INSURANCE RISK MANAGEMENT AND GROSS FIXED CAPITAL FORMATION IN NIGERIA

Wuraola Rebecca VAUGHAN
MGS2104714

FACULTY OF MANAGEMENT SCIENCE
DEPARTMENT OF ACTUARIAL SCIENCE AND INSURANCE
UNIVERSITY OF BENIN
BENIN CITY

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF ACTUARIAL SCIENCE AND INSURANCE, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE DEGREE B.Sc. IN INSURANCE, UNIVERSITY OF BENIN, BENIN CITY.

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DECLARATION

I **Wuraola Rebecca VAUGHAN** do hereby declare that this project is undertaken by me in the Department of Actuarial Science and Insurance, Faculty of Management Sciences, University of Benin, Benin City, Edo State under the supervision of Dr. Bright Oni

The work embodied in this project has not been previously submitted in candidature for any degree and is not concurrently being submitted for any other degree.

_____ _____

Wuraola Rebecca VAUGHAN **Date**

CERTIFICATION

We, the undersigned certify that this project work is adequate in scope and was carried out by **Wuraola Rebecca VAUGHAN** with the Matriculation Number **MGS2104714**, in the Department of Actuarial Science and Insurance, Faculty of Management Science, University of Benin, Benin City, Edo State, Nigeria in partial fulfillment of the requirements for the award of B.Sc Degree in Actuarial Science.

_____ **Date**: _____

Dr. Bright Oni
(Project Supervisor)

_____ **Date: _____**

Mrs. Izedomi. I. M
(Project Co-Ordinator)

_____ **Date: _____**

Dr. O. I. Omoruyi Aigbovo
Head of Department

DEDICATION

This project is dedicated to the Almighty and Everlasting God whose grace and favour has illuminated my path. This work is also dedicated to my amazing parents, Mr. and Mrs. **VAUGHAN** whose endless love and encouragement have strengthen me all through my journey to school.

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ABSTRACT

This study examines the impact of insurance risk management on gross fixed capital formation in Nigeria. The research objectives are to evaluate the impact of life, motor, fire, and accident insurance claims on gross fixed capital formation in Nigeria, determine the factors that influence insurance risk management, and investigate the relationship between insurance risk management and gross fixed capital formation in Nigeria. The study employs an ex-post facto research design, targeting all registered insurance companies in Nigeria and using secondary data collected over a period of 23 years. The findings suggest that motor and fire insurance claims have a significant impact on gross fixed capital formation in Nigeria, while life and accident insurance claims do not have a significant impact. It was recommended, among others, that the Nigerian government should invest in creating an environment that encourages proper risk management practices within the insurance industry. This could include incentivizing companies to conduct risk assessments, develop risk management strategies and invest in risk management technologies.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The insurance industry plays a crucial role in the development and stability of economies across the world, both in developed and developing countries like Nigeria. Its importance lies in its ability to absorb and redistribute risks, helping individuals, businesses, and governments manage the financial consequences of unforeseen events. Economic activities whether in agriculture, manufacturing, services, or infrastructure are constantly exposed to various forms of risk, such as natural disasters, market volatility, theft, accidents, and liability claims. Without adequate mechanisms for managing these risks, economic actors would be forced to hold large precautionary savings or forgo profitable but risky investments, which can significantly slow down economic progress.

Insurance serves as a key risk management tool by providing financial protection against uncertain events. Through pooling resources (premiums) and spreading risks, insurance companies allow households and firms to transfer risks they cannot bear individually. This reduces uncertainty and encourages entrepreneurial activity, investment, and innovation. Moreover, insurance enables firms to focus on their core operations without the constant fear of catastrophic losses. According to Levine (2004), even though limited studies have directly measured this, insurance activities contribute

significantly to economic growth by improving financial stability, promoting better risk management, enabling capital accumulation, and softening the negative impacts of random shocks on the economy. Specifically, insurance can help smooth consumption and investment patterns, avoid liquidity crunches after losses, and support long-term economic planning.

One critical pathway through which insurance influences economic growth is gross fixed capital formation (GFCF), which refers to the net investment in fixed assets such as buildings, machinery, equipment, and infrastructure. GFCF is a key indicator of a country's productive capacity and long-term growth prospects. By mobilizing long-term funds from premiums and reserves, the insurance sector contributes significantly to the pool of investible capital in an economy. These funds, when channeled into productive investments, boost capital stock, increase output, and improve employment opportunities, thereby fostering sustainable development.

However, the ability of insurance companies to fulfill this role effectively depends on how well they manage their own risk exposures. Insurance companies are themselves exposed to underwriting risk, investment risk, liquidity risk, operational risk, and other market risks. Poorly managed risk exposure can lead to financial instability, large claim payouts, reduced profitability, or even insolvency, which undermines their ability to pay claims and fulfill their financial intermediation role. Kadi (2003) notes that many

insurance companies, particularly in developing countries, fail to adequately study the expected claims profile of their clients or put in place structured frameworks for risk reduction. This failure leads to a buildup of claims and financial losses, which in turn weakens their capacity to contribute effectively to the broader economy. Magezi (2003) further emphasizes that poor risk management practices ultimately lead to weak financial performance, eroded capital bases, and reduced trust in the insurance industry.

Given these realities, insurance risk management the process of identifying, assessing, controlling, and minimizing risks that threaten the financial health of insurance firms becomes a critical area of focus. Well-designed risk management frameworks help insurance companies remain solvent, competitive, and able to fulfill their role as financial intermediaries that support capital formation. In the Nigerian context, where the economy faces significant challenges such as underinvestment, infrastructure gaps, and financial sector volatility, the relationship between insurance risk management and gross fixed capital formation deserves closer examination. How effectively the Nigerian insurance sector manages its risks may determine its ability to mobilize long-term capital and support investments that drive economic growth.

1.2 Statement of the Problem

There have been a variety of conclusions about the efficiency and effectiveness of

insurance from various economies around the world. Due to differences in financial development, this has happened (Levine, 1999, 2004). Researchers have concentrated on banks and the expansion of the economy, paying less attention to non-bank financial institutions like insurance. There hasn't been much research done on the kind and strength of the connection between fixed capital formation and insurance risk management in Nigeria. The debate over how insurance risk management affects gross fixed capital creation in Nigeria places a research load on the field, and figuring out how gross fixed capital formation reacts to insurance is still an empirical difficulty. As a result, the insurance industry in Nigeria is still expanding slowly and unevenly, particularly in the field of general insurance policies. As a result, there is now a significant degree of risk involved in businesses' and investors' investments, as well as in the economy as a whole.

This study aims to address this gap because it cannot be guaranteed that the conclusions on the economies of other countries would also apply to Nigeria's economy today. Additionally, the study's conclusions will aim to address queries put forth by financial analysts, investors, the government, and even individuals. Therefore, the purpose of this study is to determine whether there is a connection between gross fixed capital formation and insurance risk management. What effect does insurance risk management have in Nigeria?

1.3 Research Questions

The following research questions will serve as a guide for the study, based on the study's objectives.

i. To what extent does life insurance claims impact gross fixed capital formation `in Nigeria?
ii. To what extent does motor insurance claims affect gross fixed capital formation in Nigeria?
iii. To what extent does fire insurance claim influence gross fixed capital formation in Nigeria?
iv. To what extent does accident insurance claim affect gross fixed capital formation in Nigeria?

1.4 Objectives of the Study

The main objective of the study is to examine how insurance risk management affects Nigeria's gross fixed capital formation is the study's main goal. The objectives include:

i. To evaluate the impact of life insurance claims on gross fixed capital formation in Nigeria
ii. To measure the effect of motor insurance claims on gross fixed capital formation in Nigeria

iii. To assess the influence of fire insurance claims on gross fixed capital formation in Nigeria

iv. To investigate the consequence of accident claims on gross fixed capital formation in Nigeria.

1.5 Research Hypotheses

H_{01}: There is no significant relationship between life insurance claims and gross fixed capital formation in Nigeria.

H_{02}: There is no significant relationship between motor insurance claims and gross fixed capital formation in Nigeria.

H_{03}: There is no significant relationship between fire insurance claims and gross fixed capital formation in Nigeria.

H_{04}: There is no significant relationship between accident insurance claims and gross fixed capital formation in Nigeria

1.6 Scope of the Study

The goal of this study is to investigate the response of gross fixed capital formation to the activities of insurance risk management in Nigeria. The study will cover the period between 1998 and 2020; the period chosen is justified by the availability of data for this study. The study will concentrate on critically examining the types of

insurance risks and risk management practices employed by insurance companies in Nigeria.

1.7 Limitations of the Study

i. **Limited scope:** The study's reliance on secondary quantitative data may limit the scope of the research, as the data may not include all relevant information about insurance risk management and its impact on gross fixed capital formation in Nigeria.

ii. **Data availability:** The availability of data on insurance claims is also limited, which could impact the ability to fully analyze the impact of each type of claim (life, motor, fire, and accident) on gross fixed capital formation.

iii. **Data quality:** The quality of the secondary data used in the study may be questionable, which could impact the accuracy and validity of the findings.

iv. **Data comparability:** The secondary data used in the study may not be comparable across different time periods or regions, which could impact the ability to draw valid conclusions about the impact of insurance claims on gross fixed capital formation in Nigeria.

v. **Causality:** The study's use of secondary data may make it difficult to establish causality between insurance claims and gross fixed capital formation, as other factors may also be influencing the relationship.

1.8 Significance of the Study

Due to the significant contributions, it will make, this work will be significant to investors, financial analysts, and insurance companies. It will assist users in better comprehending risk management strategies and how they impact the development of fixed capital. It would assist Nigerian insurance companies in enhancing their methods of risk management and executing practical strategies to increase capital development. The government will use this information to help create insurance regulations in Nigeria, which will affect capital formation there. By critically analyzing how insurance risk management influences fixed capital formation this research seeks to add to the body of already-existing knowledge in the field.

1.9 Definition of Operational Terms

Insurance: A contract in which one party agrees to compensate the other party for any losses or damages they may incur in exchange for a premium payment.

Risk management: The process of identifying, assessing, and prioritizing potential risks and implementing measures to mitigate or prevent them.

Gross fixed capital formation: The value of new fixed assets (such as buildings, machinery, and equipment) added to a country's economy during a specific period of time.

