REINSURANCE AND FINANCIAL PERFORMANCE OF SHORT-TERM INSURANCE COMPANIES IN SOUTH AFRICA

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by

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George Sermador Sognon

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DEDICATION

This dissertation is dedicated to my parents, Theresa Akua Moru and Raymond Sognon and also to Ms. Klara Schmitt and Pascal Kwame Sognon for their continuous prayerful support, love and guidance. A special dedication to a superwoman, Professor Dorothy Jane Oluman Ffoulkes-Crabbe who was instrumental to my childhood development.

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ABSTRACT

Profit driven companies have a responsibility to generate decent returns and pay dividends to their shareholders. Investors and shareholders of financial institutions are particularly concerned about their cash flow, risk and returns to ascertain the financial performance of the business. In the insurance industry, risk management and financial performance goes hand-in-hand. In order for the short-term insurance industry in South Africa to thrive, the right risk management policy is needed to keep the business afloat and make returns for shareholders and most importantly, effectively perform the risk indemnification function of meeting claim payment on the occurrence of specified losses.

This research undertakes a study to understand the relationship between the use of reinsurance contracts by insurers as a risk management tool and its impact on financial performance of short-term insurance companies in South Africa. It employs data on 79 short-term insurers (2007 – 2014) sourced from the insurance department of the Financial Services Board (FSB). The random effect and fixed effect panel techniques are employed in this study to estimate both static panel data models to identify the determinants of financial performance for insurers. Return on assets (ROA), return on equity (ROE) and underwriting profit (UPROF) are employed as proxies of financial performance.

The data analysis indicate that the average reinsurance ratio is 44% over the period of the study. The second-stage regression analysis showed that reinsurance contracts reduces profitability, which suggests that any potential risk diversification associated with reinsurance usage is offset by the loss of revenue in investment incomes. The findings also indicate that a negative relationship exist between underwriting risk and financial performance of short-term insurers. As underwriting risk exposure increases, insurers are expected to report lower profitability. The size of a short-term insurer correlates positively with financial performance. According to the findings, large insurance corporations in South Africa perform better than smaller sized insurers. As a result, mergers and acquisitions is the way-forward for the industry since consolidation positively impacts bottom-line due to economies of scale and capacity. The results from the findings also indicate that the use of leverage positively impacts financial performance of insurers as most insurers in South Africa are benefiting from reduced income tax payable due to interest payment to debt holders. A positive relationship exists between diversification of business lines and financial performance. The findings seem to suggest that diversified insurers increase gross premiums from the same client whiles reducing cost due to the scale of transactions.

The findings from this study recommends that for short-term insurers to improve their financial performance, they will have to increase their retention ratio. This will lead to low reinsurance ratios allowing room for high net premiums to be available to the firm. While doing this, insurers have to be mindful of their risk management policies. Insurance companies also have to diversify their business lines, increase leverage and the asset size of the firm in

order to increase profitability. The regulatory environment should be opened to reduced reinsurance ratios as long as risk management measures and enough capital are available to absorb risk in the future.

GLOSSARY OF TERMS

Bn	Billion
CEO	Chief Executive Officer
DIV	Diversification
FSB	Financial Services Board
GDP	Gross Domestic Product
GSB	Graduate School of Business
LEV	Leverage
MD	Managing Director
M&A	Mergers and Acquisitions
Mn	Million
NA	Namibia
NAIC	National Association of Insurance Commissioners
ORSA	Own Risk and Solvency Assessment
Q	Quarter
R	Rand
RE	Reinsurance
ROA	Return on Asset
ROE	Return on Equity
ROUP	Return on Underwriting Profit
SA	South Africa
SSA	Sub-Saharan Africa
SAM	Solvency Assessment Management
SCR	Solvency Capital Requirement
SPSS	Statistical Package for Social Sciences

UCT	University of Cape Town
UPROF	Underwriting profit
URISK	Underwriting risk
USD	United States Dollars
VaR	Value at Risk
VLF	Variance Inflation Factor
ZAR	South African Rand

CHAPTER ONE

INTRODUCTION

1.1 Background

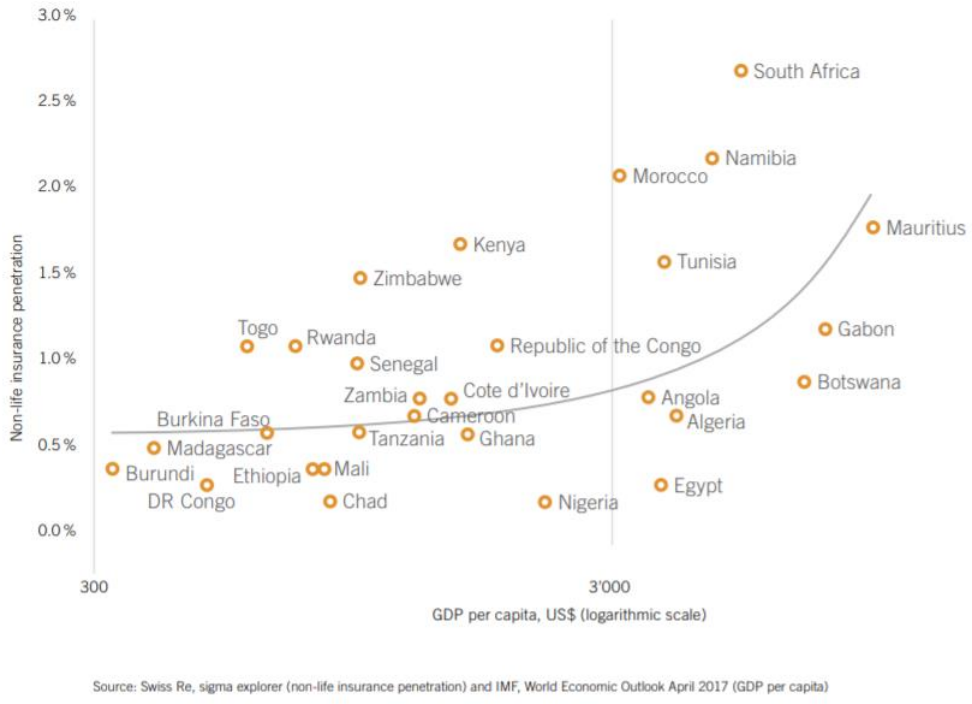
South Africa (SA) and Namibia (NA) are considered to be among the very few nations in Africa to record high insurance penetration rates over the last decade, with rates of 14.0% and 7.3% respectively in 2013 (KPMG, 2016) while more than half of all African nations recorded less than 1% insurance penetration rate (KPMG, 2016), indicating the severity of the situation as well as the opportunities for growth. In spite of the success chalked by the South African insurance industry, only 19.5% of the total gross premium recorded can be attributed to short-term insurance compared to the 81.5% by the long-term insurance (KPMG, 2016). Hence relatively lower revenues are earned on the average by players in the short-term insurance industry in SA. The short-term insurance industry as a result can be regarded as less developed and still in its early stages compared to long-term insurance and is also faced with a number of challenges particularly competition, high claims, macroeconomic and high cost of reinsurance.

"Insurance for insurers" is how Baur & Breutel-O'Donoghue (2004) simply puts the definition of reinsurance. Reinsurance provides the means by which an insurance company protects itself from unexpected losses that it cannot cover for. Reinsurance by short-term insurers in South Africa has grown significantly in recent years given the severity of risk and challenges to meet demands by the insured. This has multiple impact on the risk borne by insurers and their financial performance. What reinsurance does, is to transfer a part of the risk of loss of an insurer to be incurred by the reinsurer. South African start-up insurer, Resolution Life failed to build-up its capital after ceding most of its premiums to a re-insurer. This led to an eventual collapse of the company due to low cash inflow from net premiums. If management and board had undertaken an Own Risk and Solvency Assessment (ORSA) in order to maintain a good balance between risk and return, Resolution Life would have increased its capital base and relied less on reinsurance (KPMG, 2013).

