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Does Size Shield? Examining the Moderating Role of Firm Size on Market Risk–Profitability Nexus among Kenyan Insurers

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Abstract

The insurance industry constitutes a critical pillar of the non-bank financial sector and remains integral to sustaining economic development in both emerging and advanced markets. In Kenya, persistent pressures on profitability have been evident, with at least nine insurers experiencing severe financial distress leading to collapse over the past ten years. This study examined whether firm size moderates the relationship between liquidity risk and credit risk in shaping the profitability of insurance companies in Kenya. The inquiry was anchored on key theoretical frameworks, namely Modern Portfolio Theory, Agency Theory and Institutional Theory. A positivist philosophical orientation and an explanatory research design informed the methodological choices. The target population comprised all 55 insurers licensed by the Insurance Regulatory Authority (IRA) as at 31 December 2022. The study utilized secondary data derived from audited financial statements accessed through IRA and the Association of Kenya Insurers (AKI) repositories for the period 2014–2022, complemented by data from the Central Bank of Kenya and the Kenya National Bureau of Statistics. Analytical procedures included descriptive statistics, panel regression modelling, and Pearson's correlation analysis to evaluate the associations among the study variables. The findings revealed that firm size did not exert a statistically significant moderating effect, as it did not materially alter the model's decision rule. This suggests that the influence of interest rate, inflation and foreign exchange risks on return on equity (ROE) and return on assets (ROA) remained relatively uniform across insurers irrespective of their asset base. The study recommends that insurance companies in Kenya should implement comprehensive and standardized risk management practices irrespective of organisational size.

Key words: *Market Risk, Interest Rate Risk, Inflation Rate Risk, Foreign Exchange Risk, Profitability, Return on Equity, Return on Assets, Firm Size, Kenya*

1. Introduction

The insurance industry constitutes a foundational pillar of modern financial systems, offering essential mechanisms that cushion households, firms, and entire economies against unexpected financial disruptions. Through its core risk-transfer and loss-absorption functions, the sector enhances economic stability by reducing uncertainty and enabling economic agents to plan, invest, and operate with greater confidence. Tasdemir and Alsu (2024) emphasize that insurance services lower the economic burden of volatility by safeguarding both personal and commercial assets, thereby strengthening financial resilience. This stabilizing role fosters economic progress through multiple transmission channels, including improved efficiency in resource allocation, heightened investor assurance, and reduced susceptibility to unforeseen shocks. Empirical work by Cristea, Marcu, and Cârstina (2014) affirms the sector's macroeconomic relevance by identifying a positive causal relationship between insurance market deepening—measured through insurance penetration—and economic growth, captured via GDP per capita. According to the Chartered Insurance Institute (2018), the fundamental purpose of insurance and risk management lies in transferring potential financial losses from policyholders to insurers through legally binding contracts, thereby minimizing exposure to adverse events and their wider economic implications.

Globally, insurance markets in developing economies have demonstrated strong momentum, with emerging markets collectively accounting for nearly 80% of recent industry expansion, as documented by the Association of Kenya Insurers (2021). Despite this momentum, Africa continues to exhibit some of the lowest insurance penetration levels worldwide, signaling untapped potential for sectoral development. In Kenya, the insurance industry is acknowledged as a key segment of the wider financial services ecosystem, with the Insurance Regulatory Authority (IRA) mandated to oversee its sustainable growth and ensure the financial robustness of market participants. The IRA's Strategic Plan (2018–2022) reflects this mandate and aligns with major national development frameworks—including Kenya Vision 2030, the Big Four Agenda, and the Third Medium-Term Plan (MTP III)—as well as the Financial Services Sector Plan (2018–2022), the Sustainable Development Goals, and internationally recognized regulatory principles. These strategic linkages underscore the central role of an efficient, well-regulated insurance sector in advancing Kenya's long-term socio-economic objectives.

1.1 Market Risk

Market risk encompasses the possibility of incurring financial losses due to adverse movements in fundamental market variables that determine the value of an organisation's liquid or market-sensitive assets. Such variables include interest rate shifts, currency volatility, fluctuations in equity prices, and changes in commodity markets (Ekinci, 2016). Periods of intensified market turbulence can amplify these fluctuations, resulting in significant losses within relatively short intervals and, in severe circumstances, jeopardizing the continuity of financial institutions (Odubuasi et al., 2020). Broadly, market risk captures the exposure a firm faces when unfavourable developments in interest rates, securities valuations, commodity price levels, inflation, or foreign exchange rates diminish its financial position (Fahrul & Rusliati, 2016; Badawi, 2017; Omari & Mungai, 2021). Ekinci (2016) emphasizes that these risks stem from unpredictable changes in market environments that directly influence the pricing of financial instruments. Complementing this view, Ekinci (2016) and Namasake (2016) note that market risk is often more volatile than credit risk, largely due to its heightened sensitivity to sudden and sometimes unanticipated market dynamics. Consequently, market risk has the potential to erode shareholder value when disruptions in interest rates, equity markets, commodity prices, or currency values adversely affect financial outcomes. Effective identification and management of market risk therefore remain central to preserving institutional soundness and ensuring sustainable financial performance.

1.1.1 Interest Rate Risk

Interest rate risk refers to the potential adverse impact that fluctuations in interest rates may have on a firm's earnings or asset values, as articulated by Horcher (2005). Kariuki (2021) similarly observes that this form of risk arises from uncertainty surrounding unexpected movements in interest rates, which may undermine the financial performance of institutions. Within the insurance sector, interest rate risk is particularly pronounced. Papadamou and Siriopoulos (2014) identify it as one of the most significant risks confronting life insurers, largely due to two structural features of their operations: the mismatch between the duration of assets and liabilities, and the high degree of variability in market interest rates. Shiu et al. (2012) reinforce this position by noting that insurers exhibiting substantial disparities between asset and liability duration are especially vulnerable to shifts in interest rates. The widespread exposure of insurance companies to interest rate volatility is further documented by Carson, Elyasiani, and Mansur (2008).

Horcher (2005) also highlights that interest rate risk comprises several components, including absolute interest rate risk—linked to changes in overall interest rate levels—and yield curve risk, which relates to alterations in the shape or slope of the yield curve. Basis risk constitutes an additional dimension, emerging when inconsistencies arise between a firm's risk exposures and its risk management strategies. Berends et al. (2013) argue that life insurance firms face heightened interest rate sensitivity because they offer long-term contractual products whose valuation is heavily influenced by prevailing and expected future interest rates. Given the extended period between premium collection and benefit payouts, life insurers must invest policyholders' funds prudently to ensure their capacity to meet future obligations. This often results in substantial investment in long-duration financial instruments such as bonds. Nonetheless, Mboga (2015) notes that although considerable research attention has been directed toward understanding the effects of interest rate fluctuations on banking institutions, the insurance sector has remained comparatively underexplored, signaling a notable gap in the literature.

