DETERMINANTS OF FINANCIAL PERFORMANCE OF INSURANCE COMPANIES: EMPIRICAL EVIDENCE FROM KENYA

by

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Submitted as per the prerequisites for the level of

Master of Commerce

in the subject of

Business Management with specialisation in Financial Management

at the

UNIVERSITY OF SOUTH AFRICA

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DECEMBER 2020

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Determinants of Financial Performance of Insurance Companies: Empirical Evidence from Kenya

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ABSTRACT

The drivers of financial success of the insurance industry are of interest to several players in any economy including the government, policymakers, policyholders, and investors. In Kenya, there have been relatively few studies on this topic, most of which look at narrow elements that determine insurance companies' performance. This paper sought to explore the components contributing to the financial performance of insurance firms. We sourced secondary data from the Insurance Regulatory Authority Annual Reports. The sample consisted of 37 General Insurers and 16 Life Insurers for the stipulated period of 2009 to 2018. For the analysis, a panel data method was employed. While most global studies have used generalized methods of moments and Pooled OLS models, this study explored the use of fixed and random effects model. On the basis of empirical findings, insurer size, combined ratios of an insurer and solvency margin were found to hold significant positive roles in determining the financial performance of insurance companies in Kenya. Solvency margin was established to hold weight, particularly on life insurers. The impact of underwriting risks on the overall insurance industry was found to be sizeable. It is suggested that small sized insurers pay close attention to ways of mitigating themselves against underwriting risk to avoid underwriting losses.

The size and investment decisions of an insurer had a moderate positive impact. This suggests that large insurance companies, in terms of total assets, are well placed to outperform and that investment decision making is an important business tool for both general and life insurers. For reinsurance ratio, the analysis showed a moderated positive impact, which was dependent on the size of the company. The study recommends that a small sized insurer needs to understand the risks it insures against since on matters of reinsurance, they generally cede lower proportions of their premiums. Lastly, insurers need to cushion against a reliance on huge debts, since excessive leverage was found to a negative effect on finance performance. This study provides broad analyses of the various drivers of financial performance of the insurance industry in Kenya. The study contributes to the academic literature on the insurance sector in Kenya and Africa as a whole. Furthermore, it provides pointers to the management and directors of insurance companies on the aspects of their business that would need greater attention to drive and sustain superior financial performance.

Keywords: insurance, financial performance, solvency, Kenya

ABSTRAK

Die drywers van finansiële sukses van die versekeringsbedryf wek belangstelling onder verskeie spelers in enige ekonomie, insluitend die staat, beleidsmakers, polishouers, en beleggers. In Kenia is betreklik min studies oor hierdie onderwerp gedoen. Die meeste studies ondersoek eng elemente wat die prestasie van versekeringsmaatskappye beïnvloed. Hierdie referaat het ten doel om die komponente te verken wat tot die finansiële prestasie van versekeringsfirmas bydra. Ons het sekondêre data uit die Jaarverslae van die Regulatiewe Owerheid bekom. Die monster het bestaan uit 37 algemene versekeraars en 16 lewensversekeraars vir die gestipuleerde tydperk van 2009 tot 2018. Vir die ontleding is ’n paneeldatametode gebruik. Terwyl die meeste globale studies veralgemeende metodes van momente en saamgevoegde GKK-modelle gebruik, het hierdie studie die gebruik van die vaste- en stogastiese-effektemodel verken. Empiriese bevindings het getoon dat versekeraargrootte, gekombineerde verhoudings van ’n versekeraar en solvensiemarge belangrik was in die bepaling van die finansiële prestasie van versekeringsmaatskappye in Kenia. Solvensiemarge is vasgestel om gewig te hou, veral met betrekking tot lewensversekeraars. Daar is bevind dat die uitwerking van onderskrywingsrisiko’s op die oorkoepelende versekeringsbedryf beduidend is. Daar word voorgestel dat kleingrootte versekeraars noukeurig aandag moet gee aan maniere om hulself teen onderskrywingsrisiko te beskerm om onderskrywingsverliese te voorkom.

Die grootte en beleggingsbesluite van ’n versekeraar het ’n matig positiewe uitwerking gehad. Dit dui daarop dat groot versekeringsmaatskappye, wat totale bates betref, goed geplaas is om beter te presteer en dat beleggingsbesluitneming ’n belangrike sake-instrument is vir sowel algemene as lewensversekeraars. Wat die herversekeringsverhouding betref, het die ontleding ’n matig positiewe uitwerking getoon, wat van die grootte van die maatskappy afgehang het. Die studie beveel aan dat ’n kleingrootte versekeraar die risiko’s moet verstaan waarteen hy verseker aangesien, wat herversekering betref, hulle oor die algemeen laer verhoudings van hul premies sedeer. Laastens moet versekeraars hulself skans teen ’n afhanklikheid van groot skulde, aangesien daar bevind is dat buitensporige hefboomwerking ’n negatiewe effek op finansiesprestasie het. Hierdie studie bied ’n algemene ontleding van die onderskeie drywers van finansiële prestasie van die versekeringsbedryf in Kenia. Die studie dra by tot die akademiese literatuur oor die versekeringsektor in Kenia en Afrika in die geheel. Dit bied voorts

aanwysers vir die bestuur en direkteure van versekeringsmaatskappye oor daardie aspekte van hul besigheid wat meer aandag benodig om hoogstaande finansiële prestasie aan te dryf en te handhaaf.

Sleutelwoorde: versekering, finansiële prestasie, solvensie, Kenia

NGOBUFITJHAZANA

Abakhozeleli bepumelelo yezeemali zebubulo letjhorensi bafuneka khulu kubadlali abambalwa kunanyana ngiliphi ihlelo lezomnotho ezweni, kubalwa phakathi urhulumende, abasunguli bamapholisi, abanikazi bamapholisi kanye nabatjaliimali. Elizweni leKenya, kade kwenziwa iimfundo zamarhubhululo ezimbalwa ezimalungana nalesi sihloko, iimfundo ezinengi ziqala iinhlaka ezincani ezinomthelela phezu kobujamo bezeemali bekhamphani yetjhorensi. Iphepha leli belifuna ukuphenya iingaba ezinegalelo phezu kobujamo beemali emakhamphanini wetjhorensi. Sifumene idatha yesigaba lesibili ku-*Insurance Regulatory Authority Annual Reports*. Isampuli beyina-37 yabosotjhorensi boke kanye ne-16 yabosotjhorensi bepilo esikhathini esibekiweko ukusukela ngo-2009 ukufikela ngo-2018. Ngokwehlelo lokutsenga, indlela yedatha yephanele isetjenzisiwe. Njengombana amarhubhululo asebenzise iindlela zoke zeenkhathi begodu ahlanganisa woke amamodeli we-OLS, leli rhubhululo beliphenya ukusetjenziswa kwemithelela yamamodeli angatjhugulukiko kanye nemodeli yemiphumela yananyana yini. Ilwazi elitholakele liveze ukuthi ubukhulu befema yetjhorensi, kuhlangene neenlinganiso ezihlanganisiweko zikasotjhorensi kanye nokungezelela kancani kwenzuzo (*solvency*) yebhizinisi kudlale iindima ezihle nezibonakalako ekutholeni ubujamo beemali bamakhamphani wamatjhorensi eKenya. Ukungezelelwa kancani kwenzuzo kwasungulwa ngesizathu sokuphatha amandla, ikakhulu malungana nabosotjhorensi bepilo. Umthelela wobungozi bokuba ngaphasi kwebubulo loke letjhorensi kwatholakala kwenzeka ngenani eliphezulu. Kutjhukumiswe ukobana abosotjhorensi abancani baqalisisa iindlela zokuzivikela malungana nobungozi bokukhosela ukubalekela ukulahlekelwa ngaphasi kwehlelo lokukhoseliswa.

Ubukhulu kanye neenqunto zikasotjhorensi zokutjalwa kweemali zibe nomthelela omuhle. Lokhu kutjho bona amakhamphani wetjhorensi amakhulu, malungana nepahla yoke eligugu, zihlelwe ngamajamo ukobana zisebenze kuhle khulu kanti lesi siqunto sokutjalwa kweemali kulithulusi lebhizinisi eliqakathekileko kubosotjhorensi bemihlobo yoke kanye nabosotjhorensi bepilo. Malungana nesilinganiso sokufakwa ngobutjha kutjhorensi, amanani wetsengo akhombise umthelela omuhle, obewudzimelele kubukhulu bekhamphani. Irhubhululo lincoma ukobana usotjhorensi omncani udinga ukuzwisisa iingozi ezifake kutjhorensi, malungana neendaba zokufakwa ngobutjha kutjhorensi njengombana, ngokujayelekileko banikelwa iingcenye eziphasi zamaphrimiyamu. Kokugcina, abosotjhorensi badinga ukuzivikela

malungana nokudzimelela phezu kweenkolodo eziphezulu, njengombana iinzuzo eziphezulu zokukhozelelwa kokutjalwa kweemali zitholakele ukobana zibe nomthelela omumbi phezu kobujamo bezeemali. Leli rhubhululo linikela itsengo elinabileko laba khozeleli bobujamo bobujamo bezeemali abahlukahlukeneko bebubulo letjhorensi eKenya. Irhubhululo lifaka igalelo kumtlolo wezobukghwar (*literature*)i emkhakheni wezetjhorensi eKenya kanye ne-Afrika yokana. Ngaphezu kwalokho, irhubhululo linikela abaphathi nabanqophisi bamakhamphani wetjhorensi iinkomba eendabeni zamabhizinisi wabo, lawo bekazokudinga ukutjheja khulu ukukhozelela ubujamo bezeemali kanye nokugcina ubujamo bezeemali busezingeni elihle khulu.

Amagama aqakathekileko: itjhorensi, ubujamo beemali, ubujamo bokuqina ngokweemali, i-Kenya

ACKNOWLEDGEMENTS

I would like to take this opportunity to appreciate the detailed guidance, frequent reviews and kind feedback by my supervisor: Professor Athenia Sibindi. Your professionalism, knowledge, expertise, and interest in the research helped me complete the study. Thank you for your patience and consistent support. I would like thank my econometrician, Stephen Oriedi, it was a pleasure working with you. I am grateful to Ian Makamara for the meticulous language editing especially considering the tight time constraint. I extent my gratitude to the College of Economic and Management Sciences at the University of South Africa (UNISA) for financial support without which timely completion of this project would not have been possible. Finally, I wish to extend my deepest gratitude to my family for their invaluable sacrifices and faith in me. Your steadfast encouragement and backing have made it possible for me to complete this study.

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LIST OF ACRONYMS

AKI	Association of Kenyan Insurers
ANOVA	Analysis of Variance
BCG	Boston Consulting Group
CSR	Corporate Social Responsibility
EU	European Union
EVA®	Economic Value Added
FEM	Fixed Effects Model
GAAP	Generally Accepted Accounting Practice
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
GWP	Gross Written Premium
IAIS	International Association of Insurance Supervisors
ICS	International Capital Standards
IRA	Insurance Regulatory Authority
IPM	Insurance Performance Measure
KES	Kenya Shilling
MCR	Minimum Capital Requirement
NEP	Net Earned Premium
NSE	Nairobi Securities Exchange
OLS	Ordinary Least Squares
RBC	Risk-Based Capital
RE	Random Effects
REM	Random Effects Model
ROA	Return on Assets
ROE	Return on Equity
SVA	Shareholder Value Theory
USA	United States of America
USD	United States Dollar

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Insurance is useful from an economic perspective, as it creates a buffer against losses that could arise from the occurrence of unforeseen financial setbacks. This is done by inclusion of a possible mechanism by which the transfer of losses can be done. Consequently, the level of uncertainty is reduced. Insurance provides satisfaction and contentment to individuals and communities in general and improves the utilization of capital. If there was no insurance, businesses would have to maintain huge reserves to cater for unexpected events.

The huge reserves put aside would have to be invested in relatively safe but relatively low return investments, representing an inefficient deployment of capital. Since insurers are professional managers of risk, they are well placed to take on the potential liabilities with use of much less capital. The release of funds will allow for their use in pursuits that are more productive (Vaughan & Vaughan, 2008, p. 42).

The insurance sector plays a remarkable and positive part in propelling Kenya's economy and has registered remarkable growth over the years. Kenya's industry gross premium, written in 2016, was KES 195.2 billion, a 13% growth on the KES 172.5 billion figure for 2015.

Insurance plays a useful role in the economy in general. Life insurance allows their beneficiaries and main policy holders to safeguard against unforeseen deprivation in income through premature death or retirement. Furthermore, property insurance provides a cushion against the loss of business and individual property. Liability insurance provides coverage against legal liability exposures (Saunders & M., 2006, p. 64-74).

Insurance companies are a source of long-term savings which can be used to fund projects that have long maturity periods. Institutional stakeholders such as insurers, pension trusts and sovereign wealth funds have more than US Dollars 80 trillion in assets under management globally (PwC AWM Research Centre, 2017, p. 6-7).

Notwithstanding the importance of the insurance industry in Kenya, there has been limited research on the determinants of financial performance of insurance firms. The few papers on the features that contribute on to the elements that drive the financial performance and money related execution of insurance establishments in Kenya have focused on single issues; for example: Jelle (2015: p. 6-42) examines the contribution of capital structure on the financial soundness of insurance firms recorded on the Nairobi Securities Exchange. Nyongesa, 2017, p. 194-208 studies the effects of management practices on the financials of the company.

Further, (Mwangi & Murigu, 2015, p. 288-295) explores the ingredients of financial performance of general insurers. In terms of the elements affecting insurance companies' performance, existing literature leans towards the general insurance sector. This study seeks to evaluate factors such as solvency, liquidity, and underwriting risk, while incorporating both life and general insurance companies. The proposed study will address the wide range of issues that influence financial performance as well cover the entire Kenyan insurance industry. The analysis will be done for all the players in both the general and life insurance sectors.

The present study seeks to set out the constituents of financial achievement of insurance firms in Kenya. It is envisaged that the findings of this evaluation build onto the existing academic literature on the performance of underwriters in Africa. Insurance managers may potentially pick from this study the business aspects that they should focus on to improve the performance of the companies that they run.

1.2 BACKGROUND

There are 52 insurance companies operating in Kenya. Out of the 52, 16 write long term business (life) only, 9 are composite insurers (writing both life and general business), while the rest are general insurance only businesses (Insurance Regulatory Authority, 2018, p. 154-158).

Table 1.1: **Breakdown of Number Insurance Companies in Kenya, 2009-2018**

Insurance Companies in Kenya	
Life insurance	16
General Insurance	27
Composite (Both life and General)	9
Total	**52**

Source: Insurance Regulatory Authority.

The performance trend in the insurance industry financial performance is displayed below. ROE has been flat from 2009 to 2011. However, in 2013, the measure reached its peak at 41% for life insurers, and 20% for general insurers. The returns on equity has shown a downward shift, despite rising growth in gross written premium. The trend has been on a decline from 2014, begging the questions as to what determinants lead to such figures.

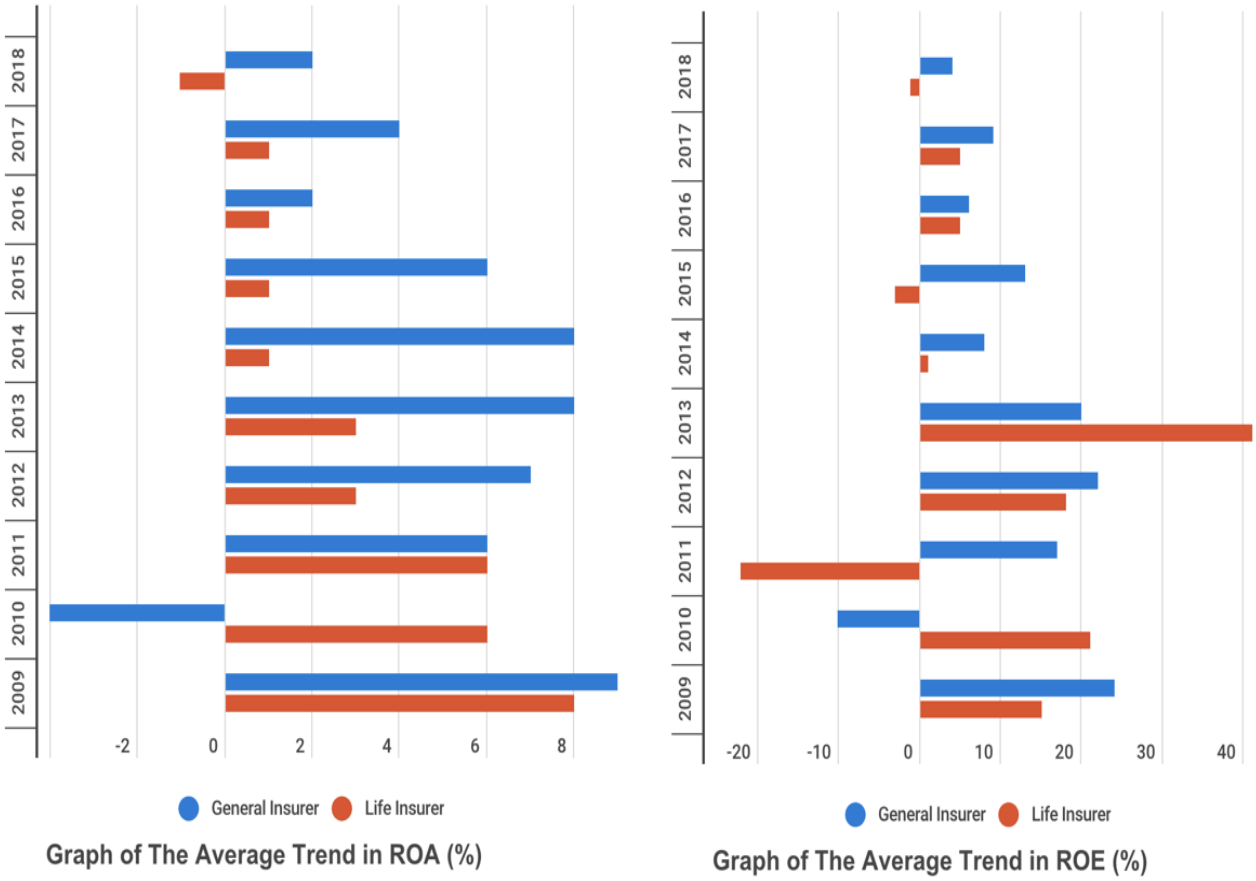


Figure 1.1: Graphs of Average Trend of ROA and ROE,2009-2018

Source: Compiled by Author

The trend of the insurance industry has been good, especially for respective shareholders. Over five years from 2012 to 2016 the global insurance industry has done better than most industries in terms of total shareholder returns. The total shareholder return for the industry was 18.5% over those five years; which is impressive considering the tough world economic environment in that period (The Boston Consulting Group, 2017, p. 2).

Better allocation of capital and minimisation of expenses relative to other companies have been the key drivers of this sterling performance by insurance companies. In the long run, growth is the major driver of shareholder value. Over the ten-year period running from 2006 through 2016, 95% of the value created by the top 25% insurance companies came from growth (The Boston Consulting Group, 2017, p. 2-3). Insurance companies in Kenya reported a growth of 6.45% in insurance premiums in 2017 compared to general economic growth of 4.9%.

Growth in insurance premiums from 2012 to 2017 was 60.51% (Association of Kenya Insurers, 2017, p. 42). Given the correlation between growth in business underwritten by insurance companies and increase in profitability and subsequent growth in shareholder value, Kenyan insurance companies are potentially a good investment for equity investors.

Gross written premiums edged by 6.2% in 2017 to settle at KES 207.6 billion for the year. The industry's investment holdings, total assets and shareholders' funds grew by 13.1%, 12.7%, and 9.9% respectively over the five-year period from 2013 to 2017. In spite of this phenomenal growth, insurance penetration, which is the extent and proportion of Gross Direct Insurance Premiums to Gross Domestic Product (GDP), was only 2.68% in 2017, which is roughly similar to the 2.71% penetration rate in 2016 (Insurance Regulatory Authority, 2018, p. 3-4).

The level of insurance penetration in Kenya is low relative to other markets; there is a lot of scope for further growth. The level of insurance penetration in Kenya is slightly less than that of Africa which stands at 2.96%. Kenya has a long way go to hit the 13.75% penetration rate in South Africa or the 7.55% penetration rate in Namibia (Swiss Re Institute, 2018, p. 46).

Even with the relatively low penetration, insurance builds Kenya's wealth and economy in general. By the close of the year 2017, there were 52 insurance companies in Kenya. There are numerous other players that work in conjunction with insurance companies: as at 31st December 2017, these included four reinsurance firms, 221 insurance brokers, eleven reinsurance brokers, 31 medical insurance specialist firms and 126 motor vehicle assessors among other industry players.

The players in the insurance division in Kenya employ thousands of people. The cumulative number of lives covered under life insurance in Kenya is 4.26 million, which is roughly 9.1% of the total population as of the close of 2017. The total count of lives covered has increased by more than 100% in five years from 2.06 million in 2013 (Insurance Regulatory Authority, 2018, p. 2-3).

There have been several failures of insurance companies in Kenya. Since 2005 four insurance companies have collapsed. The organizations that have been declared financially insolvent include: United Insurance Limited, Blue Shield Assurance, Concord Insurance, Standard Assurance, and Invesco Assurance. A bit of a bright spot is that Invesco Assurance is back in operation. The firms could not handle the obligations due from them as insurance firms, including the payment of key debtors and creditors (Waitathu, 2013). If the management of these companies had been well versed in the factors that drive superior financial performance, there is a possibility that they may have kept their companies afloat.

Among the proposed determinants for financial performance include, solvency, size of the insurer, leverage, underwriting risk and standard level factors for instance size and age of insurer. Size and age determinants have a role in the number of clients that an insurer services, this translates to the growth in insurers top line in terms of volumes and reputation. Moreover, financial performance depends on going concern aspects of the insurance industry, as such; solvency, leverage and underwriting risk have a link to the overall performance.

Kenyan insurance companies have grown their presence in Eastern, Central and Southern Africa to cover several countries including Tanzania, Uganda, Rwanda, Burundi, DRC Congo, South Sudan, Mozambique, Malawi, Mauritius, and Zambia among others. This has been necessitated by businesses that are already insured in Kenya having commercial interests in neighbouring African countries.

1.3 PROBLEM STATEMENT

Insurance penetration is relatively low in Kenya at around 3% compared to over 13% for South Africa (Swiss Re Institute, 2018, p. 46). There have been several failures of insurance companies in Kenya. Consequently, there is a need to explore the elements that drive financial performance within the insurance sector. It can be noted that there is plenty of scope to grow the insurance sector as a whole and for individual companies to grab significant market share.

The overall performance of the stock market over the decade has shown fluctuations over the decade. It would be of essence to study the determinants of financial performance of various insurers since most of the companies in Kenya are listed on the Nairobi Stock Exchange (NSE).

Returns on Equity figures portray gradual declines starting from 2014 for the whole industry in Kenya, this begs the question on what factors led to the deterioration. Consequently, the income posed as gross domestic product from financial services also portrays reduction in respective figures. The health of the financial sector impacts the economy in general. Greater understanding of the best practices leading to superior performance by some insurance industry players would be illuminating for the entire financial services industry and could provide useful pointers to the state of the economy in general.

There have been global studies that explore the elements that establish the financial performance of insurance firms. However, there have been relatively few studies on this topic focusing specifically on Kenyan companies. Moreover, those few studies have concentrated on the narrow elements driving insurance companies' performance. This study will therefore bridge a gap in knowledge by comprehensively analysing the various drivers of the financial achievement of insurance firms in Kenya.

In an evaluation piece to set out the elements that influence the profitability of general insurers in Kenya, (Mwangi & Murigu, 2015, p. 295-296) found that profitability was positively correlated to higher debt levels.There are a few studies that have concentrated on the interconnection between firm size and profitability, with firm size being generally taken as the total assets or sales volumes.

In their study examining the connection among size and benefit among 45 financially recorded companies in Nigeria, (Bolarinwa & Obembe, 2017) find that there exists a direct link between firm size and financial efficiency

In a study of 47 insurance firms from 2011 to 2015 (Maina, 2016, pp. 25-31) found a strong correlation between annual liquidity ratios and insurance company profitability. However, the study does not outline the solvency aspect of the insurance sector. We seek to analyse this driver and study its correlation with financial performance.

Odira (2016, p. 39-44) investigated the influence of liquidity, solvency, and leverage on the performance drivers of general insurance firms from 2011 and found that liquidity had a significant and positive correlation with financial accomplishment. Leverage was found to have a negative sway on the accomplishments of insurance firms, while the effect of solvency on the financial performance of similar insurers was found to be positive but statistically insignificant. We delve deeper to establish the extent to which investment decisions impact the financial bottom-line of insurers.

In a study of the Romanian insurance market from 2008 to 2012 (Burca & Batrinca, 2014) found that the main elements of the financial accomplishments in the Romanian market comprise monetary leverage, organization size, development of gross composed expenses, underwriting hazard and solvency edge (Burca & Batrinca, 2014, p. 307-308). We investigate further by comparing with the Kenyan market to identify the correlation that exists among these factor variables.

1.4 AIM OF THE STUDY

The prime point of this evaluation is to establish the variables that determine the financial performance of insurance institutions in Kenya.

1.4.1 Research Questions

To guide the study, the research questions that will be addressed include:

1) Do the standard firm-level factors explain the financial performance of Kenyan insurance companies?
2) What is the impact of solvency on the financial performance of Kenyan insurance firms?

3) Does underwriting risk have an impact on the financial performance of Kenyan insurance companies?

4) What is the influence of investment performance and decisions on the insurance firm's financial performance?

