Journal of Finance and Accounting

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Ngare Caroline Waruguru, Prof. Ambrose O. Jagongo & Dr. Moses Odhiambo Aluoch

ISSN: 2616-4965

Stratford Peer Reviewed Journals and Book Publishing
Journal of Finance and Accounting
Volume 10||Issue 2 ||Page 49-65||March||2026|
Email: info@stratfordjournals.org ISSN: 2616-4965

Government Securities Investment and Profitability: Evidence from Listed Insurance Companies in Kenya

[*1]Ngare Caroline Waruguru, [2]Prof. Ambrose O. Jagongo & [3]Dr. Moses Odhiambo Aluoch

[1]Student, Department of Accounting and Finance, School of Business, Economics and Tourism, Kenyatta University

[2,3]Lecturer, Department of Accounting and Finance, School of Business, Economics and Tourism, Kenyatta University

***Email of the Corresponding Author: ngare.caroline@gmail.com**

How to cite this article: **Waruguru, C., N., Jagongo., A., O. & Aluoch, M., O. (2026). Government Securities Investment and Profitability: Evidence from Listed Insurance Companies in Kenya.** ***Journalof Finance and Accounting*****, 10(2) pp.49-65. https://doi.org/10.53819/81018102t3168**

Abstract

Kenyan insurance companies are crucial in furtherance of National Gross Domestic Product. The government of Kenya has enacted polices to regulate the industry to ensure maximum utilization of its potential to the growth of economy. Despite gearing, reduction in their profits over the last few years have been witnessed due to increasing competition, low uptake of insurance products, and ineffective investment decisions and contingency planning. This study purposed to ascertain investment decision impacts on profitability of Nairobi Securities Exchange insurance companies with specifics on equity investment, government securities (bonds), corporate bonds and investment properties. Theories of Resource based view, modern portfolio, CAPM and arbitrage pricing would bolster the review. The research adopted a cross-sectional research design, utilizing secondary data from audited financial reports of listed insurance companies. The small populace of 6 companies advised a census technique method with the review period being 2015-2024 (10 years). Descriptive statistics, correlation analysis and panel data regression analysis were applied to explore the variable's associations. Diagnostic tests were performed to examine any violation of regression assumptions and they included normality, heteroscedasticity, autocorrelation, multicollinearity, stationarity and hausman tests. The analysis on regression concluded a negative association of equity and corporate bonds on profitability. Government bonds revealed a positive and significant association while property investments showed an insignificant positive impact on profitability. The interaction involving firm size and investment decisions showed a significant negative effect. The research recommended that listed insurance firms should be more cautious in managing their equity portfolio including identifying and selling off underperforming equities. Allocation of government securities should be increased due to their positive impact on profitability. Firms should also strengthen their credit risk assessment processes on corporate bond issuers as this will limit negative impacts on profitability. Embracing more liquid and immediate profit-generating assets was recommended along with property assets to boost the overall portfolio performance. On the other hand, large insurance firms should prioritize improving managerial efficiency through simpler governance structures. Various researchers are called upon to compare listed and unlisted insurance companies as well as other financial sectors in Kenya.

Keywords: *Government Securities, Bonds, Insurance Profitability, Return on Assets, Nairobi Securities Exchange, Kenya*

1.0 Introduction

Worldwide, insurance companies play prominent roles in financial services landscape supporting economy's growth and advancement. Their specialized offerings encompass risk underwriting and substantial funds aggregation via premiums meant for long-term investments. The insurance sector is key to global financial system, with premiums from the sector factoring 7.4% of the world GDP in 2020, underscoring its value in global sustainable development (Swiss Re Sigma, 2021). Insurance firms gather capital from diverse policyholders in the form of premiums, and after fulfilling policy obligations and addressing administrative costs, the remaining funds are utilized to ensure future cash flow needs through strategic investments (Aase, 2014). In developed economies including the United States, United Kingdom, and Australia, insurance companies invest substantially in government securities as part of their asset allocation strategies to balance risk and return (OECD, 2016). Government bonds provide reliable income streams through predictable interest payments and are considered low-risk investments suitable for matching long-term insurance liabilities. In developing markets, particularly in Asia and Africa, insurers are increasingly targeting government securities to enhance yields while maintaining capital preservation (Insurance Outlook Report, 2023). The prevalent investment avenues pursued by global insurance institutions typically include real estate, stocks, treasury bills and bonds, and bank deposits (IRA Annual Report, 2022).

In Africa, insurance markets face unique challenges including regulatory demands, shifting customer expectations, and increasing competition (Allen et al., 2011). African insurance companies recorded modest growth of 0.5% in real terms in 2017, down from 5.1% in 2015, with profitability varying across nations due to dynamic investment strategies (Chege et al., 2019). Government securities represent a significant component of African insurers' investment portfolios due to their safety characteristics and liquidity advantages. In South Africa, the bond market substantially contributes to economic development, with both bank and non-bank entities playing significant roles (Fanta & Makina, 2017). Uganda's insurance sector witnessed fluctuating return on equity rates of 25%, 25.3%, 10%, and 15% for years 2015 through 2018 respectively, partly attributed to varying government securities yields (IRA-Uganda Annual Report, 2019). The growth of insurance firms in Kenya has lagged compared to developed nations (Morara & Sibindi, 2021). Kenya's insurance sector experienced growth rate of 15.8% in 2022, declining from 26.9% surge observed in 2021, with total net premiums rising from KES 115.1 billion in 2021 to KES 128.8 billion in 2022 (Economic Survey Report, 2023). However, profitability metrics have shown concerning trends. The total industry's return on assets ratios have been declining since 2015, with years 2014, 2015, 2016, 2017, 2018, 2019 and 2020 recording ROA values of 5.5, 3.8, 3.6, 3.2, 2.39, 2.3 and 1.75 respectively (Kiptoo et al., 2021).