1.1.2 Inflation Risk

Inflation risk refers to the possibility that rising prices for goods and services will diminish the purchasing power of money, thereby reducing the real value of financial returns. Bohnert et al. (2015) characterize this risk—also termed purchasing power risk—as the condition in which actual inflation exceeds expectations. Rothwell (2019) notes that inflation can erode the real value of investment outcomes, particularly for savings and financial instruments that lack inflation-adjustment mechanisms. According to Bohnert et al. (2015), inflation linked to long-term liabilities poses a major source of uncertainty for non-life insurers, as it affects the accuracy of technical provisions and ultimately influences future profitability. Given the return-driven nature of the insurance business, the sector is particularly sensitive to reductions in purchasing power.

Swiss Re (2018) observes that inflation risk has emerged as a central concern for financial institutions due to its adverse implications on asset values, investment yields, and the future cost of insurance obligations. Within the insurance industry specifically, it is recognized as a key risk management priority because of its potential to disrupt both operational and financial outcomes. In addition, life insurers must also consider the implications of deflation, which can similarly distort the value of long-term commitments and investment strategies. As inflation conditions evolve, insurers are required to adjust their investment portfolios accordingly to maintain financial stability.

Mutwiri (2019) asserts that the Consumer Price Index (CPI)—measuring average changes in the price level over time—serves as an appropriate indicator for quantifying inflation risk. This metric was adopted in the present study because it captures annual variations in inflation and aligns with the nature of the variables under investigation. Over the study period from 2014 to 2022, CPI data indicated a Compound Annual Growth Rate (CAGR) of 0.145% and a cumulative increase of 1.16%, reflecting modest but persistent inflationary pressures during the period under review.

1.1.3 Foreign Exchange Risk

Foreign exchange risk arises when unfavourable movements in currency values create the potential for financial loss, particularly for firms whose cash flows or asset holdings are denominated in currencies other than their reporting currency (Brand, 2018). This form of risk is especially pronounced for institutions operating in environments characterized by exchange rate instability. Offiong et al. (2020) observe that fluctuations in exchange rates constitute a significant source of exposure for many organisations, including insurers, as such volatility can diminish investment values, reduce premium inflows, and negatively affect overall earnings. For insurance companies, decisions regarding investment and underwriting in the context of volatile currency markets can meaningfully influence operational and financial performance.

Shiu et al. (2012) note that insurers engaged in cross-border investment or business activities are inherently exposed to foreign exchange risk. Mange (2000) further explains that exposure arises when the currencies in which premiums are received and claims are settled differ, creating mismatches that are sensitive to exchange rate changes. Additional exposure emerges when insurers invest in foreign-currency-denominated securities or supply insurance products within foreign markets. Insurance Europe (2013) reports that insurers often hold assets in foreign currencies to meet policyholder obligations, thereby facing heightened vulnerability to currency fluctuations. Moreover, indebtedness in foreign currencies can amplify this risk when exchange rate movements affect the cost of servicing such liabilities.

Insurance Europe (2013) recommends that insurers explicitly integrate foreign exchange risk considerations when determining capital adequacy for forthcoming financial cycles. While Popov and Stutzmann (2003) acknowledge that foreign exchange risk cannot be completely eradicated, they highlight a range of mitigation strategies that can be employed to reduce its impact. For internationally active firms, foreign exchange volatility remains a critical area of concern, exerting considerable influence on profitability and financial stability.

1.2 Firm Size

According to Almashhadani and Almashhadani, (2022) and Fujianti and Satria (2020), firm size reflects the enormity of a company in terms of its total assets, market equity capitalization or sales. Niresh and Velnampy (2014) and Surajit and Saxena (2009) contend that the size of a firm may be defined as the level of size and scope of production, including its variety and/or different services that be simultaneously delivered to clients by a firm. A firm's size, driven by economies of scale, is a principal component as pertains to establishing its profitability.

Firm size has been conceptualized in various ways within the literature, with scholars such as Almashhadani and Almashhadani (2022) and Fujianti and Satria (2020) describing it as the magnitude of an organisation measured through indicators such as total assets, market capitalization, or sales volume. Other researchers, including Niresh and Velnampy (2014) and Surajit and Saxena (2009), view firm size as representing the breadth and scale of a company's operations, encompassing the extent of production activities and the range of goods or services provided concurrently to customers. The size of an organisation, often associated with the benefits derived from economies of scale, is widely regarded as a key determinant of its profitability. Larger firms may achieve cost efficiencies, enhanced market power, and improved access to financial resources, positioning firm size as an important factor in understanding performance dynamics.

1.3 Profitability

Profitability is widely regarded as a core metric of organisational performance in the financial industry, offering insight into a firm's operational effectiveness and its ability to create economic value for its stakeholders. According to Tiplady (2024) and Walters and Helman (2023), profitability reflects the income generated from a firm's trading and operational activities, thereby indicating how efficiently its assets are utilized to produce earnings. Tulsian (2014) reinforces this perspective by defining profitability as the capacity of an investment to deliver returns, underscoring its role as a key determinant of financial success. Ehiogu and Nnamocha (2018) together with Malik (2011) further highlight that profitability represents the residual income remaining after all production and operating expenses have been settled, making it a critical measure of managerial performance and organisational efficiency.

Building on the insights of Dorofti and Jakubik (2015) and Nguyen and Nguyen (2020), profitability continues to be a primary objective of corporate financial management, often assessed in relation to shareholder equity, asset utilization, or revenue generation. In this sense, profitability not only signals a firm's immediate financial standing but also provides an essential basis for evaluating its long-term viability and growth trajectory. For insurance companies, maintaining robust profitability is especially important, as it underpins solvency, supports the fulfillment of policyholder commitments, and contributes to shareholder value creation. Understanding the determinants of profitability—including exposure to various forms of financial risk—therefore constitutes an important foundation for analysing performance patterns within Kenya's insurance industry.

2. Statement of the Problem

The insurance sector in Kenya constitutes a vital component of the national financial system and contributes significantly to overall economic output. Despite its central role, industry performance indicators reveal a worrying downward trend in

profitability over the period 2014–2022. During this timeframe, the sector experienced a compound annual decline in return on equity (ROE) of -7.74% , amounting to an overall reduction of -47.5% . Similarly, return on assets (ROA) recorded a compound annual decrease of -9.85% , translating into a cumulative decline of -56.36% . Given that profitability is integral to evaluating organisational performance and assessing long-term viability (Nguyen & Nguyen, 2020), the persistent deterioration in these metrics raises significant concerns regarding the financial health and sustainability of Kenya's insurance industry. Such declining profitability not only threatens firm-level stability but also poses broader risks to the sector's contribution to economic development and the functioning of the wider financial services ecosystem.