Of the estimated USD 5.2 billion in premiums written by short-term reinsurers in Africa, South Africa claimed 39% in 2016. (Dr. Schanz; Alms & Company, 2017). Cessions of gross premiums from emerging markets in the short-term reinsurance industry was approximately

USD 42.0 billion (Dr. Schanz; Alms & Company, 2017). In 2015, average global short-term cession rate was 8.4% compared to 24% and 26% by Africa and South Africa respectively (PwC, 2014). The high rate of reinsurance by short-term insurers in Africa, can be attributed to the lack of local underwriting capacity for large scale risks. Reinsurance by short-term insurers increased to 29.4% in 2016 from 25.8% in 2015 as against 30.6% in Quarter 3 (Q3) 2017. The increase can be attributed to high expected disasters and claims by the insured (Financial Services Board, 2016).

Figure 1: Non-life insurance penetration (premiums in % of GDP) and GDP per capita ($)



Source: (Dr. Schanz; Alms & Company, 2017)

Risk management is an important part of the business model for all insurance companies (PwC, 2012). Insurance companies as part of risk management strategy reinsure or cede part of its gross premiums to another company i.e. reinsurer. This is to ensure that in the event of a liability or claim by the insured, the insurer will not be overly-burden. It also ensures the sharing of risk between insurers and reinsurers. One of the many reasons why insurers reinsure is because of the limited capital size (i.e. small size of equity on the books) to fully

underwrite a transaction, in that case they partner with other insurers and rely on reinsurers in other to meet the capital requirement by the regulator (FSB) in completing the deal.

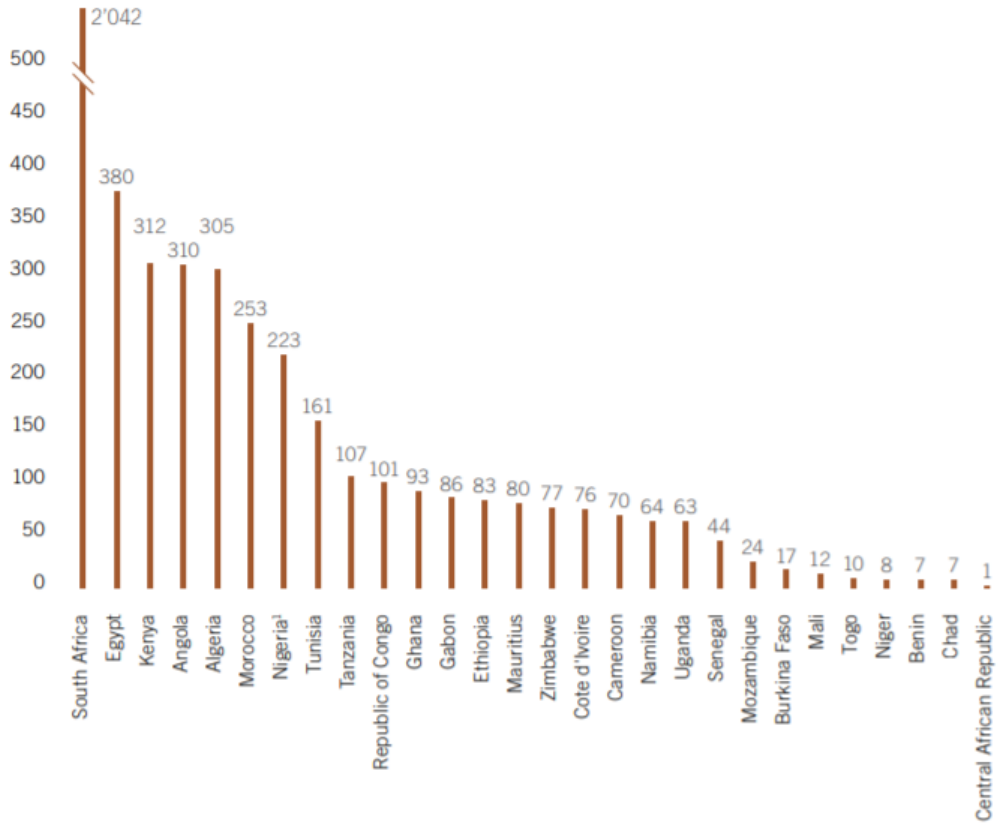
Managers of insurance companies have to decide on the level of risk they want to expose the business to vis-à-vis the profitability of the firm. Reinsuring a potential risk comes with some implications on the books of the company including lower net premium after reinsurance premium is ceded and lower underwriting profits leading to lower return on investment and growth in capital. However minimizing reinsurance can also have negative consequences to the operations of the company, as risk levels are significantly exposed leading to lower profits and in some cases insolvency in the event of high claims by the insured.

The use of reinsurance by insurers cannot be over-emphasized. This is because, reinsurance is used as a risk management tool to reduce exposure to certain types of risk the insurer cannot fully cover for. Whilst this is the case for most short-term insurance companies in South Africa according to a research by Plessis, Mostert & Mostert (2010: p. 210), if reinsurance is properly utilized, it can increase the profitability and capital base of insurers. While generally reinsurance in Africa is low compared to the rest of the world, reinsurance by short-term insurers is high. However insurance companies in South Africa patronise reinsurance more, with rates above the average developed markets cession rate. The total percentage of re-insurance ceded by insurance companies has a direct impact on the profitability and the solvency of these companies.

According to Schanz et al. (2017: p. 20), short-term insurance penetration in Africa stood at 0.92% which is lower than the global average of 2.8% in 2016. While cession rate of 8.2% of short-term insurance premiums to reinsurers was achieved in 2014, total short-term cessions in Africa stood at an estimated USD 4.9 billion, with South Africa accounting for approximately 50% of the total in 2014. This increased to USD 5.2bn in 2016 with USD 20.1bn in short-term insurance premiums as Africa recorded a cession rate of 26% in 2016. Schanz et al. (2017) indicates that "total African life reinsurance cessions in 2014 amounted to approximately USD 3.3 billion, representing an average cession rate of 7.6%" (p. 24). It also states that South Africa was the only sizeable and dominant African life reinsurance market, generating USD 3.1 billion of premiums in 2014. There are only seven other African markets (Egypt, Kenya, Morocco, Nigeria, Tunisia, Tanzania and Algeria) with an estimated

size of more than US$100 million each. Schanz, et al. (2016) is of the view that currently "Africa has an estimated average cession rate of 24%" (p. 24).

Figure 2: Estimated non-life reinsurance market of selected African markets 2015/2016 ($ mn)



Source: (Dr. Schanz; Alms & Company, 2017)

Oxford Business Group (2016) believes that the South African insurance market will become more sophisticated with the introduction of Solvency Assessment Management (SAM) which will demand more reinsurance services in the future.

1.2 Statement of Research Problem

KPMG states that "in a South African context, the outcome of the SAM reinsurance regulatory review is likely to affect how market participants select their reinsurance partners, structure their contracts and manage the level and mechanism of risk transfer" (2016: p. 41). Ceding of insurance premium to reinsurers has two major impacts for most insurers; financial performance and solvency. Every insurer needs to make positive cash flows and remain financially stable (i.e. profitable) in order to stay in business. The ability of an insurer to stay

afloat requires growth in gross premiums, lower cost and good yields on investments. However not all insurers are able to make underwriting profit as low retention ratio and high claims ratio tend to impact the bottom line i.e. profits of the insurer, due to the inability of underwriters to manage risk exposures. Hence every insurer needs to understand the importance of managing risk and its impact on the profitability of the business. However, there are few research focused particularly on the relationship that exist between financial performance and re-insurance by short-term insurers. This research seeks to provide information about the relationship between reinsurance and financial performance. It also gave recommendation to help managers and the risk team of insurance companies in South Africa as well as policy makers better understand the impact of reinsurance on their bottom line.

The study of the topic is critical to the industry because the amount of gross premiums ceded as reinsurance has the potential to reduce the risk exposure of the insurer especially during financial crises whiles lowering the potential investment returns (Aduloju & Ajemunigbohun, 2015). An understanding of the reinsurance-profitability relationship assists management and risk managers to better price and determine the ratio of gross premium to be ceded to achieve target returns. Other researchers have looked at the risk implication of retaining some level of risk by ceding less premiums without focusing its impact on equity and profitability of the firm.

