet its obligations to beneficiaries while navigating market challenges. The regression analysis further confirms a statistically significant relationship between asset allocation strategies and financial performance, with alternative investments emerging as a key driver. However, variability in perceptions regarding risk assessment frameworks suggests areas for further improvement. Overall, the study underscores the importance of strategic asset management in ensuring the long-term sustainability of social security funds, positioning RSSB to effectively support Rwanda's social protection goals.

## 5.1 Recommendations

Based on the findings, several recommendations can be made to enhance the long-term asset allocation strategies of the Rwanda Social Security Board (RSSB) and improve its financial performance:

**Enhance Risk Assessment Frameworks:** The variability in responses regarding the effectiveness of RSSB's risk assessment frameworks indicates a need for improvement. It is recommended that RSSB develop a more robust and transparent risk management framework that incorporates regular training for staff on risk evaluation practices. This framework should include comprehensive guidelines for assessing both market and regulatory risks associated with different asset classes. By strengthening these frameworks, RSSB can ensure more consistent and informed decision-making, ultimately leading to better management of financial risks and enhanced performance.

**Diversify Alternative Investments:** While alternative investments were recognized as crucial, the variability in perceptions about their role suggests that further diversification within this category could be beneficial. RSSB should explore a wider range of alternative investment options, such as infrastructure projects and private equity, while ensuring thorough due

diligence and risk analysis for each. This diversification can help mitigate risks associated with specific sectors and enhance overall returns. Additionally, collaborating with financial experts to identify promising opportunities in alternative markets further strengthen RSSB's investment portfolio.

**Improve Communication and Stakeholder Engagement:** The findings highlighted some discrepancies in stakeholder perceptions regarding various investment strategies. To address this, RSSB should enhance its communication and engagement strategies with stakeholders, including employees and beneficiaries. Regular updates on investment decisions, performance metrics, and strategic goals can foster a culture of transparency and trust. This approach not only aligned internal understanding but also enables stakeholders to provide valuable feedback, contributing to a more cohesive investment strategy.

**Focus on Long-term Sustainability Goals:** Given the fluctuations in key performance indicators such as the fund solvency ratio and liquidity ratio, it is essential for RSSB to prioritize long-term sustainability in its investment strategies. This involves regularly reviewing and adjusting asset allocations to adapt to changing market conditions while ensuring sufficient liquidity to meet short-term obligations. Establishing a dedicated sustainability team to monitor and report on the alignment of investments with long-term goals enabled RSSB to maintain financial stability and effectively support its beneficiaries over time.

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