1.4.2 Research Objectives

1) To establish whether firm-level factors explain financial performance of Kenyan insurance firms.
2) To establish whether there is a link between the solvency of Kenyan insurance establishments and their financial performance.
3) To determine if there is a connection between underwriting hazards and the financial performance of insurance establishments in Kenya.
4) To find out the impact of investment performance and decisions on the financial performance of insurers in Kenya.

1.4.3 Significance of the study

The findings from this study will provide a solid foundation for scholars looking to engage in deeper research in the specific determinants of financial performance of insurance companies in Kenya. Researchers in insurance will be able to access this study from open access academic website, and other public repository domains such as university libraries and journals once the findings are published. The study will add to the academic literature on the insurance sector in Kenya and Africa as a whole. The findings from this study may also provide pointers to management of insurance companies on the aspects of their business that would need greater attention to drive and sustain superior financial performance.

1.5 Dissertation Outline

The rest of the dissertation is organised as follows:

Chapter 2 Literature Review

This chapter provides the theoretical foundation of the study and reviews selected empirical literature relating to key variables with the aim of highlighting the research

study gaps. Further, the empirical review of studies that best relate to the objectives of the study are presented and discussed.

Chapter 3 Research Methodology

This chapter presents and describes the research methods and procedures used in conducting the study. It outlines the research design, population of the study and sampling design, data collection and data analysis.

Chapter 4 Research Findings and Discussion

This chapter begins by presenting and analysing the descriptive statistics. It then progresses to conduct correlational analysis and analyse panel data estimations. Further, these findings are discussed in relation to existing studies.

Chapter 5 Summary of Findings, Conclusions and Recommendations

This chapter summarises the findings of this study. This relates to a summary of findings from the literature review as well as documenting the empirical findings of the study. The chapter ends by proffering recommendations and suggestions for areas of further research are also provided in this chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The principal focus of the study is to establish the elements that have the greatest influence in how well from a financial perspective insurance companies in Kenya perform. This chapter explores various literature on the financial achievement of the insurance sector across the globe. It starts with the review of theories underpinning the study. The literature review section reviews key theories that relate to corporate performance in general, and specifically to the constituent drivers of financial achievement of insurance firms. The discussion in the chapter progresses to review selected empirical literature relating to key studies by depicting the research loopholes. The existing literature that best relates to the objectives of the study is then evaluated and presented. Each of the aspects of the empirical literature is presented first from a developed world perspective then onto the developing world. The presentation is cascaded from the most sophistically economies followed by the more advanced emerging markets, then to Africa in general, and finally to Kenya specific literature.

The continuation of the chapter is collated in this line up: Section 2.2 reviews the conceptual framework in literature that anchors this study. Section 2.3 reviews the empirical literature and Section 2.4 concludes the chapter.

2.2 CONCEPTUAL FRAMEWORK

The conceptual framework section attempts to uncover whether the existing theories provide guidance on what determines the performance of various organisations with particular emphasis on insurance companies. The theories that will be analysed in this section are shareholder value, stakeholder theory, financial performance, and solvency theory.

2.2.1 Shareholder Value Theory

The key narrative around shareholder value is the notion that the overriding objective of management should be the maximisation of shareholders' wealth. The rise in

shareholder's wealth is measured by the increase in monetary value of the investment (capital gains) and escalations in dividend payments. In terms of assessing the performance of the management team of a company growing the return on assets in the balance sheet over time is an indicator of success (Fligstein & Shin, 2007, p. 403-404).

One of the earliest theories on shareholder wealth maximisation was advanced by Nobel Laureate Milton Friedman who argued that the key obligation for a business

was the maximisation of shareholder wealth. The overriding narrative of his theory is a company is mainly handled and controlled for the key satisfaction of shareholders. Further Friedman (1970, pp 28-31) postulated that; "there is only one key role of an entity – that is to utilize its available resources and participate in the roles aligned at improving its profits provided it captures it in an fair competition in the absence forgery or bribery." The approach towards shareholders welfare differs between capitalist oriented economies and socialist leaning economies.

Greater emphasis on shareholder value has been a major aspect in capitalist countries since the 1980s (Martin, et al., 2007, p. 3-4). Shareholder satisfaction, which has been flagged as a fundamental concept of corporate administration among firms in the United States of America, Australia, and Great Britain in the course of the 80s and 90s, has picked steam in many other countries (Lazonick & O'Sullivan, 2000, p. 13-14). The focus on "maximising shareholder value" has kept gathering momentum well into the twenty-first century. The leap and growth of institutional shareholders, as compared to governments and individual shareholders accelerated the quest for maximisation of shareholder value (Hiil, 2001). The relocation for stockholding from individuals to institutions made it easier to execute the takeovers recommended by agency theorists (Lazonick & O'Sullivan, 2000, p. 13-35). The objective of maximising shareholder value provides the basis for setting performance metrics to motivate managers and signals to investors how well the organisation is performing (Martin, et al., 2007, p. 6-7). Insurance establishments should devise mechanisms to promptly validate claims made by policyholders and effect settlement on a timely basis as this translates to value for shareholders (Harrison & Wick, 2013, pp. 97-124).

Denning (2010) explained that private interests of key executives should resonate with those of the firms, and its partners. A number of regulations were enacted in the 1990s

first by the United States Securities regulator and later by other advanced markers regulators that added more emphasis to the primacy of shareholders. The first change, required more detailed disclosure of top executives' compensation, which put firm executives under increased pressure to deliver up to their rates of remuneration (Denning, 2010). The second change made it easier for investors to source the information about other players, which substantially lowered the expenses of staging a proxy fight (Grinblatt & Sheridan, 2004, p. 632-633). There has also been a surge in individual activist investors who take up a sizable stake in a firm with the main objective of changing the way management is running a company, with a view to improve the market and intrinsic worth of the company and as a consequence boost the value of their stakes (Ponomareva, 2018). Among institutional investors, hedge funds have played a growing and significant role in shareholder activism (Armour & Cheffins, 2009). Overall, the power of activist investors over corporate governance has continued to intensify. Activist investors set a record in 2017 putting in over USD 60 billion into listed companies, more than double the amount invested in 2016 (Breitinger & Hardach, 2018).

A fairly recent innovation in assessing the benefits to shareholders is the Shareholder Value Analysis (SVA) metric. SVA is calculated by working out the net present value of a business then deducting the total amount of debt that the company owes (Oxford Reference, 2019). The underlying principle of SVA is that a firm improves its worth for its shareholders if equity returns are more than equity costs. In terms of assessing management decisions SVA translates to the difference in shareholder value (Mankaï & Selim, 2012, p. 1007-1043). SVA can be deployed at either an individual business unit level or organisation wide. At the unit level SVA measures the value created by the unit over time by analysing cash-flows (Peterson & Blenborg, 2008). At the firm level SVA provides a basis for examining the various ways for the strengthening of the shareholder value by exploring the trade-offs that exist in investing in new ventures, reinvesting in existing units, or returning cash back to executive partners (Pandey & Arora, 2015, p. 2129-2130).

2.2.2 Stakeholder Theory

An alternative to the shareholder value theory is "stakeholder theory". This theory suggests that managers must come up with and put into action procedures to consider

the needs of all the parties that are impacted by the business. The approach for the management of a company under this theory to consider the interests of key company stakeholders for the betterment of the whole organization in the foreseeable long-term. The success of a company is dependent on how well it can balance the diverging needs of its stakeholders (Schwab & Kroos, 1971, p. 20-21).

In Freeman's (1984) ground-breaking enactment of stakeholder theory he advanced that the main justification of an organization is to be a vehicle looking after the welfare and satisfaction of stakeholder interests over and above its goal of seeking profitability. A stakeholder approach encompasses the active driving of the business conditions, relationships, and the promotion of joint affairs (Freeman & McVea, 2001, p. 10-11).

In order to maximise profits, companies need to offer outcomes and input that meet the wants of the key customers, develop great relationships with suppliers to optimise on operations, have employees who are inspired and engaged with their work, and be supportive of the communities in which they operate (Freeman, et al., 2010, p. 9-11).

There have been efforts to introduce more holistic ways to assess company performance rather than just increase in shareholder wealth. One such example would be, corporate social responsibility (CSR), while shareholder preference is extensively recognized to be an obstacle to sustainability (Ronnegard & Smith, 2018). On the other hand, some types of CSR have been shown to increase shareholder value, CSR activities create goodwill with stakeholders that moderates the impact of negative events touching on companies (Godfrey, et al., 2008, p. 440-442).

According to Chukwu (2018), supporting the interest of employees through fair wages. This improves workforce commitment and leads to positive financial outcomes for insurance firms .The study outlines that insurers should adopt measures that lead to employee satisfaction in order to remain profitable and competitive. Furthermore, they need to ensure customer satisfaction since it is strongly associated with the financial performance of insurance firms (Chukwu, 2018, pp. 12-20).

This theory is mainly interested in the way these relationships are in terms of both processes and outcomes from the firms and the firm's stakeholders as these groups can affect decision-making processes (Machira, 2016, pp. 20-31). The aim of stakeholder theory is to address the group of stakeholders who deserve and require the attention of the management (Sundaram & Inkpen, 2004, pp. 350-363).

Jensen (2001) faulted the stakeholder theory arguing that managers are put in a situation in which they are not able to make effective decisions. The theory does not outline specific measurements of performance therefore, it makes managers unaccountable for their performance. The theory is thus, appealing to managers who are focused on their self-interest. Jensen (2001) further noted that based on evidence running over more than two centuries, social welfare has been maximized when each firm in an economy has the free opportunity to maximize its market value.

Firms with strong shareholder rights have been found to report superior performance across a wide range of metrics (Gompers, et al., 2003). An analysis of 1,500 large firms during the 1990s came to the conclusion that firms where shareholders' rights are strong, are found to have higher valuations, greater profitability, have greater revenue growth, incur less capital expenditure and have less need to make acquisitions.

In a research covering the years leading to the 2008 economic crisis, (Kesten, 2010, p. 1609-1610), found the opposite effect with firms where management is entrenched, reporting superior performance to those in which management is less well entrenched. Managers frequently take short term profit measures that will positively impact the share price in the near-term, but which may be harmful in the long run. Specifically, managers facing the threat of a takeover may go for short–term projects with the aim of boosting the worth of the fraternity's shares at the detriment of its operations (Kesten, 2010, p. 1622-1623). Firms whose shares are held by investors with a longer-term horizon have a better bargaining position in acquisitions; they are less likely to benefit from making acquisitions but have a higher likelihood of being purchased at a higher premium (Gaspar, et al., 2005, p. 158-162).

2.2.3 Financial Performance Theory

Financial performance can be stipulated as a subjective estimate of how effectively an organisation uses assets to earn and accumulate revenues (Nandan, 2010, p. 66-74). If a company is utilising its assets in a better way than its peers or competitors, it can be deemed to be doing well from a financial performance perspective.

In their review of company performance (Brealey, et al., 2001, p. 150-151) it was established that an investment that earns more than the cost of capital makes investors better off, as it is earning them a higher return than what they can obtain for themselves.

Naturally, managers of an enterprise are primarily interested with whether the firm's returns on its assets outweighs or falls short of the cost of capital (Jacobs & Anil, 2012). A firm would be then deemed to be performing well if the return it is achieving on the assets it is employing is superior to that which would be achievable by investment in a relatively safe fixed income security.

There are several basic measures of financial performance. These can be expressed as financial ratios and are generated from a company's financial statement; the balance sheet, income statement, and cash flow statements (Engle, 2011). The estimates of Return on Equity (ROE) and Return on Assets (ROA) are the key focus of our study.

Return on Equity, which assesses profitability for the providers of a company's equity capital is defined by after-tax profits divided by shareholder's equity and is expressed as a percentage. An increase in ROE can be achieved by reducing capital employed. Return on Assets on the other hand measures profitability for all providers for capital. ROA can be outlined as the takings before interest and taxes divided by total assets, the total assets being the sum of shareholder's equity and all liabilities (Bodie, et al., 2008, p. 654-655).

There are several financial performance measures particular to the insurance industry. The basis for computing performance metrics for insurance companies is the Net Earned Premium (NEP) (Mohamed & Florentin, 2018). When an individual pays annual insurance premium, they are counted as part of the Gross Written Premium (GWP) for an insurance company. To arrive at the NEP, the cost of reinsurance is deducted from the GEP (InvestSMART Financial Services Pty Ltd, 2019).

The expense ratio refers to the percentage of the net premium that insurance firms spend on obtaining, writing, and servicing insurance, and reinsurance, which is more simply referred to as "underwriting expense" (Atkinson & Hedges, 2020). Business expenses such as marketing, software maintenance, professional fees, and commissions paid are examples of expense ratio costs. A lower expense ratio is better

because it implies that the insurance company is more profitable (Atkinson and Hedges, 2020). A lower expense ratio also means that an insurance company has a greater scope to attract clients with lower prices compared to competitors with higher expense ratios.

The combined ratio simply sums up the expense ratio and the loss ratio (Nickolas, 2018). A combined ratio beneath 100% implies that an insurance firm operates at an underwriting profit, which means that the company is profitable before adding returns from investment of premiums. By the same token, an underwriting ratio which is higher than 100% signifies that claims and expenses have outweighed income from premiums, highlighting that there has been an underwriting loss and that it has cost the insurance firm to hold float in the year. An underwriting ratio of exactly 100% proves there has been neither an underwriting loss nor profit, and that the cost of float has been nil (Calandro and Lane, 2002).

The insurance margin is made possible by the fact that insurance companies can hold a float. Float is the money that an insurance company gets the opportunity to hold on to between the time it receives premiums from customers and the time it must pay out claims made by customers on their policies. Until a policyholder has made a claim, the insurer is able to invest the premiums collected and generate investment income (Nissim, 2010). The profit generated from investment income resulting from holding float can be very significant; it would go towards boosting the shareholder's funds and contribute to dividends paid out.

Calandro and Lane (2002) developed a comprehensive approach to measuring insurance company financial performance which they christened "Insurance Performance Measure (IPM)''. The underwriting ratio, which compares premium receipts to anticipated claims and expenses and is a measure of the "cost of float", fails to capture a number of elements (Calandro & Lane, 2002).

2.2.4 Solvency Theory

In general terms, solvency is the long-term financial strength of a company and refers to the capacity of the company to satisfy its long-term financial commitments promptly. While solvency is of interest to various organisation stakeholders it is of particular importance to both investors and creditors. Investors are keen on a company's continued financial standing so that it can continue to grow, generate profits, and earn

them dividends. Investors are concerned with protecting and growing their investment, and if a company becomes insolvent not only do they lose income and capital gains; their entire investment risks being written off (Cuumins & Derrig, 1988). Lenders and creditors are keen on being repaid and will be interested in whether the company that is borrowing from them has the resources to meet its commitments.

The interest coverage ratio and debt to equity ratio are among the most applied metrics to assess the solvency of a company. Savvy potential creditors take those ratios into account prior to advancing funds (Bragg, 2018).

A company that is creditworthy and solvent is in a position to pay present and subsequent claims as they fall due (a going concern situation). A solvency margin is a shield in a company's assets that cushions one or more of the theoretical solvency levels mandated from the supervisory institutions. (Sandstrom, 2010, p. 3). The greater the solvency margin the greater the level of comfort will be for creditors, investors, current clients, potential clients, and regulators.

The measure of the sufficiency of funds to meet obligations is expressed as a "Solvency Ratio". The dissolvability proportion of an insurance establishment is the size of its capital comparative with all risks it has assumed. As maintained by Khatri (2017), solvency ratios are a key evidence of an insurance firm's financial potential to meet its present needs and long-haul commitments.

Solvency is distinguished from liquidity by the time frame under consideration: solvency is the long-term ability to settle financial obligations while liquidity is the capacity of a company to handle financial commitments in the short run (Wüthrich and Merz, 2013). It must be noted however that short term liquidity challenges can lead to a firm being declared bankrupt if its assets cannot be sold quickly enough to settle its debts (Raines, 2019).

The current liquidity for an insurance firm is the liquid assets divided by the current liabilities. Using a similar approach as for stress testing in the banking industry in which

capitalization of banks is assessed, insurance companies are put into a number of “what if” scenarios to determine if the liquidity they hold will be enough to cover liabilities. The results of these stress tests are used as a basis of comparison between various insurance companies (Kagan, 2018).

A factor that may have huge potential influence on the solvency of life insurers is the prevailing interest rates. Non-life insurance companies are not likely to be affected significantly due to the short-term nature (usually one year or less) of the policies that they issue. Low interest rates have become an obstacle to the stability of life insurers particularly in instances where products with generally high guaranteed returns were sold in the past and are still a sizeable chunk of current portfolios. A drawn-out period of low interest rates would have a significant influence on the solvency state of life insurers translating into comparably high co likelihood of default (Berdin & Gründl, 2015, p. 32-34).

In an assessment of the influence of interest rate risk and longevity risk on the solvency of a life insurer selling policies with minimum rates of return (Berdin, 2016, p. 33-34) established that interest rate risk is the substantial menace for life insurers, and that longevity risk can be more easily alleviated and is therefore less disastrous

Solvency is so critical to the viability of insurance firms that regulators globally have come up with regulations to monitor the solvency of insurance companies. The most well-known and widely applied capital adequacy regulations are the Solvency II rules. Solvency II rules govern insurance companies throughout the European Union, the rules ensure a similar level of protection for purchasers of insurance regardless of which country they buy insurance within the EU. Fundamentally, this scrutinizes the amount of capital that EU insurers must engage so as to minimize the chance of insolvency (Insurance Europe, 2019). The open access to information and transparency that results from this requirement enhances the market forces discipline in the insurance industry (Society of Lloyd's, 2019).

Solvency II is a risk-based capital system, comparable to the Basel II system for banks. Solvency II considers three columns and pillars. Firstly, pillar 1 is a market predictable estimation of insurance liabilities and risk-based calculation of capital. Secondly, pillar 2 is an administrative audit measure. Ultimately, column 3 requires openness and transparency in reporting. The risk-based capital prerequisite, the Solvency Capital

Requirement, is determined utilizing either a standard recipe or a bespoke inside model that has been acknowledged by the regulator (European Actuarial Consulting Group, 2014).

There is also a Minimum Capital Requirement (MCR) which is estimated to 85% confidence level. If the MCR is breached over a material period of time authorization of the insurer will be revoked (PWC, 2004). Infringement of the SCR will bring about administrative intercession with the point of re-establishing the institution's capital levels (Norton Rose Fulbright, 2015). While Solvency II is a European regulatory requirement for insurers; it impacts the counterparties of European insurance companies globally; the effect of those regulations is apparent in the USA which has deep trading relations with Europe.

There are a number of differences between the approach taken by the USA in solvency regulation and set forth by Solvency II (Vaughan, 2009, p. 11-12). Solvency ratio, also referred to as an insurer's underwriting leverage, affects the riskiness of a firm in a complex manner as compared to leverage for the shareholder's non- equity (Fields, et al., 2012).

On a global basis there has been a move towards an international capital standard for the insurance industry. The International Association of Insurance Supervisors (IAIS) kicked off the process of setting up International Capital Standards (ICS) in October 2013 (Hartwig, et al., 2015, p. 10-11). The major drive towards global capital standards is: there is a sizable number of insurers active internationally with some of them leading operations of such a big scale that they are systemically important globally.

According to the IAIS, around fifty-five insurance groups can be designated as internationally active insurance groups while nine insurers worldwide can be classified as global systemically important insurers (Whittingham, et al., 2016, p. 5-7). The key objective in establishing International Capital Standards is to ensure that insurers with international operations including the global systematic insurers hold enough capital to cover for the risks that they take on, and that those capital levels are scrutinized carefully by regulators (Accenture, 2015, p. 4-6). The key challenge for the IAIS is that there is no current insurance capital standard that is consistent on a global basis. The IAIS has launched a number of consultation documents in the process of developing

a global capital standard (Deloitte, 2017, p. 5-7). The recent rise of nationalism particularly in the United States of America may slow the development of unified global capital standards.

Many factors contribute to insurance companies becoming insolvent. These include: inadequate pricing of insurance products (insufficient underwriting), excessive growth in premiums written relative to capital held by the company, major unexpected catastrophes leading to pay-outs that are much larger than existing capacity can handle, unexpected decline in the values of assets held by an insurer, risky investments turning sour culminating in the destruction of the value of assets held by an insurer (Institute and Faculty of actuaries, 2014).

Fraud by management has also been identified as a cause for insolvency; many insolvent insurers appear to have overstated assets and understated claim liabilities prior to going insolvent (Harrington & Niehaus, 2003, p. 116). Fraudulent claims by clients often working in cahoots with insurance sector players has also contributed to the insolvency of several insurers players.

Insurers commonly reduce insolvency risk by providing coverage across different geographic regions, offering varying types of insurance covers, entering into insurance contracts which help improve the diversification of risk among different insurers, and investing in fixed income securities which have a low risk of default (Harrington & Niehaus, 2003, p. 95). Continuous improvement of risk management systems, and better underwriting can additionally diminish the danger of bankruptcy. Monetary forgery can also be kept in check by enhancing internal control systems.

In conclusion there are theories that have been considered are each highly relevant to this study. Firstly, shareholder value for insurance companies is heavily impacted by each of the observed factors that shall be analysed in the study that is: firm level factors, underwriting risk, liquidity, and the impact of investment decisions. A well-run insurance company that manages each of these elements well will indeed grow shareholder value.

Secondly, financial performance is interlinked with each of the firm-level and insurance specific factors that shall be examined in the next section, with each having an impact

on the productivity of any underwriter. Financial performance overall is a principal ingredient in growing shareholder value. Financial metrics such as ROE and ROA are the foundation of this study upon which the influence of firm-level factors, underwriting risk, solvency, and investment decision making are measured.

Thirdly, solvency theory is the lifeblood of insurance companies. The various theories advanced have sought to elucidate both its value and the regulatory advances in its measurement. The interconnection between solvency and financial success of insurance institutions is one of the important aspects of this evaluation.

2.3.5 Review of Shareholder Value, Financial Performance and Solvency Theories.

As discussed, three main theories have been explored as a guide to the study on the determinants of financial performance of the insurance industry. Firstly, shareholder theory which proposes the growth in the return on assets (ROA) in the balance sheet over time as an indicator of success (Fligstein & Shin, 2007, p. 403-404). This study seeks to use both ROA and ROE to evaluate the main determinant. Secondly, financial performance theory points out financial ratios generated from a company's financial statements as key measures of financial performance. Lastly, as maintained by Khatri (2017), solvency ratios are a key evidence of an insurance firm's financial potential to meet its long term commitments. This study dives more to evaluate how significant solvency factor influences the performance of insurers.

2.3 REVIEW OF EMPIRICAL LITERATURE

Related evaluations have been done locally and internationally examining some of the elements that impact on the financial effectiveness of insurance establishments: both positive and negatively. This section will review empirical work covering the financial soundness of insurance firms in Kenya, the rest of Africa, other developing country locations, emerging market economies and selected advanced economy markets. The independent variables that decide the monetary soundness of insurance

establishments can be grouped into the following broad categories: firm level factors, solvency and liquidity, underwriting risk, investment decisions.

2.3.1 Firm level factors

Age of insurer, and corresponding size of the company are the main firm level variables in this study. These factors are characteristics particular to a business, mainly the resources unique to a firm. These resources may be financial might, unique technology, in-house knowledge and other privileges including human capital (Barney, 1986, p. 1231-1241). The difference in performance levels among competitors within an industry is as a result of the development of these unique attributes to a point where they generate core resources that are difficult to replicate (Barney, 1986, p. 1231-1241). Firm effects can be distinguished from industry wide effects.

Firm level factors are considered internal to an organisation and generally do have a direct correlation with the effectiveness of a company. Industry factors that influence performance of organisations include similarity in tackling industry state of affairs, and copying of workable blueprints (Mauri & Michaels, 1998, p. 212-213). Firm-level factors are influenced by industry trends; firms contending in a similar economic territory tend to build up similar coping mechanisms (Mauri & Michaels, 1998, p. 216-217).

State-level factors for example political climate, legal system, work structure, labour laws and social set up affect how organizations run their operations (Baldini, et al., 2018, p. 93-95). In the case of multinational companies' state-level factors have a similar impact to performance as industry-level factors but are less impactful compared to firm-level factors (Makino, et al., 2004, p. 1037-1039).

In a paper on the empirical evidence of financial soundness of insurance companies in the United Kingdom (Jadi, 2015) size was found to be the most essential element that dictates the financial performance. The study took a different approach from other studies on key elements defining the financial accomplishments of insurance firms and relied on financial agency ratings as the basis for comparing performance between industry players rather than the more commonly used metrics of return on assets or return on capital employed.

Insurance company rankings and dynamics are shaped by productivity, liquidity, and size of the organization. Size is of particular importance to general insurers as their performance jumps compared to that of life insurers (Jadi, 2015, p. 177-179).

In an analysis on the distribution efficiency, bank affiliation, and product mix on the profitability of Italian insurance firms, Spotorno (2016) found that until 2007, none of product mix composition, bank affiliation, or distribution efficiency had outstanding contribution on insurance companies' financial performance. Nevertheless, after the lapse of financial crisis, distribution efficiency and bank affiliation proved to have a remarkable impact on performance, the tough economic conditions also increased the importance of product mix to financial performance.

Bank affiliated insurers were able to document improved monetary effectiveness partly because of the advantage they borrowed from fairer distribution costs, which was because of the presence of their banking partners' distribution networks. Bank affiliated insurers also gained from their owner's decision on relocating their customers' savings from riskier assets to insurance policies so as to decrease vulnerability to financial risks (Spotorno, et al., 2016, p. 29-30).

In an assessment of the influence of firm-specific factors on the profitability and financial productiveness of general insurance firms within Turkey over eight-year period from 2006 to 2013 Kaya (2015) documented that the profitability of non-life insurance establishments is in a statistically remarkable way positively connected to the size of the company and premium growth rate (Kaya, 2015, p. 525-526). Further, the financial soundness of Turkish insurance companies was found to have a negative relationship with the age of the company, loss ratio, and current ratio. Insurance firms should pay more attention to developmental plan outs and consider merger and acquisition options (Doron & Young, 2010).