A review of empirical studies examining the relationship between firm size and profitability reveals inconsistent findings and highlights several gaps that warrant further investigation. Methodological deficiencies are evident in the works of Asola, Otieno and Onyango (2023), Ahmeti and Iseni (2022), Morara and Sibindi (2021), Wolde, Kolech and Dadi (2020), Gweyi (2018) and Maniagi (2018). In addition, contextual limitations emerge in studies conducted across different jurisdictions and sectors, as seen in research by Siopi and Poufinas (2023), Ahmeti and Iseni (2022), Wolde, Kolech and Dadi (2020), Gweyi (2018), Maniagi (2018), Orzynski (2016), Wani and Dar (2015) and Malik (2011). These methodological and contextual discrepancies underscore the need for further empirical inquiry within the Kenyan insurance context, particularly to ascertain whether firm size moderates the relationship between market risk and profitability.

3. Objective of the Study

The main objective of the study was to examine the moderating effects of firm size on market risk and profitability of insurance firms in Kenya.

4. Literature Review

4.1 Theoretical Review

4.1.1 Modern Portfolio Theory

Modern Portfolio Theory (MPT), originally introduced by Markowitz in 1952, presents a systematic approach to evaluating how investors can optimize the balance between risk and expected return. The theory departs from the traditional focus on assessing assets individually and instead emphasizes the importance of analysing how different investments interact as components of a single portfolio. Markowitz (1952) demonstrated that when assets with imperfectly correlated returns are combined, the overall variability of the portfolio can be reduced without proportionately lowering its expected performance. This foundational principle of diversification has since become central to contemporary portfolio construction and risk management strategies within financial institutions.

Within the insurance sector, MPT provides a useful conceptual framework for constructing investment portfolios in environments characterized by market volatility and uncertainty. Insurance companies must allocate premium income in a manner that not only achieves acceptable returns but also preserves adequate liquidity for meeting future claims obligations. By drawing on the principles of MPT, insurers can create portfolios that limit exposure to particular forms of market-related risks, including liquidity and credit risks, while enhancing overall stability. The theory supports a disciplined, quantitative approach to asset allocation, enabling insurers to evaluate risk–return trade-offs and diversify across asset classes in a way that aligns with their risk appetite and regulatory requirements. Through this lens, MPT contributes significantly to understanding how insurers can mitigate market risk and strengthen long-term financial resilience.

4.1.2 Agency Theory

Agency Theory, formally developed by Jensen and Meckling in 1976 and preceded by conceptual contributions from Ross and Mitnick in the early 1970s, provides an analytical lens for understanding relationships in which one party (the agent) is delegated authority to act on behalf of another (the principal). In corporate finance and organisational governance, the theory is frequently employed to explain the interactions between managers and shareholders. A central assumption is that agents and principals do not always pursue identical objectives, particularly when information asymmetries exist or when their attitudes toward risk diverge. Such misalignment may give rise to agency conflicts, where managerial decisions prioritize personal interests over the welfare of shareholders.

In the context of market risk, comprising interest rate, inflation, and foreign exchange risk, Agency Theory offers valuable insights into managerial decision-making processes related to risk exposure and expected returns. Managers, as agents, may prefer conservative strategies that minimize volatility and protect their employment security or remuneration structures. Conversely, shareholders typically favour strategies that maximise firm value, even when these involve taking on higher levels of risk. This divergence becomes particularly significant in insurance firms, where investment decisions, risk mitigation practices, and capital management directly affect profitability and solvency. Within this study, Agency Theory provides a conceptual basis for exploring how governance structures and managerial incentives influence the relationship between market risk and firm profitability. By

highlighting the role of internal decision-making dynamics, the theory enhances understanding of how organisational behaviour shapes financial outcomes in the insurance industry.

4.1.3 Institutional Theory

Institutional Theory, which emerged from the foundational work of Selznick (1957) and was later expanded through the influential contributions of Meyer and Rowan (1977) and Scott (2001, 2007), posits that organisational behaviour is shaped not solely by internal efficiency considerations but also by broader external forces. These forces include regulatory requirements, cultural expectations, professional norms, and socially embedded practices. Within this framework, institutions are viewed as enduring systems of rules, routines, and shared beliefs that structure how organisation's functioned and interpret their environments.

For insurance companies, which operate in a highly regulated and socially scrutinized sector, Institutional Theory offers a valuable perspective for understanding how market risk management practices evolve. The industry is characterized by stringent regulatory oversight, established reporting standards, and expectations regarding prudent capital management and underwriting conduct. These institutional pressures influence how insurers respond to fluctuations in interest rates, inflation, and foreign exchange markets, shaping their risk mitigation strategies and financial decision-making processes.

The theory therefore provides a robust foundation for analysing how external norms and legal mandates guide organisational responses to market risk. It suggests that firms act not only to optimize financial outcomes but also to maintain legitimacy and demonstrate compliance with institutionalized standards. In the context of this study, Institutional Theory helps illuminate the broader environmental factors that condition insurers' approaches to managing market risk and pursuing profitability. As such, it forms an integral component of the theoretical framework underpinning the examination of market risk exposure and firm performance.

4.2 Empirical Literature

4.2.1 Interest Rate Risk and Profitability

Ehiogu and Nnamocha (2018) investigated the relationship between interest rates and profitability within Nigeria's insurance sector using a simple regression model. Profitability was assessed through total insurance profit, and the study relied on an ex-post facto design using data spanning 1985–2014. Their analysis indicated that interest rates exerted a positive but statistically insignificant influence on profitability. Although the study contributes to understanding the role of interest rates in financial performance, several limitations are evident. First, the variables employed differ from those utilized in the present study, thereby creating a conceptual gap. Second, the research was undertaken in Nigeria, an environment with economic structures and regulatory conditions distinct from those in Kenya, leading to a contextual gap. Third, the descriptive design used in the study restricted deeper examination of causal relationships, presenting a methodological shortcoming. The current study sought to address these weaknesses by employing a broader set of market risk indicators, selecting variables that more accurately reflect the Kenyan insurance environment, and adopting a more rigorous empirical methodology.