Insurance firms in Kenya diversify their portfolios by investing in local equities, international stocks, cash equivalents, bonds, and associates and subsidiaries (Iregi & Okeyo, 2017). According to IRA reports, insurance companies in Kenya have diversified their investments into equity, government securities, corporate bonds, and properties, among others. The IRA report (2019) indicates that firms have diversified revenue sources by investing across various domains to supplement earnings from core operations. Investments in government securities, particularly treasury bonds, are guided by regulatory frameworks and investment policies aimed at ensuring prudent capital management (AKI Report, 2022). Government securities (bonds) are debt instruments issued by governments seeking to secure capital from investors, promising repayment at designated rates throughout the bond's life (Besler et al., 2017). According to Amin and Harry (2003), bonds are debt securities issued by borrowers seeking to secure capital from investors. Treasury bills, similar to bonds, represent financial obligations by government with maturities of less than one year. Bonds provide an ideal alternative

investment, offering reliable income streams, capital preservation due to guaranteed repayment of principal, and balancing the volatility associated with equities (Wangari, 2015). In Kenya's context, government securities are considered relatively safe investments backed by sovereign creditworthiness, providing predictable returns essential for insurers managing long-term liabilities.

1.1 Insurance Firm Profitability

Profitability is potential earnings a business can generate from its available resources (Boodhoo, 2019). Companies typically aim to maximize profits. While profit maximization can be beneficial for a corporation, it may adversely affect consumers if a business begins offering inferior services or raises prices excessively (Ongore & Kusa, 2013). As stated by Pandey (2009), profitability encompasses a business's capacity to extract positive returns from shareholder investments. Analyzing profitability within an enterprise is vital as it helps denote how financing structures may affect growth and sustainability. Profit arises when total revenue exceeds the costs incurred in business operations (Boodhoo, 2019). Gross profit functions as a key accounting metric for true economic profitability. As one progresses down the income statement, profitability measures become increasingly influenced by various external factors, disconnecting them from genuine economic profitability (Ball et al., 2015). For instance, a company that operates with reduced production costs and superior sales relative to its competitors is ostensibly positioned for higher profitability; its aggregate earnings may nevertheless remain below those of other companies. ROA, often referred as ROI, is a crucial measure of profitability, as it evaluates the extent a firm leverages its assets to generate profit. This ratio assesses profit relative to total asset investment. A higher percentage is preferable as it implies effective asset utilization in generating sales (Pandey, 2006). Similarly, ROE assesses a company's profitability in relation to equity, also known as net assets or total assets minus liabilities. ROE indicates how efficiently a company leverages investments to enhance earnings performance.

The profitability of insurers is swayed by a blend of internal and external factors. Internal factors pertain to firm-specific characteristics, while external factors reflect industry trends and the prevailing macroeconomic conditions. On a global scale, the expansion of profits among insurance companies serves as a crucial indicator of a robust economy, which may subsequently lead to an increase in a nation’s GDP (USAID, 2012). Various elements need to be assessed when scrutinizing insurance firms. Above all, both management and investors should prioritize the financial resilience of the insurer and its capacity to fulfill ongoing commitments to policyholders while also being mindful of profitability. Profitability illustrates how effectively an enterprise's management can generate earnings using the resources at its disposal, thereby demonstrating the company's capacity to deliver a return on its investments. According to a document by Cyton Investments (2017), insurance firms have recently faced severe inefficiencies in operations, significantly eroding their profitability. Companies trading on NSE, including Liberty Holdings, Kenya Re, Co-operative Insurance Company, Britam Holdings, Sanlam, and Jubilee Holdings, have also been affected (Cyton Investments, 2018).

1.2 Investment Portfolio Diversification of Insurance Companies

Insurance firms collect capital from a diverse array of policyholders through premium payments. After settling policy claims and administrative expenses, residual funds are earmarked for future funding obligations (Aase, 2014). The substantial fiscal capacity within the insurance sector enables it to effectively drive economic development through strategic investments. Insurers consolidate funds from numerous policyholders and channel investments into multiple economic sectors such as capital markets and financial institutions like banks through means such as fixed deposits, ensuring timely payment of obligations (Omarkhanova

et al., 2019). Investigative studies have evidenced that insurers deploy a combination of own financial resources and insurance reserves as part of their investment strategies (Kaigorodova et al., 2018). An insurance fund, prior to utilization for claim payments, is temporarily free from liabilities, significantly influencing the investment capacity of the insurer in relation to the timing and volume of insurance liability payments.

Investment decisions entail the allocation of resources for substantial capital expenditures aimed at enhancing revenue streams (Purba and Bimantara, 2019). Nupurjain (2023) describes an investment decision as an approach taken to allocate a company's varied resources to maximize investor returns. Investment decisions can be classified as either long-term or short-term, and firms must contend with resource constraints. This process involves making extensive financial calculations for long-term benefits. They are firm's resolutions concerning its long-term assets aimed at propelling organic growth (Farah & Altinkaya, 2018) This strategy typically seeks to generate income for the organization, usually resulting in the acquisition of assets and resources (Adelino & Robinson, 2017). Investment decisions also comprise strategies for diversifying sources of income or establishing business ventures outside the organization's existing product lines and markets, thereby facilitating multiple income-generating streams.

In essence, investment decisions depend on distinctive investment principles (Smita, 2022). Financial institutions and intermediaries invest collected funds adhering to certain investment principles and policies. The formulation of investment policies is fundamentally derived from these investment principles. Thus, various determinants of investment principles directly influence the corresponding investment policies. Generally, a policy can be regarded as a prospective plan or course of action concerning a specific sector (Smita, 2022). In terms of insurer investment policies and selection criteria, certain foundational principles warrant adherence during the investment of the available insurance fund. Marketability arises as a key principle, which urges insurers to invest in sectors where easy liquidity for cash conversion exists, recognizing that insurers often lack comprehensive insights into the timing of fund requirements necessary for claim pay-outs.