According to Derbali (2014, p. 90-95) size, age, and premium upsurge are the most remarkable determinants of the financial performance of insurers in Tunisia. The advantage of age is attributable to the longer experience in the Tunisian insurance market (Derbali, 2014, p. 94-95). Size has a statistically negative impact on the performance of insurance firms in Tunisia. Smaller insurance establishments exhibited more efficient operations in the eight-year period from 2005 to 2012. The performance

of insurance houses in Tunisia is not impacted significantly by leverage, tangibility, and liquidity (Derbali, 2014, p. 95).

Mehari and Aemiro (2013, p. 245-246) examined the impact of firm level features on financial performance of nine insurance establishments in Ethiopia. They established that insurer's size, tangibility, and leverage were statistically significant and positively related with return on assets (ROA). Growth in written premiums, insurer's age and liquidity are found to have a statistically insignificant relationship with ROA. They concluded that insurers that are bigger in size, more leveraged, and that have a higher proportion of tangible assets report superior performance than those that have a smaller asset base, have lower debt levels and with a higher proportion of intangible assets.

The age of an insurance company and its growth in gross written premiums does not have a statistically significant interconnection with its financial performance (Mehari & Aemiro, 2013, p. 245-246).

Nyogesa (2017) set out to establish the influence of financial management practices on financial performance of insurance houses in Kenya. He highlighted that working capital management, capital budgeting techniques, capital structure decisions, claims management policies and corporate governance had positive and statistically valid impact on the financial effectiveness of the insurance industry.

In a study to set out the factors that act on the profitability of general insurance establishments in Kenya, (Mwangi & Murigu, 2015, p. 295-296) found that profitability was positively correlated to higher debt levels, equity capital, quality of management staff and negatively related to size (measured by total assets) and majority ownership by foreign shareholders. Kollie (2017 p. 28-30) found that larger insurance companies in Kenya are more profitable than their smaller counterparts since they can benefit from economies of scale and better access to capital.

2.3.2 Liquidity and Solvency

As appertains the insurance industry, solvency forms a fundamental measure of how much financially strong an insurer is and its potentiality to pay expected claim amounts. The main difference between solvency and liquidity is the time duration considered in the settling of debt. Solvency ratios are set by insurance industry regulators whose key objective is to protect policyholders and the financial system in general (Dembla, 2014).

Caporale, Cerrato, and Mario (2017) in an examination of the triggers of insolvency concerning insurance firms in the United Kingdom found that insurance industry traditional risk factors include: profitability, interest rates, liquidity and leverage. They also found out that different business lines present different credit risks. Primary insurers can reduce their insolvency risk by taking out reinsurance contracts (Caporale, et al., 2017).

Managing capital and solvency requires the management of insurance companies to ensure regulatory solvency limits are adhered to, liquidity is maintained and that actions are taken to sustain the growth of net income (Rousseau, 2017, p. 1-3). In an analysis of 3178 life insurers and 7322 non-life insurers from over 95 countries (Irresberger, et al., 2017, p. 2-4) found strong empirical evidence that boosting capital reserves enhances the performance of both life and general insurers as measured by their returns on shareholder funds and returns on total assets. Their tests confirmed a strong link between profitability and capital levels.

Mazviona, Dube, and Tendai, (2017, p. 15-27) in a study of the drivers of financial performance of non-life insurance houses in Zimbabwe over a five-year stretch from 2010 to 2014 found that expense ratio, claims ratio, leverage, and liquidity significantly affect performance as measured by ROA. Of the different factors, the expense ratio is found to be the most essential element. It is therefore recommended that reduction of expenses should be prioritized for insurance companies operating in Zimbabwe.

Kiio (2014, p. 34-39) assessed four variables that impact insurance company liquidity: quick ratio (current assets divided by current liabilities), leverage ratio (total liabilities to total assets), the log of net premiums (total premium earned less reinsurance ceded) and loss ratio (net claims incurred divided by net earned premiums) for the 41 insurance companies in operation in Kenya from 2009 to 2013 and settled that there

is a valid and positive association between profitability, measured in terms of return on assets with the quick ratio and the log of net premiums. Higher leverage was associated with poor financial performance.

High levels of liquidity put Kenyan insurance companies in a position to quickly settle obligations as they come through. Kenya insurance companies should also strive to avoid being over-leveraged as weaker levels of performance are evident as leverage levels are cranked up (Kiio, 2014). The importance of liquidity to the performance of insurance firms in Kenya was further reinforced by a study of 47 insurance firms from 2011 to 2015 by (Maina, 2016) which showed a strong correlation between annual liquidity ratios and insurance company profitability. The studies highlighted above do not delve into the long-term nature of insurance business in Kenya. It is important to evaluate how significant the solvency factor is for both life and general insurers in Kenya.

Fraud prevention has a direct link with strong financial performance; since excessive fraud harmed both the liquidity and solvency of insurance firms (Maina, 2016). Odira (2016, p. 39-44) investigates the impact of liquidity (current assets divided by short term liabilities), solvency (total assets divided by total liabilities) and, leverage (total debt divided by total equity) on the financial effectiveness of general insurance companies from 2011 and finds that liquidity had a significant and positive correlation with financial effectiveness. Leverage was found to have a negative influence on performance while the effect of solvency on the financial performance of insurance companies was found to be positive but statistically trivial.

High leverage is linked to a high percentage of unpaid claims relative to shareholders' funds in Kenya (Odira, 2016). Information about high claims outstanding amounts diffused into the market with the negative association on the involved insurance firms. It is recommended that insurance companies keep optimum liquidity levels, excessive liquidity evidenced by holding too much cash and short-term cash equivalents will translate into lower interest income. Kenyan insurance firms should also take steps to settle claims promptly so as to maintain a good reputation and standing in the market (Odira, 2016, p. 42-44).

2.3.3 Underwriting Risk

Underwriting involves researching and assessing the intensity of risk in each client before undertaking a transaction. The process assists in establishing the appropriate premiums to satisfactorily counterbalance the verifiable cost of insuring policyholders.

Underwriting risk is the risk of loss held up and handled by an underwriter. In insurance, this risk may come about from a faulty evaluation of the risk being covered or from an expected catastrophe. The impact of this erroneous assessment is that the losses writing the cover may significantly exceed the premiums collected (Zhangjiwu, et al., 2011).

An insurer's financial soundness is dependent on how well it prices the risks that it takes on as well its management of claims related costs. It is noteworthy that underwriting risk may also be referred to as the risk of collecting low levels of insurance premiums, the implication being that loss occurrence has exceeded the predictions that were made in estimating the level of premiums (Fields, et al., 2012)

The premium charged to a pool of clients should be enough to cover forecasted claims. If an insurer underestimates the risk associated with providing coverage, it could end up paying much more than it receives in premiums. The long-term financial soundness of an insurance company is directly linked to its mitigation of underwriting risk (Investopedia, 2018). An analysis of loss ratios is one way in which the different levels of underwriting risk between difference insurers can be compared.

Scordis (2019) finds that for property – casualty companies there is a positive interconnection between underwriting performance and value. The positive relation between underwriting and performance can be explained by insurers possessing a comparative informational advantage in underwriting. There is also a positive association between revenues (gauged in terms of asset turnover) and value since as revenues increase it intensifies the positive impact of underwriting performance on value (Scordis, 2019, p. 36-38). The challenge for insurers in the future is the reducing cost of data and information mining which enables rivals to segment and locate lower risk clients whom they can then entice away with cheaper premiums (Scordis, 2019, p. 36-38).

Adams and Buckle (2003, p. 137-142) evaluated insurers' financial performance in Bermuda, an international financial centre. They employ panel data techniques covering 47 insurers with data ranging from 1993 to 1997 with company size, underwriting risk, leverage, liquidity, and size of operations as independent elements. Results from their investigation maintain that insurers with high leverage and low liquidity report better financial outcomes. They concluded that size does not have a material impact on performance and contrary to their expectations they find the existence of a definite and positive correlation between performance and underwriting risk.

Burca and Batrinca (2014, p. 307-308) in a study of the Romanian insurance market from 2008 to 2012 found that the key elements of the financial performance in the Romanian insurance market are leverage, company size, growth of gross written premiums, underwriting risk, risk retention ratio, and solvency margin.

A study on the various components of underwriting risk: pricing risk, reserve risk, and reinsurance risk on the underwriting cycles on insurance houses in the State of Croatia (Jakovcevic & Mihekja, 2014, p. 1256-1257) find that underwriting risk has a valid contribution to insurance pricing. On the various components, pricing risk is found to have the highest impact on the underwriting cycle.

Boyjoo, Ramesh, and Jaunky (2017) in a review of the relatively well-developed Mauritius insurance sector over the 5-year period from 2011 to 2015 find that judicious management of underwriting risk (gauged as a ratio of benefits paid to net premium) translates into better financial performance for insurance companies. Since the main activity for an insurance company is risk underwriting and spreading the risk exposure across different clients, insurers should ensure good underwriting to mitigate on the exposure losses (Boyjoo, et al., 2017, p. 132-133).

In Kenya, insurers are mandated to hold a minimum solvency margin (Gitau & Oraro, 2018). The Kenyan Insurance Act outlines the margin of solvency requirements. The act states that an insurer shall always hold total admitted assets of not less than its total admitted liabilities. The law further states that an insurer that undertakes both long term and general insurance business shall always maintain discrete margins of solvency for each of the classes of business (Anon., 2017).

Third-party motor covers have been fixed at a maximum of KES 7,500 over the 8-year period. Secondly, Kenyan underwriters rely on fixed-rate tables instead of developing appropriate quantitative risk models (Ndeda, 2014, p. 43-44). Risk modeling will generate premiums that would be closer to the figure needed to ensure premiums levels cover the level of incurred claims with a good degree of sufficiency.

Kenya was due to implement a new solvency Risk-Based Capital (RBC) regime in July 2016, with a phased transition period of two years. However, implementation was delayed until 2019 (African Insurance Organization, 2018, p. 51). The regulator and policymakers received significant pushback from the industry, especially from the smaller players, many of which have been deemed insolvent under the proposed regime. In particular, the fact that premiums outstanding over a certain period would not have been recognized in the computation of capital was a severe issue for numerous industry participants. The Kenyan RBC legislation is comprehensive, including stress scenarios for both general and life businesses. It also addresses Kenyan concerns on issues such as relatively high property investments, and limits on concentration (African Insurance Organization, 2018, p. 51).

2.3.4 Investment decisions

Insurance companies usually have a time lag between the time they receive premiums that the time they need to settle claims. The funds held from premiums prior to claims settlement can be invested to earn additional returns for an insurance company. The funds available for investment this way are referred to as “insurance float”. The float has two components: claim reserves (also called loss reserves) and premium reserves. Claim reserves are the assets earmarked to meet all the requirements from claims and estimated at present. Premium reserves represent those premiums received but not yet earned. Claim reserves can be both short-term and long-term for instance environmental claims. Long term reserves can be invested in stocks, long-term bonds, mutual bonds, annuities, and real estate. Most claim reserves are usually short term. Premium reserves tend to be very short term. If the premium is paid year on year, the standard stretch for premium reserves will be six months (Merkel, 2014).

In one study that explored the influence of investments on the financial primacy of insurance companies in Kenya, Veronica (2015) found that investments made by

insurer have a positive and significant impact on their financial performance. Investments in real estate have the greatest impact, followed by government securities and bank deposits. The contribution by equities and corporate bonds is relatively weak; which is attributable to the smaller portions invested in these asset classes and their relatively lower returns (Veronica, 2015, p. 31-35). The study does not explore the influence of investments on ROE. It would be key to evaluate comparative impact of investment performance on both ROA and ROE.

In another study based on the Switzerland domain, that analysed the impact on the economic value of an insurance company as a result of investing in risky assets (Koch-Medina, et al., 2018, p. 38) found that investing in risky assets can have two contradictory effects on firm value. On the one hand, it can lead to an upsurge in the insurance company's worth by heightening the value of the default option and by aiding the firm to attain capital levels where added value is more. On the other hand, it can reduce the value of the firm by increasing the need for potentially costly capitalization. Investment in risk assets may also eliminate future financial benefits for an insurance company’s shareholders’ if it leads to the collapse of the firm.

Table 2.1: **Tabulated Synopsis of Empirical Studies**

Study	**Unit of analysis**	**Period**	**Key findings**	**Expected signs**
Investments and the financial performance of insurance companies	Kenya	2011-2015	● Investments have a positive effect.	**+**
Profitability of general insurers	Kenya	2010-2014	● Profitability was positively correlated to higher debt levels.	**+**
Regression and factor analyses of the drivers of financial performance of non-life insurance companies.	Zimbabwe	2010-2014	● Expense ratio, ● Claims ratio, ● Leverage and liquidity significantly	**+**
Liquidity and performance of insurance firms	Kenya	2011-2015	● A strong correlation between annual liquidity ratios and insurance company profitability.	**+**
The financial performance of insurance market.	Rome	2008-2012	● Leverage in insurance, ● Size, ● Underwriting risk, ● Solvency margin	**+** **+** **+** **+**

The impact of liquidity, solvency, and leverage on the performance of general insurers.	Kenya	2011-2016	● liquidity had a significant and positive correlation ● Leverage ● solvency	+ - +
Relationship between firm size and profitability	Nigeria	2011-2015	● size	+
Financial performance of Ethiopian insurance companies	Ethiopia	2004-2013	● firm leverage, ● size, ● tangibility, and	+ + +
Financial Risk and Financial Performance of insurers.	Nigeria	2009-2018	● credit risk has a positive effect.	-

Source: Author's own compilation

2.4 CHAPTER SUMMARY

This chapter analysed the theories underpinning the overall study. Firstly, the shareholder value theory was discussed. A focus on shareholder value is key, though moderated by concern for other stakeholders. An alternative to this theory is the stakeholder theory. An important criterion that is assessing the financial bottom-line of the companies in the study is whether they have created value for investors over time.

The financial performance of the companies will be compared using various profitability and liquidity measures. To effectively relate performance across companies of various sizes, financial ratios such as return on assets will be computed and used as a base to compare different firms.

The empirical review of firm-level factors demonstrated that size had a conclusively positive impact on the performance of insurance firms in general. The majority of the empirical studies on the link between size and the performance of insurers covered in this literature review have concluded that size has a positive influence while two found that size was a drag on performance; a ratio of two to one.

The conclusion that can be drawn out of this leaning towards size is that economies of scale are indeed important in driving the performance of insurance companies. Size appears to be a much more determinant of performance than age. In the two studies covered in this literature review that analysed age as a factor of performance one found that age was positively linked to performance the other one found its impact is negative, therefore each view cancelled the other one out.

Foreign ownership turned out to be a negative factor for the one study that investigated this aspect of ownership structure. It could be inferred that foreign owned insurance companies are not able to adapt well to the market conditions of the international environments in which they operate. Growth in premium income (which had some connection to size) and distribution network seemed to have a shaped positive stretch on performance regarding all the studies that looked into these parameters.

A review of the empirical literature covering liquidity showed that for each market that was studied liquidity is positively correlated with financial performance. This finding implies that the quick settlement of claims is highly regarded by insurance company clients. The impact of leverage seems to be mixed with an equal split between the studies that show it has a positive impact than those that show that leverage has negative impact. Leverage can boost results up to a certain point; once firms get overleveraged financial performance and ultimately sustainability is threatened. A factor that has been found to help boost solvency and ultimately financial performance is fraud control. Capital strength has been shown by two studies to be beneficial to the overall performance of insurance companies.

The studies that were reviewed on underwriting risk have been uniform and show that good underwriting is directly correlated with good financial performance of insurance companies. The studies that have investigated investment performance has found that superior investment performance has an outsize impact on the overall profitability of insurance companies. However, investment in risky assets has been established to have an equal chance of either boosting or hurting returns. The next chapter presents the research methodology employed to execute this evaluation.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter describes the various analyses and research procedures followed in conducting the study. This evaluation sought to explore the main elements that drove the financial performance of insurance companies in Kenya. Four objectives were underpinning this study. Firstly, to establish whether firm-level factors explain the financial performance of Kenyan insurance companies. Secondly, to establish whether there is a link between the solvency of Kenyan insurance companies and their financial achievements. Also, it seeks to determine if there is a linkage between underwriting risk and the financial performance of insurance firms in Kenya. Fourthly, this evaluation aims at determining the impact of investment performance and decisions on the financial success of insurers. Furthermore, this chapter outlines and considers establishing the research design for this study.

The other sections of the chapter are collated in this way: Section 3.2 outlines the research design employed in this assessment. Section 3.3 sets out the sampling frame and target population utilized for the study. Section 3.4 describes the data sources, Section 3.5 Panel data methods, and techniques, Section 3.6 specifies the models in use Section 3.7 defines the variables brought forward in this study, Section 3.8 outlines the data analysis procedure, and Section 3.9 sets out the summary of the chapter.

3.2 RESEARCH DESIGN

This section aims at providing the framework that guided this study. A research design and skeleton elucidated the methodological approaches and considerations that informed prior papers and studies on the financial accomplishment in the insurance sector across global dimensions (Mills, et al., 2010). There are three widely used research approaches in empirical studies; Quantitative, qualitative and mixed methods (Syed, 2016). These are addressed next in turn.

3.2.1 Quantitative Methods

This is an objective method that relies mostly on a statistical analysis of either real-time, pre-existing, or historical data, with the main goal being to develop a generalization or proof of a certain theory (Bryman and Bell, 2015, p. 27-28). The method encompasses the conversion of data into numerical form and conclusions drawn (Syed, 2016)

Statistical analysis is mostly done using programs and third-party applications, and manually for small samples. For accurate analysis, this method requires large samples or datasets (Bryman and Bell, 2015). According to (Rahman, 2017) this method is best and suitable for statistical and quantitative purposes. The quantitative findings are likely to be generalized to a whole population since it encompasses the randomly selected samples (Carr, 1994, p. 716-721). Also, quantitative experimentation is grounded on the positivity of the estimation of variants (Kauber, 1986, p. 572-574).

3.2.2. Qualitative Methods

With quantitative methods, making systematic comparisons is easy since it all depends on the numbers. Market researchers tend to pick this approach for their research studies (Saunders, et al., 2012). Qualitative experimentation on the contrary is a more meticulous technique when compared with quantitative experimentation methods.

This method attempts to explore the behaviours and attitudes of the population sample in the study. The data collation and analysis processes are quite tedious for this method and therefore requires a lot of time and resources. As a result, qualitative research methods become more efficient only when a small sample is under study (Denzin & Lincoln, 1994). As such, in this study, the qualitative method is not employed as the study utilizes secondary data and specifically, panel data techniques are applied which have different variables and parameters.

Also, qualitative research usually encompasses a smaller number of participants. This is because of the processes of interviews and avoidance of prior generalizations of outcomes (Syed, 2016). This methodology, despite being more efficient than the others, requires a lot of resources and with the in-depth analysis of data, studies become more complex to plan and conduct.

Unlike quantitative research methods, this method poses greater difficulty in making generalizations, and skilled professionals are required for qualitative research mechanisms to avoid bias in the interpretation of the figures and evidence in the study. The technique established by most qualitative analysts tends to be more inductive establishing that a theory is brought forward (Hovakimian, 2006).

There are several benefits of using the qualitative research approach (Rahman, 2017). Firstly, qualitative mechanisms and approaches yield sharp outlines of outcomes (Richardson, 2012). Secondly, the qualitative segment grants the analysts to discover the participants' inner perspective, resulting in figuring out how meanings are shaped (Corbin & Strauss, 2008).

Thirdly, the approach encompasses key metrics such as participant-observation, use of amorphous interviews, and direct observation (Cohen, et al., 2011). It is noteworthy that during the data collation, the explorers collaborate with the participants directly. By the same token, data collection is informed, clearly shaped, and detailed. Lastly, qualitative research design has a pliant composition as the framework can be constructed and reconstructed to a greater extent (Maxwel, 2012). Moreover, a qualitative framework adds to the understanding of the compound characteristics of an evaluation (Flick, 2011).

3.2.3. Mixed Methods (Pragmatic Approach)

The mixed-method is presented as the fusion of both quantitative and qualitative experimentation methods (Creswell, 2014, p. 40-41). The mixed-method brings about both approaches iteratively to create a research outcome stronger than either method discretely. The realistic mechanism to social science research involves using the technique which is aligned to the research obstacle (Malina, et al., 2010, p. 7-8).

This methodology allows for better conclusive analysis of data than when the quantitative and qualitative methods are treated separately. By creating relationships between the quantitative data and the qualitative data, this method provides an ideal and exhaustive analysis that is used for validation of the data collected. Mixed methods in most cases use qualitative data to examine the quantitative data (Creswell, 2014, p. 40-41).

The research design is the general layout used by the analyst to respond to the experimentation queries in the study or to help solve a dilemma (Berg, 2004, p. 10). This study mainly uses quantitative research approach to adequately explore the determinants of financial performance in the insurance industry. The method was chosen on account of the following; firstly, it encompasses the conversion of data into numerical form and conclusions drawn (Syed, 2016).This will enable guide on informed decisions from worked out calculations. Secondly, it enhances depth and details in term of the metrics under study. Lastly, quantitative approach gives room for flexibility thus the study can be adjusted according to fresh information and data.

3.2 TARGET POPULATION

A population can be elucidated as the agglomeration of all elements that abide by some general set of particulars (Paton, 2002, p. 76-77). It is the universe out of which an illustration and sample are selected. The population of this study consisted of all the insurance companies operating in Kenya. 62 insurance firms are operating in Kenya. Out of the 62, sixteen write long term business (life) only, nine are composite insurers (writing both life and general business), while the rest are general insurance only businesses (Insurance Regulatory Authority, 2018, p. 154-158). The full composition of all the registered insurance firms in Kenya is in Appendix A.

Table 3.1: **Composition of The Kenyan Insurance Sector**

Insurance Companies in Kenya	
Life insurance	16
General Insurance	27
Composite (Both life and General)	9
Total	**52**

Source (Insurance Regulatory Authority, 2018)

3.3 SAMPLE SIZE AND SAMPLING PROCEDURE

According to Robson and McCarran (2016), a sample is a subgroup of the population. It reduces the amount of time for the researcher and improves other resources. In this quantitative research, a sample size of 33 companies was used (Colin & Kieran, 2016, p. 97-98). Considering the level of growth in the insurance industry some firms are less than 10 years old. The researcher chose companies whose financial record is available from 2009 till 2018.

3.3.1 Purposive Sampling.

This type of sampling ensures consistency and a uniform time period (Robinson, 2014). It is also non-probability based. Despite being a non-probabilistic approach, purposive sampling (judgmental sampling) poses an efficient sampling technique since the research design limits the parties who can act as the primary data source (Tongco, 2019, p. 1-12). The sampling is homogeneous since it involves a particular class and analysis is over similar members of the class. Purposive sampling enables researchers to derive information out of the data that they have collected (Folley, 2018). This allows the approach puts researchers in a better position to describe the major evaluations on the overall population (Palys, 2008, p. 687-698).

This sampling technique is an informed choice of a character due to the qualities the participant depicts (Etikan, et al., 2016). Also, purposive sampling is extremely time and cost-effective with other sampling methods (Green, 2012). Furthermore, the several technique options make purposive sampling a volatile research technique that can be matched to enact the efficiency of a certain study (Lawrence & Carla, 2013) Purposive sampling poses a challenge in the level of reliability of data used. However, in this case, due to the nature and objectives of the research, the data used covers a vast number of parties. (Battanglia, 2008, p. 1-4). This study samples data from life and general insurers in their right. The major influencers of the insurance industry in Kenya are captured from 2009 to 2018, hence can be relied upon.

3.4 DATA AND DATA SOURCES

The type of data collected was secondary as the researcher relied on reports and publications, research papers, specific company websites for analysis. A secondary type of data is one that was collected by another person or a party other than the researcher. Analysts consider secondary data to be of higher quality and more feasible than that of an individual researcher (Mugenda & Mugenda, 2003, p. 112). In this study, different firms were observed over a 10-year period

The main origin of the data used in the analysis was the Insurance Regulatory Authority Annual Reports (Insurance Regulatory Authority, 2018) from 2009 to 2018. This information is considered credible as the regulator enforces strict rules ensuring authenticity. The second source used in the research is the annual financial reports from the individual company audited financial statements. Companies are bound to file reliable information due to the high penalties inflicted on those that fail to adhere. Industry annual reports from the Association of Kenyan Insurance for the ten-year period from 2009 to 2018 were also relied on to fill in gaps from the other primary data sources.

3.5 PANEL DATA METHODS.

This dissertation will employ different panel data methods to best explore the objectives under review. Panel data has more accurate deductions of model parameters. On the same note, several merits accrue from involving the use of longitudinal data. In the opinion of (Baltagi, 2008), the principal contributions of panel data can be stipulated in this fashion; Firstly, panel data allows for the testing of more complex behavioural models than purely time series data. Secondly, the figures usually contain more variability than cross-sectional data, hence the upsurge the level of accuracy of econometric estimations. Thirdly, panel data is also better at uncovering dynamic and similar relationships. Fourthly, with panel data, we can rely on the inter-individual divergences to pull down the collinearity between current and lag variables. Lastly, panel data brings about more accurate predictions for separate outcomes by the amalgamation of the evidence.

Furthermore, according to (Baltagi, 2008, p. 8-10) the hindrance of panel data is that it can be subjected to such constraints: First, it may be subjected to collection and design problems. Secondly, they are bound to the distortion of measurement errors. Thirdly, self-selectivity, non-response, and attrition are characteristics related to the panel data. Fourthly, typical micro panels involve the use of yearly data covering shorter durations of time for everyone. Lastly, the models portray cross-section dependence.