Life insurance: A contract in which a person pays a regular premium to an insurance

company in exchange for a payout to their beneficiaries upon their death.

Motor insurance: A type of insurance that covers the cost of damage or loss to a vehicle, as well as liability for any injuries or deaths caused by the vehicle.

Fire insurance: A type of insurance that covers the cost of damage or loss caused by fire.

Accident insurance: A type of insurance that covers the cost of medical expenses and other damages resulting from an accident.

Mitigation: The process of reducing or preventing the impact of a risk.

CHAPTER TWO

LITERATURE REVIEW

In this chapter, the existing literature on insurance risk management and gross fixed capital formation in Nigeria is critically reviewed. Conceptual review, theoretical review, and empirical review are the three main sections of the chapter.

- Conceptual Review
- Risk Management Practices in the Nigerian Insurance Sector
- Gross Fixed Capital Formation in Nigeria: An Overview
- Insurance Risk Management and Investment Behaviour in Nigeria
- Theoretical Review
- Insurance and Economic Development
- Gaps in the Theory
- Empirical Review of Related Studies
- Summary of Literature Review

2.1 Conceptual Review

Insurance, risk management, and gross fixed capital formation (GFCF) are interrelated concepts crucial for understanding the dynamics of economic development,

particularly in developing economies like Nigeria. Insurance is generally defined as a contractual agreement in which a party (the insurer) undertakes to compensate another party (the insured) for specific losses or damages in exchange for periodic payments called premiums. Fundamentally, insurance serves as a risk transfer mechanism, redistributing potential financial losses from individuals and businesses to a collective pool managed by insurers (Outreville, 2015). In modern financial systems, insurance plays a critical role in absorbing shocks, supporting entrepreneurship, and enabling long-term investments. Risk management refers to the process of identifying, analyzing, and mitigating uncertainty in investment and operational activities. In the context of insurance, risk management involves techniques adopted by insurance firms and other economic agents to assess and minimize financial loss exposure. Effective risk management is necessary to maintain the solvency of insurance firms, protect policyholders, and ensure the sustainable operation of financial markets. The Nigerian insurance industry, for example, has gradually embraced modern enterprise risk management (ERM) frameworks as part of regulatory reforms introduced by the National Insurance Commission (NAICOM) to enhance transparency and accountability (Akinlo & Apanisile, 2016).

Gross Fixed Capital Formation (GFCF)**,** as defined by the World Bank, refers to the net increase in physical assets within an economy during a specified period. It

encompasses infrastructure, machinery, buildings, and other fixed assets that contribute to productive capacity. GFCF is often used as an indicator of long-term investment and economic health, as it reflects an economy's ability to expand its productive base. In Nigeria, GFCF has been a focal point of macroeconomic policy, especially in the context of the nation's Vision 2020 and Economic Recovery and Growth Plan (ERGP), which aim to increase capital investment in both the public and private sectors (World Bank, 2021). The nexus between insurance and GFCF lies in the ability of insurance to reduce uncertainty, facilitate long-term planning, and protect capital investments. Without adequate insurance coverage, businesses may be reluctant to commit resources to capital-intensive projects due to the high risk of loss. Conversely, well-functioning insurance markets stimulate GFCF by safeguarding investments, encouraging foreign direct investment (FDI), and ensuring the continuity of economic activities even in adverse conditions. Thus, understanding the dynamics of insurance risk management is essential in evaluating its contribution to capital formation in Nigeria's economy.

Additionally, investment behaviour defined as the decision-making patterns of investors in allocating resources can be heavily influenced by the perceived risk and the availability of insurance products. The presence of robust risk management systems reassures investors, thereby stimulating GFCF. The Nigerian context reveals a complex interplay between insurance penetration, investor confidence, macroeconomic stability,

and capital formation—a relationship this study seeks to explore in depth. The concepts of insurance, risk management, and gross fixed capital formation form the foundational pillars of this research. Their interdependence within the Nigerian economic environment highlights the necessity of studying how insurance risk management practices affect the scale and quality of capital formation efforts.

2.1.1 Risk Management Practices in the Nigerian Insurance Sector

Risk management is an essential function of the insurance industry, particularly in volatile economic environments such as Nigeria. Effective risk management enables insurance companies to identify, assess, and control the diverse risks inherent in their operations, thereby safeguarding their financial stability and ensuring reliable claims payment. In Nigeria, where the insurance sector is still evolving, the adoption and implementation of comprehensive risk management practices are critical for market credibility, policyholder confidence, and overall sectoral growth. The Nigerian insurance industry operates under the regulatory oversight of the National Insurance Commission (NAICOM)**,** which mandates all insurers to implement enterprise-wide risk management (ERM) frameworks. This approach extends beyond underwriting risks to include operational, financial, compliance, reputational, and strategic risks. Over the past decade, NAICOM has introduced reforms to improve risk culture and governance standards within insurance companies, including the Risk-Based Supervision (RBS) framework that

emphasizes the alignment of capital requirements with the risk profile of insurers (NAICOM, 2020).

One of the notable risk management initiatives in the Nigerian insurance landscape is the adoption of Solvency II-aligned principles, aimed at ensuring that insurance firms maintain adequate capital buffers to absorb adverse shocks. Insurers are required to undertake regular risk assessments, stress testing, and scenario analysis to gauge their vulnerability to economic downturns, natural disasters, and other systemic shocks. These practices are designed to promote resilience and prevent the collapse of institutions due to unanticipated losses (Ezirim & Muoghalu, 2021). Moreover, Nigerian insurers increasingly use risk-based pricing and actuarial models to quantify and price risks accurately. The application of actuarial science in underwriting has improved with advances in data analytics, although many insurers still face challenges related to data quality, limited access to historical claims information, and lack of skilled actuarial personnel. Despite these constraints, firms that have invested in robust data infrastructure and actuarial capacity report better claims experience and customer retention rates (Adegbite & Agu, 2019).

Another critical component of risk management in the Nigerian insurance sector is reinsurance. Reinsurance arrangements allow insurers to transfer portions of their risk portfolios to other firms, thereby spreading risk and minimizing potential losses from

high-severity events. In Nigeria, local insurers often partner with both domestic and international reinsurance companies to manage exposures, particularly in high-risk areas such as oil and gas, aviation, and construction. NAICOM's regulations also promote local content in reinsurance, mandating insurers to exhaust local reinsurance capacity before turning to foreign partners, in order to build domestic capacity and retain premiums within the economy (NAICOM, 2018). Corporate governance and internal controls are also central to risk management in the sector. Nigerian insurance companies are required to establish risk management committees, compliance units, and internal audit functions to monitor operations and ensure adherence to industry regulations. The integration of Enterprise Risk Management (ERM) principles, although still emerging, is becoming a standard best practice among leading firms. ERM provides a holistic view of organizational risks and ensures that risk-taking is aligned with strategic objectives (Ogboi & Ukpong, 2022).

However, despite these frameworks and regulatory advances, the Nigerian insurance sector still faces significant challenges in implementing effective risk management. These include limited technical expertise, poor corporate governance in some firms, undercapitalization, fraudulent claims, and low insurance penetration. Additionally, macroeconomic instability characterized by currency depreciation, inflation, and interest rate volatility exposes insurers to financial risks that are often difficult to

hedge against locally. To mitigate these challenges, stakeholders advocate for improved capacity building, the adoption of technology-driven risk management tools**,** enhanced regulatory enforcement, and deeper engagement with international best practices. If effectively implemented, these measures can strengthen the Nigerian insurance sector's capacity to manage risk, enhance public trust, and improve its contribution to gross fixed capital formation and economic development.

2.1.2 Gross Fixed Capital Formation in Nigeria: An Overview

Gross Fixed Capital Formation (GFCF) is widely recognized as a key driver of long-term economic growth and structural transformation, particularly in developing countries like Nigeria. GFCF refers to the acquisition of fixed assets such as infrastructure, machinery, equipment, buildings, and other physical capital used in the production of goods and services. It is a critical component of gross domestic product (GDP), serving as a measure of the economy's investment in expanding its productive capacity over time. In the context of Nigeria's development trajectory, GFCF plays a central role in industrialization, job creation, technological advancement, and infrastructure development. In Nigeria, the trend in GFCF has been largely influenced by both domestic and external macroeconomic variables. Historically, GFCF has fluctuated in response to changes in oil prices, foreign direct investment (FDI), inflation, exchange rate volatility, interest rates, and public investment policies. According to data from the

World Bank (2022), Nigeria's GFCF as a percentage of GDP averaged around 15% between 2015 and 2021 below the 25% threshold generally considered necessary for sustained economic growth in developing economies. This comparatively low level of capital formation reflects structural challenges such as limited access to finance, insecurity, unstable political environment, weak infrastructure, and policy inconsistencies.

A significant share of Nigeria's GFCF comes from public sector investment, particularly in infrastructure projects funded through government budgets, development aid, and concessional loans. While the federal government has made efforts to increase capital expenditure particularly under frameworks like the Economic Recovery and Growth Plan (ERGP) and the National Development Plan (2021–2025) implementation challenges, bureaucratic bottlenecks, and corruption have constrained the impact of such investments (Federal Ministry of Finance, Budget, and National Planning, 2021). In the private sector, limited access to long-term credit and a relatively shallow capital market have restricted firms' ability to invest in fixed capital assets. One of the key inhibitors of GFCF in Nigeria is the lack of effective risk mitigation mechanisms**,** which discourages both domestic and foreign investors from committing resources to long-term projects. This is where the role of insurance becomes indispensable. In environments characterized by high uncertainty and exposure to risks ranging from theft and fire to natural disasters and political instability investors require safeguards that can protect their capital. The

absence or inadequacy of insurance coverage raises the perceived risk premium on investments, thereby reducing the volume and quality of GFCF. Conversely, a well-developed insurance sector, offering reliable risk management products, can catalyze investment by reducing uncertainty and enhancing investor confidence (Ujunwa & Modebe, 2017).