Musiega et al. (2017) examined the effect of interest rate risk on the financial performance of commercial banks in Kenya. Using ROA and ROE as indicators of profitability, the researchers applied multiple panel regression and correlation analysis to data from 44 banks covering 2006–2015. The study combined descriptive survey and correlational research designs. Findings demonstrated a significant and positive association between interest rate risk and bank profitability. While informative, the study adopted different approaches to measuring interest rate risk, which introduces a conceptual mismatch relative to the current study. Additionally, its focus on the banking industry limits its applicability to the insurance sector, which operates under different risk exposure patterns and regulatory frameworks, creating a contextual gap. The present study addresses these limitations by incorporating sector-specific indicators and expanding the analysis to include multiple dimensions of market risk relevant to insurance firms.

4.2.2 Inflation Rate risk and Profitability

Graf et al. (2014) analyzed the influence of inflation risk on financial planning outcomes using sensitivity analysis. Their results indicated that inflation risk plays a substantial role in shaping the risk–return characteristics of financial planning products. However, the study lacked clarity regarding the population under investigation and the specific metrics used to evaluate risk and return. These omissions present a conceptual gap, as the methodological approach did not sufficiently specify how inflation risk was operationalized. In contrast, the present study adopted a more rigorous analytical framework by employing multiple regression and correlation techniques and by incorporating additional market risk variables relevant to the Kenyan insurance sector.

Mwanzia (2024) examined inflation risk—measured through lending rates, interest rates, and Treasury bill rates—and its effect on loan portfolio performance in Kenya's listed commercial banks. The study found a positive and statistically significant association between inflation-related variables and loan portfolio outcomes. Nonetheless, its focus on the banking sector limits the

transferability of findings to the insurance industry, thereby creating a contextual gap. The current study addressed this limitation by integrating market risk indicators that are specifically pertinent to insurance firms and by examining profitability measures tailored to the sector.

Similarly, Almansour et al. (2021) identified a negative and significant relationship between inflation and return on assets (ROA) within Jordan's banking industry. However, the study did not engage with the broader conceptualization of inflation risk, nor did it incorporate additional market-related variables beyond inflation itself. This oversight, combined with the differing economic context, results in both conceptual and contextual gaps. The present study sought to fill these gaps by expanding the scope of market risk variables under consideration and applying the analysis within the Kenyan insurance environment, where risk exposures and profitability dynamics differ substantially from those observed in the banking sector.

4.2.3 Foreign Exchange Risk and Profitability

Muriithi, Muturi and Waweru (2016) analyzed the influence of market risk—captured through foreign exchange and interest rate exposures—on the performance of commercial banks in Kenya, using return on equity as the primary measure of profitability. Their study adopted a Time Series Cross-Sectional design and applied panel regression techniques, concluding that market risk exerts a negative and statistically significant effect on financial performance. Although the study provides important insights into risk–return dynamics within the banking sector, its exclusive focus on banks presents a conceptual limitation, as risk structures and investment profiles differ markedly across financial subsectors. Moreover, because the research did not examine the insurance industry, its findings cannot be readily generalized beyond the banking context, resulting in a contextual gap. The present study sought to address these shortcomings by incorporating additional market risk indicators tailored to the operational and regulatory realities of insurance firms.

He, Fayman and Casey (2014) undertook a longitudinal analysis of major U.S. banks, assessing how fluctuations in currency values affected profitability over a 30-year period from 1978 to 2008. Using multiple panel regression and correlation methods, the authors found a positive association between foreign exchange risk and performance, measured through changes in net earnings. Their results suggest that large financial institutions may possess the capacity to leverage currency movements to their advantage. However, the economic, institutional, and regulatory conditions of the United States differ substantially from those of Kenya, thereby creating a clear contextual gap that limits the applicability of their conclusions in the Kenyan setting. Additionally, the study focused exclusively on banking institutions and did not consider insurance-specific exposures, which further restricts the relevance of its findings to the current research. In response, the present study concentrated on Kenya's insurance sector and employed market risk and profitability indicators that better reflect the unique characteristics of insurance operations.

4.2.4 Firm Size and Profitability

Ortynski (2016) examined the determinants of performance among non-life insurance companies in Poland using multiple panel regression over an eight-year period. Firm size was included as one of the explanatory variables, and the results indicated a positive relationship with both Return on Assets (ROA) and Return on Equity (ROE). While informative, the study was undertaken in a highly developed European market characterized by advanced regulatory structures and mature insurance operations—conditions that differ markedly from those in Kenya. Similarly, Malik (2011), in an analysis of 35 listed insurers in Pakistan, reported a positive and statistically significant association between firm size and ROA. Although these studies contribute to the understanding of how firm size may influence financial performance, neither incorporated a moderating perspective nor considered the unique operational and structural characteristics of the Kenyan insurance industry. The present study seeks to bridge these gaps by examining firm size not merely as an independent determinant but as a moderating variable that may shape the relationship between market risk and profitability.

In contrast, findings from studies conducted in other emerging markets suggest that the effect of firm size on profitability may be more complex. Wolde, Kolech and Dadi (2020), in their investigation of 17 Ethiopian insurance firms, reported a positive but statistically insignificant effect of firm size on profitability. Their study relied on a descriptive design and included macroeconomic factors such as GDP and exchange rates, yet did not fully establish causal relationships at the firm level. Likewise, Ahmeti and Iseni (2022), analysing 65 insurance companies in Kosovo, observed a similarly positive but insignificant relationship between firm size, ROA, and net profit margin. These outcomes imply that firm size may not exert uniform influence across different institutional contexts and its effect may be moderated or overshadowed by other financial and operational dynamics. Notably, both studies treated firm size solely as a direct independent variable, without exploring its potential moderating role in shaping the interaction between financial risk exposures and organisational performance. The present study addresses this gap by explicitly conceptualizing and testing firm size as a moderator within the market risk–profitability relationship.

4.3 Conceptual Framework

The conceptual below framework depicts the relationships between the study variables; independent variables (interest rate risk, inflation rate risk and foreign exchange risk), moderating variable (firm size) and the dependent variable (profitability).