3.5.1 Static Panel Data: Estimation Techniques

The basic model to be considered is shown by the equation below.

$$y_{it} = \beta_1 + \sum_{j=2}^{k} \beta_j X_{jit} + \sum_{p=1}^{s} \gamma_p Z_{pi} + \delta t + \epsilon_{it}$$ **Equation 1**

Where i represents the unit of observation, t represents the time period (year) and captures time effects by allowing for a change in the intercept over time, and p the unobserved explanatory variable. The variables and parameters of interest are depicted by X and β. The model nuisance is encompassed by Z.

Since the variable Z is not observed, obtaining information about the component involving the Z's is not possible. Define the index h_i to be the unobserved components of the model.

$$h_i = \sum_{p=1}^{s} \gamma_p Z_{pi}$$ **Equation 2**

This translates the model to:

$$y_{it} = \beta_1 + \sum_{j=2}^{k} \beta_j X_{jit} + h_i + \delta t + \epsilon_{it}$$ **Equation 3**

$$\boldsymbol{y\_it = \beta_0 + \beta_1 DEBT_{it} + \beta_2 SOL_{it} + \beta_3 SIZ_{it} + \beta_4 REIS_{it} + \beta_5 AGE_{it} + \beta_6 COM_{it} + \beta_7 INV_{it} + h_i + e_{it} + \delta t}$$

Equation 4

3.5.2 Pooled Ordinary Least Squares (OLS)

If the variable X captures all the relevant information of each unit of i, there will be no unobserved variable hence the unobserved index will be dropped. Pooled Ordinary Least Squares is to be used in this case.
However, dropping the $h_i's$ in the model causes the problem of missing variables hence the model will become biased. As a result, the case of a variable representing all information over all units is very rare. According to Woolridge (Wooldridge, 2009), Pooled OLS is more significant when employed on a different sample for each period t of the panel data.

The pooled model assumes that h_i is uncorrelated with the variable X. Dependence on the dependent variable y may be through the variance of the model, δ.

Observations for each i become linearly independent and this brings the model to:

$$y_{it} = x'_{it}\beta + h + \epsilon_{it}.$$ **Equation 5**

By means of ordinary least squares estimation, the parameters $\beta \; and \; h$ are obtained.

3.5.3 Fixed Effects Model

For fixed effects models, unlike pooled Ordinary Least squares, the unobserved variable Z is correlated with the variable X. This renders the pooled OLS model inconsistent. If h_i is constant and does not vary with t, the regression line will shift

consistently constant for each observation i. Since there are n individual effects, the number of parameters under estimation becomes $k + n$.

3.5.4 Random Effects Model

In this model, the differences between the individual observations are random, and are from a distribution with constant parameters.
The unobserved variable is uncorrelated with the variable X. This means that the conditional expectation of Z given the independent is a constant.

Suppose $E[z_i'y] = \mu^*$, then

$$y_{it} = x_{it}'\beta + E[z_i'y] + (z_i'y) - E[z_i'y] + \epsilon_{it} \qquad \textbf{Equation 7}$$

$$y_{it} = x_{it}'\beta + \mu^* + \mu_i + \epsilon_{it} \qquad \textbf{Equation 8}$$

$$FIP_{it} = \beta_0 + \beta_1 DEBT_{it} + \beta_2 SOL_{it} + \beta_3 SIZ_{it} + \beta_4 REIS_{it} + \beta_5 AGE_{it} + \beta_6 COM_{it} + \beta_7 INV_{it} + h_i + e_{it} + u_{it} \qquad \textbf{Equation 9}$$

Where;

FIP_{it} =Financial Performance of insurance firm i at duration t

$DEBT_{it}$= Debt Ratio of insure i at duration t

SOL_{it} = Solvency Ratio of insurer i at duration t

INV_{it} =Investment Income of insurer I at duration t

SIZ_{it} = Size of insurer i at duration t

$REIS_{it}$=Reisuranance factor for insurer i at duration t

AGE_{it} = Age of insurer i at duration t

COM_{it} = Combined Ratio of insurer i at duration t

e_{it} = error term of insurer i at duration t

By combining $\mu_i and\ \epsilon_{it}$ we get the combined error term, let's say f_{it}.

This model is less likely to be heteroskedastic. This model becomes more efficient when the number of cross sections is greater than the number of coefficients being estimated.

3.5.5 Diagnostic Tests

To select the correct model to use, we adopt the use of various tests: Applied Chow test, Breusch Pagan LM evaluation, Modified Wald Test, and Haussmann Specification check.

Firstly, the Applied Chow Test is applied to establish if there exist individual effects or fixed effects. Secondly, the Breusch Pagan LM test is for examining the presence of random effects in the analysis. Thirdly, Modified Wald Test is used to check for panel GroupWise Heteroscedasticity. Lastly, the Haussmann Specification test is explored to choose the best fit between fixed and random effects realised.

The null hypothesis under consideration will be that the model has random effects. For the Hausman test, the null hypothesis is that fixed or random effect is not correlated with the independent variables. Hausman test examines the presence of endogeneity in the panel model (Sheytanova, 2014). If both fixed and random effects are found, the Haussmann test will be required (Wooldridge, 2009).

Table 3.2: Selected Studies Employing Panel Data

Author(s)	Estimation Method(s)	Study and Unit of analysis
(Anam & Abdullah, 2016)	Generalized Method of Moments	The main elements of Financial Performance of insurance companies of USA and UK
(Ahmed & Ahmed, 2011, p. 123-128)	Pooled OLS	A case of life insurance sector of Pakistan
(Papadogonas, 2009)	Generalized Method of Moments (system-GMM)	The financial performance of large and small firms: a piece evidence from Greece
(Tufail and ul-Sehar, 2013)	Fixed Effects Model	The main Determinants of Profitability Panel Data: Evidence from Insurance Sector of Pakistan
(Al-Shami & A, 2008)	Pooled Ordinary Least Squares and Fixed Effects	Determinants of Insurance
(WANJUGU, 2018)	Multivariate Regression analysis	The determinants of financial performance in general insurance companies in Kenya
(Abdeljawad, 2013)	Random Effects Model	The Dynamic Capital Structure Trade-off Theory: Evidence from Malaysia

Source: Compilation by Author

3.6 MODEL SPECIFICATION

In the testing of the association between financial performance and its determinants, the following static panel data model is going to be specified:

Equation 3.1

$$FIP_{i,t} = x'_{i,t}\beta + h_i + \varepsilon_{i,t} \qquad \textbf{Equation 10}$$

Where:

$y_{it} = FIP_{i,t}$= financial performance measures (ROA or ROE)

$x'_{i,t}$= vectors of explanative variables (solvency ratio, size, age, combined ratio, debt ratio, total assets)

h_i= constant of a group

$\varepsilon_{i,t}$ = error.

This model can be restated as follows as follows;

$$FIP_{it}=\beta_0 + \beta_1 DEBT_{it} + \beta_2 SOL_{it} + \beta_3 SIZ_{it} + \beta_4 REIS_{it} + \beta_5 AGE_{it} + \beta_6 COM_{it} + \beta_7 INV_{it} + h_i + e_{it} \qquad \textbf{Equation 11}$$

Where;

FIP_{it} =Financial Performance of insurance company I at duration t

$DEBT_{it}$= Debt Ratio/Leverage of insure i at duration t

SOL_{it} = Solvency Ratio of insurer i at duration t

SIZ_{it} = Size of insurer i at duration t

AGE_{it} = Age of insurer i at duration t

INV_{it} =Investment Income of insurer I at duration t

SIZ_{it} = Size of insurer i at duration t

$REIS_{it}$=Reinsurance factor for insurer i at duration t

COM_{it} = Combined Ratio of insurer i at duration t

e_{it} = error term of insurer i at duration t

3.7 MODEL DETERMINATION.

In order to determine the correct model to use, we adopt the use of various tests: F test for the fixed effect model and Breusch-Pagan Lagrange Multiplier (LM) test for the random effects model. The null hypothesis under consideration will be that the model has random effects. For Hausman test, the null hypothesis is that fixed or random effect is not correlated with the independent variables. Hausman test examines the presence of endogeneity in the panel model (Sheytanova, 2014). If both fixed and random effects are found, Haussmann test will be required (Wooldridge, 2009). The model will be determined as per the summary in the following table.

Table 3.3: Selected Tests and Studies on Model Specification

F-Test	**Breusch-Pagan LM Test**	**Model of Choice**
No fixed effect	No random effect	Pooled OLS
Fixed Effect	No random effect	Fixed Effects Model
No fixed Effect	Random Effects	Random Effects Model
Fixed Effects	Random Effects	Pick one depending on Hausman test results.

3.8 VARIABLE DEFINITION

This segment sets out the factors employed in this study to help examine the financial performance of the insurance companies in Kenya. The study uses the shareholder's equity to derive the ratios used to ascertain the financial effectiveness of the insurance industry. This study utilizes both the ROA and ROE variables as the dependent variables to test the purpose of this evaluation.

The determinants assessed include standard firm-level factors, underwriting risk, solvency, and investment decisions with macro-economic factors such as interest rates and inflation being control variables. This study analyses data for the 10-year period from 2009 to 2018.

Theoretical studies are also done on variable factors with insurance firm-specific factors including solvency margin, expense ratio, combined ratios, loss ratios, reinsurance ratios, investment decisions, debt ratios explored. Furthermore, firm-specific factors including size and age of insurers are studies in light of achieving the stated objectives of the study. Derbali (2014) studied the effect of size, age and premium growth on the financial success of insurers in Tunisia. A comparative study with the use of similar variables include Mehari and Aemiro (2013).

(Kaya, 2015, p. 525-526) studied the influence of underwriting risk on the financial achievement of general insurance. Mazviona, Dube, & Tendai (2017) studied the influence of leverage, liquidity, expense ratios on ROE of insurance companies in Zimbabwe. Laslty, Veronica (2015) studied the impact of investments made by insurance companies on their financial performance.

The following include the elements used to explain and accomplish the research objectives and provide solutions to the research questions.

Dependent Variables

- Return on Assets (ROA)
- Return on Equity (ROE)

Independent Variables

- Solvency ratio
- Debt ratio
- Combined ratio
- Reinsurance ratio
- Investment ratio
- Size of insurer
- Age

Table 3.4: Summary of Variables Under Study

Variables	Definition /Formula	Expected Sign
ROA	$ROA = \frac{Net\ Income}{Total\ Assets}$	**Nil**
ROE	$ROA = \frac{Net\ Income}{Total\ Equity}$	**Nil**
Solvency Ratio (SOL)	SOL=$\frac{Net\ Income}{Total\ Liabilities}$	**Positive**
Combined Ratio (COM)	COM=$\frac{Incurred\ Losses+Expenses}{Gross\ Earned\ Premiums}$	**Positive/ Negative**
Debt Ratio (DEBT)	DEBT=$\frac{Total\ Liabilities}{Total\ Assets}$	**Positive**
Size (SIZ)	SIZ= $(Total\ Assets)$	**Positive**
Reinsurance Ratio (REIS)	REIS=$\frac{Reinsurance\ Premium\ ceded}{Gross\ Premium}$	**Positive**
Investment Ratio (INV)	INV=$\frac{Total\ Investment\ Income}{Gross\ Written\ Premuim}$	**Positive/ Negative**
Age (AGE)	AGE=$Year\ of\ Establishment$	**Positive**

Source: Author's own construction

3.9 DATA ANALYSIS PROCEDURE

The secondary data collected was analysed using the Stata software version 16. The data analysis procedure encompassed some stages. Firstly, descriptive statistics was presented and analysed. Secondly, correlation analysis was performed. The correlation coefficient of individual variables were determined, together with the combined correlation coefficients. The direction and slope of the correlation was important when discussing the findings from the study as the type of correlation helped dictate the type of influence, whether positive or negative (Berg, 2004).

Thirdly, panel regression analysis was conducted by estimating the PLS, FE, and RE models.

3.9.1 Ethical Clearance

Ethical clearance was obtained from UNISA to undertake the study after the proposal was approved. The research involved significant utilization of secondary data. A detailed reference for any work that was quoted from third parties was provided. All information collected was handled with confidentiality.

3.10 CHAPTER SUMMARY

This chapter considers the research framework and design engaged in this study. It then proceeds to discuss the estimation methods, namely the pooled regression, fixed effects, random effects, and models. The role of this groundwork is to evaluate how various elements affect the financial performance of insurance companies. A model including explanatory and dependable variables suitable for the analysis is specified. The next chapter presents and analyses the data as well as discusses the findings of this study.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 INTRODUCTION

There were four objectives that formed the basis of this evaluation. Firstly, to build up whether firm-level components clarify financial performance of Kenyan insurance companies. Secondly, to establish whether there was a link between the solvency of Kenyan insurance companies and their financial performance. The third objective was to determine if there was a connection between underwriting risk and the performance of insurance establishments in Kenya. Finally, the study aimed at determining if investment decisions have a bearing on the financial success of insurers in Kenya.

A panel data model was determined to gauge the connection between the financial performance, the autonomous factors and the firm-level factors as well as insurance specific variables (explanatory variables). A variety of specification tests were applied to guarantee that the assessed models were well specified and the estimated results consistent.

The other sections of this chapter are collocated along this line: part 4.2 presents the enlightening measurements and examines patterns that arise among different variables underpinning the study. Section 4.3 presents and enumerates the findings of the correlation analysis. Section 4.4 discusses the diagnostic tests used in determining the appropriate panel regression model. Section 4.5 highlights the outcomes of panel regression using Pooled OLS, Fixed and Random Effects. Section 4.6 outlines comparison of top insurers and outliers based on size of the insurer. Section 4.7 gives a comparison of a control variable used in the study and section 4.8 then outlines the summary of the chapter.

4.2 DESCRIPTIVE STATISTICS

Table 4.1: Summary of Statistics for The Whole Insurance Industry in Kenya

Variable	Obser-vations	Mean	Median	Std. Dev.	Skewness	Kurtosis
ROA	420	0.04007	0.031	0.099453	3.8	35.37
ROE	420	0.1114	0.1065	0.43	-2.06	78.61
Debt Ratio	420	67.563	66.251	16.81	-0.41	3.04
Combined Ratio	420	109.47	98.995	63.894	4.58	31.17
Solvency	420	181.285	88.0345	751.85	14.7814	243.918
Re-insurance	420	0.279	0.1555	0.219	5.72	46.57
Investment Ratio	420	0.3588	0.1735	0.837	9.75	129.178
Age	420	41.94	36	22.61	0.546	2.349
Size	420	6.601	6.56	0.506	0.213	2.546

This segment presents a rundown of the insights of the apparent sample of factors relating to the sample data under check. It evaluates the measure of variability which includes the minimum, maximum variables, and standard deviation. In addition, it explores the measure of central tendency including the mean. The summary statistics for the whole insurance industry are documented in table 4.1. The descriptive measurements of the factors for both general and life insurers are presented in Tables 4.2 and 4.3 discretely.

Table 4.2: Summary of Variables Under General Insurance

Variable	Obser-vations	Mean	Median	Std. Dev.	Min	Max	Skew-ness	Kurtosis
ROA	270	0.05	0.04	0.09	-0.25	0.90	3.26	32.07
ROE	270	0.12	0.12	0.22	-0.69	2.23	3.19	33.71
Debt Ratio (DEBT)	270	59.64	60.66	11.63	13.31	84.40	-0.67	4.18
Combined Ratio (COM)	270	104.67	99.74	38.88	64.89	664.46	11.43	161.03
Solvency (SOL)	270	123.89	90.75	130.79	27.07	1344.2	4.87	36.28
Reinsurance (REIS)	270	0.37	0.21	0.56	0.01	5.23	4.84	33.00
Investment Ratio (INV)	270	0.33	0.16	0.59	0.00	5.56	4.66	31.86
Size (SIZ)	270	6.48	6.47	0.37	5.58	7.21	0.00	2.33
Age (AGE)	270	37.51	33.00	21.64	1.00	88.00	0.60	2.37

Source: Stata Output

Table 4.3: Summary of Variables Under Life Insurance.

Variable	Obser-vations	Median	Std. Dev.	Min	Max	Skewness	Kurtosis
ROA	150	0.0105	0.110	-0.239	0.97303	4.4789	38.385
ROE	150	0.088	0.661	-5.231	4.28005	-1.773	39.849
Debt ratio (DEBT)	150	85.075	16.008	1.7021	106.372	-2.625	12.215
Combined Ratio (COM)	150	95.230	138.74	-1.837	1381.93	5.636	47.110
Solvency (SOL)	150	81.101	1240.9	-54.32	13403.6	8.974	89.431
Reinsurance (REIS)	150	0.057	0.1308	0.0033	0.7197	1.773	6.611
Investment (INV)	150	0.217	1.1577	0.0019	12.857	9.179	94.362
Size (SIZ)	150	6.95	0.6291	5.3388	7.9034	-0.370	2.1335
Age (AGE)	150	44.5	22.178	15	98	0.5357	2.1138

The results established that the sample median insurer financial performance of Kenyan insurance companies flagged by ROA was 3.1% for the duration under survey. On the other hand, the median proxied by ROE was at 10.65%, about three times the figure highlighted by ROA: see table 4.3.

The least performing insurance company had a minimum ROA of -23%, while the best performing insurer recorded a ROA of 90%. The median (standard deviation) performance of banks based on ROE in the sample was 0.1065 (0.43). This showed that the variability of the return on equity was quite high overall.

The mean debt ratio (Leverage ratio) of all insurance companies over the study period was 67.56. This amount tallied with the median at 66. The finding established that more than half of the insurers leverage on long term debt for financing and other solutions. The standard deviation recorded based on debt ratio was 16.81. The highest debt ratio was 106 and the lowest 1.7: both settled from life insurers.

Furthermore, the reinsurance ratio had a median of 0.1555, which tallied with a mean figure of 27%. The standard deviation rate was 0.21, with positive values for both skewness and kurtosis. This suggests that only a small proportion of the insurance industry reinsure themselves against certain risks.

The mean investment ratio of all insurance companies over the study period was 0.3588. This amount did not tally with the median which recorded a figure of 0.174. The finding established that most of the insurers do not leverage on investment for financing. The standard deviation for debt ratio was 0.83. This translates to 68.89% in variation in terms of making investment decisions.

The analysis depicted that size factor had a mean worth 6. 601. The most sizeable insurer had a logarithmic value of 7.9 from life insurer and the smallest company had a value of 5.5 from a general insurer. The median age for Kenyan insurers under test was 36 years, with an average value of 41 years. The finding established that close to 60% of the insurance industry in Kenya comprises of relatively moderate age in the industry

Kurtosis and Skewness were explored to elucidate and ascertain the normality of the distribution of data under review. Kurtosis estimated the peakiness or levelness of the series, whereas skewness measured the degree of asymmetry of the series.

Solvency ratio exhibited the greatest excess kurtosis and the highest positive skewness. Variables with distributions that were negatively skewed implied that it has a fat/long left tail and mean is less than the median. The large kurtosis exhibited tail data exceeding the tails of the normal distribution and implied extreme returns, which can either be favourable or unfavourable.

The mean value of ROA is 4.7% for General Insurers. This value is much higher than that of Life insurers whose ROA for the period was 3.0%. For life insurers, financial performance indicator return on assets has mean values ranging from -0.24 to 0.97 showing the mean financial performance of 3%. The wider range is proven by larger standard deviations.

On the contrary, the return on equity (ROE) was 9.2% for life insurers while general insurers show a 12.2% on average. The profitability rates are fairly higher for general insurers with most of its businesses and claims being paid within a year. This showed that the returns on capital contributions by general insurers are higher. This could either be due to the differences in the capital contributions needed in the set-up of the two entities, or difference in the amount of risks held by both life and general insurers.

Standard deviation ranges from its mean, around 9.2% and 11% for General and Life insurers respectively. The higher standard deviation value of ROE, 0.66 and 0.22 for life and general insurers respectively shows more dispersed and differentiated equity returns of all the insurance industry captured under study.

In contrast, the lower standard deviation of ROA, 0.11 and 0.092 for life and general insurers respectively demonstrated less dispersed return on assets. It should be noted that returns on assets and equity of above 30% are treated as outliers. The underlying market rate for this return stands at 35% or thereabouts. Some of the industry players are quite small in size and as such, an influx in the capital injections or revaluations have significant effects on the magnitude of ROA and ROE. We seek to analyse them separately as the chapter unfolds.

In General insurance for instance, in 2012, Madison Insurance Company reported a return on equity of 90% (Insurance Regulatory, 2012). This was a greater deviation from the mean value realised. As a result, the standard deviation measure, which shows variations and dispersions, were also higher in the industry.

Similarly, in 2009, Kenyan Alliance Insurance Company reported the highest value in return on asset 97%, which shows a greater deviation from the overall mean realised. Consequently, maximum and minimum values were not relied upon as best measures in gauging the industry. The overall trend in ROA for the ten-year period is depicted in figure 4.2.1.

Standard deviation outlines that the ROE of the industry in the panel revolves around its mean of 22.2% and 66% for General and Life insurers respectively. The maximum value of ROE stands at 223% and 428% for the two sectors respectively. These two values are considered as outliers in the data set and their analysis is also elaborated. Life insurers tend to have higher values in the dependent variables on average. The overall trend for ROE is depicted in figure 4.2.2

Reinsurance had a mean of 36.8% and 11.9% for General insurers and life insurers respectively. The amount of mitigation allotment held by general insurers is greater than life insurers. Furthermore, bearing in mind the duration involved for both transactions, general insurers pay more claims and hold huge risk compared to life insurers. The general insurers tend to pay out a larger percentage of their gross premium earned and cede to reinsurance companies. The risk perhaps realised by the general insurance segment is quite huge in magnitude and even frequency, as such the insurers seek to minimize the risks on their side.

It is also worth mentioning that investment ratio, which incorporates the total investment income and gross earned premiums, averages at 40.3% for life and 33.8% for general insurers. This still supports the notion that general insurers tend to hold greater risk within the varieties of classes and products they deal in.

4.3 ANALYSIS OF THE TREND OF MAIN VARIABLES

The trends in the insurance industry financial achievement with Return on Assets (ROA) displayed as general and life for the period under study is as shown in Figure 4.3.1. ROA showed steady increase and decrease within a 1% to 9% range in average values. General insurance underwriters show higher ROA than life insurance underwriters.

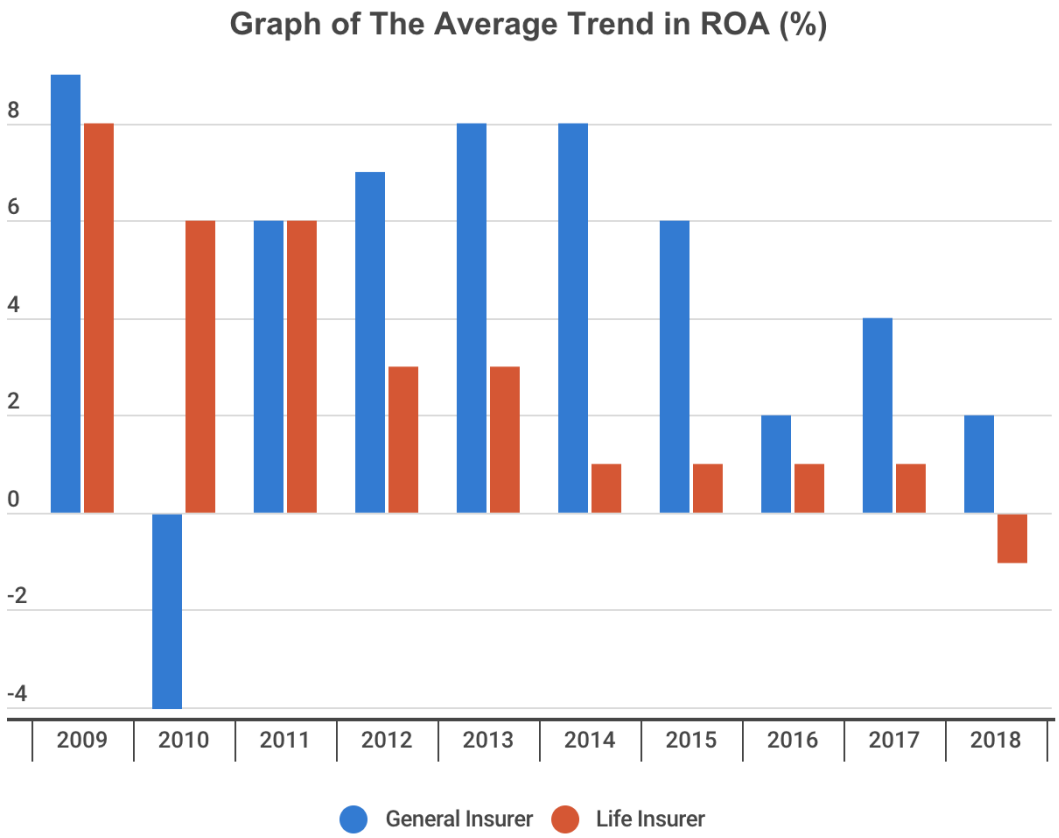


Figure 4.3.1: Trends in Return on Assets (ROA) For Both General and Life Insurers, 2009-2018.

The trends in the insurance industry monetary performance with Return on Equity (ROE) displayed as general and life for the period under study is as shown in Figure 4.3.2. In comparison, general insurers in Kenya generated more return on the equity value to shareholders from 2009. It must be noted however that the returns depicted minor fluctuations in the rates realised.

In 2013, the returns generated by life insurers was twice that of general insurers. The potential in life insurance business seemed to have taken over during that year. Subsequently, there was a decline documented from 2013 at 42% down to 10% on

average over the period ending 2018. It can also be noted that in 2010 and 2011, significant declines in equity return were highlighted from both life and general insurers in separate years.