A number of researchers (Alhassan, 2016; Bernard & Tian, 2009; Garven, 2003; Plessis et al., 2010; Sandrock, 1996) have examined re-insurance and risk management by short term insurers, however very little is available on the financial performance and viability of short-term insurers via the use of reinsurance in South Africa. The use of reinsurance or ceding part of gross premium to a reinsurer has been used as a risk management tool for decades. This is because reinsurance takes away part of the responsibilities of an insurer including claims and the required solvency capital by regulators. However, little attention has been paid to a firm's ability to return more cash and capital to shareholders by optimising reinsurance. This research seeks to close the gap and introduce knowledge on the impact of reinsurance on the financial performance of short-term insurers in the South African context.

1.3 Statement of Research Objectives and Hypotheses

The main research objective for this study is to examine the relationship between gross premium ceded and financial performance of short-term insurance companies in South Africa. The objective below is expected to be derived from this research work:

1. *To investigate the relationship between reinsurance and profitability of short-term insurers*

Based on the research objective outlined above, this study seeks to test the following hypotheses:

H_1: Other things equal, ceding a proportion of gross premiums by short-term insurers has no impact on profitability.

H_2: Other things equal, ceding a proportion of gross premiums by short-term insurers has an impact on profitability.

1.4 Justification of the study

Very little research has been written on the use of reinsurance as a tool by insurance companies to maximise financial performance. Available research most often focuses on risk management by insurers. In general little attention has been paid to the insurance industry compared to other industries in the financial services sector. The study of reinsurance is much needed, considering the low insurance penetration rate especially in the short term insurance industry, in a bid to attract new capital and boost awareness and patronage of short term insurance policies. Although insurance penetration in South Africa is high, the short-term insurance industry has not grown as much as the long-term insurance market. It is therefore critical for industry players, regulators, academia and investors to invest more resources and research into the field. A number of papers have also been written on the topic of risk management by insurance companies, however attributing financial performance to reinsurance has seen little studies in South Africa. As such this study hopes to contribute particularly in the area of reinsurance and its relationship with financial performance in the short-term insurance industry. This research is expected to guide management of short term insurers in deciding the right proportion of insurance premium to cede which reduces risk exposure and maximises underwriting profit. The Financial Services Board (FSB) would also

benefit from the study by considering reforms to its policies on ceding gross premiums. The outcome of the research will assist the regulator in improving the current standard for reinsurance policies.

1.5 Organization of the study

This research has been structured to have five chapters beginning with this introduction and background to the insurance industry in South Africa. The second chapter of this piece has a literature review of relevant information across the continent, other developing and developed economies. The third chapter is the research methodology followed by the collection of data, analysis, results and discussion of the findings in the fourth chapter. The fifth and final part of the study concludes the research and give recommendations based on the outcome of the methodology. References and appendices gathered from writing this research has be included at the end of the work.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This section discusses a number of literature that are relevant to the study of the use of reinsurance by short-term insurers and how it impacts financial performance. It also discusses the theories related to reinsurance as a risk management tool and empirical literature on reinsurance and financial performance of short-term insurers. Reinsurance has been used for decades in South Africa by almost all the short-term insurers as a risk management tool. There is the need to look at how reinsurance has impacted short term insurers by reviewing what has been written in the field. Empirical literature that relates to reinsurance and profitability has been examined to determine what researchers think about the subject.

2.2 Overview of short-term insurance market in South Africa

Insurance in South Africa was introduced in 1826 as British citizens and businesses began operations in the country. The United Empire and Continental Life Assurance Association, and the Alliance British and Foreign Fire and Life Insurance Company (all foreign firms) were the first to open branches in the country. In 1831, the South Africa Life Assurance Company was established and became the first local insurer. By the late 19th century, more than 50 foreign insurers were providing coverage for the country (OBG, 2017).

The Short-term insurance Act 53 defines the short term insurance business as "the business of providing or undertaking to provide policy benefits under short-term policies" (Africa, 1998). Short term insurance involves taking a policy on assets such as vehicle, house, travel, business and household contents. Firms who insure inventory, plant and machinery take short term insurance (FindanAdvisor, 2018). Sandrock (1996) states that providing cover against damage of property like vehicles, buildings and other physical possessions is called short term insurance. Hence it is any insurance taken on assets or things other than life insurance. It is taken only for the period that it is needed for. The short term insurance market is made up of insurance companies providing the following insurance services; property, motor, transportation, engineering, miscellaneous, liability, guarantee, accident and health insurance. As at the end of 2017, there were 88 short term insurance companies in South Africa with 33 typical insurers, 33 niche insurers, 6 cell captive insurers, 8 captive insurers and 8 insurers in

run-off according to the regulator i.e. FSB (Financial Services Board, 2017). Over ZAR 118bn worth of insurance premiums were written by short term insurers in South Africa representing a 3.5% growth in 2017 (Financial Services Board, 2017). However in recent years, the industry has been impacted by external factors like technology and regulation which is leading to faster and better services using technology whiles increasing cost (SAIA, 2018). The services provided by the different types of policies under short term insurance market are provided in Table 2.1 below.

Table 2. 1 Classes of business underwritten in the short-term insurance market

Types of short-term policies	Details
Engineering	This relates to providing cover for machinery or equipment used in the course of business, buildings or other structures (Africa, 1998).
Guarantee	This relates to a "contract in terms of which a person, other than a bank, in return for a premium, undertakes to provide policy benefits if an event, contemplated in the policy as a risk relating to the failure of a person to discharge an obligation, occurs and includes a reinsurance policy in respect of such a policy" (Africa, 1998).
Liability	This means "a contract in terms of which a person, in return for a premium, undertakes to provide policy benefits if an event, contemplated in the contract as a risk relating to the incurring of a liability, otherwise than as part of a policy relating to a risk more specifically contemplated in another definition in this section, occurs and includes a reinsurance policy in respect of such a policy" (Africa, 1998).
Miscellaneous	This means a "contract in terms of which a person, in return for a premium, undertakes to provide policy benefits if an event, contemplated in the contract as a risk relating to any matter not otherwise defined in this section, occurs and includes a reinsurance policy in respect of such a policy" (Africa, 1998).
Motor	This means a "contract in terms of which a person, in return for a premium, undertakes to provide policy benefits if an event, contemplated in the contract as a risk relating to the possession, use or ownership of a motor vehicle, occurs and includes a reinsurance policy in respect of such a policy" (Africa, 1998).
Accident and Health	This means a "contract in terms of which a person, in return for a premium, undertakes to provide policy benefits if a- (a) disability event; (b) health event or (c) death event occurs" (Africa, 1998).
Property	This means a "contract in terms of which a person, in return for a premium, undertakes to provide policy benefits if an event, contemplated in the contract as a risk other than a risk more specifically contemplated in another definition in this section relating to the use, ownership, loss of or damage to movable or immovable property occurs and includes a reinsurance policy in respect of such a policy" (Africa, 1998).
Transportation	This means a "contract in terms of which a person, in return for a premium, undertakes to provide policy benefits if an event, contemplated in the contract as a risk relating to the possession, use or ownership of a vessel, aircraft or

	other craft or for the conveyance of persons or goods by air, space, land or water, or to the storage, treatment or handling of goods so conveyed or to be so conveyed, occurs and includes a reinsurance policy in respect of such a policy" (Africa, 1998).

Source: Short-term insurance Act No. 53 of 1998

2.2.1 Premium Development

Over the last 12 months ending 2016, the total gross premium of short term insurers have increased by 3.2% from ZAR114bn to ZAR118bn. As at the end of 2016, the number of short term insurers decreased by 1. About 50% of all short term insurers are local with the remaining being foreign-owned. Gross premium of reinsurance written to short term insurers also grew by 8.3% from ZAR32bn to ZAR35bn in 2016. The ratio of gross premiums ceded grew from 28.3% to 29.7% over the same period.