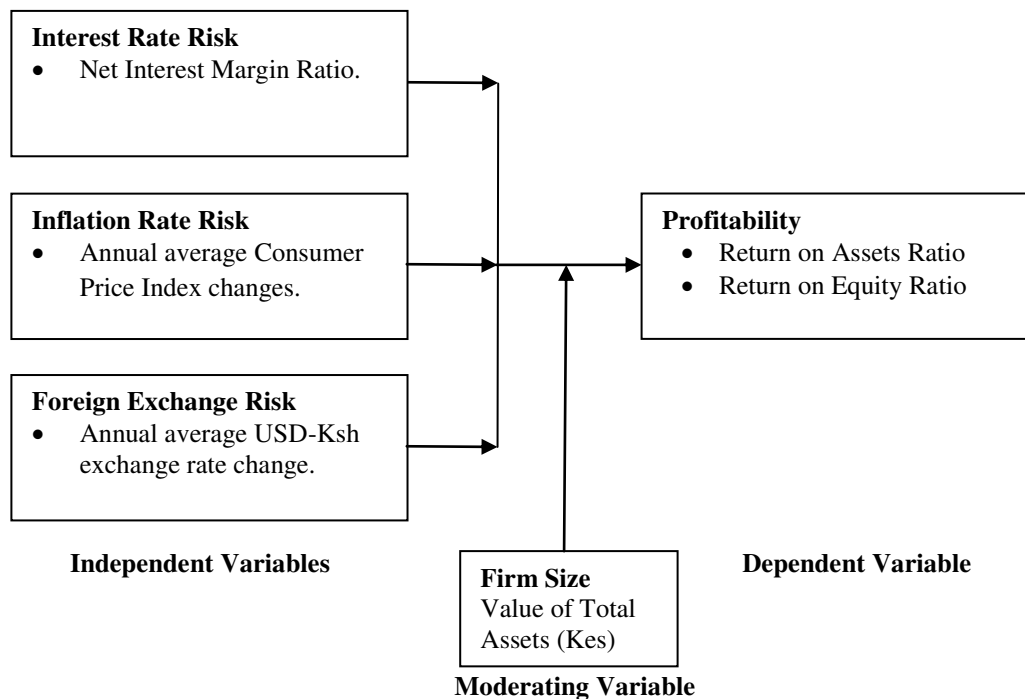


Figure 1: Conceptual Framework

5. Research Methodology

This study was grounded in a positivist philosophical orientation, which posits that the phenomena under examination exist independently of the researcher and are therefore amenable to objective observation and analysis. The nature of the research questions, the analytical techniques applied, the study objectives, and the temporal scope were all consistent with the underlying assumptions of positivism. As outlined by Cazeaux (2017) and Zukauskas, Vveinhardt, and Andriukaitiene (2018), positivism asserts that events and their contextual conditions are external realities, capable of being investigated without distortion from subjective interpretation. Guided by this philosophical stance, the study employed an explanatory research design. Saunders et al. (2009) describe explanatory research as an approach aimed at identifying and understanding causal relationships among variables. Such a design facilitates structured inquiry into how particular variables may influence, or be influenced by, others within a defined context.

6. Research Findings and Discussion

The study applied random effects regression with hierarchical moderation to assess whether firm size-measured by the natural logarithm of total assets-significantly moderates the relationship between market risks and profitability (ROA and ROE) by incorporating interaction terms between firm size and each market risk indicator, and evaluating their statistical significance.

6.1 Moderating Effects of Firm Size on Market Risk and Profitability (ROE)

Table 1: Moderating Effect of Firm Size on Market risk and Return on Equity

Variable	Coefficient	Std. Error	Z	P> z
Interest rate risk	1.0998	0.1281	8.5900	0.0000
Inflation risk	-0.0566	0.3016	-0.1900	0.8510
Foreign exchange risk	-0.0001	0.0021	-0.0600	0.9520
Firm Size (Total Assets)	-0.0080	0.0090	-0.8900	0.3720
Interest rate risk* firm size	0.0234	0.0366	0.6400	0.5220
Inflation risk* firm size	-0.0484	0.1292	-0.3700	0.7080
Foreign exchange risk* firm size	0.0001	0.0003	-0.0100	0.9890
_cons	0.1928	0.0603	3.2000	0.0010

Source: Researcher (2025)

From the findings in Table 1, the following optimal model was developed:

$$ROE_{it} = 0.1928 + 1.0998IRR_{it} - 0.0566InfR_{it} - 0.0001FER_{it} + 0.0080FS_{it} + 0.0234 (IRR*FS) - 0.0484 (InfR*FS) + 0.0001 (FER*FS) + \epsilon_{it}$$

Where:

- ROE_{it}** = Return on Equity of Insurance firm i at time t.
- IRR_{it}** = Interest Rate Risk for Insurance firm i at time t.
- InfR_{it}** = Inflation Risk for Insurance firm i at time t.
- FER_{it}** = Foreign Exchange Risk for Insurance firm i at time t.
- FS_{it}** = Foreign Exchange Risk for Insurance firm i at time t.
- ε_{it}** = the error term.

The analysis examined the moderating effects of firm size on Market risk and Return on Equity (ROE). The findings in Table 1 showed that firm size does not significantly alter these relationships, as all interaction terms between firm size and the market risk indicators were statistically insignificant, given that their corresponding p-values exceeded the 0.05 threshold. The interaction terms for Interest rate risk (B = 0.0234, p = 0.5220), Inflation risk (B = -0.0484, p = 0.7080), and Foreign exchange risk (B = 0.0001, p = 0.9890), along with the direct effect of Firm size (B = -0.0080, p = 0.3720), were also insignificant, leading to the non-rejection of the three null hypothesis (H₀₁, H₀₂, and H₀₃).

6.2 Moderating Effects of Firm Size on Market Risk and Profitability (ROA)

Table 2: Moderating Effect of Firm Size on Market risk and Return on Asset

Variable	Coefficient	Std. Error	Z	P> z
Interest rate risk	1.2589	0.1562	8.0600	0.0000
Inflation risk	-0.2402	0.3672	-0.6500	0.5130
Foreign exchange risk	-0.0006	0.0025	-0.2300	0.8180
Firm Size (Total Assets)	-0.0120	0.0110	-1.1000	0.2730
Interest rate risk* firm size	0.0293	0.0446	0.6600	0.5110
Inflation risk* firm size	-0.0426	0.1574	-0.2700	0.7870
Foreign exchange risk* firm size	0.0001	0.0003	-0.0800	0.9340
_cons	0.2487	0.0736	3.3800	0.0010

Source: Researcher (2025)

From the findings in Table 2, the following optimal model was developed:

$$ROA_{it} = 0.2487 + 1.2589IRR_{it} - 0.2402InfR_{it} - 0.0006FER_{it} - 0.0120FS_{it} + 0.0293 (IRR*FS) - 0.0426 (InfR*FS) + 0.0001 (FER*FS) + \epsilon_{it}$$

Where:

- ROA_{it}** = Return on Assets of Insurance firm i at time t.
- IRR_{it}** = Interest Rate Risk for Insurance firm i at time t.
- InfR_{it}** = Inflation Risk for Insurance firm i at time t.
- FER_{it}** = Foreign Exchange Risk for Insurance firm i at time t.
- FS_{it}** = Foreign Exchange Risk for Insurance firm i at time t.
- ε_{it}** = the error term

The regression results in Table 2 indicate that the moderating variable, firm size, does not significantly have any effect between market risk and Return on Assets (ROA) among insurance firms in Kenya, as evidenced by the insignificance of all interaction terms. Interest rate risk (B = 0.0293, p = 0.5110), Inflation risk (B = -0.0426, p = 0.7870), and Foreign exchange risk (B = 0.0001, p = 0.9340) were all statistically insignificant, along with the direct effect of firm size (B = -0.0120, p = 0.2730), leading to the non-rejection of the three null hypothesis (H₀₁, H₀₂, and H₀₃). These findings imply that the influence of Market risks on profitability remains largely consistent across firms of different sizes, supporting similar conclusions drawn by Mwaurah (2019) and Maniagi (2018), but diverging from Gweyi (2018).