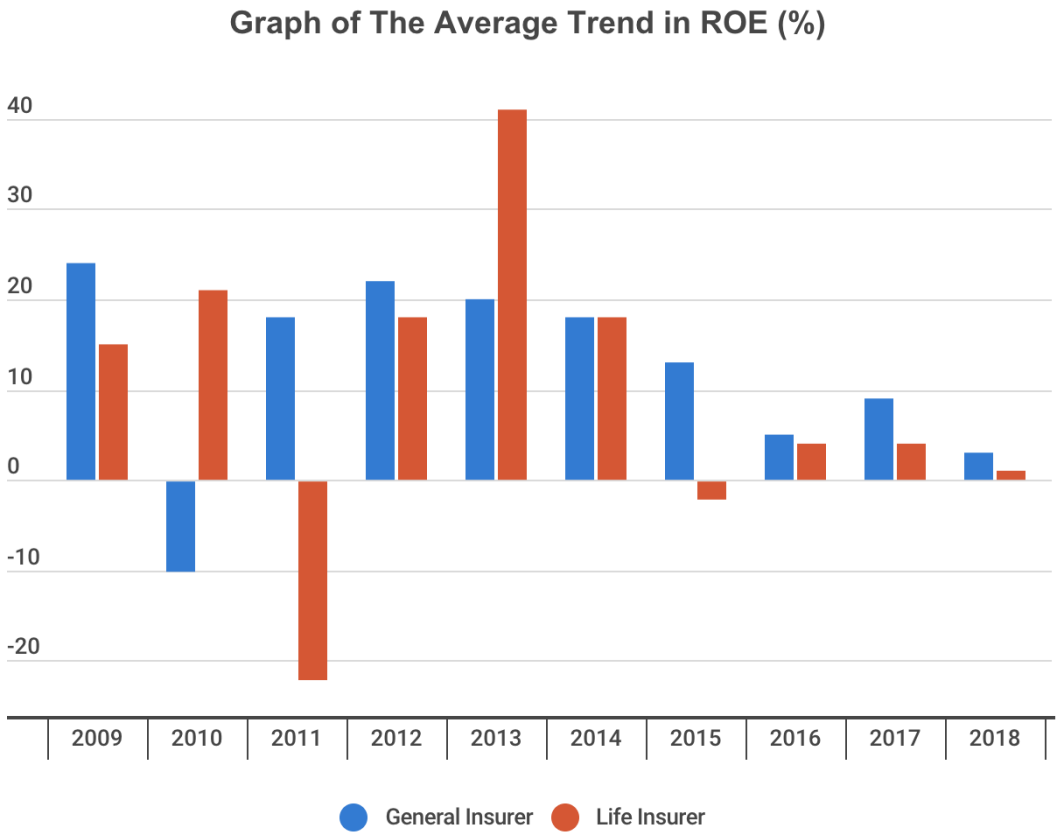


Figure 4.3.2: **Trends in Return in Equity (ROE) For Both General and Life Insurers, 2009-2018.**

4.3.1 Solvency Ratio

A comparison of the annual averages for solvency ratio for insurers from 2009 to 2018 is done as shown in figure 4.3.3. Solvency ratio has total equity and assets as the main constituent in its computation. It can be noted that there has been a gradual decline in the factor from 2009 to 2014. However, the measure took a different turn at the end of 2014. The analysis established that solvency ratio has been increasing steadily from 2014. On the contrary, the peak realised during 2009 has not yet been surpassed. It can be inferred that the ability of Kenyan insurers to meet long-term liabilities is growing, with a slower pace than realised in 2009-2011. Subsequently, most companies have realised the importance of setting aside resources to curb long

term liabilities: as such, the ratio has depicted a gradual rise in the previous years from 2014.

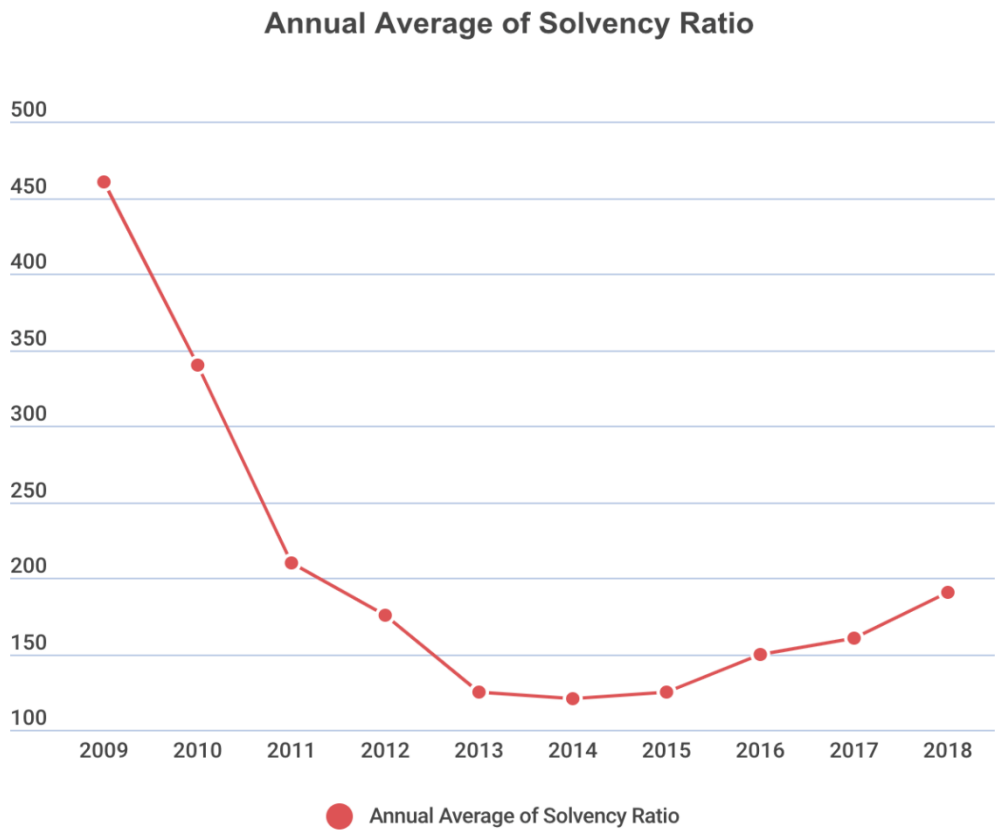


Figure 2.3.3: **Annual Average of Solvency Ratio for The Insurance Industry in Kenya.**

Source: Author's Analysis.

4.3.2 Debt Ratio

The debt ratio, which can also be referred to as leverage ratio, has total assets and total equity as major constituents in its computation. The comparison of the annual averages for debt ratio for insurers from 2009 to 2018 is done as shown in figure 4.2.4

The trend in debt ratio can be inferred above as ranging from 65% to 70%. There has been a steady growth in the measure over the years from 2013 to 2018. Random fluctuations were realised in the earlier years from 2009 to 2013, with a gradual rise picking up at the end of 2013. Insurers depicted some reliance on debt as leverage on their long-term functions. The magnitude of rise in figures highlighted informed processes as margins were smaller. The amount of debt accumulated over the years

also declined, an evidence of strong grip of debt management over the years from 2011.

Annual Average of Debt Ratio

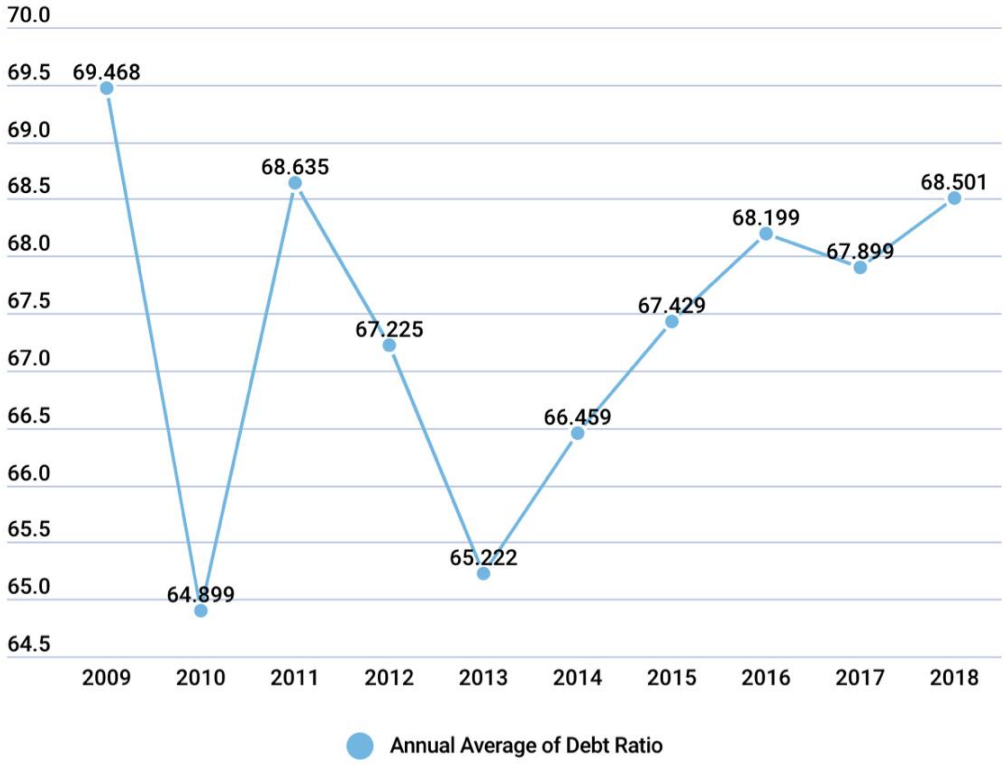


Figure 4.3.4: Annual Average of Debt Ratio for the Insurance Industry in Kenya.

Source: Author's Analysis

4.3.3 Size of Insurer

A comparison of the annual averages for the size of insurers from 2009 to 2018 is done as shown in figure 4.3.5. Size of insurance firms was estimated by taking the common logarithm of all-out resources and assets realised by the respective industry players. The main element outstanding in its computation is the net capital injections and assets of the insurance industry.

The trend in size can be inferred from the above figure as ranging from KES 6.2 billion to KES 6.9 billion. There has been a steady growth in the size of the industry in a good measure over the years from 2009 to 2018. Over the years, there have been a number of mergers and acquisitions amongst insurers. Also, some of the life insurers transfer

their business and shift to general insurance business as well. Massive growth realised by top performers has had a great effect in the rise of the size of the insurance firms.

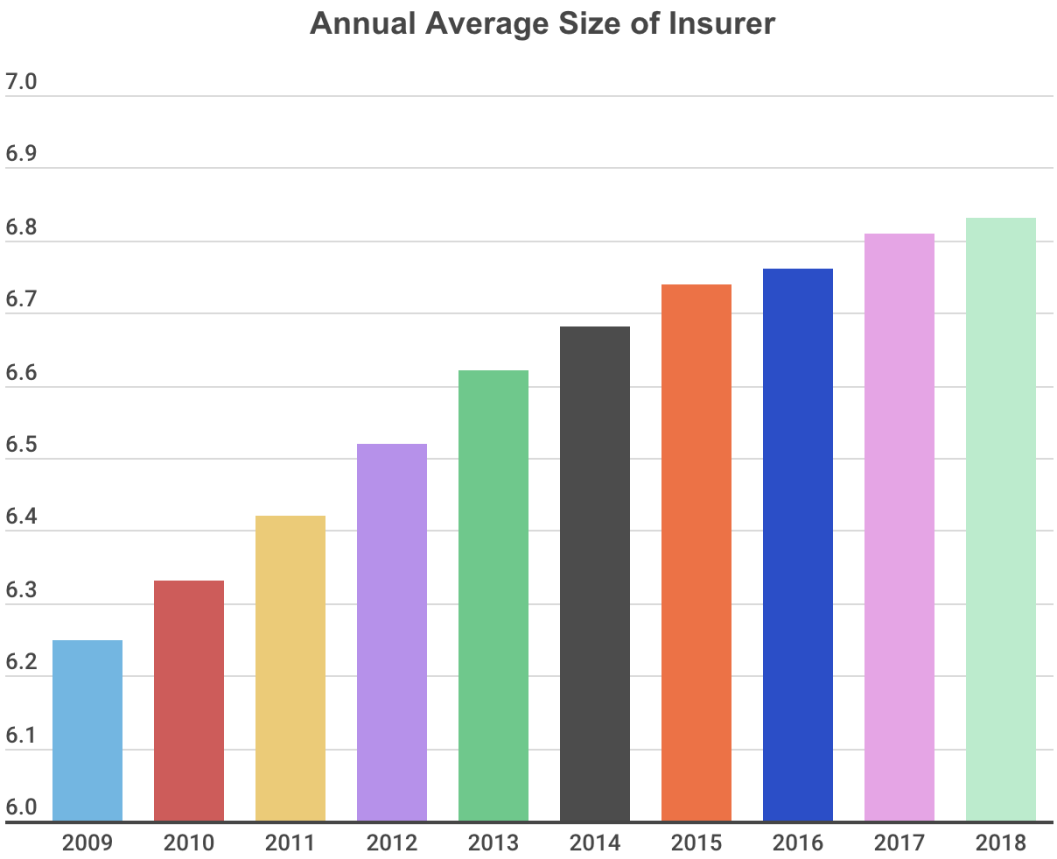


Figure 4.3.5: Trend in The Annual Average of Size of The Insurance Industry in Kenya

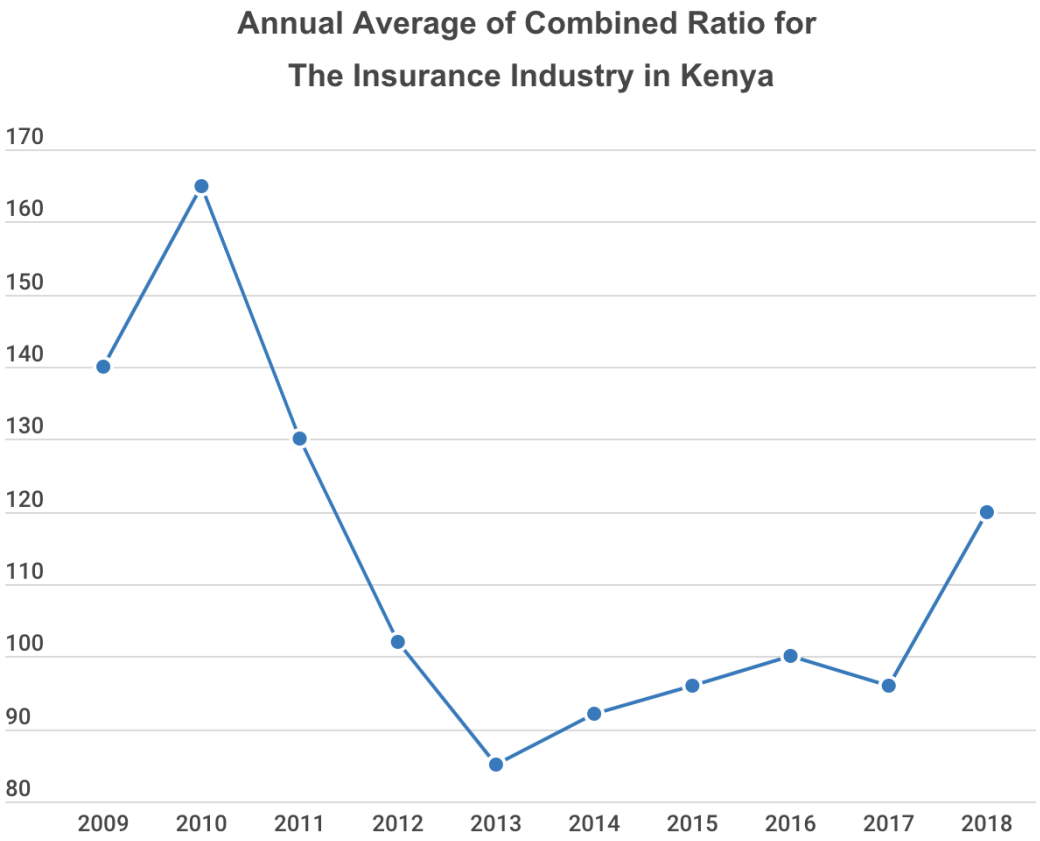
Source: Compiled by Author based on sample data.

4.3.6 Combined Ratio

A comparison of the annual averages for combined ratio for insurers from 2009 to 2018 is done as shown in figure 4.3.6. The main element outstanding in its computation is the net earned premiums. Loss ratio is the quotient of incurred claims and earned premiums by an insurer. Expense ratio on the other hand divides commissions paid by the earned premiums.

The trend in combined ratio can be inferred above as ranging from 120% to 160%. There has been a decline in the measure over the years from 2010 to 2017. A slight

increase is realised in the year 2018. The better part of the industry has been paying more in sorting out the claims incurred.



Source: Creator's Analysis dependent on test information

Figure 4.3.6: Annual Average of Combined Ratio for The Insurance Industry in Kenya.

4.3.6 Investment Ratio

The investment ratio consists of total investment income to gross premium income earned. The comparison of the annual averages for investment ratio for insurers from 2009 to 2018 is as shown in figure 4.3.7.

The trend in ratio can be inferred above as ranging from 30% to 60%. There have been random fluctuations in the measure over the years from 2013 to 2018. The mean investment ratio for the sample under review was 35%. The average investment ratio started off at peak levels of about 60% then fell during the period corresponding years. Hence, based on the investment income ratios, the profitability of the industry averaged at 35% over the period of study.

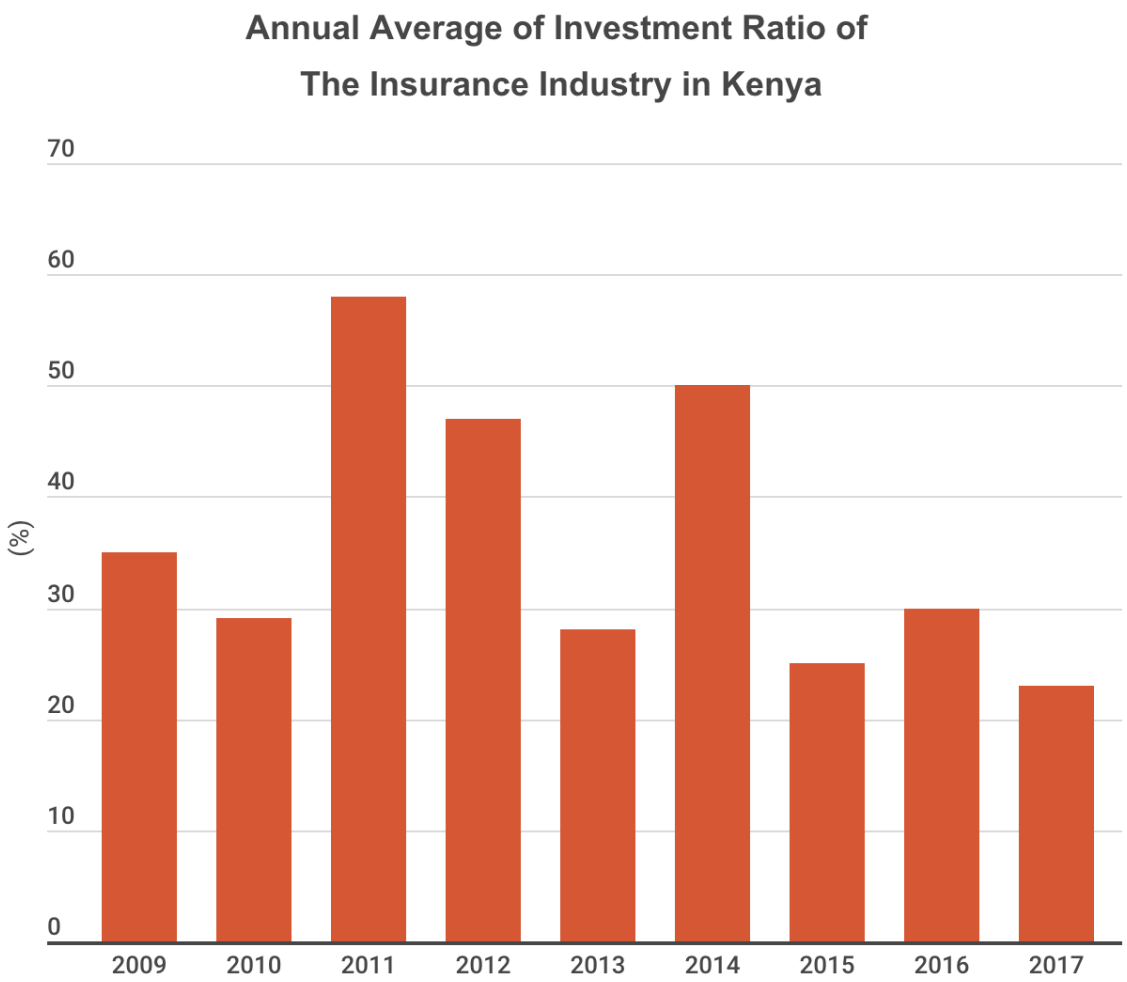


Figure 4.3.7: Trend in The Annual Average of Investment Ratio of The Insurance Industry in Kenya.

Source: Compiled by Author based on sample data.

4.3.7 Reinsurance Ratio

Reinsurance fluctuated widely within the 20% range. What can be inferred is that the reinsurance numbers showed a fluctuation in figures for the period 2009-2018. It highlighted some downturn from a high of around 46% in 2013, to a low of 20% in 2018.

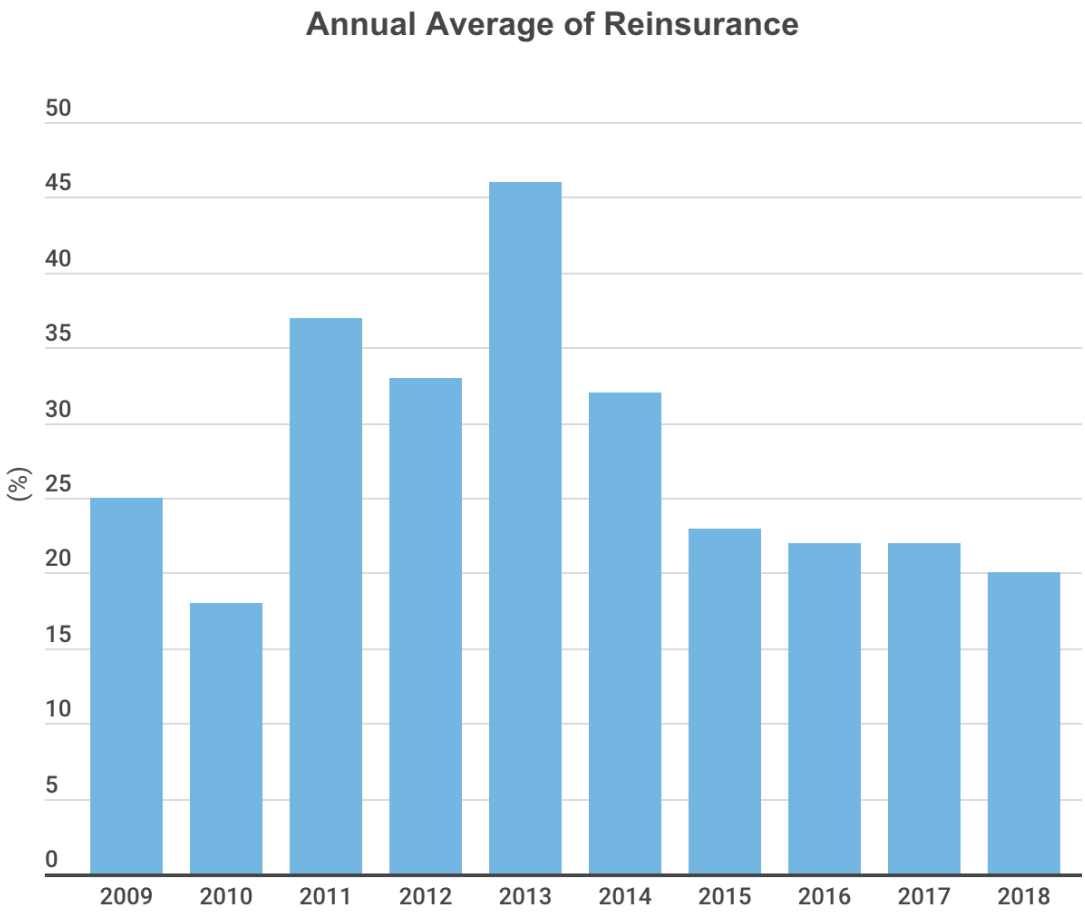


Figure 4.3.8: Trend in The Annual Average of Reinsurance for the Insurance Industry in Kenya.

Source: Compiled by Author based on sample data.

4.3.9 Variability of ROE and ROA

The variability of ROA over the year's averages at 0.1 and about 10% of ROA is realised from year to year. The variability of ROE for the whole industry averages at 18% overall.

Figure 4.3.9 A gives the variation that is depicted by both measures of return over the years. It can be mentioned that the overall trend in variation for ROA is one of a consistent type. On the other hand, variation in ROE is quite significantly inconsistent over the years. The fact is that ROE represents the outcome of the enacted financial ratio analysis.

From the results of figure 4.7.1 the spreads of ROA were slightly better than ROE. For this reason and the above, there was a need to use ROA as a dependent variable to help explore more and accomplish the objectives of this examination.