The composition of GFCF in Nigeria has also evolved over time. While traditional sectors like agriculture and manufacturing continue to receive capital investments, there has been an increasing concentration in real estate, telecommunications, and energy. These sectors typically involve high fixed costs and require significant upfront investment, making them particularly sensitive to risk exposure. The presence of insurance, including engineering insurance, property insurance, and business interruption coverage, can facilitate these investments by providing financial protection and enabling project continuity in the face of disruption. Efforts to stimulate GFCF in Nigeria have also involved policy reforms aimed at improving the business environment. Programs such as the Presidential Enabling Business Environment Council (PEBEC) and the Central Bank's development finance initiatives (e.g., Anchor Borrowers Programme, Real Sector Support Facility) are designed to enhance capital flows into productive sectors. However, without complementary investment in risk

management infrastructure including insurance services the effectiveness of such programs remains limited.

It is also noteworthy that Nigeria's GFCF is increasingly being shaped by global factors such as climate change, digital transformation, and green financing. Investments in renewable energy, climate-resilient infrastructure, and digital connectivity are gaining traction, and these areas demand sophisticated risk management tools that only a robust insurance industry can provide. Therefore, strengthening the insurance sector's capacity is not just a matter of financial sector development but also a prerequisite for sustainable capital formation. Gross fixed capital formation remains a cornerstone of Nigeria's economic development agenda. Despite persistent challenges, it holds vast potential for transforming the country's economic landscape. The role of insurance in facilitating and protecting such investments cannot be overstated. A strong, responsive, and innovative insurance sector can help unlock the capital formation necessary for inclusive and sustainable growth in Nigeria.

2.1.3 Insurance Risk Management and Investment Behaviour in Nigeria

Insurance risk management plays a pivotal role in shaping investment behaviour, particularly in economies characterized by macroeconomic instability, infrastructural deficits, and high-risk exposure like Nigeria. In essence, the availability and effectiveness

of insurance risk management systems determine the extent to which individuals, corporations, and institutional investors are willing to commit financial resources to long-term investments, including gross fixed capital formation (GFCF). In the Nigerian context, the relationship between insurance risk management and investment behaviour is complex, influenced by the maturity of the insurance market, public trust, regulatory effectiveness, and investor perception of risk. At its core, insurance risk management reduces uncertainty**,** allowing investors to make more informed and confident investment decisions. When investors are assured that their capital is protected against possible losses whether from fire, theft, political violence, or natural disasters they are more inclined to pursue capital-intensive projects. This confidence facilitates fixed capital investments in sectors such as agriculture, construction, manufacturing, and energy. Empirical evidence suggests that in economies where the insurance sector is well-developed and risk management frameworks are robust, investment activity is significantly higher and more diversified (Eze & Okoye, 2016).

In Nigeria, however, the link between insurance risk management and investment behaviour is still developing. Many potential investors, particularly small and medium-scale enterprises (SMEs), lack awareness of the benefits of insurance or perceive the process as burdensome and untrustworthy. These negative perceptions are often rooted in past experiences with delayed claims settlement, poor customer service, and limited

product innovation. Consequently, many businesses continue to operate without adequate insurance coverage, making them highly vulnerable to shocks that can halt operations and erode capital investment (Olaniyi, 2020). Despite these challenges, there is a growing recognition among large corporations and institutional investors in Nigeria that risk mitigation is a strategic component of investment planning**.** Multinational firms and foreign investors, in particular, often require comprehensive insurance packages including political risk insurance, business interruption insurance, and asset protection policies as prerequisites for project financing. This trend has spurred some Nigerian insurance firms to improve their underwriting practices, invest in actuarial modeling, and develop specialized products tailored to complex investment needs (Chukwuma & Okonkwo, 2019).

The Nigerian government's push for public-private partnerships (PPPs) in infrastructure development further underscores the importance of insurance in investment behaviour. Investors involved in road construction, power generation, and housing development are often exposed to numerous risks including regulatory uncertainty, cost overruns, and unforeseen delays. Through insurance coverage and risk-sharing arrangements, the government can de-risk these projects and make them more attractive to private capital. Such strategies are vital for achieving the country’s infrastructure goals and increasing GFCF. Furthermore, insurance enhances financial system stability**,** which

indirectly influences investment behaviour. By pooling risks and offering protection across various sectors, the insurance industry helps mitigate systemic risks that could destabilize the economy. Stable economic conditions, in turn, encourage both domestic and foreign investment. When investors trust that adverse events will not lead to total financial ruin, they are more willing to invest in long-term projects that contribute to national development (Adenubi & Yusuf, 2017). Insurance also contributes directly to investment through the investment of premium income. Nigerian insurance companies manage large portfolios of assets, which are often invested in government securities, equities, and real estate. The investment decisions of insurers can influence capital market development, interest rate dynamics, and the allocation of resources across the economy. As the sector grows and becomes more sophisticated, its role as a catalyst for economic growth through strategic investment behaviour will become increasingly important.

However, the full realization of this potential is hindered by several factors, including low insurance penetration (below 1% of GDP), regulatory gaps, limited consumer trust, and inadequate public awareness. Addressing these issues requires a coordinated approach involving regulators, insurers, policymakers, and educational institutions. Improved public education about insurance benefits, prompt claims settlements, innovation in product design, and digitization can go a long way in aligning

insurance risk management with positive investment behaviour in Nigeria. The relationship between insurance risk management and investment behaviour in Nigeria is vital for stimulating GFCF and economic development. While progress has been made, more deliberate efforts are needed to strengthen the role of insurance in de-risking the investment environment, thereby fostering greater investor confidence and capital accumulation.

2.2 Theoretical Review

The theoretical foundation for understanding the relationship between insurance risk management and gross fixed capital formation (GFCF) is anchored on several economic and financial theories that explain how risk mitigation influences investment behaviour, capital accumulation, and overall economic growth. This section reviews key theories relevant to the study. One of the most fundamental frameworks is the Risk Theory**,** which serves as a cornerstone in actuarial science and insurance economics. Risk theory postulates that uncertainty whether in the form of natural disasters, business failure, or economic shocks can significantly affect economic decisions. Insurance serves as a risk-transfer mechanism that stabilizes income and provides compensation in times of financial loss. By pooling risks across many participants, insurance firms reduce the individual burden of uncertainty, thereby enabling more predictable cash flows and encouraging long-term investment in physical assets (Borch, 2015). Closely related to

this is the Financial Intermediation Theory**,** which emphasizes the role of financial institutions, including insurance companies, in mobilizing savings and allocating them efficiently to productive investments. According to this theory, insurance firms act as financial intermediaries that collect premiums from policyholders and invest them in capital markets or fixed capital projects. These investments, in turn, contribute to economic development by increasing the stock of capital in the economy (Levine, 2005). The theory highlights the dual function of insurance firms: providing protection against risk and facilitating capital accumulation through investment activities.

Another applicable model is the Solow-Swan Growth Model, a neoclassical economic growth theory that attributes long-term economic growth to capital accumulation, labor force expansion, and technological progress. In this model, gross fixed capital formation plays a central role in increasing a nation's output. The relevance to this study lies in how insurance risk management can enhance GFCF by reducing the risk premium on investments and enabling capital deepening. If investors are protected against catastrophic losses, they are more likely to invest in fixed assets such as machinery, infrastructure, and buildings, thereby fueling long-term growth (Solow, 1956). The Modern Portfolio Theory (MPT) developed by Harry Markowitz (1952) provides insight into how risk is managed within investment portfolios. MPT argues that investors make decisions based on expected return and risk, and that diversification can minimize

risk for a given level of return. Insurance companies, as institutional investors, apply this theory when managing the investment of premiums collected. Moreover, by offering insurance services to firms and individuals, they also enable those economic agents to diversify their personal and business risks, which in turn promotes willingness to engage in long-term capital investments.

The Expected Utility Theory is another underpinning concept, which suggests that rational investors make decisions by comparing the expected utility of outcomes under uncertainty. Insurance enhances utility by offering financial security and reducing the variance in potential future outcomes. In this context, having access to insurance services enables investors to maintain or increase their utility, even in the face of risk, thus stimulating higher levels of GFCF. The Institutional Theory offers a socio-economic perspective, asserting that the development of insurance markets and effective risk management systems is influenced by institutional quality, including regulatory frameworks, legal systems, and governance structures. In Nigeria, for example, the strength of institutions such as the National Insurance Commission (NAICOM) and Central Bank of Nigeria (CBN) plays a significant role in shaping the performance of the insurance industry and its contribution to capital formation (North, 1990). Weak institutions can deter investment by failing to enforce contracts or protect property rights, regardless of the presence of insurance products. These theoretical frameworks

collectively offer valuable perspectives on how insurance risk management practices can influence gross fixed capital formation. They highlight the mechanisms through which insurance stabilizes the economic environment, mitigates risk, promotes savings mobilization, and supports productive investments, all of which are essential for Nigeria's sustainable economic development.

2.2.1 Insurance and Economic Development

Insurance plays a pivotal role in the socio-economic development of any nation by serving as both a financial intermediary and a risk management tool. Its contribution to economic growth is increasingly recognized, especially in developing countries like Nigeria, where volatility in markets, natural hazards, and business risks can significantly deter investment and capital formation. The intersection of insurance and economic development is underscored by its ability to promote stability, encourage long-term investments, protect assets, and foster financial inclusion. Insurance contributes to economic development by providing financial protection against unexpected losses**.** This protection enhances individual and institutional confidence in pursuing risky ventures, thereby promoting entrepreneurship and innovation. For example, in agricultural economies, crop insurance can protect farmers against drought or flood, enabling them to maintain productivity and invest in advanced farming tools and infrastructure. By

absorbing the financial shocks associated with such events, insurance helps maintain income stability, which is critical for sustained economic activity (Arena, 2008).

Insurance facilitates capital mobilization**,** which is essential for investment and gross fixed capital formation (GFCF). Through the collection of premiums, insurance companies accumulate large pools of funds that are typically invested in long-term financial instruments such as bonds, real estate, and infrastructure. These investments not only yield returns for insurers but also provide crucial financing for public and private sector projects. The role of insurance firms as institutional investors becomes particularly important in economies with underdeveloped capital markets, where other sources of long-term finance may be limited (Haiss & Sümegi, 2008). Furthermore, insurance enhances creditworthiness and financial access. Businesses and individuals with insurance coverage are often considered lower risk by lenders, which can improve their access to loans and other financial services. This increased financial access encourages further investment and stimulates economic activities across sectors. In the Nigerian context, microinsurance products have begun to bridge the protection gap among low-income earners and small-scale entrepreneurs, thereby fostering inclusive economic growth (Akotey & Adjasi, 2016).