7. Conclusions and Recommendations

The conclusions drawn from this study are informed by the comprehensive regression analyses undertaken to address the three research objectives. The central objective was to assess whether firm size moderates the relationship between market risk and profitability within Kenya’s insurance sector. The empirical findings demonstrated that firm size, measured using the natural logarithm of total assets, and did not exert a significant moderating influence on any of the relationships between the selected market risk variables and the profitability indicators. In addition, the direct effect of firm size on both ROA and ROE was found to be statistically insignificant. These results collectively suggest that firm size neither strengthens nor weakens the impact of market risk on profitability.

This outcome indicates that the capacity to manage or withstand fluctuations in interest rates, inflation, and foreign exchange movements does not improve solely by virtue of an insurer's scale, challenging the commonly held view that larger firms are inherently more resilient. The findings therefore underscore the need for insurance companies, regardless of size, to prioritise robust and strategically designed market risk management practices. Reliance on firm size as a protective mechanism is insufficient; instead, targeted and well-integrated risk mitigation frameworks are essential for sustaining profitability in the face of market volatility.

In light of the study's findings, several recommendations are proposed. First, insurance companies in Kenya should implement comprehensive and standardized risk management practices irrespective of organisational size. Both smaller and larger insurers must adopt well-structured frameworks that address their specific exposures to market risk, rather than relying on firm size as an inherent protective factor. Second, firms should prioritise the monitoring and management of key market risk components, particularly interest rate, inflation, and foreign exchange risks, as these factors demonstrated more substantive relevance to profitability than firm size. Finally, insurance companies, regardless of scale, should ensure the maintenance of adequate capital buffers to withstand financial shocks and mitigate the adverse effects of market volatility on performance. Strengthening capital resilience and enhancing market risk management capabilities are therefore essential for sustaining profitability across the sector.

References

1. Ahmed, N., Ahmed, Z., & Ahmed, I. (2010). Determinants of Capital Structure: A Case of Life Insurance Sector of Pakistan. *European Journal of Economics, Finance and Administrative Sciences*, 6(24), 1450-75.
2. Ahmeti, Y., & Iseni, E. (2022). Factors affecting profitability of insurance companies. Evidence from Kosovo. *Academicus International Scientific Journal*, 13(25), 122-142.
3. Ali, B. J. & Oudat, M. S. (2020). Financial Risk and the Financial Performance in listed Commercial and Investment Banks in Bahrain Bourse. *International Journal of Innovation, Creativity and Change*, 13(12), 160-180.
4. Almansour, A. Y., Alzoubi, H. M., Almansour, B. Y., & Almansour, Y. M. (2021). The effect of inflation on performance: an empirical investigation on the banking sector in Jordan. *The Journal of Asian Finance, Economics and Business*, 8(6), 97-102.
5. Almashhadani, M., & Almashhadani, H. A. (2022). The beneficial of firm size, board size, ownership structure, and independence in developing markets' firm performance: Evidence from Asia. *International Journal of Business and Management Invention*, 11(7), 88-92.
6. Aransi, A. P., Ezema, C. A., Okparaka, V. C., & Uzor Emmanuel, E. (2024). Exchange Rate Volatility and the Growth of General Insurance Business in Nigeria.
7. Asola, A. O., Otieno, S., Onyango, M. (2023). Firm Size and Financial Performance of Insurance Companies Listed at NSE, Kenya. *Journal of Emerging Technologies and Innovative Research*, 10 (5), 634-643.
8. Association of Kenya Insurers (2018). *Insurance Industry Annual Report*. Kenya: AKI.
9. Association of Kenya Insurers (2021). *Insurance Industry Annual Report*. Kenya: AKI.
10. Ayyubi, S., & Widyastutik, A. (2019). The Impact of Macroeconomic Indicators on Islamic Insurance Demand in Indonesia. *Jurnal Ilmu Ekonomi Syariah (Journal of Islamic Economics)*, 11(2), 180-200.
11. Badawi, A. (2017). Effect of credit risk, liquidity risk, and market risk banking to profitability bank (study on devised banks in Indonesia stock exchange). *European Journal of Business and Management*, 9(29), 1-8.
12. Berends, K., Menamin, R., Thanases, P. & Rosen, R. J. (2013). *The sensitivity of life insurance firms to interest rate changes*. Federal Reserve Bank of Chicago.
13. Bohnert, A., Gatzert, N., & Kolb, A. (2015). *Assessing Inflation Risk in Non-Life Insurance*. Working Paper. Department of Insurance Economics and Risk Management Friedrich-Alexander University Erlangen-Nürnberg (FAU).
14. Brainard, L. (2008) "What is the Role of Insurance in Economic Development? *Zurich Government and Industry Thought Leadership Series*, 2.
15. Brand, A. (2018). *Risk in Financial Services*. London: Chartered Institute for Securities & Investment.
16. Brewer, E., Carson, J. M., Elyasiani, E., Mansur, I., & Scott, W. L. (2007). Interest Rate Risk and Equity Values of Life Insurance Companies: A GARCH M Model. *Journal of Risk & Insurance*, 74(2), 401-423. <https://doi.org/10.1111/j.1539-6975.2007.00218.x>
17. Carson, J. M., Elyasiani, E. & Mansur, I. (2008). Market Risk, Interest Rate Risk, and Interdependencies in Insurer Stock Returns: A System-GARCH Model. *Journal of Risk and Insurance*, 75(4), 873-891.
18. Cazeaux, C. (2017). *Art, Research, Philosophy*. London: Taylor & Francis.
19. Charumathi, B (2012). On the Determinants of Profitability of Indian Life Insurers – An Empirical Study. *Proceedings of the World Congress on Engineering*, 1, 978-988.
20. Deloitte (2020). *Insurance Outlook Report 2020/2021*, East Africa. Deloitte & Touche.
21. Deloitte (2024). *Insurance Outlook Report 2024*, East Africa. Deloitte & Touche.
22. Dorofiti, C. & Jakubik, P. (2015). Insurance sector profitability and the macroeconomic environment, *EIOPA Financial Stability Report*, 56-71.