Gathogo (2020) posits that investment decisions can be quantified as a percentage allocation of funds across various asset classes relative to total investments. Two predominant techniques for asset allocation include strategic and tactical asset allocation. Strategic asset allocation involves setting target allocations for each portfolio component based on anticipated returns, volatility, and inter-class correlations. In contrast, tactical asset allocation requires active adjustments to portfolio weights informed by short- and medium-term economic and market conditions. Furthermore, key metrics for measuring investments encompass allocations to real estate, shares, government securities, corporate bonds, and fixed deposits with banks (Kong et al., 2020). Gathenya (2015) defines equity investments as funds allocated within a firm via the acquisition of the company's shares, reflecting ongoing trading in company stocks. Hall (2020) argues that equity investment offers numerous advantages, such as providing a diverse range of investment options, a high potential for capital appreciation, and opportunities for growth through rights shares.

Amin and Harry (2003) characterize bonds as debt securities issued by borrowers seeking to secure capital from investors. Essentially, bonds are debt instruments promising repayment at designated rates throughout the bond's life (Besler et al., 2017). Various types of bonds exist, with municipal and corporate bonds being largely traded in this context (Besler et al., 2017). Treasury bills, akin to bonds, represent financial obligations by the government and have maturities of less than one year. They are unique in that they are sold at a discount to their nominal value, with payment at maturity representing the difference between the nominal value

and the discounted price, as interest is accrued rather than paid in cash. Bonds provide for an ideal alternative investment, offering a reliable income stream, capital preservation due to the guarantee of repayment of principal, and balancing the volatility associated with equities (Wangari, 2015).

Real estate investment trusts (REITs) involve pooled investments directed towards real estate trusts, differentiating them from mutual funds, which invest in stocks and bonds on behalf of clients (NSE, 2021). Real estate encompasses both movable and immovable assets, including land and structures (Pagourtzi et al., 2003). In real estate investment, ownership includes both mineral and surface rights, which can be transferred collectively or separately. This sector can be categorized into residential and non-residential properties. Residential properties include those intended for habitation, often featuring social amenities such as schools, dining establishments, swimming pools, security services, and healthcare facilities. Current trends in Kenya also see residential properties encompassing various housing types, including flats, mansionettes, and bungalows. The critical factor influencing real estate investment and development is funding, compounded by capital-intensive nature requiring substantial financing for feasibility.

1.3 Listed Insurance Companies in Kenya

The Insurance Regulatory Authority (IRA) bears the responsibility of regulating, licensing, and promoting growth and stability of the insurance sector. The IRA has established key result areas aimed at fostering a fair, competitive, and stable insurance landscape. These areas include regulation and supervision, policy formulation and market development, consumer education and protection, and enhancing institutional capacities (AKI Annual Report, 2019). By the end of 2019, the industry comprised 55 insurance firms, 28 health insurers, 211 insurance brokers, 5,579 insurance providers, and 129 service providers, in addition to compensation officers, policy analysts, and life insurance inspectors (IRA, 2019). As of December 2022, the Nairobi Securities Exchange (NSE) had listed six insurance entities (NSE, 2022), operating within life, non-life, motor, and medical insurance sectors.

Insurance uptake within Kenya remains relatively low compared to other significant economies, as evidenced by a penetration rate of 2.3% for FY 2022, according to the Q4 2022 report by the Insurance Regulatory Authority (IRA) and Kenya National Bureau of Statistics (KNBS) 2023 Economic Survey. This limited penetration level, which remains significantly below the global average of 7.0% as reported by the Swiss Re Institute, is largely ascribed to perceptions of insurance as a luxury service, often pursued only when deemed necessary or legally mandated. Notably, insurance penetration has remained stagnant at 2.3% since 2020. The guiding principles enable insurance firms to allocate 30% of assets to NSE, 10% towards REITS and 5% abroad, alongside permissible investments in government bonds. Investments made by general insurers in other companies are capped at 10%. The regulatory framework permits insurers to allocate at least 20% of their assets towards government securities and 65% in prescribed investments, leaving 15% for discretionary investments, all governed by a risk-based supervision model (AKI Report, 2022).

1.4 Firm Size

This is a company's magnitude and scale measured by overall assets, revenue or number of employees (Akhmadi 2023). In relation to capital structure and dividend policy, firm size is considered to have either a strengthening or a weakening factor and as such, bigger firms depict a strong relationship albeit they have no role in strengthening the relationship. Kiruga et. al (2024) asserts that company size has significant influence using ROA and no significant influence using ROE. As such, bigger firms outperform smaller firms due to a larger asset base.

Tipis (2022), large firms can leverage market power and achieve economies of scale thus, increasing their competitiveness and performance as compared to smaller firms. The growth in size is necessitated by customer attraction, increase in asset base and issuance of new loans. According to Omenyo (2019) in ascertaining firm size effects on financial performance, established that financial position characterized firm size, thereby recommending number of employees as its measure. Wayongah (2019), asserts that the larger the firm, the bigger the assets thus denoting a great variance in the financial performance of bigger firms in relation to smaller firms. Moreover, firm age and asset tangibility may also explain the significant variation in performance. According to Muhindi (2018), large banks have a superior profitability performance. They perform better than medium and small banks establishing a positive connection of performance and size.

1.5 Statement of the Problem

Kenya's insurance firms have witnessed a decline both in their operational and Profitability in the last 5 years (AKI, annual report, 2022). Cytonn Investments (2017) highlights that, over the past five years, insurance companies have frequently faced significant operational inefficiencies, leading to reduced profitability. As per IRA report (2019), published in August 2020, the Authority recorded 1,962 complaints in 2019, a decrease from 2,233 in 2018. Of these grievances, 80% were directed at general insurance providers, while 20% involved long-term insurers. The issues raised included delays in claim settlement, rejected claims, incorrect deductions, and unsatisfactory offers or compensations. Delayed settlement has been a major raising an alert on how the insurance companies conduct financial management practices especially liquidity issues. The high number of complaints has led to Loss of consumer trust has led to low insurance sales and the industry's input to the nation's GDP has ultimately dropped. Further, the total industry's ROA ratios have also been declining since 2015; the years 2014, 2015, 2016, 2017, 2018, 2019 and 2020 recorded ROA values of 5.5, 3.8, 3.6, 3.2, 2.39, 2.3 and 1.75 respectively (Kiptoo et al., 2021). The depressed ROA signifies a weakening financial status.