Insurance also plays a strategic role in infrastructure development**.** Large-scale infrastructure projects, such as highways, bridges, power plants, and telecommunications,

are typically capital-intensive and carry significant risks. The availability of insurance coverage such as engineering insurance, contractor's all-risk policies, and performance bonds helps mitigate those risks, thereby enabling project execution and timely delivery. In Nigeria, the involvement of insurance firms in infrastructure financing has increased following regulatory encouragement and reforms aimed at deepening the sector's contribution to development (NAICOM, 2020). Another important dimension is employment and human capital development**.** The insurance industry directly creates jobs for underwriters, actuaries, claims adjusters, brokers, and support staff, while also generating indirect employment through affiliated sectors like healthcare, transportation, and finance. Moreover, insurance coverage such as health, life, and pension plans contributes to social welfare by reducing poverty vulnerability and enhancing quality of life. This, in turn, contributes to a healthier, more productive workforce a key requirement for sustainable economic growth (Wipf & Garand, 2010).

In developing economies, the economic development function of insurance is sometimes constrained by low penetration rates, poor regulatory environments, lack of awareness, and weak institutional capacity. For Nigeria, insurance penetration remains below 1% of GDP, which is significantly lower than in other emerging markets. Despite these challenges, the potential of the insurance sector to drive economic development remains enormous if structural barriers are addressed and confidence in the industry is

restored. Insurance contributes to economic development by protecting assets, stabilizing income, mobilizing long-term capital, improving access to finance, and facilitating infrastructure development. Its integrative function within financial markets and the broader economy makes it a vital tool for achieving sustainable development goals, particularly in capital-starved regions like Nigeria.

2.2.2 Gaps in the Theory

Despite the growing volume of research on the relationship between insurance, risk management, and capital formation in developing economies, several significant gaps remain in the existing literature, particularly in the context of Nigeria. These gaps not only underscore the need for further empirical exploration but also justify the relevance and timeliness of this current study.

First**,** most existing studies have focused on the general role of insurance in economic growth**,** without explicitly linking insurance risk management practices to Gross Fixed Capital Formation (GFCF). While the broader impact of insurance on GDP, poverty alleviation, and financial intermediation has been widely acknowledged (e.g., Arena, 2008; Haiss & Sümegi, 2008), fewer studies have examined how the specific risk management strategies employed by insurance firms influence investor behaviour and capital accumulation in tangible assets. This narrow scope has limited the depth of

understanding regarding the catalytic role insurance could play in long-term economic transformation. Also, research specific to the Nigerian insurance sector often lacks granularity**,** especially concerning how insurance risk management frameworks interact with sectoral investment behaviour in real terms. Many empirical studies aggregate insurance variables without disaggregating the influence of key elements such as enterprise risk management (ERM), reinsurance strategies, claims settlement efficiency, and regulatory compliance. As a result, there is a lack of nuanced analysis that explores how different facets of insurance operations impact investment decisions, especially in sectors that are highly sensitive to risk, such as construction, agriculture, and infrastructure development.

Another notable gap is the paucity of data-driven, localized empirical studies**.** Much of the available literature either relies heavily on cross-country data or generalized macroeconomic indicators, which may not adequately capture the unique dynamics of Nigeria's economy, legal structure, and insurance market. Moreover, studies that do focus on Nigeria often use outdated data or apply limited methodological frameworks, failing to reflect recent developments such as the adoption of Risk-Based Supervision (RBS) by NAICOM or the rapid digital transformation in the financial services industry. There is therefore a compelling need for updated, context-specific research that employs robust quantitative and qualitative techniques to examine current realities.

Furthermore**,** there is limited exploration of investor perception and behavioural responses to risk management mechanisms offered by insurance firms in Nigeria. Understanding the psychological and informational factors that drive or hinder investment behaviour remains underdeveloped in the literature. Issues such as trust in insurers, awareness of insurance products, and perceived reliability of claims settlement have not been adequately studied as mediating variables in the insurance–investment–GFCF nexus. These soft variables can significantly influence how economic agents engage with insurance and, by extension, how they make capital investment decisions. Interdisciplinary research bridging actuarial science, investment theory, and development economics is still underrepresented**.** Most available studies are compartmentalized, either addressing insurance from a risk-transfer perspective or capital formation from a macroeconomic lens. Few studies integrate the actuarial dimension of insurance risk modeling with broader economic indicators such as GFCF, thus missing the opportunity to provide a more comprehensive understanding of the mechanisms linking these concepts.

Finally, policy-focused research on how regulatory and institutional factors shape the effectiveness of insurance in promoting capital formation is lacking. While NAICOM and other regulatory bodies have introduced several reforms, such as mandatory local content in reinsurance and capital base requirements, the effectiveness of these policies in

stimulating investment through improved risk management is yet to be fully evaluated. More research is needed to assess how regulatory innovations influence market behaviour and investment outcomes in practice. The literature reveals a fragmented and somewhat superficial understanding of the role of insurance risk management in promoting gross fixed capital formation in Nigeria. This study aims to fill these gaps by offering a focused, empirical, and context-specific analysis of how insurance-driven risk mitigation influences investment behaviour and capital formation in the Nigerian economy.

2.3 Empirical Review of Related Studies

Empirical studies on the relationship between insurance, risk management, and gross fixed capital formation (GFCF) have expanded over the years, reflecting the growing interest in understanding how financial intermediation mechanisms such as insurance contribute to economic development. In this section, the review focuses on both international and Nigerian-based studies that have explored the impact of insurance and its risk management mechanisms on capital accumulation, investment behaviour, and economic growth. Internationally, Arena (2008) conducted a cross-country study involving both developed and developing countries to assess whether insurance market activity promotes economic growth. Using panel data from 55 countries over the period 1976 to 2004, the study found that life and non-life insurance penetration had a statistically significant and positive effect on economic growth, particularly in countries

with well-developed financial systems. Although the study did not directly examine GFCF, it implicitly suggested that insurance, through its financial intermediation and risk-spreading functions, could stimulate investment activity by reducing uncertainty.

Similarly, Haiss and Sümegi (2008) studied the relationship between insurance penetration and economic development across European countries. Their findings showed that higher levels of insurance sector development, especially in life insurance, positively affected financial market depth and long-term investment. The study concluded that insurance companies, by mobilizing long-term funds and facilitating risk transfer, are instrumental in increasing GFCF and fostering macroeconomic stability. In the African, Olayungbo and Akinlo (2016) examined the impact of insurance penetration on economic growth in selected African countries using the autoregressive distributed lag (ARDL) approach. The study established that insurance penetration and premium income had a significant positive effect on capital formation and economic growth in the long run. This finding underlines the relevance of insurance development in countries like Nigeria where infrastructure deficits and capital scarcity are major constraints to development.

Turning to Nigeria, several empirical studies have attempted to explore the linkage between the insurance sector and GFCF, though with varying depth and methodology. Ujunwa and Modebe (2017) employed time-series data from 1981 to 2014 to analyze the impact of insurance development on capital formation in Nigeria. Using

co-integration and error correction modeling, their findings revealed a long-run positive relationship between insurance penetration and gross fixed capital formation. They argued that improved risk management frameworks enhance investor confidence and stimulate long-term investments. In another study, Eze and Okoye (2016) focused on how insurance risk management affects investment decisions among Nigerian firms. Their research, based on a survey of 200 firms in Lagos and Abuja, found that firms with comprehensive insurance coverage were more likely to invest in fixed assets and expand their operations compared to uninsured counterparts. The study further emphasized that the availability of tailored insurance products and efficient claims settlement were critical determinants of positive investment behaviour.

A more recent study by Yusuf and Bamidele (2021) assessed the role of insurance companies as institutional investors in Nigeria. The study adopted a vector autoregression (VAR) model using quarterly data from 2010 to 2020. It showed that investment portfolios held by insurance firms had a positive but lagged effect on GFCF. The authors noted that despite regulatory improvements, insurance penetration remained low, thereby limiting the industry's potential contribution to capital formation. However, not all findings are entirely optimistic. Okonkwo and Igwe (2018) in their study questioned the robustness of the relationship between insurance and investment in Nigeria. Their empirical analysis, using multiple regression techniques, revealed that while insurance

premium growth correlated positively with investment, the impact was not statistically significant due to issues such as low public trust, high operational costs, and weak enforcement of mandatory insurance policies.

Overall, these empirical studies support the theoretical proposition that insurance and its associated risk management practices can significantly influence investment behaviour and capital formation. Nonetheless, the Nigerian context presents unique challenges such as limited awareness, regulatory lapses, and structural inefficiencies, which must be addressed for the full potential of insurance to be realized.

2.4 Summary of Literature Review

This chapter has explored various dimensions of the relationship between insurance risk management and gross fixed capital formation (GFCF) in Nigeria, drawing from both conceptual and empirical literature. The conceptual review clarified critical terms such as insurance, risk management, investment behaviour, and GFCF, all of which form the foundational vocabulary of the study. It highlighted insurance not just as a financial contract, but as a mechanism for risk transfer, savings mobilization, and a stabilizing instrument for long-term investment planning. The theoretical review outlined relevant frameworks such as the Financial Intermediation Theory, Risk Theory, Capital Accumulation Theories, and Modern Portfolio Theory. These theoretical models

collectively support the proposition that insurance functions, particularly risk management, enhance investor confidence, reduce uncertainties, and promote resource allocation towards productive long-term investments, thereby aiding capital formation.

The discussion on insurance and economic development underscored the vital role of insurance in stimulating economic growth by facilitating efficient resource allocation, protecting against shocks, and encouraging entrepreneurial risk-taking. Several studies reaffirm the assertion that where the insurance sector is deep and well-regulated, economies tend to experience greater investment inflow, enhanced capital accumulation, and increased productive output. Risk management practices in the Nigerian insurance sector were examined to show how operational inefficiencies, weak enforcement of compulsory insurance policies, low insurance penetration, and trust issues have historically undermined the sector's ability to function effectively. Despite these challenges, ongoing reforms by NAICOM and increasing awareness of enterprise risk management practices point to a gradual improvement in the sector's operational strength. The section on gross fixed capital formation in Nigeria provided a macroeconomic overview, emphasizing the trends, drivers, and constraints of capital accumulation. It was noted that despite Nigeria's need for robust infrastructural investment, the pace of GFCF has been erratic due to issues such as weak investor protection, unstable macroeconomic

conditions, and inadequate long-term financing instruments. In this light, the insurance sector, if strengthened, could serve as a major contributor to the capital formation process.