23. Ehiogu, C. P. & Nnamocha, P. N. (2018). Effect of Interest Rate on Profit of Insurance Companies in Nigeria. *International Journal in Management and Social Science*, 6(7), 233-246.
24. Eken, M. H., & Kale, S (2013). Evaluating the Efficiency of Turkish Banks: A Risk and Profitability Approach. *The Business and Economics Research Journal*, 6(1), 53-68.
25. Ekinci, A. (2016). The effect of credit and market risk on bank performance: Evidence from Turkey. *International Journal of Economics and Financial Issues*, 6(2), 427-434.
26. Ekinci, R., & Poyraz, G. (2019). The Effect of Credit Risk on Financial Performance of Deposit Banks in Turkey, *Procedia Computer Science*, 158, 979-987.
27. Fahrul, M., & Rusliati, E. (2016). Credit risk, market risk, operational risk and liquidity risk on profitability of banks in Indonesia. *TRIKONOMIKA: Jurnal Ekonomi*, 15(2), 78-88.
28. Fisher, R. A., & Tippett, L. H. C., (1928). Limiting forms of the frequency distribution of the largest or the smallest member of a sample. *Proceedings of the Cambridge Philosophical Society*, 24, 180-190.
29. Fujianti, L., & Satria, I. (2020). Firm size, profitability, leverage as determinants of audit report lag: Evidence from Indonesia. *International Journal of Financial Research*, 11(2), 61-67.
30. Gacheru C. W. (2021). Financial Risks and Its Effect on Financial Performance of Investment Firms Listed at the Nairobi Securities Exchange in Kenya. *Journal of Finance and Accounting*, 5(2), 86-102.
31. Gnedenko, E. M. (1943). The Limiting Distribution of the Maximum Term in a Random Series. *Ann Math*; 44(3), 423-453.
32. Graf, S., Haertel, L., Kling, A., & Ruß, J. (2014). The impact of inflation risk on financial planning and risk-return profiles. *ASTIN Bulletin: The Journal of the IAA*, 44(2), 335-365.
33. Greene, W.H. (2008). *Econometric Analysis* (6th ed.). Upper Saddle River, N.J.: Prentice Hall
34. Gumbel, E.J. (1958). *Statistics of Extremes*. Columbia University Press, New York.
35. Gweyi, M. O. (2018). *Influence of Financial Risk on Financial Performance of Deposit Taking Savings and Credit Co-Operatives Societies in Kenya*. Unpublished PhD Thesis. Jomo Kenyatta University of Agriculture and Technology.
36. He, L. T., Fayman, A., & Casey, K. M. (2014). Bank profitability: The impact of foreign currency fluctuations. *Journal of applied business and economics*, 16(2), 98-104.
37. Horcher, K, A. (2005). *Essentials of Financial Risk Management*. John Wiley & Sons, Inc.
38. Insurance Europe (2013). *Currency Risk*, Briefing Note. https://www.insuranceurope.eu/sites/default/files/attachments/Briefing%20note%20currency%20risk_0.pdf /
39. Insurance Regulatory Authority (2023). *Insurance Industry Annual Report, Kenya*: IRA.
40. Kariuki, F. W. (2021). Interest rate risk and value of the firm among private equity firms in frontier markets: Insights from deposits taking savings and credit cooperatives in Kenya. *International Academic Journal of Economics and Finance*, 3(6), 388-404.
41. Lambe, I. (2015). Assessing the impact of exchange rate risk on banks performance in Nigeria. *Journal of Economics and Sustainable Development*, 6(6).
42. Malik H. (2011). Determinants of insurance companies' profitability: An analysis of insurance sector of Pakistan. *Academic Research International*, 1(3), 315-321.
43. Mange, J. I. (2000). Measuring Foreign Exchange Risk in Insurance Transactions. *North American Actuarial Journal*, 4(2), 88-100. doi:10.1080/10920277.2000.10595905
44. Maniagi, G. M. (2018). *Influence of Financial Risk on Financial Performance of Commercial Banks in Kenya*. Unpublished PhD Thesis. Jomo Kenyatta University of Agriculture and Technology.
45. Mansyur, N. (2017). Impact Financial Risk on Financial Performance Bank in Indonesia. *The International Journal of Business & Management*, 5(10), 305-310.
46. Markowitz, H. (1952). Modern portfolio theory. *Journal of Finance*, 7(11), 77-91.
47. Matayo, W., & Muturi, W. (2018). Effect of financial risk on financial performance of large-scale supermarkets in Nairobi County, Kenya. *International Journal of Social Sciences and Information Technology*, 4(10), 574-591.
48. Mboga, C. (2015). *The effect of interest rate on financial performance of insurance companies in Kenya* (Doctoral dissertation, University of Nairobi).
49. Meyer, J.W. & Rowan, B. (1977). Institutionalized organizations: formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340-363.
50. Morara, K., & Sibindi, A. B. (2021). Determinants of financial performance of insurance companies: Empirical evidence using Kenyan data. *Journal of risk and financial management*, 14(12), 566.
51. Muriithi, J. G., Muturi, W. M., & Waweru, K. M. (2016). The Effect of Market Risk on Financial Performance of Commercial Banks in Kenya. *Journal of Finance and Accounting*; 4(4), 225-233. <https://doi.org/10.11648/j.jfa.20160404.18>
52. Muriithi, J. G. (2016). *Effect of Financial Risk on Financial Performance of Commercial Banks in Kenya*. Unpublished PhD Thesis. Jomo Kenyatta University of Agriculture and Technology.
53. Musiega, M., Olweny, T., Mukanzi, C., & Mutua, M. (2017). Influence of interest rate risk on performance of commercial banks in Kenya. *Economics and finance review*, 5(2), 14-23.
54. Mutwiri, N, W. (2019). *Systematic Risk and Performance of the Stock Market in Kenya*. Unpublished PhD Thesis. Kenyatta University.