Table 2. 2: Short term premiums written over the last five years

Year	Gross Premiums (ZAR)	Growth	Reinsurance (ZAR)	Growth	Reinsurance to GP
2012	87,675,000,000	-	22,961,000,000	-	26.2%
2013	96,178,000,000	9.7%	27,556,000,000	20.0%	28.7%
2014	102,833,000,000	6.9%	26,494,000,000	(3.9%)	25.8%
2015	113,909,000,000	10.8%	32,194,000,000	21.5%	28.3%
2016	117,577,000,000	3.2%	34,878,000,000	8.3%	29.7%

Source: Financial Services Board

2.2.2 Market Concentration

Below are details of the 10 leading players in the short term insurance space and their market share as well as reinsurers as at the end of 2016.

Santam leads the market with close to 20% market share with the second biggest insurer having less than 10% of the market share. The remaining top 10 short-term insurers have a total of 42% of the market share.

Table 2. 3: Premiums written by the 10 leading short-term insurers in 2016

Primary short term insurers			
No.	**Name of player**	**Total premium (ZAR)**	**Market share (%)**
1	Santam	22,469,267,000	19.3
2	Hollard Insurance	10,386,326,000	8.9
3	Mutual & Federal	8,717,615,000	7.5
4	Guardrisk	7,546,973,000	6.5

5	Outsurance	7,019,816,000	6.0
6	Bryte Insurance	3,736,734,000	3.2
7	Escap Limited	3,411,047,000	2.9
8	Auto & General	3,033,732,000	2.6
9	Absa	2,638,537,000	2.3
10	Centriq	2,492,324,000	2.1
11.	Remaining	45,269,403,000	38.8
	Total Industry	**116,721,774,000**	**100.0**

Source: Financial Services Board

Munich RE, a foreign-owned short-term reinsurer is a leader in the South African market with 41% share. The remaining top 2 reinsurers after Munich RE, have a significant share of the market share of 47%.

Table 2. 4: Premiums written by the 3 leading short-term reinsurers in 2016

Reinsurers			
No.	**Name of player**	**Total premium (ZAR)**	**Market share (%)**
1	Munich RE	4,179,737,000	40.5
2	Hannover RE	2,530,112,000	24.5
3	African RE	2,342,657,000	22.7
4.	Remaining	1,261,360,000	12.2
	Total Industry	**10,313,866,000**	**100.0**

Source: Financial Services Board

2.2.3 Insurance penetration

Insurance penetration compares gross premiums to the Gross Domestic Product (GDP) of a country making it a ratio or percentage which measures the impact of insurance on the economy (Alhassan, 2016). South Africa has the highest insurance penetration rate in Africa of 12%, (compared to Africa's average rate of 0.9% as at 2016). SSA wrote USD10.3bn of insurance premiums in 2016 with short term insurance representing 62%. However emerging markets average insurance penetration rate stood at 3.2% in 2016 (SwissRe, 2017).

2.2.4 Reinsurance by short-term insurers

Reinsurance is a strategy by an insurer to part away a portion of the risk and premiums to another insurer or reinsurer in order to maximise the underwriters return. Depending on management plan, reinsurance can form a substantial part of the insurers' cash flow (Sandrock, 1996). According to Sandrock (1996), reinsurance can be taken as a technical or financial plan. The technical role of reinsurance comes from reducing exposure and

minimizing risk from large ticket transactions/ deals. Hence reinsurance protects the insurer against insolvency due to high claims. The financial role of reinsurance can be attributed to having a better solvency margin and increase its ability to write more premiums or expand its portfolio.

Most insurance companies in South Africa ceded more than a percentage of their premiums to reinsurers. The rationale behind most companies' decision to cede a portion of their businesses to other insurers or reinsurers can be attributed to risk management measures or policies. Others do not have the capacity to fully underwrite the risk, whiles some insurers are complying with regulatory requirements for purposes of solvency capital. A risk manager, would want to determine the ratio of premiums ceded that will positively impact the viability, profitability and solvency of the business. According to Alhassan (2016) the ceding of reinsurance premiums reduces risk exposure and increases capacity.

Currently the short-term insurance market in SA has been hit with high claims and numerous complaints leading to a gradual increase in the proportion of gross premium ceded to reinsurers from 25.8% in 2014 to 30.9% at the end of September 2017. This naturally has an impact on the net premium retained by the insurer and its profitability. This study will help managers of short-term insurance companies better understand the impact of their decision to cede more premiums to reinsurers on their financial performance. It will also help regulators when deciding to fix a cap or floor rate to the reinsurance ratio or solvency margins and also determine what impact reinsurance has on the financial performance of insurance companies in South Africa. This research compares key financial indicators like gross profit, net profit, ROA and ROE to premiums ceded and gross premium.

The Managing Director (MD) of SA Eagle, an insurance company indicates that his business was faced with the situation of having to lower solvency margins since it was an inefficient use of capital and less management of risk (Finance Week, 2004). For the short-term insurance industry to thrive, it is critical to determine the key factors including the use of reinsurance as a tool to increase leverage whiles increasing value for shareholders. If this strategy is well implemented, the industry is expected to grow and stay profitable.

2.3 Risk Management in insurance market: Theory of Reinsurance

2.3.1 Agency theory

The theory of agency relates to principals and agents in the business environment. It is based on the separation of ownership from management in a firm. Management is often times given the independence to make decisions without any conflicts from shareholders. However they are accountable to the board who reports to shareholders. Risk management is an important feature for both management and owners as decision relating to risk can determine the performance and survival of the business. Shareholders will want to make the highest returns on their investment with manageable risk whiles managers will want to stay conservative with as little risk exposure as possible. This will mean either managers take on less risky transactions or reinsure high risk events. However this contradicts the objectives of shareholders who want high risk but well managed business. If management decides to take risky businesses with less reinsurance, owners stand to lose from poor financial performance and reduced capital. This has led to the use of share options as a managerial remuneration tool (Jerzemowska, 2006).

2.3.2 Corporate Demand Theory

Sheikh, Syed, & Shah (2017) states that based on the corporate demand theory, reinsurance safeguards the insurer by enhancing the underwriting capacity of the primary insurer without necessarily increasing its capital solvency requirement. Among other things, reinsurance reduces the insurer's tax liability and lowers the risk of bankruptcy whiles diminishing the firm's outgoing cash volatility. This theory supports the fact that reinsurance is used by a number of insurers as a tool to hedge risk by diversifying risk and reducing insolvency risk. Reinsurance can assist insurers comply with the minimum solvency capital requirements; help stabilise losses; minimise cost of bankruptcy, manage underwriting risks and lower tax liability as further suggested by the theory (Sheikh et al., 2017). This will thereby help the insurer to stabilise the potential returns of shareholders and expose the firm to expert knowledge and services from the reinsurer.

Aduloju & Ajemunigbohun (2015) believes that the objective of a primary insurer in purchasing reinsurance coverage is against the assumed risks. However, Plantin (2006) is of a different view; that the core mission for demanding insurance or reinsurance coverage is risk

sharing, especially when other studies have proved that sharing risk optimally is not the only reason for taking reinsurance policies.

2.4 Empirical literature on the relationship between reinsurance and financial performance

Reinsurance ceded by short-term insurance companies

Sandrock (1996) refers to a reinsurer as a provider of protection to an insurer in a similar way as an insured is protected from a potential loss. KPMG (2013) has underscored the importance of using reinsurance in managing liquidity and capital. However, it indicated the need to have a balance between shareholders' capital and the use of reinsurance. Ceding substantial reinsurance affects profitability which impacts the capital base of the company. Risk managers of insurance companies need to take a critical look on a strategic level at its reinsurance arrangements/ policies to help fund new business expenses. Reinsurance is an important risk management tool used within the insurance industry to spread uncertain cost of risk exposure over a larger capital base. Reinsurance contracts can have various different characteristics and also the reinsurance market is constantly changing and developing according to KPMG (2013).