Cytonn Report (2020) reveals average ROA for listed insurance companies was recorded at (9.4%) and (1.3%). Additionally, loss ratio increased from 79.4% in 2021 to 88.1% in 2022 (IRA, 2022). This rise was attributed to sluggish premium growth, which was only 1.6% in 2019 and 1.2% in 2020 (IRA, 2022). This pattern prompts an inquiry into financial leverage sufficiency to generate an interest tax shield that could improve profitability. Thus, this study explores investment portfolio diversification and Kenya's listed insurance firms profitability. The deteriorating performance is not only related to competition in the market but also on diversification of investments to create more channels of income. Some insurance companies have opted to investment in other sectors as measures to supplement earning from their key operations. Whereas the investments are conducted to generate more income to the companies it's not clear how they have impacted the profitability of the companies hence the need for this study.

Several studies conducted previously to ascertain investment decision impacts on firm's profitability advance conflicting views. Nzewi, Chiekezie and Arachie (2016), noted that prudential investment decision would positively influence profits. Kang'e et al. (2020) however reveals that the Kenyan underwriting industry has been registering overall losses in its underwriting activities since 2015 which has led to a weak financial performance. World Bank Group report (2018) discloses non-financials earning decrease thus fashioning a knowledge gap. Maranga (2022) considered investment decisions as expansion, renewal and replacement. However, these are a collection of various investment decisions different from the current study variable which considers the diversifications in insurance companies.

According to IRA, insurance companies in Kenya have diversified their investments into equity, government securities, corporate bonds, properties, among others. Awuor (2018) explored behavioral qualities influencing individual investment at NSE. However, there is insufficient and outdated research in investment portfolio diversification and its impact on profitability especially on key investments undertaken such as equity investments, corporate bonds, government securities and property investment. Hence, this study will seek to bridge the existing gaps and provide a guideline to the above noted problem.

1.6 Objective of the Study

The general objective of the study is to establish the effect of government securities (bonds) investments on profitability of insurance companies listed in the Nairobi Securities Exchange. While specific objectives include:

i. To establish the effect of equity investments on profitability of insurance companies listed in the Nairobi Securities Exchange.
ii. To establish the effect of government securities (bonds) investments on profitability of insurance companies listed in the Nairobi Securities Exchange.
iii. To establish the effect of corporate bonds investments on profitability of insurance companies listed in the Nairobi Securities Exchange.
iv. To establish the effect of investment properties on profitability of insurance companies listed in the Nairobi Securities Exchange
v. To establish the moderating effect of firm size between investment portfolio diversification and profitability of insurance companies listed in the Nairobi Securities Exchange.

1.7 Research Hypotheses

H_{01}: Equity investments have no significant effect on profitability of insurance companies listed in the Nairobi Securities Exchange.

H_{02}: Government securities investments have no significant effect on profitability of insurance companies listed in the Nairobi Securities Exchange.

H_{03}: Corporate bonds investments have no significant effect on profitability of insurance companies listed in the Nairobi Securities Exchange.

H_{04}: Investment properties have no significant effect on profitability of insurance companies listed in the Nairobi Securities Exchange.

H_{05}: Firm size has no significant moderating effect on the relationship between investment portfolio diversification and profitability of insurance companies listed in the Nairobi Securities Exchange.

2.0 Literature Review

The section reviews theoretical foundations and empirical evidence linking government securities investment and profitability. The reviewed studies are summarized and critiqued with the view of establishing potential research gaps that justify the current investigation.

2.1 Theoretical Review

This review serves as a foundational structure that supports theories guiding research. According to Defee (2010), a robust research endeavor should be anchored in established theory. A theory comprises a coherent assembly of validated propositions that are widely accepted as accurate and can be utilized as explanatory principles for a range of phenomena

(Kothari, 2004). The current study will leverage resource-based, modern portfolio, capital asset pricing model and arbitrage pricing theories.

2.1.1 Resource-Based View Theory (RBV)

RBV, advanced by Pfeffer and Salancik (1978), serves as a framework elucidating strategic assets a company possesses for its development. The central tenet of RBV is that a firm's competitive performance is fundamentally connected to the valuable resources within its reach. The sustainable growth of an organization is contingent on allocation of available resources during budgeting. Transitioning from short-term financial gains to long-term sustainability necessitates that resources exhibit diversity and not be easily transferable. This leads to the creation of valuable organizational resources that are both rare and difficult to imitate (Hoopes et al., 2003). Provided these conditions are met, a firm's resource assembly can facilitate persistent above-average returns. RBV posits that a firm's distinctive resources and capabilities are foundational for its investment strategy (Hoopes et al., 2003). The selected investment approach must enable the firm to exploit its core competencies in relation to external opportunities. Quality and quantity of resources significantly influence investment activities, thereby stimulating financial performance (Aosa, 1992; Machuki and Aosa, 2011). Achieving sustainable financial outcomes allows companies to secure above-average returns, drawing attention to how firms acquire and maintain competitive advantages. RBV asserts the answer lies in possessing specific key resources characterized by attributes such as value, inimitability, and relevance. Effective financial performance is realized when firms adequately deploy these resources in their investment endeavors. Thus, RBV underscores strategic decisions, entrusting management with critical responsibility of recognizing, cultivating and utilizing essential resources for investment activities for optimal returns. The model presumes that firms are characterized by heterogeneous resources and capabilities (Ireland et al., 2011).