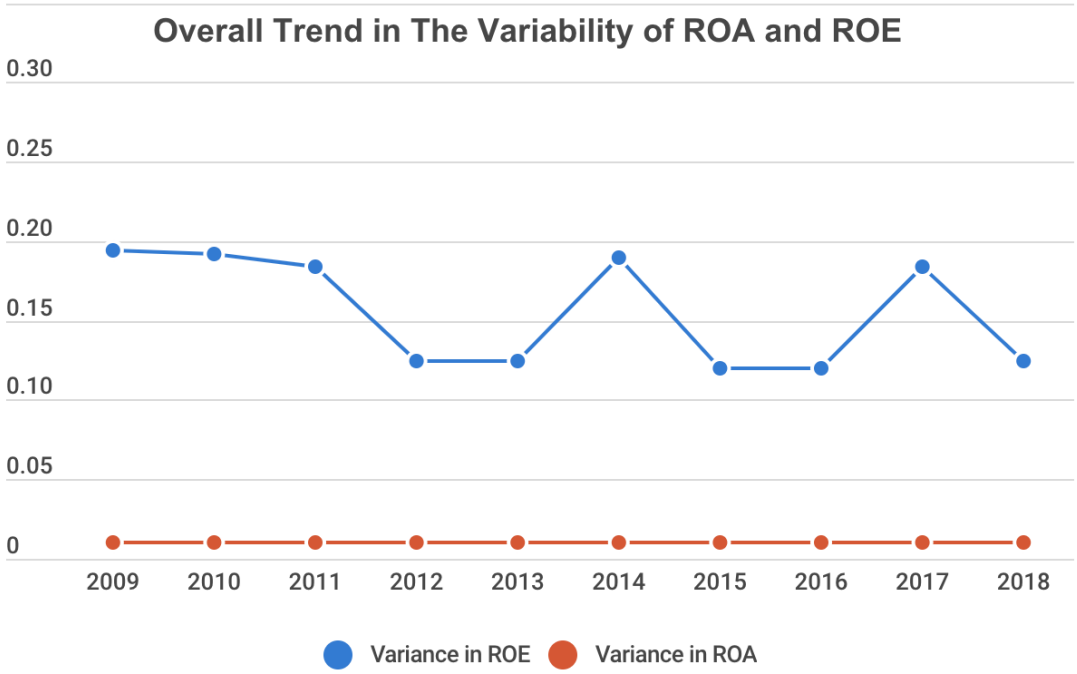


Figure 4.3.9: A Comparison Measure of Variability ROA and ROE.

Source: Analysis by Author based on sample data.

Most smaller companies whose ROA was above 35% had huge increases in capital injections from one year to the next. These huge increases had a significant effect on total investments and assets in general. Great movements realised from year to year were attributed to revaluations of most of the sources of earnings for some companies. Some of the insurers are pension administrators and not wholly in the life insurance business.GA life insurance for instance, engages more in pension administration hence their corresponding values in underwriting provisions, solvency rations and net incurred claims proved a little insignificant in comparison.

It is also worth noting that transfer of a business for life business to general has great impacts on the values of the returns. For instance, Monarch Insurance made a move to transfer its life business to general. This significantly increased its value of ROA,

despite it being quite a small company. Re-adjusting of total assets: land, investments, and buildings. Regulations perhaps should be made considering transfer from general insurance to life and vice versa. This limited part of the study.

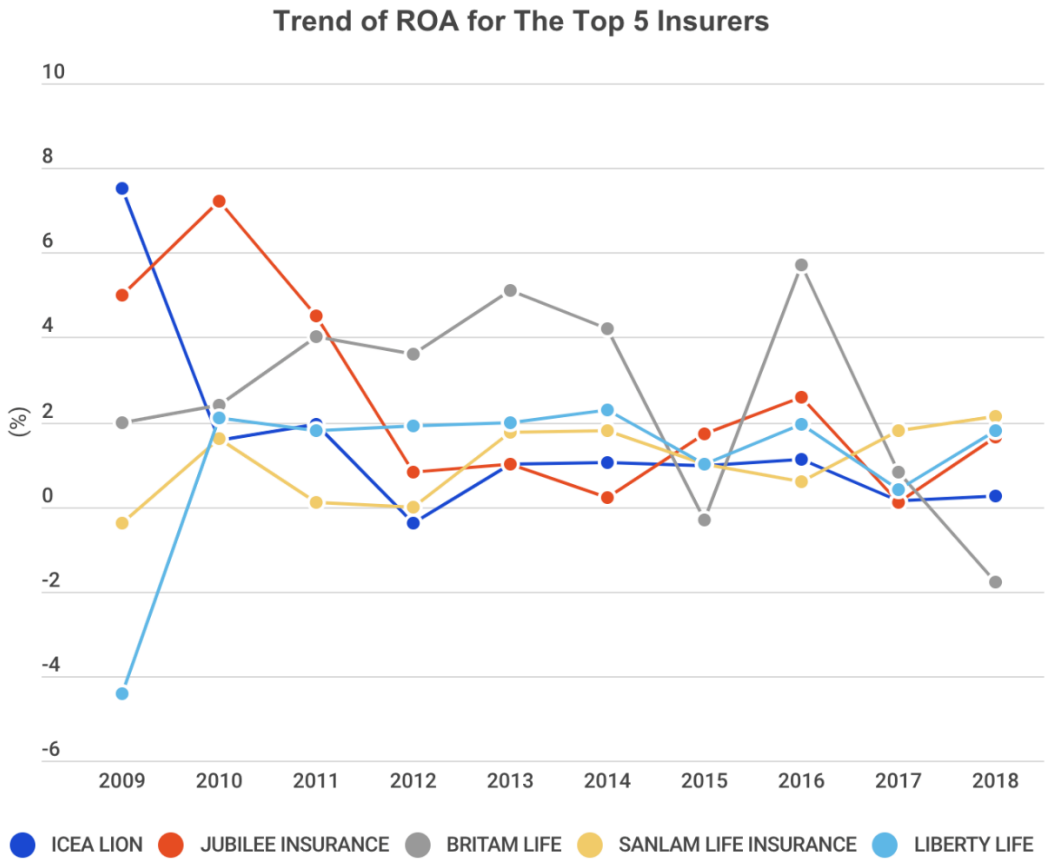


Figure 4.3.10: Trend of Performance for the Top 5 Insurers.

Source: Analysis by Author based on sample data.

4.4 CORRELATION MATRIX

In this section, focus is placed on analysing the correlations between the elements employed in this dissertation. The results in Table 4.4 elucidate the linkages among various factors under review. We get to learn if there are any relationships exist among variables or not.

Table 4.4: Correlation Matrix

	ROA	ROE	Debt Ratio	Combined Ratio	Solvency	Re-insurance	Invest-ment	Size	Age
ROA	1								
ROE	0.44***	1							
Debt Ratio	-0.22	-.05**	1						
Combined Ratio	0.10**	-.01***	-.12*	1					
Solvency	0.43	0.11***	-.28**	0.56	1				
Reinsurance	0.15	0.051**	-0.25	-0.05	0.0297*	1			
Investment	0.05	0.0323	-0.07	-0.04	0.0427	0.24***	1		
Size	-0.1***	0.0436**	0.516	-0.1387	-0.1508	-0.1545	-0.041	1	
Age	-0.09**	0.0012	0.198	0.0269	-0.0229	-0.0859	.002***	.36**	1

(*) / (**) and (***) highlights 10%, 5% and 1% level of significance respectively.

The correlation matrix lays bare whether the variables are correlated with each other or not. As a rule of thumb, in the event that the level of connection between factors is 80%, then multicollinearity is present. In this section, focus is placed on analysing the correlations between the variables employed in this study. The interconnections of the variables used are reported in Table 4.4. We get to learn if there are any connections that exist among variables.

Objective 1: To investigate whether firm-level factors explain financial performance of Kenyan insurers.

The outcome of the correlation analysis reported that the size of the insurer was positively correlated to ROA and impact was valid at the 1% mark of validity in that order. The strength of the relationship recorded a 10.25%. Similarly, size was positively linked to ROE, though the relationship was statically valid with a strength relationship of only 4.36%.

Furthermore, the size variable plays a role in the financial performance in insurance, particularly with ROE as they have a positive correlation of close to 4.3%. This is quite similar to ROE as there exists a negative correlation of small margin of 0.1%. Then again, for both ROA and ROE measures, debt ratios of the industry are negatively correlated at 20% and 5% respectively.

Results revealed a positive influence of size on the monetary effectiveness of insurers. Larger firms have capacity to earn better returns and gains on the profitability levels. This is in line with a prior expectation.

Furthermore, correlation analysis established that the age of the insurer was negatively correlated to ROA, and effect was highly valid at 5% level of significance. Meanwhile, the age variable positively correlated to ROE and strength of relationship was statically insignificant at 1.8%.

Hence, the results are inconclusive and contrary to the prior expectation. Financial performance is not conclusively determined by the age of the insurer, making more analysis on this matter imperative.

Objective 2: To establish whether there exists a link between the solvency of Kenyan insurance firm and their financial performance

Solvency ratio was used to help investigate the interconnection that exists between solvency and financial performance. The findings of this evaluation established that solvency was definitely correlated to ROA and ROE. The impact was valid at a 1% level of significance with the strength relationship at 11.37% in comparison to ROE. This finding was not however quite conclusive since the positive relationship with ROA was statistically insignificant. Further analysis was done to help establish a strong standpoint of the solvency variable

Similarly, the debt ratio of insurers was negatively correlated to both ROA and ROE at 20% and 5% respectively, with an impact on ROE. Leverage levels have a role in the financial performance of insurers, with caution to be instilled on equity amounts invested in respective companies.

Objective 3; To determine if there was a relationship between underwriting risk and the financial performance of insurance firms in Kenya.

ROA and ROE show a positive relationship that is 45% at a 1% significance level. The strength was found to be statistically significant, with an impact on one variable affecting the other. Both variables measure the returns of insurers, that tallies the with prior expectations. Underwriting risk was measured using a combined ratio variable.

Results from correlation analysis revealed a positive effect of combined ratio on the financial performance regarding both ROA and ROE. Underwriting had a statistical significance on ROA with impact of 10% at a 5% significance level. Similarly, the variable showed a 0.5% positive significance at a 1% level. Therefore, underwriting risk has a role to chip in in the determination of returns by an insurance company. However, there is a need to explore the specific factors leading to the positive contribution; loss and expense ratios were used in the calculation of combined ratios. This is in line with the prior expectations.

Objective 4: To find out if investment decisions have a bearing on the financial performance of insurance companies in Kenya.

The findings on this analysis settled that investment ratio/decisions were positively correlated to both ROA and ROE. However, the impact was insignificant, with a strength relationship at 4.7% and 3.2%.

Meanwhile, the investment ratio variable positively correlated to reinsurance ratio and strength of relationship was statically significant at 24%. This implied that most insurers with good investment returns mitigate their risk of loss by reinsuring some a percentage of their products. This also implied that insurers who reinsure themselves against huge risks have better investment decisions. Table 4.4 below portrays the relationship that exists between the elements of financial achievements of the insurance in Kenya.

4.5 EMPIRICAL FINDINGS

This segment outlines the panel regression results establishing the main elements contributing to the financial performance of insurance firms. Three models were assessed, namely, the Pooled Ordinary Least Squares (POLS), Fixed Effects and Random Effects models. Diagnostics evaluations and tests were explored to establish which model should be used for inference purposes. Two metrics of financial execution, namely ROA and ROE were employed for robustness. Before the panel regression results are presented, the diagnostics tests are presented first.

4.5.1 Diagnostic Tests

In this section, certain diagnostic tests were carried out to best estimate a robust model using ROA and ROE simultaneously. The tests that were examined included Chow Check, Breusch Pagan LM evaluation, Modified Wald Test, and Haussmann Specification evaluation.

Firstly, the Chow check method was applied to establish if there existed individual effects or fixed effects. Secondly, the Breusch Pagan LM test was used to examine the presence of random effects in the analysis. Thirdly, the Modified Wald Test was used to check for panel group wise heteroskedasticity. Lastly, Haussmann Specification evaluation was utilized to select the best fit among fixed and irregular impacts realised.The diagnostics test results for estimating the relationships between financial performance flagged by ROE are highlighted in Table 4.6. Considering the evidence from diagnostic tests, both models used modified Wald tests to deal with heteroskedasticity.

Table 4.5: Diagnostic Tests Using ROA as a Measure of Performance

Issue	Name of Test	Probability Value	Deduction
Testing for Individual/ Common effects and Fixed effects H_0: Common Effects exist (p value > 5%) H_1: Fixed effects exist (p value < 5%)	Chow Test	p=0.0011	Fixed effects are valid
Test for presence of random effects H_0: Choose OLS (p value greater than 0.05) H_1: Choose RE (p value less than 0.05)	Breusch Pagan LM test	p=1.000	Random effects are absent. Pooled OLS model is preferred.
Test for group wise Heteroscedasticity	Modified Wald Test	p=0.0000	Heteroscedasticity exists.
Choosing between fixed effects and random effects model H_0: RE present (p value > 5%) H_1: FE present (p value < 5%)	Hausman Specification Test	p= 0.0036	Fixed effects specification is valid.

Table 4.6: Diagnostic Tests Using ROE as a Measure of Performance

Issue	Name of Test	Probability Value	Deduction
Testing for Individual/ Common effects and Fixed effects H_0: Common effects exist (p value > 5%) H_1: Fixed Effects present (p value < 5%)	Chow Test	p=0.031	Fixed effects are valid
Test for presence of random effects H_0: Choose OLS (p value greater than 0.05) H_1: Choose RE ((p value less than 0.05)	Breusch Pagan LM test	p=1.000	Random effects are absent. Pooled OLS model is preferred.
Test for Group wise Heteroscedasticity	Modified Wald Test	p=0.0000	Heteroscedasticity exists
Choosing between fixed effects and random effects model H_0: RE present (p value > 5%) H_1: FE present (p value < 5%)	Hausman Specification Test	p= 0.0025	Fixed effects specification is valid.

In this segment, the empirical analysis and outcome of the financial performance indicators and estimations shall be presented. The study applied pooled OLS (Ordinary least squares) model, fixed estimators, and random effect model. Lastly, we applied the Haussmann test on data. In this section, both ROA and ROE were applied separately in the modelling of the financial performance indicators using fixed and random effects models comparatively.

Table 4.7: Empirical Results when ROA is used a Measure in Panel Regression

ROA	**Pooled OLS**	**Random Effects**	**Fixed Effects**
Debt ratio (DEBT)	-0.000327 (-0.92)	-0.000327 (-0.92)	-0.00066** (-1.34)
Combined ratio (COM)	-0.0206*** (-3.56)	-0.0206*** (-3.56)	-0.020*** (-3.32)
Solvency ratio (SOL)	0.0072*** (9.85)	0.0072*** (9.85)	0.007*** (8.77)
Reinsurance ratio (REIS)	0.025230*** (2.63)	0.025230*** (2.63)	0.02525*** (2.53)
Investment ratio (INV)	0.000101 (0.02)	0.000101 (0.02)	0.00100 (0.19)
Size (SIZ)	-0.003198** (-0.25)	-0.003198** (-0.25)	-0.00771* (-0.26)
Age (AGE)	-0.00223 (-0.79)	-0.00223 (-0.79)	-0.00233 (-1.0)
Constant (CONS)	0.095504 (1.27)	0.095504 (1.27)	0.23526 (1.84)

(*) / (**) and (***) indicate the (10%), (5%) and (1%) level of significance respectively. The t-statistics for the pooled and fixed effects models as well as the z-statistics for the random effects models are reported in parentheses.

The regression output documented the pooled OLS and random effects (RE) estimation results for comparison. The analysis of the results was also based on the fixed effects. The FE model is of good fit and is well specified. The F-statistic value is 2.09 and is statistically significant at the 5% level of significance.

In testing the relationship between ROA and debt ratio, there was a negative correspondence established. Results from the analysis using Pooled OLS showed that a 1% fall in the debt ratio translates to a drop of 0.03% in ROA (Table 4.7). The result was insignificant. Similar results were found based on the random effects (RE) model, where a 1% increase in the debt ratio would result in an insignificant 0.03% decrease in ROA. Different results are documented for inference, the Fixed Effects showed that a 1% rise in debt ratio would result in a valid 0.6% shrink in ROA. The result was valid at a 5% level of significance.

In testing the association between combined ratio and monetary efficiency, it was settled that combined ratio was positively linked to both ROA and ROE. The Pooled OLS results documented that a 1% increase in combined ratio corresponded to a 2.06% decrease in ROA. The strength of the relationship is at a 1% level of significance. A similar trend and results are shown based on random effects (RE). For inference, Fixed Effects models allude that a 1% jump in combined ratio would result in a 2.00% decrease in ROE. These results are valid at a 1% level of significance.

According to correlation analysis, it was realised that the interconnection between solvency ratio and financial performance is positively related. The results from Pooled OLS estimation highlighted that 1% upsurge in solvency ratio would lead to a valid ascent of 0.72% in ROA. Similarly, based on the random effects (RE) model, a 1% increase in solvency ratio would lead to a significant increase of 0.72% in ROA. For comparison, the Fixed Effects estimator showed that a 1% jump in solvency ratio would result in a 0.70% upsurge in ROA. The results were settled to be valid at a 1% level of significance.

Furthermore, from correlation analysis, it was realised that the link between reinsurance ratio and financial performance is positively related with regards to both ROA and ROE variables. The estimation results in using Pooled OLS estimation results highlighted that a 1% jump in reinsurance ratio translated to a rise of 2.5% in

ROA, which is statistically valid at a 1% level. Similarly, based on the random effects (RE) model, a 1% rise in reinsurance ratio results in a valid rise in ROA of 2.5%. For deduction, the Fixed Effects estimator established that a 1% increase in reinsurance would result in a 2.55% invalid fall in ROE.

In testing the linkage between investment and financial performance, the results of the correlation analysis settled a positive relationship. It was noted however, that the positive interconnection was invalid. The Pooled OLS estimation results highlighted that a 1% rise investment ratio would translate in a 0.1% uptake in ROA. The Random effects (RE) model also showed that a 1% jump in investment ratio translated into a 0.1% upsurge in ROA. Similarly, the fixed effects model settled that a 1% hike in investment corresponded to a 0.11% rise in ROA.

The connection between firm specific factors and monetary efficiency of insurers was settled to be positive. The size variable was positively associated with both ROA and ROE. On the other hand, age depicted a positive relationship with ROE only. The estimation results from pooled OLS regression highlighted that a 1% increase in size factor would correspond to a 0.3 % decrease in ROA. It should be noted that the decline is valid at a 5%level of validity. The outcome tallied for both random and fixed effects.

The estimation results from pooled OLS regression highlighted that a 1% increase in age factor would correspond to a 0.2% decrease in ROA. It should be noted that the decrease is insignificant. The results depicted proved similar for both random and fixed effects

Overall, the financial performance proxied by ROA, solvency ratio, combined ratio and reinsurance ratio are all valid at a 1% mark. Also, the debt ratio (leverage) insurer is valid at a 5% mark. The size of the insurer was also significant at a 10% significance level. The other independent variables (age of insurer and investment) are inferred as not significant.

Table 4.8: Empirical Results When ROE Is Used as The Measure in Panel Regression

ROE	Pooled OLS	Random Effects	Fixed Effects
Debt ratio (DEBT)	-0.0016 (-0.95)	-0.0016 (-0.95)	-0.0045116* (-1.79)
Combined ratio (COM)	-0.004 (-1.26)	-0.004 (-1.26)	-0.003122 (-1.03)
Solvency ratio (SOL)	0.001** (2.52)	0.001** (2.52)	0.00705* (1.71)
Reinsurance ratio (REIS)	0.0405 (0.84)	0.0405 (0.84)	0.045416 (0.9)
Investment ratio (INV)	0.0087 (0.34) (0.02)	0.0087 (0.34) (0.02)	0.0075469 (0.28)
Size (SIZ)	0.0817** (1.4)	0.0817** (1.4)	0.3075387** (2.05)
Age (AGE)	-0.03 (-0.26)	-0.03 (-0.26)	-0.0262566* (-2.21)
Constant (CONS)	-0.2968 (-0.86)	-0.2968 (-0.86)	-0.506935 (-0.78)

(*) / (**) and (***) indicate the (10%), (5%) and (1%) level of significance respectively. The t-statistics for the pooled and fixed effects models as well as the z-statistics for the random effects models are reported in parentheses.

Table 4.8 Empirical Results When ROE Is Used in Panel Regression

In testing the relationship between ROE and debt ratio, it was realised that they are negatively related with a 5% level of significance. Results from the analysis using Pooled OLS showed that a 1% decrease in the debt ratio would lead to a decrease of 0.2% in ROE (Table 4.8). The result was settled as insignificant. Similar results were found based on random effects (RE) model, where a 1% increase in the debt ratio would result in an insignificant 0.2% decrease in ROE. Different results are documented for inference, the Fixed Effects showed that a 1% increase in debt ratio would result in a highly significant 0.4% decrease in ROE. The outcome was highly noteworthy at 10% validity.

The estimation results of Pooled OLS documented that a 1% upsurge in combined ratio corresponded to a 0.4% decline in ROE. A similar trend and results are shown based on random effects, for inference, the Fixed Effects model highlighted that a 1% ascent in combined ratio corresponds to a 0.3% fall in ROE. The outcomes are valid at a 1% level of significance.

According to the correlation analysis, it was realised that the interconnection between solvency ratio and financial performance is positively related. The results from Pooled OLS estimation highlighted that a 1% rise in solvency ratio translates to a significant jump of 0.1% in ROE. Similarly, based on the random effects (RE) model, a 1% increase in solvency ratio would lead to a significant increase of 0.1% in ROE. For comparison, the Fixed Effects estimator showed that a 1% increase in solvency ratio would result in a 0.70% upsurge in ROE. This had a strength at a 10% level of significance.

The estimation results in using Pooled OLS outcome highlighted that a 1% jump in reinsurance ratio would lead to a rise of 0.4% in ROE, which is statistically insignificant. Similarly, based on the random effects (RE) model, a 1% increase in reinsurance ratio corresponded to a significant rise in ROE of 0.4%. For deduction, the Fixed Effects estimator established that a 1% increase in reinsurance would result in a 0.45% insignificant decrease in ROE.

In testing the interconnection between investment and financial performance, the results of correlation analysis settled a positive relationship. It was noted however, that the positive relationship was insignificant. The Pooled OLS outcome highlighted that a 1% upsurge in investment ratio resulted in a 0.87% rise in ROE. The Random effects (RE) model also showed that a 1% jump in investment would result in a 0.87% ascent in ROE. Similarly, the fixed effects model settled that a 1% uptake in investment corresponded to a 0.7% rise in ROE.

The estimation results from pooled OLS regression highlighted that a 1% increase in age factor would correspond to a 3% decrease in ROE. It should be noted that the decrease is insignificant. The results depicted proved similar for both random and fixed effects.

Overall, Table 4.8 shows the results of Pooled OLS, Random effects and fixed effects model when financial performance indicator ROE is taken as the dependent variable. Four variables out of seven are found to be significant. Under this, solvency ratio and debt ratio variables are valid at a 10% level of significance, while age and size at 5% significance level.

4.6 EMPIRICAL ANALYSIS OF THE TOP 5 INSURERS.

Further analysis was done with the top performers and small sized insurers separately, so as to extensively accomplish the objectives of the study. Using the sample data, more analysis was done on ROA and ROE to support the findings from the above sections on ROA as a more conclusive determinant of reference.

It should be noted that companies whose ROA/ROE measures are 35% and above are considered as outliers. We sought to establish more results comparing the outliers and the industry players whose ROA figures fall within the cut off market rate of 35%.

Furthermore, there were significant errors in the dependent variable figures. Some companies were greatly impacted with revaluations of assets from one year to the other. It is due to these generalizations that a detailed analysis was done on the top five companies as well as bottom five, as ranked by size. This helps make a comparison of the small samples with the whole industry, as per the above sections.

4.6.1 Diagnostic tests when ROA is proxied as a Performance measure.

Firstly, the Applied Chow Test was applied to establish if there existed any individual effects or fixed effects. Secondly, the Breusch Pagan LM test was used to examine the presence of random effects in the analysis. Thirdly, the Modified Wald Test was used to check for panel group wise heteroskedasticity. Lastly, Haussmann Specification test was utilized to help select the best fit between fixed and random effect models.

Table 4.9: Diagnostic Results When ROA Is Used as a Performance Measure

Issue	Test	Critical Value	Deduction
Testing for Individual/ Common effects and Fixed effects H_0: Common Effects exist (p value > 5%) H_1: Fixed Effects exist (p value < 5%)	Chow Test	p=0.003	Fixed effects are valid
Test for presence of random effects H_0: OLS present (p value > 5%) H_1: Random Effects present (p value < percent)	Breusch Pagan LM test	p=1.000	Random effects are absent. Pooled OLS model is preferred.
Test for group wise Heteroscedasticity	Modified Wald Test	p=0.0000	Heteroscedasticity exists.
Choosing between fixed effects and random effects model H_0: RE present (p value >5%) H_1: FE present (p value >5%)	Hausman Specification Test	p= 0.004	Fixed effects specification is valid.

The diagnostics test results for estimating the relationships between financial performance, flagged by ROA and ROE, are reported in Table 4.9 and Table 4.10 discretely. The initial test was to establish if there existed any individual effects or fixed effects. The estimation results of the test confirmed the significance of fixed effects as a value of 0.003, which is less than a 5% validity level. Similar inferences were made when ROE was explored. The Breusch Pagan LM test also confirmed the absence of random effects.

Table 4.10: Diagnostic Results When ROE Is Used as a Performance Measure

Issue	Test	Critical Value	Deduction
Testing for Individual/ Common effects and Fixed effects H_0: Common Effects exist (p value > 5%) H_1: Fixed Effects exist (p value < 5%)	Chow Test	p=0.004	Fixed effects are valid
Test for presence of random effects H_0: OLS present (p value > 5%) H_1: Random Effects present (p value < percent)	Breusch Pagan LM test	p=1.000	Random effects are absent. Pooled OLS model is preferred.
Test for group wise Heteroscedasticity	Modified Wald Test	p=0.0000	Heteroscedasticity exists
Choosing between fixed effects and random effects model H_0: RE present (p value >5%) H_1: FE present (p value >5%)	Hausman Specification Test	p= 0.0036	Fixed effects specification is valid.