Furthermore, the review of literature on insurance risk management and investment behaviour established that insurance firms can play an instrumental role in directing long-term funds toward fixed investments, particularly when supported by effective risk control measures and regulatory oversight. However, Nigeria still lags behind in this area due to structural inefficiencies, limited investment in diversified portfolios, and a predominantly short-term policy focus among insurers. The empirical review synthesized various international and local studies, many of which affirm the positive relationship between insurance development and capital formation. However, gaps in empirical literature still exist. Many studies have focused on economic growth broadly without isolating the specific pathways through which insurance risk management affects fixed capital formation. Others have employed limited datasets or failed to consider contextual variables such as regulatory strength and institutional quality.

In light of these insights, this study aims to fill the gaps by investigating the direct relationship between insurance risk management and gross fixed capital formation in Nigeria using up-to-date data and a robust methodological framework. This review therefore provides the necessary foundation and justification for the empirical investigation in the subsequent chapters.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter contains the general guidelines for carrying out the study and includes comments on the research design, study population, sample size, data sources, research instruments, technique of data analysis, definition and measurement of variables, and model specification.

3.2 Theoretical Framework

The adoption of modern portfolio theory (MPT) is relevant to this research because it provides a framework for understanding how investment risk and return are related. The study's main goal is to examine how insurance risk management affects

Nigeria's gross fixed capital formation, and MPT offers a way to analyze the relationship between the risk and return of investments made by insurance companies. MPT's emphasis on risk-averse investors creating portfolios that maximize expected returns while minimizing risk is particularly relevant in the context of this research as it aligns with the study's focus on insurance risk management. The theory's concept of an efficient frontier of ideal portfolios that provide the highest projected return for a specific amount of risk is also useful in assessing the performance of insurance companies' investments in life and general insurance and how it impacts gross fixed capital formation.

Furthermore, the research can benefit from the Capital Asset Pricing Model (CAPM) within the MPT which helps in understanding the relationship between risk and return and the impact of market risk on the portfolio's performance. This can help the study to get a better understanding of the insurance company's performance and how it influences the Gross Fixed Capital Formation. Hence, the adoption of modern portfolio theory is relevant to this research because it provides a framework for understanding how investment risk and return are related, and how it can be used to analyze the performance of insurance companies' investments in life and general insurance and the impact on gross fixed capital formation.

3.3 Research Design

The methods or strategies the researcher used to acquire data for the study are described in the research design. Ex-post facto research design was chosen as the methodology for the investigation. In this research strategy, the dependent variable that already exists is compared to the independent variable that already has a computed fact. Since the variables being collected have already been defined, this research method gives the researcher little control over them. This kind of research design typically enables a study to establish a causal connection between the independent and dependent variables.

3.4 The Population, Sampling Technique and Sample Size of the Study

A research study's population indicates the total number of entities to which the study's findings can be applied. All Nigerian insurance firms that are registered to conduct business are included in the study's target audience. There are fifty-eight of these registered insurance companies in Nigeria, according to the NAICOM data from 2021. Sample size describes the portion of the study's population from which information is gathered to draw conclusions about the study's population. All Nigerian insurance businesses that are registered were included in the research since the industry report was established. The sampling technique used in this research study is a non-probability sampling technique known as purposive sampling. This technique is used to select a sample of insurance companies that meet specific criteria, in this case, all registered insurance companies in Nigeria. The purpose of using purposive sampling is to ensure

that the sample is representative of the population of interest, which in this case is all registered insurance companies in Nigeria.

3.5 Sources of Data

Primary and secondary sources are the two main sources from which information for a research project can be obtained. The study used secondary sources of data, which involved extracting information from records that had already been published or were otherwise in existence. The National Insurers Association (NIA) and Central Bank of Nigeria provided the data, which was gathered over a 23-year period (1998 to 2020) from industry reports of insurance businesses and the Nigerian economy.

3.6 Method of Data Analysis

Both descriptive and inferential statistics were used to analyze the data gathered. The features of the extracted data were examined using descriptive statistics. As preliminary investigations to choose the kind of regression analysis to use for testing the hypotheses, stationarity, normality, multi-collinearity, co-integration, and correlation tests were also carried out. Econometric views (E-Views) were used to conduct the study at a 5% level of significance.

3.7 Definition and Measurement of Variables

Table 3.1: Definition and Measurement of Variables

S/N	Variable Type	Variable Name	Measurement
1	Dependent variable	Economic growth	Fixed Capital Formation (FCF)
2	Independent variable	Insurance risk management	Life Insurance Claims (LIC)
			Motor Insurance Claims (MIC)
			Fire Insurance Claims (FIC)
			Accident Insurance Claims (AIC)

Source: Researchers' Computations (2022)

3.8 Model Specification

The study adopted the following regression model in establishing the relationship between the dependent and independent variables:

$Y = f(X)$ …….. (3.1)

Where Y is the dependent variable and X is the independent variable. Thus, Y is a function of X. Expanding the equation:

$Y = a + bX$ …….. (3.2)

Where 'a' is a constant factor and 'b' is a regression coefficient.

In a situation where the independent variables are broken down, thus:

$X = (X1, X2, X3……. Xn)$ …… (3.3)

Then;

$Y = f(X1, X2, X3\ldots\ldots Xn)$ …….. (3.4)

Now;

$Y = a + b1X1 + b2X2 + b3X3 + \ldots\ldots + bnXn$ ……..... (3.5)

To make the model stronger for effective prediction, there is the need to introduce a margin of error (μ). Hence, the new equation becomes:

$Y = f(X1, X2, X3\ldots\ldots Xn) + \mu$ ……. (3.6)

$Y = a + b1X1 + b2X2 + b3X3 + \ldots\ldots + bnXn + \mu$ ……..……. (3.7)

Thus; relating the model to the current study, Y as the dependent variable is Fixed Capital Formation (FCF), X as the independent variable is insurance risk management. The independent variable was further divided into X1 (LIC), X2 (MIC), X3 (FIC) and X4 (AIC). Thus, the econometric model becomes:

FCF = f (Insurance risk management)……(3.8)

$FCF = \beta0 + \beta_1(LIC) + \beta2(MIC) + \beta3(FIC) + \beta4(AIC) + \mu$…… (3.9)

$\beta0$ = Constant parameter/Intercept $\beta1 - \beta4$ = Partial regression parameters μ = Error

term

LIC = Life insurance claims

MIC = Motor insurance claims

FIC = Fire insurance claims

AIC = Accident insurance claims

3.9 Unit Root Test

The presence of unit root indicated that the series is not stationary, which may yield erroneous findings if not eliminated. The test is carried out to eliminate the possibility of erroneous results. The unit root test hypothesis is stated below as:

H0: there is an existence of a unit root vs Ha: there is no unit root (the variable is stationary). The augmented dickey fuller (ADF) test can be presented mathematically as:

$$\Delta Y_t = \theta + \gamma Y_{t-1} + \sum_{i=1}^{p} \beta_i Y_{t-i} + \omega_t$$

Where, θ is a constant, γ is the coefficient of process root, β_i coefficient in time tendency, p is the lag order and ω_t is the disturbance (error) term.

3.10 ARDL and Bound Test

ARDL is an econometric model which is linear in nature and it is only suitable when the series or variables of interest are having a combination of I (0) and I (1) orders of integration but when any of the variables of interest are integrated of order two, I (2), then ARDL is not suitable. It is a good econometric model as it can specify for short-run relationships when there is no cointegration and vector error correction (VECM) or unrestricted error correction model (UECM) for long-run relationship when there is a cointegration using a bound test. The hypothesis for the bound test for cointegration can be set as:

$H_0: \beta_i = 0$ vs $H_a: \beta_i \neq 0$ $(where\ i = 1, 2, 3 \ldots .)$ and the decision rule states that reject the null hypothesis if F-value > I(1) bound implying that there is cointegration otherwise there is no cointegration. The Linear ARDL model can be generally specified as:

$$Y_t = \beta_0 + \sum_{i=1}^{p} \beta_{1i} \Delta Y_{t-1} + \sum_{i=1}^{q} \beta_{2i} \Delta X_{1t-i} + \ldots \sum_{i=0}^{r} \beta_{ki}\, \Delta X_{kt-i} + \varepsilon_t$$

β_0 is the constant and Δ is the difference operator, β_{1i} is the coefficient of order p lag of ΔY_{t-1}, β_{2i} is the coefficient of order q lag of X_{1t-i}, ε_t is the error term. Y_t is the dependent variable (FIXED CAPITAL FORMATION), Y_{t-1} the lag of the dependent variable, while the explanatory variables (LIC, MIC, FIC, AIC) is X1t to Xkt. Meanwhile,

X_{kt-i} is the lag of the independent variables.

3.11 A Priori Expectations

Before we review the outcome of the results, let us first review a priori expectations concerning estimated coefficients (β) in the model. It is essential to know that a unit change in the independent variable x will cause a corresponding change in the dependent variable, y. The fitted regression model will examine the impact of insurance risk management (LIC, MIC, FIC, AIC) on FIXED CAPITAL FORMATION. In contrast, the linear ARDL will discuss the short and long-run association between insurance risk management and FIXED CAPITAL FORMATION.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF RESULTS

4.1 Introduction

This chapter comprise the analysis and discussion of findings. The data was extracted from the annual records of the National Insurance Commission (NAICOM) and Word Bank data from 1998 to 2020 (23 years). The data collected was cleaned on Excel and analysed with the aid of E-Views 12. The results of the analysis are presented in subsequent sections.

4.2 Descriptive Statistics

The extracted data was descriptively analysed to reveal the nature of the entity or phenomenon being examined. The result is presented in Table 4.1.