Resources comprise three primary categories: tangible assets, intangible assets, and capabilities. Tangible assets are longstanding fixed and current assets of an organization, whereas intangible assets encompass intellectual property (such as trademarks and patents), databases, company networks, and brand reputation (Williams, 1992). Capabilities are often more elusive; they are typically described as invisible assets or intermediate goods (Itami, 1987). Fundamentally, capabilities include competencies of individuals or groups, together with organizational routines and patterns of interactions through which all of firm's resources are coordinated (Grant, 1991). Therefore, RBV advocates for effective and efficient utilization of all available resources to optimize investment opportunities and enhance profitability. This theory suggests that insurance firms allocate investments across equities, properties and bonds contingent on the resources at their disposal, thereby justifying the diversification of investments to generate higher revenues.

2.1.2 Modern Portfolio Theory (MPT)

Developed by Harry Markowitz in 1952, MPT offers a basis for investors to evaluate risk concerning their anticipated returns. MPT posits that firms focusing on portfolio optimization will aim to maximize returns for a specified level of portfolio risk, or equivalently, minimize risk for a designated expected return. By advocating for diversification of asset investments, MPT aims to mitigate both market risks and those associated with specific firms when committing to particular investment portfolios (Ambrose & Vincent, 2014). MPT represents an elaborate approach to investment decision-making, imparting critical insights on portfolio management. Central to this theory is quantification of risk-return relationship, along with the premise that investors must receive compensation for embracing risk. Unlike traditional security analysis, which emphasizes individual investment characteristics, MPT shifts focus toward understanding overall portfolio statistical relationships (Amalendu et al., 2011).

Mathematically, MPT formulates the principle of diversification, aiming to select a collection of investment assets that carries low levels of risk than any single investment. This probability arises intuitively since various asset types often fluctuate in value in contrasting directions. Interestingly, diversification can also reduce risk even if asset returns exhibit positive correlations (Taleb, 2007).MPT illustrates that companies manage their businesses on a portfolio basis (Markowitz, 1952). In insurance industry, businesses can be segmented by portfolios of general, life, specialist, and composite insurance, each representing distinct strategic units. Moreover, insurance firms invest in multiple portfolios as part of prudent financial management practices, aiming to maintain control over various portfolios in a bid to optimize returns. MPT is pertinent to this study as it endorses investment diversification strategies. Insurance entities have expanded their investments into various areas, including bonds, real estate, and equities, to enhance profitability.

2.1.3 Capital Asset Pricing Model (CAPM)

The foundation CAPM is rooted in how investor behavior influences asset valuation. The resulting theory integrates risk with return to formulate an equilibrium model of asset valuation, effectively bridging these concepts (Lintner, 1966). Key contributors include Sharpe (1964), along with Treynor, Mossin, Lintner, and Black (1965).CAPM is the pioneering model that incorporates risk into asset valuation. Essentially, it provides a mechanism to ascertain expected return that investors should demand from an asset of a specific nature. Within CAPM, calculation of expected return is divided into two components: identifying a risk-free rate and determining the return rate for a risky asset, represented as risk premium. The standard deviation of an asset is less significant compared to its contribution to systematic risk of the portfolio into which it is included. The emphasis lies on the association between the expected return of an efficient portfolio to that of individual assets.

Critics of CAPM argue model's reliance on two key assumptions leads to oversimplification. The first assumption posits that investors have unrestricted access to borrowing or lending without limit at a risk-free rate that is consistent across all investors, regardless of their borrowing or lending practices. The second assumption suggests that all investors share identical expectations, resulting in uniform probability distributions for future returns over equivalent time periods. Hence, CAPM can derive both risk prices and metrics for specific assets (Elbannah, 2015). The model presumes no taxes or transaction costs related to buying or selling assets, absence of impacts from inflation or interest rate adjustments, and that capital markets exist in equilibrium, with all assets appropriately priced. Despite these criticisms, CAPM is vital, as it assists in decision-making regarding various investment options amidst risks and uncertainties. Various investment portfolios yield returns that align with market risks, alongside opportunities for portfolios to achieve returns that exceed the risk-free rate.

2.1.4 Arbitrage Pricing Theory (APT)

APT posits that the anticipated financial asset return is predominantly determined by its "beta." Beta measures relationship between company-specific factors affecting financial performance and the broader market within which the company operates. Typically, an asset with a beta of one mirror market performance, while a beta of 0.75 indicates asset movement proportional to 75 percent of the market's movements. The primary architect of APT, Ross (1976), built this heuristic theory on premises of eliminating arbitrage opportunities. Both APT and CAPM assert that the expected returns of assets linearly related to their covariance with other random variables, differing in specific variables of focus (in CAPM, covariance is related to market portfolio returns). Covariance is elucidated as the risk that persists despite diversification. The slope coefficient in the linear relationship between expected returns and covariance represents a risk premium, closely associated with mean-variance efficiency. APT proves beneficial for

investors looking to gauge a company's historical sensitivity to significant market fluctuations typically seen during the onset of bull and bear markets. Different investment strategies can be formulated based on an investor's short-term and long-term goals, using APT as a framework. For instance, an investor may choose to refrain from purchasing a stock with a beta of one while anticipating a recession if their goal is to invest for a short timeframe. Numerous studies have sought to validate APT's empirical applicability relative to CAPM, with APT proposing that actual and expected securities returns respond to multiple forms of non-diversifiable risks, rather than simply market risks (beta).

APT operates under several assumptions: firstly, it employs a pricing model that accounts for multiple sources of risk, whereas CAPM focuses solely on a singular market risk factor. Secondly, the macroeconomic factors inherent to APT carry systematic risks that can be reduced through diversification. Thirdly, investors are required to develop their risk and return profiles contingent upon the sensitivities and premiums associated with the macroeconomic risk elements. High-risk investors will capitalize on discrepancies in real and anticipated earnings on assets utilizing arbitrage strategies. APT is pertinent, as it pertains to identification of macroeconomic factors that influence stock returns. Specifically, APT examines the factors' influence on profitability of equity investments among insurance firms, thus informing the study's variables.