Omasete (2014)'s research on the Kenyan insurance industry was one of the closest to this study. It considered the impact of risk management on financial performance of short-term insurance companies in Kenya. The study was open to all the risk management tools that could be used, compared to this research which is limited to the use of reinsurance only. Omasete (2014) came to the conclusion that "a unit increase in risk management implementation and monitoring led to an increase of 0.398 in financial performance" (p. 46). Reinsurance was considered as one of the risk management tools to utilise among other factors to manage liquidity risk. The study contacted 150 respondents. The research approach used by the researcher was descriptive in nature; using data collection instruments like observations, questionnaires and interviews. In using SPSS version 23, the descriptive and inferential statistics produced P-value of 0.00 indicating the relevance of the studied variables. This meant that the studied independent variables which includes liquidity risk management, operational risk management and enterprise risk management significantly affect the financial performance of Kenyan insurance companies (Omasete, 2017). Among

other things the study recommended that risk sharing between insurance companies and reinsurance companies will lessen operational risk.

The use of reinsurance has the potential to reduce the unearned premium reserves and write more business than it could have with no reinsurance according to Sandrock (1996). However, it was quick to indicate the possibility of an inefficient insurer placing more business with reinsurers leading to poor financial performance. It concluded by saying that a balance between cost and probable benefit of the insurance policy should be identified. After some analysis based on empirical data, Sandrock (1996) concluded that there is a negative correlation between net income and gross premiums premium ceded. After using 12 years of data, the percentage of written premium ceded dropped from 30% to 23%, while an analysis of the data showed that a correlation coefficient of r= 0.0229 meant that there was a negative but extremely weak relationship between the two variables. It is important to note that differences in time period i.e. the data was collected from 1981 to 1993 which means macroeconomic indicators and industry performance would have changed between the period and now. Sandrock (1996)'s studies on reinsurance by short-term insurers is critical to the body of work on the industry. He indicates that there should be a balance between the cost and probable benefit of an insurance policy. Risk managers' ability to skilfully use the right proportion of reinsurance ceded to maximise profitability is of importance to both the board and shareholders of every insurer. With the right understanding of risk, managers should be able to fairly determine whether a particular client or event is worth reinsuring. If the probability is highly unlikely then there is no need to reinsure hence gross premium equals net premium leading to higher profitability and returns to shareholders. Some companies use proportion reinsurance to automatically transfer risk and premiums to another insurer or reinsurer once a client is underwritten.

Aduloju & Ajemunigbohun (2015) used structured questionnaires from 246 respondents and secondary data of 10 insurance companies in Nigeria. The 10 consisted of four long-term and six short-term insurance firms. "In addition twenty five respondents were selected from each company giving a sample size of 250" (p. 22). The selected firms represents about 41% of the premium income market. The select insurers were picked from the regulators' (NAICOM) website, which had 56 licensed insurers and 2 reinsurers in the country. This results led to the view that a positive correlation exist between reinsurance and profitability. The authors calculated Reinsurance Ceded Ratio (RCR), Return on Asset (ROA), Return on Equity (ROE)

as well as the Ratio of Reinsurance Recoverable to Policyholders Surplus (RRPHS) from their 2014 and 2015 financials. Using SPSS, the authors run correlation analysis to test the relationship between the variables and the results showed a correlation of 0.817 i.e. reinsurance ceded strongly correlated with gross premium written. Aduloju & Ajemunigbohun (2015) did another test between reinsurance capacity and underwriting profit, return on equity and profit after tax, which showed that there were no relationship, moderate positive correlation and high positive correlation respectively. Their results showed that reinsurance reduces insolvency by stabilizing loss claims and expanding capacity. Aduloju & Ajemunigbohun (2015) backed their research with the Corporate Demand Theory; stating that by subscribing to reinsurance, insurers were sharing risk and more. They also used (Cummins, Dionne, Gagne, & Nouira, 2008)'s view that purchasing reinsurance was found to have reduced the "insolvency risk of ceding companies by stabilizing loss experience, confining liability with respect to specific risks, improving underwriting capacity, and safeguarding against catastrophes" (p. 19).

An investigation by Garven (2003) led to the conclusion that if demand by insurers for reinsurance is high, there is likely to be low correlation between investment returns and claims ratio. The authors explained how the use of firm size, financial leverage, reinsurance, underwriting risks, liquidity ratio and ROI have a significant influence on firm performance.

A research by Obonyo (2016) looked to assess the impact of reinsurance arrangements on financial performance of general insurance companies. The analysis led to the conclusion that there was a positive but insignificant relationship between reinsurance and financial performance and retention levels were negatively related to underwriting profit ratio. Obonyo (2016) employed both descriptive and inferential statistics to analyze the secondary data. Annual financial statements of insurers and Kenya's insurance industry annual reports from 2013 to 2015 were used to gather gross and net premiums, underwriting profits and management expenses. The analysis made use of SPSS version 21. The data gathered was used to calculate net loss ratio, retention ratio, net claims ratio and net commission ratios. This led to the conclusion that reinsurance positively affects the performance of insurance companies in Kenya and that the retention ratio has a negative relationship with underwriting profit ratio.

Iqbal & Rehman (2014) reviews the use of reinsurance and how it affects the performance of non-life direct insurers in Pakistan. The research looks at reinsurance utilization and dependence and how exposure to reinsurance impacts an insurer's key performance indicators. The authors use secondary data from the annual reports of insurance companies over 10 years from 2002 to 2011 and three econometric models for data regression analysis. In the end, the authors came to the conclusion that the impact of reinsurance on the performance of non-life insurers in Pakistan are consistent with previous studies performed in other parts of the world. The study indicates that reinsurance utilization enhances the performance of firms while dependence and exposure of reinsurance reduce its performance.

Lee & Lee (2012) contends that the performance of a firm and reinsurance are interdependent. The researchers investigated this by using panel data from 1999 to 2009 of the property-liability insurance industry in Taiwan. They discovered that insurers that have high ROA, purchase less reinsurance policies while high reinsurance dependence tend to be used by insurers with poor financial performance. This led to their recommendation for management to balance reducing potential profitability and decreasing insolvency risk. Among other performance metrics, reinsurance has a significant influence on firm performance according to Lee & Lee (2012).

Sandrock (1996)'s paper proved that over the past 12 years, the short-term insurance industry in South Africa has increasingly ceded less written premium to reinsurers. This led to the author concluding that there is no causal relationship between the percentage of reinsurance ceded and the financial results of South African short-term insurers. The study also investigated the impact of reinsurance on the underwriting results of the short-term insurance industry in South Africa. The result clearly indicated that although reinsurance may affect the financial results of a short-term insurer, South African short-term insurers continued to have ceded progressively less gross premium. Insurers with adequate capital resources tend to command more underwriting risk. Interestingly that was not the case according to Sandrock (1996) whose study stated that "the underwriting variable is not significantly correlated with the percentage of premium ceded to reinsurers" (p. 167).

(American Risk and Insurance Association, 2016), in its presentation of reinsurance network and the performance of insurers observed affiliated and non-affiliated insurers using annual statements from the National Association of Insurance Commissioners (NAIC) from 2000-

2011. The study included total assets, net premiums written and surplus in each of the sample year, of insurers with positive numbers. Based on the availability of information, (American Risk and Insurance Association, 2016) tracked "2,901 US P/L insurers and 6,737 non-NAIC regulated reinsurance counterparties with 419,524 reinsurance transaction relationships" (p. 14). The author used variables like insurer's loss experience and insurer's profitability to measure financial performance. (American Risk and Insurance Association, 2016) states that "The regression result showed that an "insurer's performance could possibly affect its reinsurance strategy and hence its reinsurance network position. (American Risk and Insurance Association, 2016) also proved that size is negatively related to the combined ratio, suggesting that larger insurers may enjoy economies of scale in risk diversification which can lead to better underwriting performance" (p. 22).

In a research looking at the determinants of financial performance in general insurance companies in Kenya, (Mwangi & Murigu, 2015) stated that high retention ratio combined with low claims ratio are likely to positively impact on the performance of insurers. Hence when an insurer is very efficient in its underwriting decisions vis-à-vis a high retention, this should lead to profitability.