55. Mwanzia, S. M. (2024). The Influence of Inflation on Loan Portfolio Performance Amongst Listed Commercial Banks in Kenya. *Journal of Business and Management*, 26(2), 1-13.
56. Mwaurah, I. G. (2019). *Influence Of Financial Risk on Stock Returns of Commercial Banks Listed in Nairobi Securities Exchange*. Unpublished PhD Thesis. Jomo Kenyatta University of Agriculture and Technology.
57. Namasake, K. W. (2016). *The Effect of Market Risk on The Financial Performance of Commercial Banks in Kenya* (Doctoral dissertation, University Of Nairobi).
58. National Treasury (2013). *Sector Plan for Financial Services, 2013 – 2017*. Kenya: National Treasury.
59. Nguyen, T. N. L., & Nguyen, V. C. (2020). The determinants of profitability in listed enterprises: A study from Vietnamese stock exchange. *Journal of Asian Finance, Economics and Business*, 7(1), 47-58. <https://doi.org/10.13106/jafeb.2020.vol7.no1.47>
60. Niresh, J. A. & Velnampy, T. (2014). Firm Size and Profitability: A Study of Listed Manufacturing Firms in Sri Lanka. *International Journal of Business and Management*, 9(4). <https://doi.org/10.5539/ijbm.v9n4p57>
61. Noor, J.A., & Abdalla, A. (2014). The Impact of Financial Risks on the Firms' Performance. *European Journal of Business and Management*, 6, 97-101.
62. Nzioka, O. M., & Maseki, F. M. (2017). Effects of hedging foreign exchange risk on financial performance of non-banking companies listed at the Nairobi securities exchange. *European Scientific Journal*, 13(10), 402-416.
63. Odubuasi, A., Wilson-Oshilim, U., & Ifurueze, M. (2020). Effect of market risks on the financial performance of firms in Nigeria. *European Journal of Accounting, Auditing and Finance Research*, 8(6), 28-45.
64. Offiong *et al.*, (2020). Exchange rate volatility and Insurance Sector Performance in Nigeria: A long-run investigation. *Academy of Accounting and Financial Studies Journal*, 24(3).
65. Ogutu, S. O. (2013) *Purchasing power risk and the performance of non-life insurance companies in Kenya*. Unpublished MBA thesis. University of Nairobi.
66. Omar, A., Taufil Mohd, K. N., & Ahmad, N. (2017). Exposure to foreign exchange rate risk: A review of empirical evidences. *Journal of Insurance and Financial Management*, 2(5), 79-91.
67. Omari, L., & Mungai, M. (2021). Effect of inflation risk on stock market returns in Kenya. *International Journal of Economics, Commerce and Management*, 9(4), 1–15.
68. Ortyński, K. (2016). Determinants of Profitability of General Insurance Companies Performance in Poland. *Central European Review of Economics & Finance*, 12(2), 53–66.
69. Papadamou, S., & Siriopoulos, C. (2014). Interest rate risk and the creation of the Monetary Policy Committee: Evidence from banks' and life insurance companies' stocks in the UK. *Journal of Economics and Business*, 71, 45–67. doi:10.1016/j.jeconbus. 2013.09.001
70. Parlak, D. & Ilhan, H. (2016). Foreign Exchange Risk and Financial Performance: The Case of Turkey. *International Review of Economics and Management*, 4(2), pp.1–15.
71. Pickands, J. (1975). Statistical Inference Using Extreme Order Statistics. *Annals of Statistics*, 3, 119-131.
72. Popov, V., & Stutzmann, Y. (2003). How is foreign exchange risk managed? An empirical study applied to two Swiss companies. *University of Lausanne*.
73. Reddic, W. D. (2021). Under pressure: investment behaviour of insurers under different financial and regulatory conditions. *The Geneva Papers on Risk and Insurance-Issues and Practice*, 46(1), 1-20.
74. Rothwell, K (2019). *International Certificate in Wealth and Investment Management*. London: Chartered Institute for Securities & Investment.
75. Rudd, J. B. (2022). Why do we think that inflation expectations matter for inflation? (And should we?). *Review of Keynesian Economics*, 10(1), 25-45.
76. Saunders M., Lewis P., & Thornhill, A. (2009). *Research methods for business studies* Fifth Ed Pearson educational centre Edinburgh Gate, Harlow, and Essex CM 202 J. England.
77. Scott, W.R. (2007). *Institutions and organizations: Ideas and interests*. Thousand Oaks, CA: Sage Publications.
78. Selznick, P. (1957). *Leadership in administration: A sociological interpretation*. Harper & Row.
79. Shiu, Y.-C., Wang, C.-F., Adams, A., & Shin, Y.-C. (2012). On the determinants of derivatives hedging by insurance companies: Evidence from Taiwan. *Asian Economic and Financial Review*, 2(4), 538–552.
80. Siopi, E., & Poufinas, T. (2023). Impact of internal and external factors on the profitability and financial strength of insurance groups. *International Advances in Economic Research*, 29(3), 129-149.
81. Surajit, B. & Saxena, A. (2009). *Does the Firm Size Matter? An Empirical Enquiry into the performance of Indian Manufacturing Firms*. Available at SSRN: <http://ssrn.com/abstract=1300293>
82. Suwanmalai, W., & Zaby, S. (2022). How Do Life Insurers Respond to a Prolonged Low-Interest Rate Environment? *A Literature Review. Risks*, 10(8), 155.
83. Swiss Re Institute (2018). *World insurance in 2017*. Annual Report, Swiss Re Institute.
84. Tafri *et al.*, (2009). The Impact of Financial Risks on Profitability of Malaysian Commercial Banks: 1996-2005. *International Journal of Social, Behavioural, Educational, Economic, Business and Industrial Engineering*, 3(6), 1320 – 1334.

85. Tasdemir, A., & Alsu, E. (2024). The Relationship between Activities of the Insurance Industry and Economic Growth: The Case of G-20 Economies. *Sustainability*, 16(17), 7634.
86. Von Tamakloe, B., Boateng, A., Mensah, E. T., & Maposa, D. (2023). Impact of risk management on the performance of commercial banks in Ghana: A panel regression approach. *Journal of Risk and Financial Management*, 16(7), 322.
87. Voutilainen, R. (2022). Notes on insurance company investments. *Journal of Insurance and Financial Management*, 6(3), 116-129.
88. Wolde, T. H., Kolech, A. G., & Dadi, M. D. (2020). Factors affecting profitability of insurance companies in Ethiopia. *Journal of International Trade, Logistics and Law*, 6(2), 106-118.
89. Yamoah, S. A. (2023). Impact of inflation and interest rate on life insurance companies in Ghana: A post-Covid analysis. *Journal of Insurance and Financial Management*, 7(6), 12-27.
90. Zukauskas, P., Vveinhardt, J. & Andriukaitiene, R. (2018). *Philosophy and paradigm of scientific research. Management Culture and Corporate Social Responsibility*. doi: 10.5772/intechopen.70628.