2.2 Empirical Review

This section explores both local and international research, highlighting the relationship between each independent variable and profitability.

2.2.1 Equity Investment and Firm Profitability

Cheruiyot, Aluoch, and Ndungu (2024) carried out research focusing on the relationship between portfolio composition and listed NSE's investment firms' financial performance. Study honed in on five NSE listed, investment firms over an 8year span from 2015 to 2022. The research was guided by the Modern Portfolio Theory (MPT), employing secondary data obtained from published audited financials. Descriptive statistics and multiple linear regression models were utilized, revealing a positive link. Ilo, Yinusa and Elumah (2018) evaluated the performance of 37 mutual funds in Nigeria from 2012 to 2015, categorized into six distinct portfolios to assess fund managers' capabilities. The findings indicated that market generally yielded negative risk premiums and that mutual fund portfolios produced similarly negative mean excess returns, suggesting that investors were not adequately compensated for the risks associated with these assets. While this study addressed investments in Nigeria, the present zeroes in on Kenyan firms.

In a related study, Iraya and Wafula (2018) explored the effect of portfolio diversification on returns of Kenya's 7 balanced mutual funds. By employing descriptive research, it concluded that unsystematic risk was positively correlated with returns, although impact of equity investment on CIS returns was not specifically detailed. Chepkorir (2018) investigated equity diversification influence on NSE's listed commercial banks financial performance. Grounded on MPT, Agency and Diversification Strategy Theories, both primary and secondary forms of data were gathered. Utilizing data collection sheets for financial performance, findings emphasized a positive and strong correlation ($r = 0.640$) highlighting importance of liquidity for insurance investments, as insurers often lack foresight regarding when they will need to pay client claims, leading them to prioritize liquidity when investing.

2.2.2 Government Securities (bonds) and Firm Profitability

Tebaldi et al. (2018) investigated financial robustness of emerging markets, focusing on 31 developing countries between 1994 and 2014. It aimed to understand sovereign government bond spreads determinants and their effects on economic health, revealing marginal increases in bond spreads following financial crisis, which were positively correlated to economic growth. While this study examined sovereign bond impacts on national economic variables, current examination focuses on bond investment specifically. Wanyonyi (2018) assessed investment diversification influences on financial outcomes of listed agricultural firms with census survey. Analysis of panel data from 2010 to 2017 indicated a positive link of bonds, securities investments and profitability. The present research focuses on Kenya's CIS. Fanta and Makina (2017) also investigated equity, institutional debt, bonds, and South Africa's economic growth, reinforcing the significant role played by both bank and non-bank entities in bond market. Mengich et al. (2018) considered corporate bond investment effects on Kenyan banks' productivity. Utilizing an ex-post facto research design and employing secondary data from 42 commercial banks from 2008 to 2017, findings revealed a significant correlation. However, this study centered on banks rather than Kenya's CIS.

2.2.3 Corporate Bonds Investment and Firm Profitability

Manyanga et al. (2023) examined debt financing impacts on financial performance of SMEs in Zimbabwe. It was framed by capital structure theory, adopting a positivist stance and employing cross-sectional survey targeting 210 SMEs. Quantitative data were amassed using Likert-type responses structured questionnaire, while SPSS and SEM facilitated hypothesis testing. Findings showed a positive influence of debt financing to financial performance. Nazir et al. (2021) analyzed corporate debt levels and 30 Pakistan Stock Exchange companies' performance from 2013 to 2017. The study employed pooled OLS regression alongside the models fixed and random effects to assess companies operating in automotive, sugar and cement. Findings indicated that short-term debts had negative impacts together with long-term debt, a contrast to favorable influence of sales growth and firm size in the non-financial sector. Muema (2021) studied equity and bond investments effects on Kenya's CIS financial performance, anchored on MPT and efficient market hypothesis. Utilizing a positivist philosophy and an explanatory research design, the examination spanned from 2010 to 2018 with a target population of 17 collective investment schemes. Secondary data analysis used descriptive, correlational, and panel regression analysis with findings indicating no substantial link, recommending more robust diversification policies to strengthen the investment choices.

2.2.4 Properties Investment and Firm Profitability

Kioko and Ochieng (2020) explored portfolio diversification and NSE's listed investment firms' financial performance. Their evaluation drew upon CAPM, Portfolio Theory and Black-Litterman Model. Descriptive statistics indicated that firms had diversified investment portfolios generating different returns, with real estate investments yielding highest returns and bonds the lowest. Mungai and Elly (2018) analyzed alternative investments influence on Kenya's pension funds financial performance. The study encompassed REITs, venture capital, immovable property and personal equity funds. Majority of pension schemes were invested primarily in fixed-income and government securities as well as quoted equities, allocating limited resources to private equity and venture capital. Except for venture capital and private equity, all alternative investments were found to correlate positively with financial performance. This study highlighted a conceptual gap by concentrating solely on alternative investments, whereas the present research expands to include a variety of investments. Odhiambo (2017) conducted an analysis using a five-year span of annual reports to assess the relationship between real estate finance and financial NSE's 11 listed banks' performance.

Utilizing data collected from individual banks' annual indicators, NSE and CBK, a substantial influence of real estate financing was realized, with mortgage finance being highest.

2.2.5 Investment Portfolio Diversification, Firm Size and Profitability

Kamau (2023) assessed firm size moderating effect on underwriting risk and insurer's financial performance. Grounded in agency theory, the study encompassed 54 firms operating in Kenya from 2010-2018, employing random and fixed effect models for panel data analysis while utilizing the Hausman test for hypothesis validation. Results demonstrated that underwriting risk had a significant negative effect on performance with firm size as an adverse moderator.