(Cummins et al., 2008) indicates that reinsurance has the potential to reduce an insurer's risk of insolvency by stabilizing the potential of losses, improve capacity whiles limiting the firm's liability on a particular risk and/or protect against catastrophes. The study also noted that reinsurance is likely to decrease the incentive conflict that may arise between multiple parties leading to reduced agency cost. The authors analysed 554 insurers from 1995 to 2003 which resulted in multiple conclusions. (Cummins et al., 2008)'s results showed "that the coefficient associated with the growth rate of share of premiums ceded to non-affiliates reinsurers is negative and statistically significant at the 5% level. Hence, ceding a larger share of written premiums to non-affiliated insurers reduces significantly the volatility of the loss ratio" (p. 21). (Cummins et al., 2008)however agreed that large insurers that generate significant outputs "can purchase a larger quantity of reinsurance compared to small insurers without ceding a higher proportion of the premiums written" (p. 12). The empirical results by (Cummins et al., 2008) clearly indicate "that reinsurance increases significantly the costs of producing insurance services and reduces significantly the volatility of the loss ratio. Thus, insurers purchasing reinsurance accept to pay higher costs for the production of insurance services to reduce their underwriting risk" (p. 22).

An article by (Lo, 2016) “interweaves empirical findings and academic research on the optimal reinsurance ratio and studies the optimal insurance–reinsurance decisions made by an insurer in the context of a three-party model comprising a policyholder, insurer and reinsurer. The analytic results formed the basis for understanding the cost-benefit implications of insurance and reinsurance for an insurer. The article placed emphasis on how the interplay between insurance and reinsurance creates value to an insurer”.

(Johnson, 1977) states that if the unusually bad year of 1965 is excluded, primary insurers were the most profitable. When this on-site study was conducted, nearly every primary insurer was in the process of increasing its net retentions or its share of the pro-rata treaties. Many executives had indicated that the largest premium and the largest profit were wrapped up in the lower levels of coverage and to be profitable one had to retain much of this risk and premium. A survey of the reinsurance brokers four years later indicates that this trend had stopped abruptly and in some cases reversed direction.

Meng, Siub, & Yang (2016) discusses “optimal insurance risk control problem; a general situation where several reinsurance companies enter into a reinsurance treaty with an insurance company. The reinsurance companies adopt variance premium principles with different parameters. Dividends with fixed costs and taxes are paid to shareholders of the insurance company. Under certain conditions, a combined proportional reinsurance treaty is shown to be optimal in a class of plausible reinsurance treaties. Within the class of combined proportional reinsurance strategies, analytical expressions for the value function and the optimal strategies are obtained” (p. 41).

Table 2.5: Premiums written by the 3 leading short-term reinsurers in 2016

Author(s) name	Countries	Sample (firms)	Retention Ratio	Major findings
(Burcă & Bătrînca, 2014)	Romania	21	18.9%	Negative
(Cummins et al., 2008)	United States	554	68%	Positive
(Mwangi & Murigu, 2015)	Kenya	22	70%	Positive
(Chen et al., 2016)	United States	2,901	N.A	Negative
(Sandrock, 1996)	South Africa	34	23%	Negative
(Lee & Lee, 2012)	Taiwan	15	42%	Negative
(Iqbal & Rehman, 2014)	Pakistan	22	76%	Positive

(Obonyo, 2016)	Kenya	32	66%	Positive
(Garven, 2003)	United States	178	27%	Positive
(Aduloju & Ajemunigbohun, 2015)	Nigeria	10	44%	Positive
(Alhassan, 2016)	South Africa	80	56%	Negative
(Omasete, 2014)	Kenya	15	N.A	Positive
(Alhassan & Biekpe, 2015)	South Africa	441	56%	Positive
(Vittas, 2003)	Mauritius	17	53%	Positive
(Akotey & Abor, 2013)	Ghana	23	72%	Negative
(Fields, Gupta, & Prakash, 2012)	63 countries	404	77.8%	Positive
(Alhassan & Biekpe, 2016)	South Africa	80	55.7%	Positive
(Sheikh et al., 2017)	Pakistan	27	94.4%	Negative
(Upreti & Adams, 2015)	United Kingdom	863	67%	Positive
(Wanjugu, 2012)	Kenya	22	70%	Positive

Note: Retention ratio is measured as the volume of premiums retained by insurers after reinsurance contracts to gross premiums

2.5 Summary of the literature

This chapter gave an overview of the insurance industry looking at the history and types of insurance policies under short-term insurance according to the laws of South Africa. The chapter then looked at the growth in gross premiums, insurance ceded and the ratio of reinsurance to gross premium over the last 5 years. The 10 biggest short term insurers and 3 largest reinsurers were profiled. The chapter further discussed into details two theories, namely agency and corporate demand. The agency theory emphasized the need to separate ownership from management in a firm. Whiles the corporate demand theory states that, demanding for insurance or reinsurance coverage is a risk sharing strategy.

The empirical research showed mixed results, i.e. some research indicated the positive impact of reinsurance on financial performance whiles others stated otherwise. The only similarity in the results can be attributed to the fact that it established the existence of some relationship between reinsurance and financial performance. The four studies from South Africa indicated an equal split on the relationship between reinsurance and financial performance, whiles majority of developing economies showed a positive relationship between the two variables. The United States, United Kingdom, Taiwan and Romania representing developed markets with 6 studies in total showed 3 out of the 6 indicated negative results between the two variables. In total there were 13 positive outcomes and 7 negative outcomes on the relationship between reinsurance and financial performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter defines the population, sample size and data period for the research. In addition, the analytical framework in terms of the regression equation and measurement of variables in the regression model as well as discussion of the estimation technique are explained. Quantitative research methods were used in carrying out the research. The evaluation that was carried out used two systems of data collection; techniques and literature review.

3.2. Sample size and data period

The population of this research is all the elements that form part of the universe of data available in the South African insurance industry. The sample is a portion or section or part of the population. This study adopted data from the FSB on all the registered short-term insurance companies in South Africa and the annual reports of the respective companies. Annual reports from the FSB on the insurance industry and individual company financials were used to extract information for data analysis. This ensured that the research is comprehensive and has reliable data. Secondary data was also gathered from the financial statements of insurance companies which is available on the website of FSB i.e. industry reports prepared by the FSB. In total 79 insurance companies formed part of the sample size. The objective was to determine if there is a causative relationship between the data to be collected. Financial statements and industry performance statistics on short-term insurance companies available from 2007 – 2014 were used.

3.3 Analytical framework

The study used a panel regression model to examine the effect of reinsurance on financial performance. It was presented as follows:

$$finp_{i,t} = \beta_0 + \beta_1 reins_{i,t} + \beta_2 size_{i,t} + \beta_3 lev_{i,t} + \beta_5 urisk_{i,t} + \beta_6 div_{i,t} + \varepsilon_{i,t}$$

where $finp$ refers to the proxies of financial performance measured as net profit; $reins$ is the proxy for reinsurance measured as the ratio of reinsurance premiums ceded to gross premiums underwritten; $size$ denotes firm size measured as the natural logarithm of total assets; lev represents the proxy for leverage measured as the ratio of debt to total assets; $urisk$ refers to the proxy for the amount of risk underwritten or to be borne directly by the insurer and measured by the ratio of net incurred claims to net premiums and; div is the proxy for diversification of investment and measured by the Herfinderahl index for product line diversification.

3.3.1 Hypotheses Development

The theoretical arguments linking the independent variables and financial performance are discussed in this section, in addition to the expected outcomes for this dissertation.

3.3.1.1 Reinsurance and Financial Performance

The use of reinsurance as the risk management tool has been widely used across the world. Reinsurance is used by insurers as a risk mitigation tool, however risk management can directly impact financial performance (Omasete, 2017). Risk management, particularly reinsurance and return, have an inverse relationship which would mean that, the more returns an insurer expects the less risk management policies i.e. reinsurance it would have put in place as argued by (Obonyo, 2016). This study therefore expects that an insurer with lower exposure to reinsurance to report better financial performance because a large chunk of the net premiums will be available to the firm compared to firms that have high reinsurance exposure. However, the insurer will be exposed to high claims in the occurrence of the insured event. Insurers with high reinsurance ratios are expected by the study to report relatively lower financial performance due to low net premiums resulting in low earnings. In this study, firms with high reinsurance ratio are defined as firms who have ceded at least 35% or more while firms with low reinsurance ratio have ceded less than 35% of gross premiums.