Furthermore, group wise heteroskedasticity was tested and it was found that it was present. Lastly, the Hausman evaluation check established the input of the fixed effects model over the random effects

4.6.2. Panel Regression Results on The Top 5 Insurers

Results from the analysis of the top 5 insurers using Pooled OLS highlighted that a 1% decrease in the debt ratio would lead to a decrease of 0.1% in ROA (Table 4.11).

Table 4.11: Empirical Results When ROA Is Used in Panel Regression.

	Pooled OLS (ROA)	**Random Effects (ROA)**	**Fixed Effects (ROA)**
Debt ratio (DEBT)	-0.012276* (-4.31)	-0.012276* (-4.31)	-0.0122*** (-2.67)
Combined ratio (COM)	0.00508*** (0.67)	0.00508*** (0.67)	0.001 (0.52)
Solvency ratio (SOL)	0.0111*** (-0.36)	0.0111*** (-0.36)	0.0070*** (-0.52)
Size (SIZ)	-0.0507 (-0.44)	-0.0507 (-0.44)	-0.0527 (-0.71)
Reinsurance ratio (REIS)	0.1367 (0.53)	0.1367 (0.53)	0.1229 (0.85)
Investment ratio(INV)	0.0433 (0.29)	0.0433 (0.29)	0.058 (0.51)
Age (AGE)	0.06105 (2.8)	0.06105 (2.8)	0.061** (0.62)
Constant (CONS)	0.21525 (2.39)	0.21525 (2.39)	0.2825 (2.89)

(*) / (**) and (***) indicate the (10%), (5%) and (1%) level of significance respectively. The t-statistics for the pooled and fixed effects models as well as the z-statistics for the random effects models are reported in parentheses.

Source: Author's compilation based on Stata Output

The result was settled as significant. Similar results were found based on the random effects (RE) model, where a 1% increase in the debt ratio would translate to a

significant 0.2% decrease in ROA. Similar results were documented for inference, the Fixed Effects showed that a 1% increase in debt ratio would result in a highly significant 0.2% decrease in ROA. The result was highly significant at the 5% level of significance.

On the other hand, the impact of a 1% increase in debt ratio corresponded to a 7% decrease in ROE. This translates to a remarkable association between debt ratio and the return to the key stakeholders' equity. Estimation results of the fixed effects model depicted that a similar upsurge in debt ratio would translate to a 10% rise in ROE. This suggests that top insurers have significant equity stakes in comparison to debt levels for financing. Accumulating more liabilities in the long-term would translate to decline in the profitability to shareholders.

Furthermore, the estimation results of Pooled OLS depicted that a 1% increase in combined ratio corresponded to a 0.5% increase in ROA. A similar trend and results are shown based on random effects (RE). For inference, the Fixed Effects model documented that a 1% upsurge in growth would correspond to a 0.1% rise in ROA. The outcome was noteworthy at the 10% level of validity. Similar deductions were settled on analysis of financial performance flagged by ROA.

Closely related to prior results for the whole industry, the results from Pooled OLS estimation on the top 5 companies highlighted that a 1% increase in solvency ratio would translate to a significant rise of 0.1% in ROA. Similarly, based on random effects (RE) model, 1% increase in solvency ratio would lead to a significant increase of 0.1% in ROE. For comparison, the Fixed Effects estimator showed that 1% increase in solvency ratio would result in a 0.70% rise in ROA. This had a strength at a 1% level of significance. It can be mentioned that there is a direct proportionality between the magnitude of the solvency on the monetary effectiveness of an insurance firm in Kenya.

Table 4.12: Empirical Results when ROE is used in Panel Regression of the Top 5 Insurers

(ROE)	**Pooled OLS (ROE)**	**Random Effects (ROE)**	**Fixed Effects (ROE)**
Debt ratio (DEBT)	-0.07888*** (-1.27)	-0.07888*** (-1.27)	-0.10473*** (-1.06)
Combined ratio (COM)	0.04155*** (0.47)	0.04155*** (0.47)	0.04143*** (0.94)
Solvency ratio (SOL)	0.01038*** (-0.29)	0.01038*** (-0.29)	0.01743*** (-0.87)
Size (SIZ)	0.26969 (0.20)	0.26969 (0.20)	0.2105 (0.29)
Reinsurance ratio (REIS)	0.2387** (0.78)	0.2387** (0.78)	0.2328** (1.3)
Investment ratio (INV)	0.03623 (0.21)	0.03623 (0.21)	0.04228 (1.3)
Age (AGE)	0.064** (2.53)	0.064** (2.53)	0.061** (0.19)
Constant (CONS)	0.2203 (0.21)	0.2203 (0.21)	0.4948 (0.42)

(*) / (**) and (***) indicate the (10%), (5%) and (1%) level of significance respectively. The t-statistics for the pooled and fixed effects models as well as the z-statistics for the random effects models are reported in parentheses**.**

Source: Author's compilation based on Stata Output

In the same light, the estimation results in using Pooled OLS estimation results highlighted that a 1% increase in solvency ratio would translate into an ascent of 1% in ROE. Similarly, based on the random effects (RE) model, a 1% increase in reinsurance ratio would result in a significant rise in ROE of 1%. For deduction, the Fixed Effects estimator established that a 1% ascent in reinsurance would correspond to a 1.7% insignificant rise in ROE. This suggests that the ability of an insurance company to finance their long-term liabilities, with regards to current asset portfolio, determines the returns posted to its shareholders. Close attention on solvency therefore translates to better profitability for shareholders.

In testing the interconnection between investment and financial performance, it was realised from the Pooled OLS that a 1% increase in investment ratio would translate into a 4% increase in ROA. Similar results were highlighted with random effects. For inference, fixed effects established that a 1% increase in investment would lead to a 5% increase in ROA. It must be mentioned however that these amounts were found to be statistically insignificant. In addition, Pooled OLS estimation results highlighted a 1% rise in investment ratio would result in a 3% upsurge in ROE. The random effects (RE) model also showed that a 1% increase in investment would result in a 3% upsurge in ROE. Similarly, the fixed effects model settled that a 1% increase in investment corresponded to a 4% rise in ROE. It is important to note that insurers who pay close attention to investment decisions also earn fruitful returns on their assets in comparison to the companies with little traction to investments.

The estimation results from pooled OLS regression highlighted that a 1% increase in age factor would correspond to a 6% increase in ROA. It should be noted that the increase was inferred as being insignificant. The results depicted proved similar for both random and fixed effects. This finding did not tally with those of the collective insurance industry. Age factor works in the interest of the top 5 insurers. This suggests that the longer-serving insurers outshine the younger companies, with respect to the size of the company. For more inference using fixed effects, the strength of the variable age was established to have a noteworthy influence on ROE at a 10% level.

Reinsurance ratio highlighted a pragmatic and positive influence on the financial efficiency of the top 5 insurance firms. From Pooled OLS and random effects, a 1% upsurge in reinsurance translated to a 13.67% rise in ROA. A similar figure is highlighted by fixed effects; however, none was settled as statistically significant. The estimation results proxied by ROE established that there was a significant impact of reinsurance on ROE of the top 5. In the testing of the ration using Pooled OLS, a 1% increase in reinsurance ratio translated to a significant 23% increase in ROE.

The results tallied with that of random and fixed effects. This impact was noteworthy at a 5% level of validity. This suggests that most of the top 5 insurers leverage on reinsurance to mitigate themselves against uncertain risks with huge claim amounts. In addition, the profitability to shareholders is partly pegged on mitigation of risks by involving reinsuring.

Overall, Table 4.8 shows the results of Pooled OLS, Random effects and the fixed effects model when the financial performance indicator ROE is taken as the dependent variable. Four variables out of seven are found to be significant. Under this, the solvency ratio and debt ratio variables are significant at a 10% level of significance, while age and size at a 5% significance level. Combined ratio and solvency are inferred as highly significant at a 1% significance level. There is also a great relationship between reinsurance and the financial performance of the small sized insurers at a 5% significance level. The age of the insurer still holds at a 10% significance level.

Overall, seven firm level determinants were under study: Solvency variable, debt ratio (Leverage) and the age of insurer are inferred as highly significant in this model. For the top 5 performing insurers, reinsurance factor and combined variables are found to be not as significant as in the case for the overall insurance industry. It is also worth noting that most all of the top five insurance companies cede a small percentage of their gross earned premiums. The values realised as combined ratios are all less than 100%. This supports the line that these companies make a lot of underwriting profit. The combined ratios range from 20% to 80%. Underwriting risk pulled by this category of insurers is quite lower than that pulled by small sized insurers.

What can also be inferred is that most of these insurers have higher investment ratios too. Combined ratio and investment ratio values are inversely proportional. This category however pools huge risk in matters of reinsurance as they do not cede bigger proportions of their premiums with reinsurance companies. Both the debt ratio and solvency are inferred as highly significant at a 1% significance level. Also, it can be mentioned that there is a great interconnection between the age of the insurer and the financial performance of the insurers at a 10% significance level.

4.7 EMPIRICAL ANALYSIS OF THE BOTTOM 5 INSURERS.

Further analysis was done with the bottom performers separately, so as to extensively accomplish the objectives of the study. Using the sample data, more analysis was done on ROA and ROE to support the findings from the above sections on ROA as a more conclusive determinant of reference.

Table 4.13: Diagnostic tests when ROA is proxied as a measure.

Issue	Test	Critical Value	Deduction
Testing for Individual/ Common effects and Fixed effects H_0: Common Effects exist (p value > 5%) H_1: Fixed Effects exist (p value < 5%)	Chow Test	p=0.0018	Fixed effects are valid
Test for presence of random effects H_0: OLS present (p value > 5%) H_1: Random Effects present (p value < percent)	Breusch Pagan LM test	p=1.000	Random effects are absent. Pooled OLS model is preferred.
Test for group wise Heteroscedasticity	Modified Wald Test	p=0.0000	Heteroscedasticity exists.
Choosing between fixed effects and random effects model H_0: RE present (p value >5%) H_1: FE present (p value <5%)	Hausman Specification Test	p= 0.0023	Fixed effects specification is valid.

Firstly, the Applied Chow Test was applied to establish if there existed any individual effects or fixed effects. Secondly, the Breusch Pagan LM test was used to examine the presence of random effects in the analysis. Thirdly, the Modified Wald Test was used to check for panel group wise heteroskedasticity. Lastly, Haussmann Specification test was utilized to help select the best fit between fixed and random effect models.

The diagnostics test results for estimating the relationships between financial performance, flagged by ROA and ROE, are reported in Table 4.13 and Table 4.14 discretely. The initial test was to establish if there existed any individual effects or fixed effects. The estimation results of the test confirmed the significance of fixed effects as a value of 0.0018, which is less than a 5% significance level. Similar inferences were made when ROE was explored. The Breusch Pagan LM test also confirmed the absence of random effects.

Table 4.14: Diagnostic Results When ROE Is proxied as a Performance Measure

Issue	Test	Critical Value	Deduction
Testing for Individual/ Common effects and Fixed effects H_0: Common Effects exist (p value > 5%) H_1: Fixed Effects exist (p value < 5%)	Chow Test	p=0.0039	Fixed effects are valid
Test for presence of random effects H_0: OLS present (p value > 5%) H_1: Random Effects present (p value < percent)	Breusch Pagan LM test	p=1.000	Random effects are absent. Pooled OLS model is preferred.
Test for group wise Heteroscedasticity	Modified Wald Test	p=0.0000	Heteroscedasticity exists
Choosing between fixed effects and random effects model H_0: RE present (p value >5%) H_1: FE present (p value <5%)	Hausman Specification Test	p= 0.003	Fixed effects specification is valid.

4.7.2. Panel Regression Results on Bottom 5 Insurers

Results from the analysis of the bottom 5 insurers using Pooled OLS highlighted that a 1% decrease in the debt ratio would lead to a decrease of 3.2% in ROA (Table 4.15).

Table 4.15: Empirical Results When ROA Is Used in Panel Regression

(ROA)	**Pooled OLS (ROA)**	**Random Effects (ROA)**	**Fixed Effects (ROA)**
Debt ratio (DEBT)	-0.0036* (-2.11)	-0.0036* (-2.11)	-0.032** (-1.17)
Combined ratio (COM)	0.0312** (0.27)	0.0312** (0.27)	0.005 (0.32)
Solvency ratio (SOL)	0.012*** (-0.21)	0.012*** (-0.21)	0.06* (-0.42)
Size (SIZ)	-0.003* (-0.44)	-0.003* (-0.44)	-0.0527 (-0.71)
Reinsurance ratio (REIS)	0.1367 (0.53)	0.1367 (0.53)	0.1229 (0.85)
Investment ratio(INV)	0.038 (0.29)	0.038 (0.29)	0.04 (0.51)
Age (AGE)	0.065 (2.8)	0.065 (2.8)	0.061** (0.62)
Constant (CONS)	0.20 (2.1)	0.20 (2.1)	0.2825 (2.1)

(*) / (**) and (***) indicate the (10%), (5%) and (1%) level of significance respectively. The t-statistics for the pooled and fixed effects models as well as the z-statistics for the random effects models are reported in parentheses**.**

The result was settled as significant. The result was highly significant at the 5% level of significance.

On the other hand, the impact of a 1% increase in debt ratio corresponded to a 10% decrease in ROE. This highlights a significant association between debt ratio and the return to the key stakeholders' equity. Estimation results of the fixed effects model depicted that a similar upsurge in debt ratio would translate to a 10% decrease in ROE. This suggests that small sized insurers are likely to report low equity returns when amounts of debt are higher. Accumulating more liabilities in the long-term would translate to decline in the profitability to shareholders.

Furthermore, the estimation results of Pooled OLS depicted that a 1% increase in combined ratio corresponded to a 0.3% increase in ROA. A similar trend and results are shown based on random effects (RE). For inference, the Fixed Effects model documented that a 1% upsurge in growth would correspond to a 0.5% rise in ROA. The outcome was noteworthy at the 5% level of validity.

The results from Pooled OLS estimation on the bottom 5 companies highlighted that a 1% increase in solvency ratio would translate to a significant rise of 1.2% in ROA. Similarly, based on random effects (RE) model, 1% increase in solvency ratio would lead to a significant increase of 1.2% in ROE. For comparison, the Fixed Effects estimator showed that 1% increase in solvency ratio would result in a 6% rise in ROA. This had a strength at a 10% level of significance. Consequently, it can be mentioned that there is a direct proportionality between the magnitude of the solvency on the monetary effectiveness of an insurance firm in Kenya.

Table 4.16: Empirical Results when ROE is used in Panel Regression of the Bottom 5 Insurers

(ROE)	**Pooled OLS (ROE)**	**Random Effects (ROE)**	**Fixed Effects (ROE)**
Debt ratio (DEBT)	-0.0308** (-1.07)	-0.0308** (-1.07)	-0.102*** (-0.86)
Combined ratio (COM)	0.03222*** (0.37)	0.03222*** (0.37)	0.031*** (0.84)
Solvency ratio (SOL)	0.01038*** (-0.15)	0.01038*** (-0.15)	0.01743*** (-0.87)
Size (SIZ)	0.26969 (0.20)	0.26969 (0.20)	0.2105 (0.29)
Reinsurance ratio (REIS)	0.2077** (0.78)	0.2077** (0.78)	0.2119** (1.3)
Investment ratio (INV)	0.03623 (0.21)	0.03623 (0.21)	0.04228 (1.3)
Age (AGE)	0.073** (2.53)	0.073** (2.53)	0.071** (0.19)
Constant (CONS)	0.331 (0.11)	0.331 (0.11)	0.41 (0.32)

(*) / (**) and (***) indicate the (10%), (5%) and (1%) level of significance respectively. The t-statistics for the pooled and fixed effects models as well as the z-statistics for the random effects models are reported in parentheses**.**

Source: Author's compilation based on Stata Output

Estimation results of panel regression using ROE on small sized insurers are presented in Table 4.16 and discussed as follows: the estimation results in using Pooled OLS estimation results highlighted that a 1% increase in solvency ratio would translate into an ascent of 0.1% in ROE. Similarly, based on the random effects (RE) model, a 1% increase in reinsurance ratio would result in a significant rise in ROE of 2%. For deduction, the Fixed Effects estimator established that a 1% ascent in reinsurance would correspond to a 2.1% significant rise in ROE. This suggests that the ability of a relatively small insurance company to finance their long-term liabilities, with regards to current asset portfolio, determines the returns posted to its shareholders. Close attention on solvency therefore translates to better profitability for shareholders.

In testing the interconnection between investment and financial performance, it was realised from the Pooled OLS that a 1% increase in investment ratio would translate into a 3.6% increase in ROE. Similar results were highlighted with random effects. For inference, fixed effects established that a 1% increase in investment would lead to a 4% increase in ROE. It can be mentioned however that these amounts were found to be statistically insignificant. It is important to note that small sized insurers who pay close attention to investment decisions also earn fruitful returns on their assets in comparison to the companies with little traction to investments. The analysed figures were however inferred as insignificant.

Reinsurance ratio highlighted a positive influence on the financial efficiency of the bottom 5 insurance firms. From Pooled OLS and random effects, a 1% upsurge in reinsurance translated to a 20% rise in ROA. A similar figure is highlighted by fixed effects model at 21% with 5% level of significance. The estimation results proxied by ROE established that there was a significant impact of reinsurance on ROE of the bottom 5 insurers. As such, small sized insurers could leverage on reinsurance by ceding some of its earned premiums.

Overall, Table 4.16 shows the results of Pooled OLS, Random effects and the fixed effects model when the financial performance indicator ROE is taken as the dependent variable. Five variables out of seven are found to be significant. Under this, the solvency ratio, debt ratio and combined ratio variables are significant at a 1% level of significance, while age and reinsurance ratios significant at 5% significance level. There is a great relationship between reinsurance and the financial performance of the small sized insurers at a 5% significance level.

4.8 MACROECONOMIC VARIABLES AND FINANCIAL PERFORMANCE OF THE INSURANCE INDUSTRY

An analysis of Gross Domestic Product conveying the finance and insurance sector is performed alongside the gross premium growth rates under study. A strong positive correlation of 89% is realised as existing between GDP and Premium growth rates for the period. Figure 4.8.1 gives a comparison of the summary results.

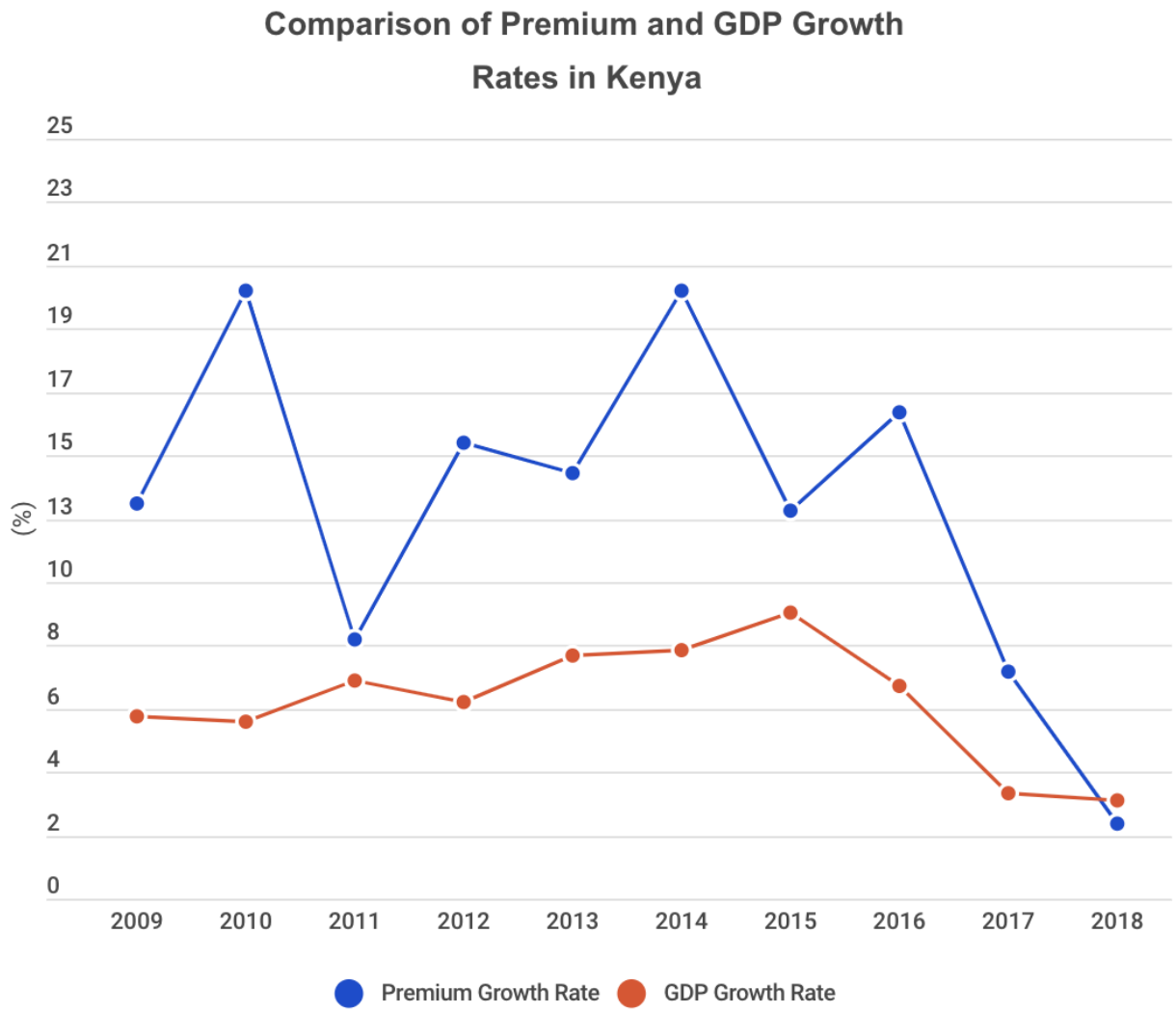


Figure 4.8.1 Comparison of Premium and GDP Growth Rates in Kenya from 2008-2009

Source: Composed by Author based on sample data.

The outcome of the descriptive statistics analysis has highlighted that the insurance sector development level has been moderately higher compared to GDP growth rates. However, over the period, there have been random fluctuations in premium growth rates. It was established that there existed a positive association linking insurance penetration and GDP growth, realised at 88.9%. It can be mentioned that the average growth rate for GDP in the insurance sector is 6%.

Gross premium for the whole industry on the other hand, grows at a rate of 13% yearly. There have been fluctuations in the premium growth rate from 2009 to 2016,

nonetheless, GDP figures were consistent within the 5% to 8% range. Both variable rates showed a decline from year 2016.

4.9 DISCUSSION OF FINDINGS

This study documented a number of findings in respect of the objectives driving the study. These are enumerated as follows:

Empirical Finding 1: To test whether firm-level factors explain financial performance of Kenyan insurance companies

Firstly, the firm level factors under review included age and size of insurer. There was a definitively positive association depicted between the size of an insurer and its financial performance. This was settled from both the correlation analysis and panel regression segment. It is important to note that the positive relationship was settled as statistically insignificant when proxied by both ROA and ROE in panel regression. However, correlation analysis posted a significant positive relationship.

Previous studies settled that the size of insurance particularly affects the ability of general insurers in attracting more policyholders and improving their profitability. More evidence suggests that size is directly related to profitability and the strength of the relationship is significant, according to Jadi (2017), Kaya (2015), Mehari and Aemiro (2013), Mwangi and Murigu (2015), Burca and Batrinca (2014), Papadogonas (2009) and Maina (2016).

Furthermore, a positive relationship was established between the age of an insurer and its financial performance. The results were found to be statistically significant with ROE, yet insignificant when ROA is used. This finding was inconclusive. Related studies established that the age of an insurance company has a negative relationship with the financial performance of an insurer, Kaya (2015).

Contrary to this, other studies realised a positive impact of age on financial performance, Derbali (2014). The study reported that the advantage of age is attributable to the longer experience in the insurance market.

Empirical Finding 2: To investigate whether there exists a link between the solvency of Kenyan insurance companies and their financial performance

The results were conclusive between solvency and financial performance showing a positive and significant relationship with both ROA and ROE. Related studies covering the same topic included (Wanjugu, 2018), handy

Odira (2016), Tufail and ul-Seha (2013), Burca and Batrinca (2014) and Mwangi and Murigu,(2015). These studies found that solvency margin is a key element in the financial performance of the insurance market. It is further added that insurance industry regulators whose key objective is to protect policyholders and the financial system in general set solvency ratios. (Dembla, 2014)

Empirical finding 3: To find out the relationship between underwriting risk and the financial performance of insurance companies in Kenya

Combined ratio was employed to assess the extent to which underwriting risk impacts financial performance of the Kenyan insurance industry. The estimation results established that there exists a direct proportionality between the cushioning of underwriting risk and the returns realised on equity and assets. This was illustrated by the panel regression results of combined ratio on both ROA and ROE.

An important fact to note is that insurers who pay close attention to underwriting risk, tend to have an improved return on asset and better return on equity Mazviona, Dube, & Tendai (2017). In addition, other study flagged in relation to underwriting included Aemiro (2013), Anam and Abdullah, (2016) and Burca and Batrinca (2014).

Empirical finding 4: To determine if investment decisions have a bearing on the financial achievement of insurance firms in Kenya

The results on the relationship between financial performance and investment decisions were conclusive. A positive relationship was established to exist when the panel regressed against ROE and ROA. On the contrary, this relationship was settled as insignificant in both scenarios. This finding contradicted the related study on investments Veronica (2015) which settled that investment decisions had a significant role in the financial performance of insurers in Kenya.