Tipis (2022) sought to uncover firm size impacts on Kenya's commercial banks' financial performance. The research operationalized firm size as natural logarithm of total assets, with control variables being credit risk, capital adequacy and liquidity measured by ROA. The investigation drew upon stakeholder, financial intermediation and firm growth behavioral theories, employing a descriptive research approach with 41 commercial banks as target spanning 2017 to 2021. Secondary data collection facilitated descriptive statistics, including mean, calculations of standard deviation, alongside diagnostic tests such as normality, homoscedasticity, multicollinearity, and autocorrelation. Correlation results exhibited a significant positive correlation between firm size and ROA, suggesting that increased asset bases lead to improved returns. Pila (2022) investigated moderating effect of Kenya's manufacturing firm size on financial uncertainty indicators and performance, prompted by the sectors' reported low performance levels. Descriptive design methodology was used targeting 856 firms registered by Kenya Manufacturers Association, covering a 12-year period from 2009 to 2020. Stratified sampling was done and a random sample of 90 firms was selected. The research variables included ROE, trade credit uncertainty, liquidity, operational costs, logarithmic and leverage measures. Findings indicated a reverse, albeit non-significant impact of firm size on performance.

2.3 Conceptual framework

Waiganjo (2013) defines conceptual framework as an illustration of connections between study's independent variables, along with any moderating or intervening variables, and dependent variables.

Stratford Peer Reviewed Journals and Book Publishing
Journal of Finance and Accounting
Volume 10||Issue 2 ||Page 49-65||March||2026|
Email: info@stratfordjournals.org ISSN: 2616-4965

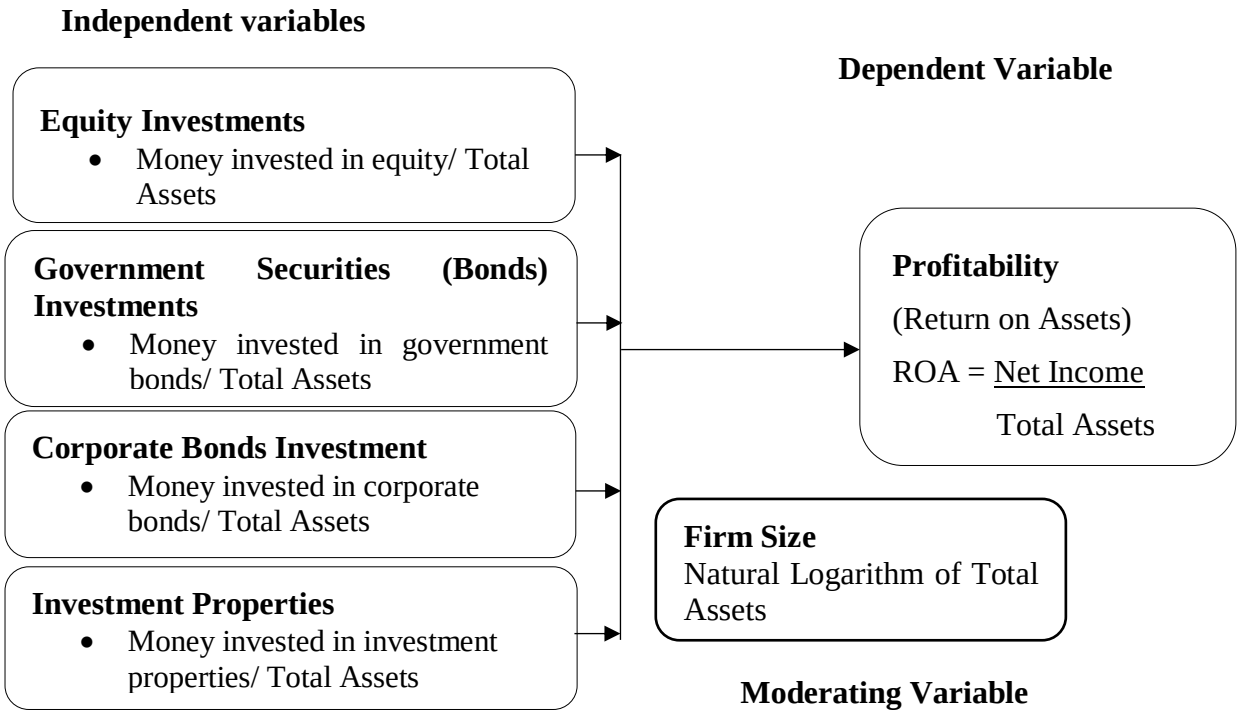

Figure 2.1: Conceptual Framework

3.0 Research Methodology

This study adopted a positivist research philosophy to ensure objective analysis using quantitative data, given the reliance on secondary financial data obtained from audited reports of insurance companies listed at the Nairobi Securities Exchange. In line with this approach, the study employed a panel research design, which integrates both cross-sectional and time-series dimensions, covering a ten-year period from 2015 to 2024. This design was considered appropriate as it enhances analytical efficiency, improves variability, and reduces issues of collinearity compared to purely cross-sectional or time-series approaches. A census technique was applied, targeting all six listed insurance firms due to the small and manageable population size. The study utilized panel regression analysis to examine the relationship between investment decisions comprising equity investments, government securities, corporate bonds, and investment properties and profitability measured by return on assets, with firm size incorporated as a moderating variable using the Baron and Kenny (1986) approach. Variables were operationalized as proportions of total assets to ensure comparability, while firm size was measured using the natural logarithm of total assets.

4.0 Findings and Discussion

This chapter presents findings from data analysis examining the effect of government securities investment on profitability of listed insurance companies in Kenya. Data was collected from all six NSE-listed insurance companies covering the period 2015-2024, resulting in 60 firm-year observations. After data cleaning and validation, all 60 observations were deemed complete and suitable for analysis, representing a 100% data completeness rate which is ideal for panel data analysis.