H_1 *: Reinsurance has a significant negative relationship with financial performance of short-term insurers*

3.3.1.2 Size and Financial Performance

Aside organic growth, mergers and acquisitions increase the books/ asset size of a business. This means that a firm in the insurance industry can increase its market share, cross border expansion, internal capacity and diversify risk as a result of M&A (Corporation, 2014). Whiles M&A increases the size of the business, it also reduces cost due to economies of scale from size and other business lines. This positively impacts the bottom-line of the insurer due to the sheer size and depth of the company as argued by (Chen & Wong, 2004; Daare, 2016; Mehari & Aemiro, 2013). However (Mwangi & Murigu, 2015)'s work on the determinants of financial performance of insurers in Kenya contradicts the view that size influences performance. This study expects large firms to report better financial performance due to their existing business relationship and numerous clients compared to smaller firms. (Obonyo, 2016) supports the view of the study by stating that the size of a firm provides economies of scale leading to better financial performance. This study considers large firms to be insurers with over R1.0bn in total assets while small firms have total assets below R1.0bn mark.

H_2 *: Firm size has a significant positive relationship with financial performance of short-term insurers*

3.3.1.3 Leverage and Financial Performance

Cost of debt is generally known to be cheaper for most businesses than equity. This is because equity holders are the last to receive any funds in the event of bankruptcy and have the biggest exposure hence the name residual owners. As a result, most businesses take on larger proportion of capital in the form of debt if they have the capacity to finance debt in order to reduce their tax exposure and increase the return on equity investments (Beers, 2018). This study expects firms with high leverage to report better financial performance compared to low financially leveraged insurers as supported by (Mehari & Aemiro, 2013). However, (Daare, 2016) in his work on determining the profitability of Indian non-life insurers concluded that there is a negative relationship between leverage and profitability. This study assumes highly leveraged insurers to have debt to asset ratio of more than 60% and low leveraged insurers to have less than 60% of debt to asset ratio.

H_3 *: Leverage has a significant positive relationship with financial performance of short-term insurers*

3.3.1.4 Underwriting risk and Financial Performance

Every insurer needs a good underwriter to accurately assess the risk in order to price in the form of gross premiums. Sometimes insurance companies are faced with the situation were claims exceed net earned premiums which then require the insurer to seek alternatives to paying net claims (Mwangi & Murigu, 2015). Underwriting risk can be higher than initially anticipated which will require the insurer to use its investments or reinsurance while insurers with low underwriting risk will have little to pay to clients in an unforeseen event. This study expects insurers with low underwriting risk to report better financial performance compared to insurers with high underwriting risk exposure as supported by (Kaya, 2015). (Kaya, 2015) states that "the results obtained for the loss ratio variable indicate that non-life insurance companies with low underwriting risk have higher profitability than non-life insurance companies with high underwriting". This study assumes insurers with low underwriting risk to have a combined ratio of less than 100% and insurers with high underwriting risk to have a combined ratio of 100% and above.

H_5 *: Underwriting risk has a significant negative relationship with financial performance of short-term insurers*

3.3.1.5 Diversification and Financial Performance

Deciding on the type of insurance policy to underwrite or business lines by the insurer has an impact on bottom-line. The use of diversification by insurers has the potential to add on more gross premiums, profits and improve the retention of existing clients due to discounts from multiple policies with the same insurer. Also having multiple business lines leads to diversification of revenue income which creates synergies and economies of scale (Damodaran, 2001). On the cost side, insurers can negotiate for relatively lower cost due to similar needs from different business lines. This study expects firms with multiple business lines to report better financial performance compared to single-line insurers as supported by a study by (Krivokapic, Njegomir, & Stojic, 2017). This study assumes diversified insurers to have more than one insurance business line.

H_6 *: Diversification has a significant positive relationship with financial performance of short-term insurers*

Table 1. 1: Summary of independent variables

Independent Variable	Symbol	Measurement	Expected Sign
Reinsurance	Reins	As a proportion of gross premiums ceded	$\beta_1 reins_{i,t}$
Firm Size	Size	Natural log of Total assets	$\beta_2 size_{i,t}$
Leverage	Lev	Ratio of total debt to total assets	$\beta_3 lev_{i,t}$
Underwriting risk	Urisk	Ratio of incurred claims/Net Premium	$\beta_5 urisk_{i,t}$
Diversification	Div	An index of gross premiums across business lines	$\beta_6 div_{i,t}$

3.4 Estimation techniques

The research employed statistical analysis tools via the use of regression analysis to test the relationship between the variables. It also employed the use of fixed and random effects estimation techniques for purposes of building the model.

3.4.1 Random and Fixed Effects Panel Data Model

Random effects estimation techniques assume "that there are no omitted variables or the omitted variables are uncorrelated with the explanatory variables that are in the model. It produces unbiased estimates of the coefficients, use all the data available, and produce the smallest standard errors" (Williams, 2018). It is being employed to estimate both static and dynamic panel data models to identify the source of financial performance. The fixed effect panel data model is used when we are interested in analysing the impact of variables that vary over time. Fixed effect model removes the effect of those time-invariant characteristics so we are able to assess the net effect of the predictors on the outcome variable (Torres-Reyna, 2007).

According to (Statalist, 2018), "fixed-effects model represents subject-specific parameters as fixed, yet unknown and random-effects model represents subject-specific parameters as random variables". It further states that the random-effect model (panel data) can be regarded as two-level mixed model, with the first level representing observations within subjects and the second level representing subjects. Thus, the random-effect model shows how much variation is at observation level (within-subject) and how much variation is at subject level

(between-subject). Random means each subject has its own intercept and this intercept involves a random part of the model. In the fixed-effect model however, the unobserved heterogeneity is wholly absorbed in subject-specific intercepts which are correlated with explanatory variables, in contrast with the random-effect model that has the unobserved heterogeneity partly absorbed (thus some portion is left and that is the random effect part of model).

According to (Wilhelm, 2016), fixed effects can be modelled by fitting a coefficient for each level of the factor. The particular values of the coefficient of each factor is taken as a realization of a normal distributed random variable. Therefore, the coefficient and the corresponding factor are called a "random coefficient" and "random factor", respectively. If you have missing values for that factor, a fixed representation would require to ignore all the data where you have missing values for that factor, whereas a random representation allows you to use all the available data.

CHAPTER FOUR

DISCUSSION OF FINDINGS

4.1 Introduction

This chapter discusses the inputs used in determining the relationship between reinsurance and financial performance of short-term insurers in South Africa. It will proceed to analyse the data, present analysis and produce findings which will be interpreted in the final sub-section. Sub-section two of this chapter will provide the results of the analysis on the variables used in the study whiles the third sub-section will present the results of the regression analysis. The final sub-section will discuss the findings.

4.2 Descriptive Statistics

Table 4.1 below provides the descriptive statistics on both independent and dependent variables. The independent variables are reinsurance, firm size, leverage, underwriting risk and diversification, and the dependent variable is financial performance. The Table below shows a mean reinsurance (REINS) score of 43.9%, return on equity (ROE) score of 16.6%, underwriting profit (UPROF) score of 23.8%, return on assets (ROA) score of 9.2%, firm size (SIZE) score of 13%, leverage (LEV) score of 57%, underwriting risk (URISK) score of 63% and a diversification (DIV) score of 38%. ROA across the industry ranges from a minimum of -3.5% to 15%.

The mean REINS of 43.9% is relatively lower than findings from (Lee & Lee, 2012) which recorded 58% in Taiwan. However this still indicates high usage of reinsurance by short term insurers in South Africa. (Aduloju & Ajemunigbohun, 2015) and (Vittas, 2003) found the mean REINS to be 56% and 47% in Nigeria and Mauritius respectively. In South Africa, the REINS of 77% was extremely high as shown from (Sandrock, 1996)'s finding, which was identified over 20 years ago. Economic conditions and the development of the insurance industry have changed now. South Africa has a stronger financial market and economic situations have improved leading to reduced over-dependence on reinsurers. (Alhassan & Biekpe, 2016), (Alhassan, 2016) and (Alhassan & Biekpe, 2015) recorded 44% which is close to this study for the period starting 2007 to 2012. Studies by (Iqbal & Rehman, 2014) and (Sheikh et al., 2017) which collected data in Pakistan both recorded low REINS of 24% and 6% respectively. This is an indication that Middle Eastern countries rely less on reinsurers.