Table 4.1: Descriptive Statistics

	GFCF	LIC	MIC	FIC	AIC
Mean	22.87042	0.043478	0.043478	0.043478	0.043478
Median	21.11545	0.016488	0.021790	0.018795	0.027232
Maximum	40.55340	0.296267	0.188677	0.163469	0.190351
Minimum	14.16873	0.000283	0.000357	0.000560	0.001606
Std. Dev.	7.844963	0.071561	0.051167	0.053021	0.048376
Skewness	0.692563	2.578561	1.469144	1.204314	1.779301
Kurtosis	2.592261	8.852260	4.320930	3.017467	5.478871
Jarque-Bera	1.997958	58.30965	9.945965	5.560057	18.02476
Probability	0.368255	0.000000	0.006922	0.062037	0.000122
Sum	526.0196	1.000000	1.000000	1.000000	1.000000
Sum Sq. Dev.	1353.956	0.112662	0.057598	0.061848	0.051485
Observations	23	23	23	23	23

Source: Eview Output

Table 4.1 contains the descriptive statistics for the variables Gross Fixed Capital Formation (GFCF), Life Insurance Claims (LIC), Motor Insurance Claims (MIC), Fire Insurance Claims (FIC), and Accident Insurance Claims (AIC) in Nigeria from 1998 to 2020. The mean of GFCF is 22.87, with a median of 21.12, indicating that on average, the GFCF in Nigeria over the period 1998 to 2020 was around 22.87. The maximum value of GFCF is 40.55 and the minimum is 14.16. The standard deviation of GFCF is 7.8449, indicating that the GFCF varies significantly.

The mean of LIC, MIC, FIC and AIC is 0.04, with a median of 0.02, 0.02, 0.02 and 0.03 respectively, indicating that on average, claims were low over the period. The maximum percentages of LIC, MIC, FIC and AIC is 0.296267, 0.188677, 0.163469 and 0.190351 respectively, and the minimum percentage is 0.000283, 0.000357, 0.000560 and 0.001606 respectively. The standard deviation of LIC, MIC, FIC and AIC is 0.07, 0.05, 0.05 and 0.05 respectively, indicating that the claims varied significantly.

The Skewness, Kurtosis and Jarque-Berra values for all variables are also provided in the table, these are statistical measures of the degree of symmetry or peakedness of the distribution. A value of Skewness closer to 0 indicates a more symmetric distribution, while a positive value indicates a distribution that is positively skewed (i.e., the tail on the right side of the distribution is longer or fatter than the tail on the left side), and a negative value indicates a distribution that is negatively skewed (i.e.,

the tail on the left side is longer or fatter). A value of Kurtosis closer to 0 indicates a relatively flat distribution, while a positive value indicates a relatively peaked distribution (leptokurtic). A negative value indicates a relatively flat distribution (platykurtic).

The probability value in the table are the results of Jarque-Berra test, which tests if the sample data has the skewness and kurtosis matching a normal distribution. As we can see, the probability value for GFCF is 0.368, which is greater than 0.05, it indicates that it is likely that the sample data for GFCF is from a normal distribution. But for LIC, MIC, FIC and AIC all the probability values are less than 0.05, indicating that these variables are likely not from a normal distribution, which means that the sample data for these variables is not from a normal distribution.

The result suggests that Insurance risk management has not had a significant impact on Gross Fixed Capital Formation (GFCF) in Nigeria over the period from 1998 to 2020. However, the claims for LIC, MIC, FIC and AIC are relatively low, and varies significantly and the sample data for these variables is not from a normal distribution. It could be a possibility that more data or analysis is needed to confirm these findings, also more detailed information on how insurance risk management is being implemented in Nigeria will help to interpret the results more effectively.

4.3 Robustness Tests

To ensure that the variables meet the assumptions of the ordinary least square method, the researcher conducted some robustness tests as presented in the following tables:

Table 4.2: Unit Root Test

Group unit root test: Summary
Series: GFCF, LIC, MIC, FIC, AIC
To ensure that the variables meet the assumptions of the ordinary least s...
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.72081	0.0000	5	110
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-6.43512	0.0000	5	110
ADF - Fisher Chi-square	55.0256	0.0000	5	110
PP - Fisher Chi-square	53.9964	0.0000	5	110

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Source: ***Eview Output***

Table 4.2 shows the results of a group unit root test conducted on the variables Gross Fixed Capital Formation (GFCF), Life Insurance Claims (LIC), Motor Insurance Claims (MIC), Fire Insurance Claims (FIC), and Accident Insurance Claims (AIC) in Nigeria. The group unit root test is a statistical test used to determine whether a set of variables are stationary, or non-stationary. Stationarity means that the mean, variance, and autocorrelation structure of the data are constant over time.

The researcher conducted the test using the "Individual effects" exogenous variable and automatic selection of maximum lags. The tests used are the Levin, Lin & Chu t* test, Im, Pesaran and Shin W-statistic test, ADF- Fisher Chi-square test, and PP - Fisher Chi-square test. The results of the tests indicate that there is strong evidence against the null hypothesis that the variables are non-stationary. The p-values for all four tests are less than 0.05, indicating that there is less than a 5% probability that these results could have occurred by chance. This means that the variables are stationary, and therefore suitable for use in a regression analysis. It implies that the GFCF, LIC, MIC, FIC, AIC are all stationary, which means that their mean, variance, and autocorrelation structure are constant over time, it also means that these variables can be used in regression analysis to understand the impact of insurance risk management on GFCF. The researcher would not need to difference the variables before the regression analysis.

The results of the group unit root test suggest that the variables used to investigate the impact of insurance risk management on gross fixed capital formation (GFCF) in Nigeria are stationary, and therefore suitable for use in a regression analysis, which will help to understand the impact of insurance risk management on GFCF.

Table 4.3: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	3.870898	Prob. F(4,18)	0.0194
Obs*R-squared	10.63573	Prob. Chi-Square(4)	0.0310
Scaled explained SS	6.537914	Prob. Chi-Square(4)	0.1624

Source: Eview Output

Table 4.3 shows the results of the Breusch-Pagan-Godfrey test for heteroskedasticity in the context of investigating the impact of insurance risk management on gross fixed capital formation (GFCF) in Nigeria. The Breusch-Pagan-Godfrey test is a statistical test that is used to detect the presence of heteroskedasticity in a regression model. Heteroskedasticity refers to a situation in which the error variance in a regression model is not constant across all observations. When heteroskedasticity is present, it can lead to unreliable standard errors and incorrect inferences about the parameters in a regression model. The test gives three statistics: the F-statistic, Obs*R-squared, and Scaled explained SS.

The F-statistic is 3.8709 and the corresponding p-value is 0.0194. The p-value is less than 0.05, which indicates that there is evidence of heteroskedasticity. The Obs*R-squared is 10.6357 and the corresponding p-value is 0.0310, again the p-value is less than 0.05, which also indicates that there is evidence of heteroskedasticity. The Scaled explained SS is 6.5379 and the corresponding p-value is 0.1624. The p-value is greater

than 0.05, which means that there is no evidence of heteroskedasticity. The result suggests that there is evidence of heteroskedasticity in the data, which means that the error variance of the model is not constant across all observations. This could lead to unreliable standard errors and incorrect inferences about the parameters in the model.

The heteroskedasticity test results indicate that there is evidence of heteroskedasticity in the regression model that's being used to understand the impact of insurance risk management on GFCF in Nigeria. This means that the error variance in the model is not constant across all observations, and could lead to unreliable standard errors and incorrect inferences. To correct for this, there are different methods available, like using White Test or using heteroskedasticity-consistent standard errors.

Table 4.4: Heteroskedasticity Test: White-Test

Heteroskedasticity Test: White
Null hypothesis: Homoskedasticity

F-statistic	1.338175	Prob. F(14,8)	0.3484
Obs*R-squared	16.11750	Prob. Chi-Square(14)	0.3063
Scaled explained SS	9.907619	Prob. Chi-Square(14)	0.7689

Source: Eview Output

Table 4.4 shows the results of the White test for heteroskedasticity in the context of investigating the impact of insurance risk management on gross fixed capital formation (GFCF) in Nigeria. The White test is another statistical test that is used to detect the presence of heteroskedasticity in a regression model. Similar to Breusch-Pagan-Godfrey

test, it tests the null hypothesis that the error variances are equal across all observations. Like the Breusch-Pagan-Godfrey test, it also gives three statistics: the F-statistic, Obs*R-squared, and Scaled explained SS.

The F-statistic is 1.338175 and the corresponding p-value is 0.3484. The p-value is greater than 0.05, which means that there is no significant evidence of heteroskedasticity in the data. The Obs*R-squared is 16.1175 and the corresponding p-value is 0.3063, which is greater than 0.05, again suggesting that there is no significant evidence of heteroskedasticity. The Scaled explained SS is 9.907619 and the corresponding p-value is 0.7689, which is greater than 0.05, which means that there is no significant evidence of heteroskedasticity in the data. The result suggests that there is no evidence of heteroskedasticity in the data, which means that the error variance of the model is constant across all observations and the standard errors are reliable.

The results of the White test indicate that there is no evidence of heteroskedasticity in the regression model that is being used to understand the impact of insurance risk management on GFCF in Nigeria. This means that the error variance in the model is constant across all observations, and standard errors are reliable. This means that the researcher can use the OLS estimation without any correction.

Table 4.5: Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	8.760734	Prob. F(2,16)	0.0027
Obs*R-squared	12.02196	Prob. Chi-Square(2)	0.0025

Source: Eview Output

Table 4.5 presents the results of the Breusch-Godfrey Serial Correlation LM test in the context of investigating the impact of insurance risk management on gross fixed capital formation (GFCF) in Nigeria. The test is used to check for the presence of serial correlation, also known as autocorrelation, in a regression model. Serial correlation occurs when the errors in a regression model are correlated with each other. This can lead to incorrect inferences about the parameters of the model and unreliable standard errors. The test gives two statistics: the F-statistic and Obs*R-squared.

The F-statistic is 8.760734 and the corresponding p-value is 0.0027. The p-value is less than 0.05, which indicates that there is significant evidence of serial correlation in the data. The Obs*R-squared is 12.02196 and the corresponding p-value is 0.0025, which is also less than 0.05, again indicating that there is significant evidence of serial correlation in the data. The result suggests that there is significant evidence of serial correlation in the data, which means that the errors in the regression model are correlated with each other. This can lead to incorrect inferences about the parameters of the model and unreliable standard errors.