4.1 Descriptive Statistics

Descriptive statistics were computed to determine the characteristics of government securities investment and profitability in listed insurance companies in Kenya. Table 1 presents the findings.

Table 1: Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
Profitability (ROA)	60	0.0395	0.0503	-0.0221	0.3614
Government Bonds Investment (KES)	60	16,100,000	19,300,000	560,723	92,000,000

The findings in Table 1 indicate that profitability measured by ROA had a mean of 0.0395 (3.95%) with standard deviation of 0.0503. The positive mean suggests that on average, listed insurance firms in Kenya are achieving modest profitability levels, reflecting overall positive financial outcomes. The standard deviation indicates moderate variability in profitability among firms and across time periods. The minimum value of -0.0221 reveals instances of negative returns or losses, possibly due to adverse market conditions or operational inefficiencies, while maximum of 0.3614 demonstrates potential for high profitability levels. Government bonds investment showed mean value of KES 16,100,000 with standard deviation of KES 19,300,000, ranging from minimum of KES 560,723 to maximum of KES 92,000,000. This finding implies that on average, listed insurers devote substantial resources to government bond holdings, though with considerable variation reflecting divergent investment strategies and firm sizes. The low minimum indicates some insurers making sparse government securities allocations, possibly pursuing more aggressive growth strategies through higher-risk assets, while high maximum indicates significant reliance on government bonds, likely reflecting conservative risk management or regulatory compliance priorities. The substantial standard deviation relative to mean suggests heterogeneous investment approaches among listed insurance firms, with some maintaining concentrated government securities portfolios while others diversify more broadly across asset classes.

4.2 Correlation Analysis

Correlation analysis was conducted to determine the relationship between government securities investment and profitability. Table 2 presents the findings.

Table 2: Correlation Matrix

Variables	Profitability (ROA)
Government Bonds Investment	r = 0.2322
	p = 0.075

Table 2 shows that government bonds investment had correlation coefficient r=0.2322 with profitability, implying a moderate positive relationship. This finding suggests that as government securities investment increases, profitability of listed insurance companies in Kenya tends to improve, though the relationship is not extremely strong. The positive correlation aligns with theoretical expectations from Modern Portfolio Theory that government securities contribute to portfolio optimization through risk reduction and stable returns. The moderate strength of correlation indicates that while government bonds contribute positively to profitability, they are not the sole or dominant determinant, with other factors also playing important roles. This finding is consistent with Wanyonyi (2018) who found positive links between bonds, securities investments and profitability in agricultural firms, and with Hanin, Noriza, and Mohamad (2017) who established significant positive correlations between

treasury bonds and insurance firm profitability in Turkey. The positive correlation also supports Njiiri (2015) who concluded that government securities yielded positive impacts on Kenyan insurer performance, ranking second after real estate investments in impact magnitude.

4.3 Regression Analysis

Panel data regression analysis was conducted to examine the direct effect of government securities investment on profitability of listed insurance firms in Kenya. The study judged the statistical significance of the directional influence through coefficient analysis, standard errors, t-value, and p-value. Table 3 presents the direct effect results.

Table 3: Direct Effect Results

Profitability	Coef.	Robust Std. Err.	T	P>t	[95% Conf.	Interval]
Government Bonds	9.80e-10	2.61e-10	3.76	0.000	4.69e-10	1.49e-09
_cons	.0305764	.0131442	2.33	0.020	.0048142	.0563385
Wald χ^2 (3)	7.82					
Prob > F	0.0000					
R-Square	0.1588					

The results in Table 3 indicate that government securities investment has a positive and statistically significant effect on profitability of listed insurance firms in Kenya (β = 9.80e-10, p = 0.000), suggesting that increased allocation to government bonds is associated with improved financial performance. The positive coefficient implies that government securities provide stable and predictable income streams, which enhance insurers' earnings while minimizing exposure to market volatility. The overall model is statistically significant (Wald χ^2 = 7.82, $p < 0.05$), indicating that the explanatory variables jointly influence profitability. In addition, the intercept term is positive and significant (β = 0.0306, p = 0.020), reflecting the existence of a baseline level of profitability even in the absence of the independent variables. The R-squared value of 0.1588 shows that approximately 15.88% of the variation in profitability is explained by the model, while the remaining variation may be attributed to other firm-specific factors such as underwriting performance, operational efficiency, and prevailing macroeconomic conditions. Overall, the findings reinforce the role of government securities as low-risk, income-generating assets that support financial stability and contribute to improved returns in insurance firms' investment portfolios.

5.0 Conclusion

The study concludes that government securities (bonds) investment has a positive and significant effect on the profitability of insurance companies listed at the Nairobi Securities Exchange. The findings show a moderate positive relationship (r = 0.2322) and confirm through regression analysis that government bonds significantly predict profitability (β = 9.80e-10, p = 0.000), explaining 15.88% of variation in return on assets. These results support Modern Portfolio Theory, which emphasizes diversification and inclusion of low-risk assets to enhance risk-adjusted returns. Government securities provide stable income, capital preservation, and liquidity, making them well-suited for insurers managing long-term obligations. In the Kenyan context, the findings indicate that investment in government bonds enhances financial performance by promoting stability and consistent returns, particularly during periods of market uncertainty. Therefore, appropriate allocation to government securities remains essential for improving profitability while maintaining prudent risk management.

6.0 Recommendations

Based on the findings, listed insurance firms should maintain or moderately increase allocations to government securities due to their positive contribution to profitability and financial stability. Management should adopt structured investment strategies, including duration matching and yield optimization, to align bond investments with liability profiles. The Insurance Regulatory Authority should continue supporting investment in government securities through clear policy guidelines and promote best practices in portfolio management. In addition, government agencies such as the Central Bank of Kenya and National Treasury should strengthen the bond market by ensuring liquidity, transparency, and stable issuance frameworks to support institutional investors. Future studies should examine optimal allocation levels and explore how firm-specific and macroeconomic factors influence the relationship between government securities and profitability.

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