4.10 CHAPTER SUMMARY

Overall, the chapter in this section outlines the empirical results of investigating the determinants and contributing elements of financial performance of the insurance sector, particularly within Kenya. Firstly, the chapter documented the descriptive statistics and discussed the trends that emerged among different variables underpinning the study. Secondly, it enumerated the findings of correlation analysis. Thirdly, it proceeded to discuss the diagnostic tests used in determining the appropriate panel regression model. Fourthly, it examined the results of panel regression using the panel regression models: Pooled OLS, Fixed and Random Effects. Lastly, it outlined the comparison of top insurers and outliers based on the size of the insurer and finally elucidated the empirical findings from the analyses.

The next chapter shall give a detailed interpretation of the findings from the data analysis chapter, provide conclusions and outline suggestions for future research from the gaps that may be looked upon.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The primary intent of the evaluation was to indicate the elements that determine the financial effectiveness of general and life insurers in Kenya. There were four objectives in this study. Firstly, this study sought to provide a basis whether firm-level factors explain financial performance of Kenyan insurance firms. Secondly, the study aimed at establishing whether there is a link aligning the solvency of Kenyan insurance companies and their financial performance. Thirdly, the study sought to determine if there was a link between underwriting risk and the financial success of insurers in Kenya. Fourth, the evaluation likewise pointed at determining the impact of investment decisions on the financial performance of Kenyan insurers.

This chapter sums up the key discoveries, ends and suggestions for future examination dependent on discoveries and gaps identified. Conclusions related to the research objectives of this paper are also documented. The other sections of this chapter are collated in this fashion: Section 5.2 enumerates the theoretical and empirical insights on financial performance indicators. Section 5.3 gives a synopsis of the research findings of this examination. Section 5.4 provides the benefits and contributions of this study. Section 5.5 outlines key suggestions for further evaluations.

5.2 THEORETICAL AND EMPIRICAL FRAMEWORK

5.2.1 A Summary of Theoretical Insights

The theoretical insights that were analysed included theory on shareholder value, financial performance theory and solvency theory.

Shareholder value theory, which is one of the earliest theories on shareholder wealth maximisation advanced by Milton Friedman (1970), who argued that the key obligation for a business was the maximisation of shareholder’s wealth. The major findings from this theory was that an organization is mainly handled and controlled for the satisfaction of the key partners.

An important fact to note is that the objective of maximising shareholder value provides the basis for setting performance metrics to motivate managers and signals to investors how well the organization is performing (Martin, et al., 2007, p. 6-7).In addition, there exists a surge in individual activist investors who take up a sizeable stake in a firm with the main objective of changing the way management is running a company with a view to improve the intrinsic value of the organisation and as a consequence boost the value of their stakes (Ponomareva, 2018). Among the institutional investors hedge funds have played a growing and significant role in shareholder activism (Armour & Cheffins, 2009). Overall, the power of activist investors over corporate governance continues to increase; they set a record in 2017 putting in over USD 60 billion into listed companies, more than double the amount in 2016 (Breitinger & Hardach, 2018).

An offshoot theory to the shareholder value theory is the stakeholder theory. The shareholder benefit theory postulates that the success of a company is dependent on how well it can balance the diverging needs of its stakeholders (Schwab and Kroos, 1971, p. 20-21). This theory suggests that managers must come up with and put into action procedures to consider the needs of all the parties that are impacted by the business. Similarly, the notion espoused in Freeman's (1984) enactment of the stakeholder theory is that the main purpose of a corporation is a vehicle taking care of stakeholder interests over and above its goal of seeking profitability.

This study also pursued the link between underwriting and the performance of insurers. As such, the combined ratio came in handy to help explore this research objective.

Finally, the last theory incorporated under study was the solvency theory. While solvency is of interest to various company stakeholders, it is of particular importance to both investors and creditors. Savvy potential creditors take these ratios into account prior to advancing funds (Bragg, 2018). The solvency proportion of an insurance house means the size of the capital comparative with all risks it has taken.

5.2.2 Empirical Insights from Literature Reviewed

According to Derbali (2014) size, age and premium growth are the most fundamental elements of financial success of insurers in Tunisia. The advantage of age is attributable to the longer experience in the Tunisian insurance market (Derbali, 2014, p. 94-95). Other studies in congruence to this finding include Mehari and Aemiro (2013).

Similarly, Jadi (2015) settled that size was of particular importance to general insurers as their performance oscillates compared to that of life insurers. By the same token, (Kaya, 2015, p. 525-526) found that the financial achievement of general insurance underwriters is in a statistically valid way positively linked to the size of the company.

Mazviona, Dube, & Tendai (2017) studies the financial effectiveness of insurance in Zimbabwe. The study concluded that expense ratio, claims ratio, leverage and liquidity had a positive consequence, which was statistically significantly. It is noteworthy that their evaluation was proxied on ROE only.

Odira (2016, p. 39-44) investigated the aftermath of liquidity, solvency and leverage on the performance of general insurance firms from 2011 and settled that liquidity had a remarkable and positive correlation with financial accomplishment. In addition, leverage was found to have a negative linkage on the accomplishment of insurance institutions while impact of solvency on the financial accomplishment of insurance establishments was found to be positive but statistically not valid.

Veronica (2015) found that investments by insurance companies have a significant impact. The author highlighted that investments can explain up to 52.4% of the variance of profitability; with other factors accounting for 47.6%.

In summary, it was noted that a number of empirical studies on financial performance of insurance industries across the globe laid emphasis on size, leverage and underwriting, as some of the significant factors. The studies with similar conclusions included (Jadi, 2015, p. 177-179), (Burca & Batrinca, 2014, p. 307-308) and (Kaya, 2015, p. 525-526). Elsewhere, loss ratio, claims ratio and expense ratios were derived to be statistically significant in determining financial performance Mehari and Aemiro (2013, p. 245-2 46), (Mazviona, Dube, & Tendai, 2017, p. 15 – 27).

Solvency and liquidity ratios also simulate in the performance of the industry (Maina, 2016). Investments have an impact on the industry (Veronica, 2015).

Various studies incorporated different approaches in empirical analysis, among them including multiple regression analysis and panel data regression. Among these studies include (WANJUGU, 2018) who explores the determinants of financial performance in general insurance companies in Kenya using multiple regression analysis, (Abdeljawad, 2013) who evaluates the Dynamic Capital Structure Trade-off Theory: Evidence from Malaysia using pooled OLS and (Anam & Abdullah, 2016) who the main elements of Financial Performance of insurance companies of USA and UK using Generalized Method of Moments (GMM).

5.3 SYNOPSIS OF EMPIRICAL FINDINGS

5.3.1 Firm-Level Determinants of Financial Performance

The first research question sought to be answered by this dissertation was whether the standard firm-level factors explain the financial performance of Kenyan insurance companies. Two firm level variable factors were particularly used in this study, namely, size of insurer and the age of firm. Both factors were examined with both measures of financial performance (ROA and ROE) as dependent variables separately.

5.3.1.1 Size of an Insurer

The results of the study documented that the size of an insurer was definitely and positively linked to the success of both general and life insurers across both dependent variables ROA and ROE. In the testing of the linkage aligning size and financial performance, results of this evaluation documented that insurer financial performance (proxied by ROA) and size are positively related. However, the result was statistically insignificant. By way of contrast and comparison, the outcome of the study demonstrated that insurer financial achievements (proxied by ROE) and size were positively correlated. These results prove similar in the analysis of the top 5 insurers.

This suggested that large insurance companies in terms of total assets are likely to be highly profitable.

5.3.1.2 Age of an Insurer

In the testing of the association aligning age and financial performance, findings of this evaluation documented that on insurer financial performance (proxied by ROE) and age (measured by date of establishment) are negatively related.

By way of contrast and comparison, the outcome of this paper demonstrated that insurer financial accomplishment (proxied by ROA) and age were positively correlated. It is noteworthy that the ROA measures management efficiency and exhibits the profit from insurer's total assets. ROE on the other hand conveys the net return of the capital invested by the shareholders. As such, ROA heavily relies on the efficiency of the management and its capability with making sound investments in a variety of industries.

Results from the analysis of the top 5 insurers indicated that age has a conclusive and positive effect on their performance, this element was however insignificant. Overall, the age of the insurer was settled to be negatively related to financial performance. This proposed and implied that old insurance firms are likely to perform poorly financial-wise in contrast with insurance firms which recently started operations. The older the insurer, the lower the performance.

5.3.2 Insurer Specific Determinants of Financial Performance

5.3.2.1 Solvency

In this dissertation, solvency margin was established to have a valid and conclusive positive aftermath on the financial accomplishment of the insurance industry in Kenya. The establishments seem to provide evidence that the solvency edge of insurance firms is essential as it was discovered to be a significant firm explicit factor influencing the performance of insurance companies in Kenya. It is suggested that insurance companies give more recognition to solvency margin because of the direct influence on returns achieved.

Solvency is so critical to the viability of insurance firms that regulators globally have come up with regulations to monitor the solvency of insurance companies. The second research question intended to determine whether there existed an association between solvency and financial performance.

In the testing of solvency and financial performance of the top 5 insurers, it was settled that there exists a positive relationship. It can be mentioned that this was indicated by both ROE and ROA analyses. In addition, the impact was found to be significant.

One of the greatest threats to solvency may occur during a catastrophe when many claims are received at once. General insurers should in turn invest a large proportion of their assets in short term investments. This is partly where investment decisions also play a great role.

5.3.2.2 Underwriting Risk

The results of the study documented that underwriting of insurers was positively and definitely related to the financial effectiveness of both general and life coverage firms across both dependent variables ROA and ROE. In addition, the result was statistically significant. These results prove similar in the analysis of the top 5 insurers.

The impact of underwriting risk on the overall insurance industry was found to be substantive as most (80%) of the insurance companies paid attention to making underwriting profits hence mitigated themselves against underwriting risk. Underwriting risk thus was discovered to have a legitimate positive effect on return on resources and assets. This was inferred from the results of the analysis of Combined ratio.

For top 5 performing insurers, reinsurance factor and combined ratio variables were found not to be significant as in the case for the overall insurance industry. The values realised as combined ratios were all less than 100%. This supports the line that these companies make seek underwriting profit and consequently are greatly affected when underwriting risk is not properly mitigated.

5.3.2.3 Debt Ratio

Another factor incorporated was the debt ratio of insurers. It was settled that the debt ratio had a valid negative association on performance of insurers across the Kenyan industry. In the study, debt ratio appeared to have a significant impact towards ROA and ROE. The measure was also statistically significant at quantifiable significance levels on analysis using models. These results were congruent with those on the top 5 insurers. As a significant variable, it implies that the debt ratio of insurance companies is an important firm specific factor that influences performance of insurance companies in Kenya.

Highly leveraged insurers can thus be inferred to perform better in Kenya. Companies should therefore raise most of their capital by borrowing rather than by equity capital. Although high debt ratio seems to improve performance, companies need to take caution with regards to over-leveraging as this might result in them failing to service their debt obligations. Debt ratio should be reduced to a level which allows a company to operate efficiently.

5.3.2.4 Reinsurance

In the testing of the linkage between reinsurance and the financial performance of Kenyan insurers, the outcome of the evaluation outlined that on insurer financial performance (proxied by ROE) and reinsurance are positively related. However, this impact was insignificant.

The results of the study documented that reinsurance by an insurer was positively linked to the financial success of both general and life insurers across both dependent variables ROA and ROE. By way of contrast and comparison, the outcome of this evaluation demonstrated that insurer financial performance (proxied by ROA) and size were positively correlated. These results prove similar in the analysis of the top 5 insurers.

5.3.2.5 Investment Performance

Lastly, this evaluation sought to test the correlation between financial performance and investment. In the testing of their relationship, the outcome of the study outlined that the insurer's financial accomplishments (proxied by both ROA and ROE) and investment are positively related. However, this impact was insignificant. These results prove similar in the analysis of the top 5 insurers.

5.4 CONTRIBUTION OF THE STUDY

This study adds on to the existing academic writings on the determinant of the performance of insurance companies in Kenya in particular and of similar countries in general, specifically by exploring a variety of factors that determine financial performance other than size and liquidity. Findings from this study come in handy to potential investors, shareholders, the government, policyholders, employers/ employers, and other stakeholders in the protection business in Kenya. It would be of essence for the government to liase with insurance regulators in deriving policies and capping in terms solvency margins and combined ratios for different insurers to sustain performance in the long term. Moreover, cautious investors could use the empirical findings herein in making investment decisions with relation to insurance business.

In the same light, the study highlights what sets the top 5 insurers apart from small sized insurance companies: leveraging on mitigation of underwriting risk and embracing reinsurance. In addition, this analysis investigated both firm-level factors and insurer specific factors over 2009-2018.

5.5 SUGGESTIONS FOR SUBSEQUENT RESEARCH

This evaluation has unlocked other areas of research and further studies in a variety of ways. To begin with, this evaluation sought to determine the drivers of financial effectiveness of insurance companies in Kenya. Similar research can be replicated covering other industries apart from the insurance industry.

It will be useful to carry out a study to establish firm ground on reinsurance ratios and combined ratios among the underwriters.

This study clears ground for more research and analysis on the other variables, which can influence the insurance industry without limiting it to the Kenyan system. In addition, the effect of large-scale financial factors, for example, loan fees and inflation on the financial performance of the insurance industry is an area to discuss in greater detail.

It was noted in some of the empirical literature that has been reviewed that foreign-owned insurance companies tended to underperform local companies. This would be an interesting topic for further research. It would be useful to establish what factors contribute to this kind of gap.

By the same token, advanced research can be done by involving data from reinsurance companies based on the findings of this paper on reinsurance. It would be important to include a study of reinsurance companies in relation to life and general insurers. It can also be recommended that other macroeconomic factors used as control variables, such as inflation rate and consumer price indices, be inculcated in future studies. Moreover, this study used secondary data, other studies can be done through primary data. Lastly, it would be important to include the impact of changes due to COVID 19 on the financial accomplishments of the insurance industry. More analysis on impact of digitization of most of the companies amid COVID period.

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Appendix 1: List of General insurers operational as at 31.12.2018

	LIST OF GENERAL INSURERS
1	African Merchant Assurance Company (AMACO)
2	APA Insurance Company
3	Britam General Insurance Company
4	CIC General Insurance Company
5	Corporate Insurance Company
6	Directline Insurance Company
7	Fidelity Shield Insurance
8	First Assurance Company
9	GA Insurance Company
10	Geminia Insurance Company
11	Heritage Insurance Company
12	ICEA Lion General Company
13	Intra Africa Insurance Company
14	Jubilee Insurance Company
15	Kenindia Insurance Company
16	Kenya Orient General Company
17	Madison General Insurance Company
18	Mayfair Insurance Company
19	MUA (Formerly Phoenix of E.A.)
20	Occidental Insurance Company
21	Pacis Insurance Company
22	Saham Insurance Company
23	Tausi Insurance Company
24	The Kenyan Alliance Company
25	The Monarch Insurance Company
26	Trident Insurance Company
27	UAP General Insurance Company

Source: Insurance Regulatory Authority

Appendix 2: List of Life Insurers Operational as at 31.12.2018

	LIST OF LIFE INSURERS OPERATIONAL AS AT 31.12.2018
1	APA Life Assurance
2	Britam Life Assurance
3	CIC Life Assurance
4	Corporate Life Assurance
5	ICEA LION Life Assurance
6	Jubilee Assurance Company
7	Kenindia Assurance Company
8	Liberty Life Assurance Company
9	Madison Life Assurance
10	Metropolitan Cannon Life Assurance
11	Old Mutual Life Assurance Company
12	Pioneer Life Assurance Company
13	Sanlam Life Assurance Company
14	The Kenyan Alliance Assurance Company
15	UAP Life Assurance Company

Source: Insurance Regulatory Authority

Appendix 3: Sample Data on Insurance Industry as at 31.12.2018.

COMPANY	Age	TOTAL ASSETS	SOLVENCY RATIO	COMBINED RATIO	ROE	ROA	Reinsurance Ratio	Investment Ratio
AFRICAN MERCH	16	3,392,297	66	110	-2%	-1%	21%	10%
APA INSURANCE	70	13,189,115	73	102	12%	5%	28%	16%
BRITAM GENERAL	52	10,401,934	49	105	14%	4%	16%	12%
CIC INSURANCE	48	11,346,654	58	109	0%	0%	11%	11%
CORPORATE INSURA	33	1,367,755	269	79	19%	13%	19%	65%
DIRECTLINE ASSURA	19	5,566,870	33	97	11%	2%	3%	9%
FIDELITY SHIELD	77	3,059,140	79	99	1%	1%	29%	11%
FIRST ASSURANCE	86	4,672,741	95	119	-4%	-2%	45%	13%
GA INSURANCE	4	10,458,741	142	85	22%	9%	50%	24%
GEMINIA INSURANCE	36	5,695,129	54	96	13%	4%	13%	9%

COMPANY	Age	TOTAL ASSETS	SOLVENCY RATIO	COMBINED RATIO	ROE	ROA	Reinsurance Ratio	Investment Ratio
HERITAGE INSURA	42	7,457,982	98	99	12%	5%	43%	23%
ICEA LION GENERA	53	9,728,338	114	94	19%	8%	41%	18%
INTRA-AFRICA ASSURA	35	1,904,071	90	98	3%	1%	15%	5%
JUBILEE INSURANCE	76	13,744,083	80	90	10%	3%	14%	17%
KENINDIA ASSURA	37	8,108,844	139	107	32%	9%	41%	26%
KENYA ORIENT INSURA	26	2,118,603	39	94	6%	2%	10%	3%
MADISON INSURA	30	4,648,404	33	111	-8%	-2%	5%	7%
MAYFAIR INSURA	13	5,138,754	192	81	13%	7%	9%	0%
MUA INSURANCE	65	1,412,852	826	126	6%	5%	67%	46%
OCCIDENTAL INSURA	34	3,565,535	66	99	19%	7%	13%	19%
PACIS INSURANCE	20	2,189,128	107	102	5%	2%	59%	13%

COMPANY	Age	TOTAL ASSETS	SOLVENCY RATIO	COMBINED RATIO	ROE	ROA	Reinsurance Ratio	Investment Ratio
SAHAM INSURANCE	68	1,840,319	78	99	12%	4%	8%	29%
TAUSI ASSURANCE	26	2,392,973	186	78	17%	11%	-	38%
THE KENYAN ALLIANC	37	2,929,255	142	107	3%	1%	13%	10%
THE MONARCH	29	1,781,929	48	99	20%	6%	5%	7%
TRIDENT INSURA	38	4,177,896	217	113	-7%	-3%	35%	15%
UAP INSURANCE	22	14,583,592	90	103	8%	4%	14%	5%
APA LIFE ASSURA	72	5,337,845	55	97	-12%	-1%	33%	39%
BRITAM LIFE	53	70,659,589	36	52	-16%	-2%	1%	15%
CIC LIFE ASSURANCE	50	12,185,534	40	84	4%	1%	15%	10%
CORPORATE INSURA	36	927,548	94	134	-19%	-5%	1%	28%
ICEA LION LIFE	54	80,063,878	81	23	4%	1%	2%	63%

COMPANY	Age	TOTAL ASSETS	SOLVENCY RATIO	COMBINED RATIO	ROE	ROA	Reinsurance Ratio	Investment Ratio
JUBILEE INSURANCE	81	71,880,684	35	80	25%	1%	4%	52%
KENINDIA ASSURA	40	34,072,130	36	104	9%	1%	1%	68%
LIBERTY LIFE	43	23,702,935	61	138	15%	2%	5%	59%
MADISON INSURA	30	12,685,710	46	66	-34%	-4%	2%	31%
METROPOLITAN CANNO	33	2,439,419	97	108	3%	1%	11%	32%
OLD MUTUAL LIFE	92	13,995,198	260	329	0%	0%	29%	46%
PIONEER ASSURA	85	7,056,071	58	71	9%	1%	31%	1%
SANLAM LIFE INSURA	71	24,166,469	45	136	29%	2%	16%	3%
THE KENYAN ALLIANC	39	3,162,247	130	108	-16%	-2%	20%	37%
UAP LIFE ASSURA	24	11,264,416	95	103	9%	2%	12%	41%

Appendix 4: Correlation Matrix of Variables Under Review.

	ROA	ROE	Debt Ratio	Combined Ratio	Solvency	Re-insurance	Investment	Size	Age
ROA	1								
ROE	0.4498***	1							
Debt Ratio	-0.2051	-0.0515**	1						
Combined Ratio	0.1004**	-0.0054***	-0.1199*	1					
Solvency	0.4367	0.1137***	-0.2752**	0.5643	1				
Reinsurance	0.1542	0.0505**	-0.245	-0.0453	0.0297*	1			
Investment	0.0473	0.0323	-0.0669	-0.0394	0.0427	0.2414***	1		
Size	-0.1025***	0.0436**	0.5167	-0.1387	-0.1508	-0.1545	-0.0414	1	
Age	-0.0845**	0.0018	0.1985	0.0269	-0.0229	-0.0859	0.0019***	0.3563**	1

Compiled by Author.

Appendix 5: Diagnostic Results When ROA Used as a Measure of Performance

Issue	Test	Critical Value	Deduction
Testing for Individual/ Common effects and Fixed effects H_0: Common Effects exist (p value > 5%) H_1: Fixed Effects exist (p value < 5%)	Chow Test	p=0.004	Fixed effects are valid
Test for presence of random effects H_0: Choose OLS (p value less than 0.05) H_1: Choose RE (p value greater than 0.05)	Breusch Pagan LM test	p=1.000	Random effects are absent. Pooled OLS model is preferred.
Test for Group wise Heteroscedasticity	Modified Wald Test	p=0.0000	. Heteroscedasticity exists.
Choosing between fixed effects and random effects model H_0: RE present (p value > 5%) H_1: FE present (p value < 5%)	Hausman Specification Test	p= 0.0036	Fixed effects specification is valid.

Appendix 6: Diagnostic Results When ROE Used as a Measure of Performance

Issue	Test	Critical Value	Deduction
Testing for Individual/ Common effects and Fixed effects H_0: Common Effects exist (p value > 5%) H_1: Fixed Effects exist (p value < 5%)	Chow Test	p=0.003	Fixed effects are valid
Test for presence of random effects H_0: Choose OLS (p value greater than 0.05) H_1: Choose RE (p value less than 0.05)	Breusch Pagan LM test	p=1.000	Random effects are absent. Pooled OLS model is preferred.
Test for group wise Heteroscedasticity	Modified Wald Test	p=0.0000	Heteroscedasticity exists.
Choosing between fixed effects and random effects model H_0: RE present (p value > 5%) H_1: FE present (p value < 5%)	Hausman Specification Test	p= 0.004	Fixed effects specification is well founded.

Appendix 7: Empirical Results When ROA Proxied

ROA	**Pooled OLS ROA**	**Random Effects ROA**	**Fixed Effects ROA**
Debt ratio (DEBT)	-0.000327 (-0.92)	-0.000327 (-0.92)	-0.00066** (-1.34)
Combined ratio (COM)	-0.0206*** (-3.56)	-0.0206*** (-3.56)	-0.020*** (-3.32)
Solvency ratio (SOL)	0.0072*** (9.85)	0.0072*** (9.85)	0.007*** (8.77)
Reinsurance ratio (REIS)	0.025230*** (2.63)	0.025230*** (2.63)	0.02525*** (2.53)
Investment ratio (INV)	0.000101 (0.02)	0.000101 (0.02)	0.00100 (0.19)
Size (SIZ)	-0.003198** (-0.25)	-0.003198** (-0.25)	-0.00771* (-0.26)
Age (AGE)	-0.00223 (-0.79)	-0.00223 (-0.79)	-0.00233 (-1.0)
Constant (CONS)	0.095504 (1.27)	0.095504 (1.27)	0.23526 (1.84)

Appendix 8: Empirical Results When ROE Is Proxied

ROE	Pooled OLS	Random Effects	Fixed Effects
Debt ratio (DEBT)	-0.0016 (-0.95)	-0.0016 (-0.95)	-0.0045116* (-1.79)
Combined ratio (COM)	-0.004 (-1.26)	-0.004 (-1.26)	-0.003122 (-1.03)
Solvency ratio (SOL)	0.001** (2.52)	0.001** (2.52)	0.00705* (1.71)
Reinsurance ratio (REIS)	0.0405 (0.84)	0.0405 (0.84)	0.045416 (0.9)
Investment ratio (INV)	0.0087 (0.34)	0.0087 (0.34)	0.0075469 (0.28)
Size (SIZ)	0.0817** (1.4)	0.0817** (1.4)	0.3075387** (2.05)
Age (AGE)	-0.03 (-0.26)	-0.03 (-0.26)	-0.0262566* (-2.21)
Constant (CONS)	-0.2968 (-0.86)	-0.2968 (-0.86)	-0.506935 (-0.78)

Appendix 9: GDP of Financial Services and Related Industries

Year	Financial & Insurance	Professional, Admin & Support	Real Estate	Education	Health
	KES Mn	KES Mn	KES Mn	KES Mn	KES Mn
2009	120,985	74,615	200,291	154,023	56,365
2010	197,340	82,297	258,547	174,023	61,063
2011	214,500	90,297	300,788	201,608	65,761
2012	251,622	97,979	343,029	229,193	70,459
2013	313,120	105,661	375,588	251,958	75,157
2014	366,764	113,059	417,829	279,543	91,969
2015	423,540	119,703	474,388	308,424	107,936
2016	504,688	127,776	532,644	312,971	119,537
2017	606,167	135,458	590,900	340,556	136,349
2018	987,349	143,140	649,156	360,556	153,161

Source: Kenya National Bureau of Statistics

Appendix 10: Turnitin Document

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QuickMarks	N/A
Comments	N/A
Grammar marks	N/A
File Name	Mcom_Cumulative___KM_3rd_Edi...
File Extension	docx
File Size	1.91M
Character Count	176691
Word Count	31668
Page Count	150

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Appendix 11: Language Editing Certificate

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Kamanda Morara

Has been edited for proper English Language. The following issues were corrected: grammar, punctuation, spelling, phrasing and sentence structure.

Date: 4 December 2020

Ian Makamara LL.B.