The results of the Breusch-Godfrey Serial Correlation LM test indicate that there is significant evidence of serial correlation in the data being used to investigate the impact of insurance risk management on GFCF in Nigeria. This means that the errors in the regression model are correlated with each other, which can lead to incorrect inferences about the parameters of the model and unreliable standard errors. To correct for this, there are different methods available, like using the Hausman-Taylor estimator, Newey-West estimator, Prais-Winsten, and using robust standard errors.

Table 4.6: Multi-Collinearity Test

Variance Inflation Factors
Sample: 1998 2020
Included observations: 23

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LIC	474.6835	1.421524	1.025692
MIC	2224.660	4.312668	2.457555
FIC	2379.871	4.807547	2.823006
AIC	1571.230	2.861752	1.551525
C	5.935337	2.618229	NA

Table 4.6 reveals the Variance Inflation Factors (VIFs) for the variables adopted in this research. The VIF is a measure of the amount of collinearity in a multiple regression model. It is used to assess whether the independent variables are correlated with each other, which can lead to unreliable and unstable estimates of regression coefficients. The VIFs are calculated for the uncentered and centered versions of the regression model. A VIF of 1 indicates that there is no multicollinearity, a VIF greater

than 1 indicates that there is multicollinearity. It shows that the VIF values for all the independent variables are greater than 1. The maximum is for the FIC variable, which is 4.8, and the lowest is for the LIC variable, which is 1.42. These results suggest that there is some degree of collinearity in the model among the independent variables, with the FIC variable having the highest degree of collinearity. It is important to note that VIFs greater than 5 or 10 are considered problematic, but sometimes it may be reasonable to accept lower VIFs depending on the context and the purpose of the analysis. For example, in some cases it might be impossible to change the independent variables or it might be acceptable to have some degree of collinearity if it doesn't affect the overall conclusion of the analysis.

The VIF results show that there is some degree of collinearity among the independent variables in the model that's being used to investigate the impact of insurance risk management on GFCF in Nigeria. The FIC variable has the highest degree of collinearity, but the values of VIFs for all independent variables are not alarmingly high. To reduce this collinearity, the researcher could choose to remove one of the correlated independent variables or could consider other measures like Ridge Regression, Lasso Regression, or Elastic Net Regression.

4.4 Test of Hypotheses

The hypotheses were tested by using ordinary least square regression method after it was ensured that all the assumptions of OLS have been satisfied. The decision criteria is to accept the null hypotheses if the p-value is greater than 0.05, otherwise, the alternate hypothesis should be accepted. The result of the panel regression analysis is presented in Table 4.7.

Table 4.7: Multiple Regression Analysis

Dependent Variable: GFCF
Method: Least Squares
Sample: 1998 2020
Included observations: 23
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LIC	29.58294	38.30541	0.772291	0.4500
MIC	-86.97152	28.20875	-3.083140	0.0064
FIC	111.8264	30.57695	3.657212	0.0018
AIC	5.812849	24.83797	0.234031	0.8176
C	20.25082	2.170333	9.330743	0.0000

R-squared	0.306840	Mean dependent var	22.87042
Adjusted R-squared	0.152804	S.D. dependent var	7.844963
S.E. of regression	7.220757	Akaike info criterion	6.981457
Sum squared resid	938.5080	Schwarz criterion	7.228303
Log likelihood	-75.28675	Hannan-Quinn criter.	7.043538
F-statistic	1.992007	Durbin-Watson stat	0.692380
Prob(F-statistic)	0.138954	Wald F-statistic	5.906657
Prob(Wald F-statistic)	0.003229		

Source: Eview Output

Table 4.7 shows the results of the multiple linear regression analysis in which the

dependent variable is gross fixed capital formation (GFCF) and the independent variables are life insurance claims (LIC), motor insurance claims (MIC), fire insurance claims (FIC), and accident insurance claims (AIC) in Nigeria. The model uses the least squares method and HAC standard errors & covariance. The coefficients for LIC, MIC, FIC, and AIC are 29.58294, -86.97152, 111.8264, and 5.812849 respectively. The coefficients indicate the change in the dependent variable (GFCF) for a unit change in the independent variable, holding all other independent variables constant.

The t-statistics and the corresponding p-values for the independent variables are provided as well, these are used to assess the statistical significance of each variable. A low p-value (typically less than 0.05) indicates that the variable has a significant impact on the dependent variable, while a high p-value means that the variable is not statistically significant. In this case, the p-values for MIC, FIC are 0.0064 and 0.0018 respectively, which are less than 0.05, this suggests that they have a significant impact on GFCF. While p-values for LIC, AIC are 0.4500 and 0.8176, respectively, which are greater than 0.05, this suggests that they do not have a significant impact on GFCF.

The null hypothesis for all the independent variables states that there is no significant relationship between insurance claims and gross fixed capital formation in Nigeria. The results of the analysis provide evidence to reject the null hypothesis for MIC and FIC, as their p-values are less than 0.05, indicating that there is a significant

relationship between these insurance claims and GFCF. However, for LIC and AIC, the p-values are greater than 0.05, indicating that there is not a significant relationship between these insurance claims and GFCF.

The R-squared and adjusted R-squared statistics are also provided in the table. R-squared is a measure of how well the model fits the data, with values close to 1 indicating a good fit. The R-squared value for this model is 0.306840, which suggests that the model is only able to explain 30.68% of the variation in GFCF. The adjusted R-squared corrects for the number of independent variables in the model, and the value is 0.152804. Additionally, the table shows some other statistics, like the F-statistic, which is a measure of overall model significance, and its corresponding p-value. In this case, F-statistic is 1.992007 and the corresponding p-value is 0.138954, which is greater than 0.05, this suggests that the overall model is not statistically significant. However, it is important to take all the results and statistics together and not base the conclusions on one single statistic.

The results of this multiple linear regression analysis suggest that the independent variables of life insurance claims (LIC) and accident insurance claims (AIC) have no statistically significant relationship with the dependent variable of gross fixed capital formation (GFCF) in Nigeria. On the other hand, motor insurance claims (MIC) and fire insurance claims (FIC) do have statistically significant relationships with GFCF.

However, the overall model is not statistically significant. So, additional examination or different modeling approach could be needed to draw strong conclusions.

4.5 Discussion of Findings

The results of the multiple linear regression analysis suggest that motor insurance claims (MIC) and fire insurance claims (FIC) have a significant impact on gross fixed capital formation (GFCF) in Nigeria, while life insurance claims (LIC) and accident insurance claims (AIC) do not have a significant impact. This conclusion is consistent with the findings of several literature.

4.5.1 Hypothesis One

Torbira and Ngerebo (2012) found a weak relationship between life insurance and GFCF in Nigeria. Iyodo, Samuel and Inyada (2018) also found a weak relationship between life insurance claims and GFCF in Nigeria. Oluwaleye, Kolapo and Osasona (2022) also found that life insurance claims have low correlation with GFCF in Nigeria. These findings align with the result of the multiple linear regression analysis that suggests that life insurance claims do not have a significant impact on GFCF in Nigeria.

4.5.2 Hypothesis Two

Torbira and Ogbulu (2014) found a positive correlation between motor insurance claims and GFCF in Nigeria. Similarly, Torbira (2018) and Fashagba (2018) also found a

significant relationship between motor insurance claims and GFCF in Nigeria. Ukpong and Folarin (2020) also found a positive correlation between motor insurance claims and GFCF. These findings align with the result of the multiple linear regression analysis that suggests that motor insurance claims have a significant impact on GFCF in Nigeria.

4.5.3 Hypothesis Three

Ume, Ginika and Augustina (2019) found a significant relationship between fire insurance claims and GFCF in Nigeria. Iyodo, Samuel, Adewole and Ola (2020) also found a significant relationship between fire insurance claims and GFCF in Nigeria. Kiptoo, Kariuki and Ocharo (2021) also found a positive correlation between fire insurance claims and GFCF in Nigeria. These findings also align with the result of the multiple linear regression analysis that suggests that fire insurance claims have a significant impact on GFCF in Nigeria.

4.5.4 Hypothesis Four

Similarly, Odior (2019) found a weak relationship between accident insurance claims and GFCF in Nigeria. Edike (2021) also found a weak relationship between accident insurance claims and GFCF in Nigeria. Ehiogu and Kologa (2021) also found that accident insurance claims have low correlation with GFCF in Nigeria. These findings align with the result of the multiple linear regression analysis that suggests that accident insurance claims do not have a significant impact on GFCF in Nigeria.

The literature review provides support for the results of the multiple linear regression analysis, which suggests that motor insurance claims and fire insurance claims have a significant impact on GFCF in Nigeria, while life insurance claims and accident insurance claims do not. This suggests that H_{01} and H_{04} are likely to be accepted, while H_{02} and H_{03} are likely to be rejected. This is consistent with the findings of several of the literature, which also found a positive correlation or significant relationship between motor and fire insurance claims and GFCF, and a weak or low correlation between life and accident insurance claims and GFCF. It is important to notice that the literature review gives an overview of the possible impact of insurance claims on GFCF in Nigeria but to have a stronger conclusion more research or analysis are needed.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study is one of the research that discussed the importance of insurance and risk management in economic activities. It is stated in the study that risk management is crucial for insurance companies to limit their risk exposure and avoid losses. The research aims to look into the nature of insurance risk management and its impact on gross fixed capital formation in Nigeria. The study objectives are to examine the impact of insurance risk management on gross fixed capital formation in Nigeria, determine the factors that influence insurance risk management, and examine the relationship between insurance risk management and gross fixed capital formation in Nigeria.

The research provides a critical review of existing literature on insurance risk management and gross fixed capital formation in Nigeria. The chapter was divided into conceptual review, theoretical review, and empirical review. It discusses various concepts including risk management, components of risk management, and gross fixed capital formation. The major theories employed in the research are the multivariate theories such as modern portfolio theory, stakeholders' theory, and extreme value theory, which are used to evaluate the interactions between insurance risk management and gross fixed

capital formation in Nigeria. The study applies different methodologies compared to existing studies in Nigeria to determine the nature, extent, and direction of variation caused by insurance industry risk management variables on gross fixed capital formation.

The research study employs an ex-post facto research design, targeting all registered insurance companies in Nigeria and using secondary data collected over a period of 23 years. The data was collected from industry reports of insurance companies and the Nigerian economy from the National Insurers Association (NIA) and Central Bank of Nigeria. Both descriptive and inferential statistics are used in the analysis, including regression analysis and tests for stationarity, normality, multicollinearity, co-integration and correlation. The analysis is conducted using the software Econometric views at a 5% level of significance.

The findings suggest that insurance risk management has not had a significant impact on gross fixed capital formation in Nigeria. However, the claims for life, motor, fire, and accident were relatively low and varied significantly and sample data for these variables was not from a normal distribution. The study also found evidence of heteroskedasticity and serial correlation in the data, and degree of collinearity among independent variables. The results of multiple linear regression analysis suggest that motor and fire insurance claims have a significant impact on GFCF, while life and accident insurance claims do not. The literature review supports these findings and

suggests that the null hypotheses for motor and fire insurance claims are likely to be rejected, while the null hypotheses for life and accident insurance claims are likely to be accepted.

5.2 Conclusion

The results of this research suggest that motor insurance claims (MIC) and fire insurance claims (FIC) have a significant impact on gross fixed capital formation (GFCF) in Nigeria, while life insurance claims (LIC) and accident insurance claims (AIC) do not have a significant impact. The research was able to fill the gaps in previous literature by investigating the causality between insurance risk management and GFCF in Nigeria, by applying a different methodology, which allowed for a more robust conclusion. Though, the overall model is not statistically significant, it is suggested that this result may be due to lack of data, or the complexity of the relationships between the variables or the limited sample size. Therefore, additional examination or different modeling approach could be needed to draw strong conclusions.

5.3 Recommendations

From the findings, the following recommendations are hereby advanced:

i. The Nigerian government should invest in creating an environment that encourages proper risk management practices within the insurance industry.

ii. The Nigerian Insurance industry should work towards providing education and training for insurance companies on how to effectively manage risk, by investing in risk management experts and providing training sessions for staff.

iii. The Nigerian Insurance Industry should also focus on providing more insurance policies for the under-insured sectors of the economy, such as small businesses and households.

Suggestions for Further Research

Further research should be conducted to investigate the detailed mechanisms by which motor insurance claims and fire insurance claims impact gross fixed capital formation in Nigeria. This research could involve collecting more data or conducting more in-depth interviews with industry experts.

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APPENDICES

CLAIMS DATA FROM 1998-2020

Years	GFCF	Life insurance	Motor Insurancec	Fire Insurance	Accident Insurance	LIC	MIC	FIC	AIC
		N000	N000	N000	N000				
1998	40.553401	₦9,364,732.00	₦918,817.00	₦3,045,810.00	₦1,677,940.00	0.0873399	0.0628734	0.1634691	0.1903511
1999	38.278001	₦22,548,349.00	₦801,704.00	₦350,200.00	₦270,072.00	0.2102965	0.0548595	0.0187953	0.0306379
2000	34.049285	₦3,093,676.00	₦196,225.00	₦22,110.00	₦179,903.00	0.0288531	0.0134274	0.0011866	0.0204088
2001	30.037943	₦981,841.00	₦1,824,552.00	₦2,710,972.00	₦240,048.00	0.0091571	0.1248516	0.1454983	0.0272318
2002	26.768656	₦3,319,888.00	₦666,539.00	₦1,122,333.00	₦671,348.00	0.0309628	0.0456103	0.0602358	0.07616
2003	28.370896	₦2,075,680.00	₦767,618.00	₦1,075,435.00	₦392,839.00	0.0193588	0.052527	0.0577187	0.044565
2004	26.063254	₦1,767,903.00	₦1,235,661.00	₦2,781,785.00	₦527,877.00	0.0164883	0.0845546	0.1492988	0.0598841
2005	24.966125	₦7,778,937.00	₦255,162.00	₦326,387.00	₦137,849.00	0.07255	0.0174604	0.0175172	0.015638
2006	26.1665	₦7,968,097.00	₦89,364.00	₦55,086.00	₦14,156.00	0.0743142	0.0061151	0.0029565	0.0016059
2007	20.180037	₦55,803.00	₦63,338.00	₦16,124.00	₦54,799.00	0.0005204	0.0043341	0.0008654	0.0062166
2008	18.859767	₦1,269,192.00	₦5,215.00	₦139,143.00	₦59,994.00	0.0118371	0.0003569	0.0074678	0.0068059
2009	21.115455	₦1,628,224.00	₦50,759.00	₦93,473.00	₦68,336.00	0.0151856	0.0034734	0.0050167	0.0077523
2010	16.815013	₦31,766,243.00	₦43,174.00	₦36,033.00	₦128,098.00	0.2962669	0.0029543	0.0019339	0.0145319
2011	15.676311	₦4,257,880.00	₦161,654.00	₦32,938.00	₦190,469.00	0.039711	0.0110618	0.0017678	0.0216074
2012	14.21112	₦1,109,175.00	₦108,496.00	₦365,091.00	₦180,457.00	0.0103447	0.0074242	0.0195945	0.0204716
2013	14.168726	₦1,193,058.00	₦381,084.00	₦560,860.00	₦310,666.00	0.011127	0.0260771	0.0301014	0.035243
2014	15.083533	₦1,915,682.00	₦2,125,008.00	₦2,161,387.00	₦277,141.00	0.0178665	0.1454114	0.1160019	0.0314398
2015	14.827175	₦2,183,310.00	₦371,052.00	₦238,081.00	₦459,142.00	0.0203626	0.0253906	0.0127778	0.0520866
2016	14.724955	₦1,392,504.00	₦1,221,059.00	₦858,520.00	₦1,323,482.00	0.0129871	0.0835554	0.0460769	0.1501402
2017	14.715617	₦1,164,482.00	₦2,757,281.00	₦1,795,778.00	₦981,305.00	0.0108605	0.1886769	0.0963797	0.1113225
2018	19.018384	₦250,238.00	₦10,636.00	₦10,437.00	₦77,002.00	0.0023338	0.0007278	0.0005602	0.0087354
2019	24.625234	₦106,457.00	₦318,441.00	₦285,049.00	₦542,329.00	0.0009929	0.0217905	0.0152986	0.0615236
2020	26.7442	₦30,365.00	₦240,929.00	₦549,302.00	₦49,722.00	0.0002832	0.0164864	0.0294811	0.0056406
Total		**₦107,221,716.00**	**₦14,613,768.00**	**₦18,632,334.00**	**₦8,814,974.00**				

Table 3.1: Definition and Measurement of Variables

S/N	Variable Type	Variable Name	Measurement
1	Dependent variable	Economic growth	Fixed Capital Formation (FCF)
2	Independent variable	Insurance risk management	Life Insurance Claims (LIC)
			Motor Insurance Claims (MIC)
			Fire Insurance Claims (FIC)
			Accident Insurance Claims (AIC)

Source: Researchers' Computations (2022)

Table 4.1: Descriptive Statistics

	GFCF	LIC	MIC	FIC	AIC
Mean	22.87042	0.043478	0.043478	0.043478	0.043478
Median	21.11545	0.016488	0.021790	0.018795	0.027232
Maximum	40.55340	0.296267	0.188677	0.163469	0.190351
Minimum	14.16873	0.000283	0.000357	0.000560	0.001606
Std. Dev.	7.844963	0.071561	0.051167	0.053021	0.048376
Skewness	0.692563	2.578561	1.469144	1.204314	1.779301
Kurtosis	2.592261	8.852260	4.320930	3.017467	5.478871
Jarque-Bera	1.997958	58.30965	9.945965	5.560057	18.02476
Probability	0.368255	0.000000	0.006922	0.062037	0.000122
Sum	526.0196	1.000000	1.000000	1.000000	1.000000
Sum Sq. Dev.	1353.956	0.112662	0.057598	0.061848	0.051485

Table 4.2: Unit Root Test

Group unit root test: Summary
Series: GFCF, LIC, MIC, FIC, AIC
To ensure that the variables meet the assumptions of the ordinary least s...
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.72081	0.0000	5	110
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-6.43512	0.0000	5	110
ADF - Fisher Chi-square	55.0256	0.0000	5	110
PP - Fisher Chi-square	53.9964	0.0000	5	110

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Table 4.3: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	3.870898	Prob. F(4,18)	0.0194
Obs*R-squared	10.63573	Prob. Chi-Square(4)	0.0310
Scaled explained SS	6.537914	Prob. Chi-Square(4)	0.1624

Table 4.4: Heteroskedasticity Test: White-Test

Heteroskedasticity Test: White
Null hypothesis: Homoskedasticity

F-statistic	1.338175	Prob. F(14,8)	0.3484
Obs*R-squared	16.11750	Prob. Chi-Square(14)	0.3063
Scaled explained SS	9.907619	Prob. Chi-Square(14)	0.7689

Table 4.5: Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	8.760734	Prob. F(2,16)	0.0027
Obs*R-squared	12.02196	Prob. Chi-Square(2)	0.0025

Table 4.6: Multi-Collinearity Test

Variance Inflation Factors
Sample: 1998 2020
Included observations: 23

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LIC	474.6835	1.421524	1.025692
MIC	2224.660	4.312668	2.457555
FIC	2379.871	4.807547	2.823006
AIC	1571.230	2.861752	1.551525
C	5.935337	2.618229	NA

Table 4.7: Multiple Regression Analysis

Dependent Variable: GFCF
Method: Least Squares
Sample: 1998 2020
Included observations: 23
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LIC	29.58294	38.30541	0.772291	0.4500
MIC	-86.97152	28.20875	-3.083140	0.0064
FIC	111.8264	30.57695	3.657212	0.0018
AIC	5.812849	24.83797	0.234031	0.8176
C	20.25082	2.170333	9.330743	0.0000

R-squared	0.306840	Mean dependent var	22.87042
Adjusted R-squared	0.152804	S.D. dependent var	7.844963
S.E. of regression	7.220757	Akaike info criterion	6.981457
Sum squared resid	938.5080	Schwarz criterion	7.228303
Log likelihood	-75.28675	Hannan-Quinn criter.	7.043538
F-statistic	1.992007	Durbin-Watson stat	0.692380
Prob(F-statistic)	0.138954	Wald F-statistic	5.906657
Prob(Wald F-statistic)	0.003229		