Insurers with low reinsurance ratios and high financial performance are maximizing their net premiums, have low underwriting risk, high leverage, diversified business lines and large assets.

Table 4.1: Summary statistics

	Mean	Median	Std. Dev.	Min	Max	N
ROA	0.092	0.044	0.649	-3.504	15.003	582
ROE	0.166	0.132	0.745	-3.977	15.548	582
UPROF	0.238	0.117	0.803	-0.301	18.386	582
REINS	0.439	0.372	0.423	-0.002	4.652	582
SIZE	12.967	12.911	1.612	8.902	16.870	582
LEV	0.571	0.585	0.247	0.007	0.993	582
DIV	0.380	0.462	0.280	-0.232	0.826	585
URISK	0.630	0.560	2.452	-24.769	43.791	564

Notes: ROA=return on assets; ROE=Return on equity; UPROF=Underwriting profits; REINS=Reinsurance ratio; SIZE=Firm size; LEV=Leverage; DIV=Business line diversification; URISK=Underwriting risk; Source: Authors estimation from research data

4.2.3 Correlation Results

The correlation coefficients were estimated to examine the strength of the relationship among the variables. A test of collinearity among the independent variables was conducted using a correlation matrix. The results of the correlation analysis is presented in Table 4.2 below. The table shows the correlations among the independent variables are below 0.94. In this case, a decision has been made to retain all the variables since none of them have a correlation of more than 0.70. Thus, there is no multicollinearity between the independent variables.

Table 4.2: Correlation Matrix

	ROA	ROE	UPROF	REINS	SIZE	LEV	DIV	URISK
ROA	1							
ROE	0.9353	1						
	(0.000)							
UPROF	0.9375	0.8606	1					
	(0.000)	(0.000)						
REINS	-0.0492	-0.0677	-0.147	1				
	(0.2368)	(0.1038)	(0.0004)					
SIZE	-0.0736	-0.0195	-0.1093	-0.1341	1			
	(0.076)	(0.6382)	(0.0083)	0.0012				
LEV	-0.1361	-0.1136	-0.2073	0.345	0.3174	1		
	(0.001)	(0.0061)	(0.000)	(0.000)	(0.000)			
DIV	0.0269	0.0494	-0.0162	0.182	0.2775	0.3676	1	
	(0.5193)	(0.236)	(0.698)	(0.000)	(0.000)	(0.000)		
URISK	-0.0174	-0.0401	-0.0389	-0.0345	0.004	0.0389	-0.0181	1
	(0.6815)	(0.3432)	(0.3575)	(0.4144)	(0.9242)	(0.3579)	(0.6682)	

Notes: ROA=return on assets; ROE=Return on equity; UPROF=Underwriting profits; REINS=Reinsurance ratio; SIZE=Firm size; LEV=Leverage; DIV=Business line diversification; URISK=Underwriting risk; Values in brackets are p-values. Source: Authors estimation form research data

4.3 Regression Results: Reinsurance and Financial Performance

This stage delves into the impact of reinsurance on the financial performance score as presented in Table 4.3 below. Overall, two Models are estimated under each technique as explained in the previous chapter. The estimations under Model 1 (REM) and Model 2 (FEM) includes all five control variables on size, reinsurance, underwriting risk, diversification and leverage, resulting in five regression outputs. The results of the regression estimations in Table 4.3 below identifies the determinants of financial performance. The Wald $\chi 2$ ($P>\chi 2$ of less than 0.05) for ROA, ROE and UPROF indicate the fitness of the regression models. The results of the Hausman specification test cannot be rejected at 5% significance level, hence the REM technique is the efficient estimator and the discussion of the regression analysis is limited to the REM results.

The reinsurance coefficient is negatively related to ROA, ROE and UPROF in REM at significance levels of 10%, 5% and 1% respectively. This indicates that short term insurers who cede more premiums in a bid to diversify their risk portfolio become less profitable. The loss of investment income from the ceding of insurance premiums to reinsurers which is associated with usage of reinsurance contracts outweighs the potential benefits of risk reduction. This partly explains the observed negative relationship. This finding is consistent with (Soye & Adeyemo, 2017)'s studies that there is no causal relationship between the percentage of reinsurance ceded and financial performance. The result is also in line with our hypothesis that reinsurance has significant negative relationship with financial performance of short-term insurers.

Leverage coefficient exhibits a significant negative relationship with ROA and UPROF in the preferred model (REM) at significance level of 1%. This suggest that high leverage is likely to result in a decline in profitability. The burden of huge debts is expected to negatively affect operations and profit margins. However, the impact of leverage on ROE has a negative but not significant impact on profitability. This finding is consistent with studies by (Daare, 2016) which concludes that the profitability of non-life insurers in India has a negative relationship between their leverage. The result is inconsistent with our hypothesis that leverage has a positive relationship with financial performance of short-term insurers.

The coefficient of product line diversification has a positive relationship with all forms of profitability, except for ROA which has a negative effect using REM. Also, UPROF using REM and FEM has significance levels of 10% and 5% respectively. This implies that insurers' diversification across multiple product lines increases financial performance. This arises out of the potential synergies from risk sharing and lower cost across the various business lines of the insurer. This is in line with studies of (Krivokapic et al., 2017) which states that firms with multiple business lines report better financial performance compared to single-line insurers. The result is consistent with our hypothesis that product line diversification has a positive relationship with financial performance of short-term insurers.

The underwriting risk coefficient has a negative relationship to all variables i.e. ROA, ROE and URPOF in the FEM model. This test implies that underwriting losses from claims incurred reduces the profitability of an insurer. This is consistent with (Kaya, 2015)'s study which expects an insurer with low underwriting risk to report better financial performance compared to an insurer with high underwriting risk exposure. The result is in line with our hypothesis that underwriting risk has a significant negative relationship with financial performance of short-term insurers.

Table 4.3: Regression Results

	Return on Assets (ROA)				Return on Equity (ROE)				Underwriting profit (UPROF)			
	REM		FEM		REM		FEM		REM		FEM	
	Coef.	*p>z*	*Coef.*	*p>t*	*Coef.*	*p>z*	*Coef.*	*p>t*	*Coef.*	*p>z*	*Coef.*	*p>t*
Constant	0.142***	0.000	0.194***	0.001	0.233***	0.007	0.429***	0.002	0.361***	0.000	0.322***	0.000
	(0.037)		(0.056)		(0.086)		(0.140)		(0.071)		(0.082)	
REINS	-0.024*	0.077	0.000	0.991	-0.083**	0.011	-0.031	0.512	-0.236***	0.000	-0.222***	0.000
	(0.014)		(0.019)		(0.032)		(0.047)		(0.024)		(0.027)	
SIZE	0.001	0.662	-0.003	0.511	-0.001	0.845	-0.017	0.121	-0.001	0.83	0.001	0.873
	(0.003)		(0.004)		(0.007)		(0.011)		(0.006)		(0.007)	
LEV	-0.134***	0.000	-0.151***	0.000	-0.035	0.407	-0.072	0.176	-0.141***	0.000	-0.145***	0.000
	(0.017)		(0.021)		(0.042)		(0.053)		(0.029)		(0.031)	
DIV	-0.008	0.609	0.000	0.994	0.009	0.813	0.042	0.442	0.054*	0.057	0.065**	0.044
	(0.015)		(0.022)		(0.037)		(0.054)		(0.028)		(0.032)	
URISK	-0.001*	0.087	-0.001	0.161	-0.005**	0.012	-0.005**	0.031	-0.001	0.287	-0.001	0.374
	(0.001)		(0.001)		(0.002)		(0.002)		(0.001)		(0.001)	
Wald χ^2/F (5)	100.17		13.89		17.4		2.7		174.94		26.56	
prob > χ^2	0.000		0.000		0.0038		0.0205		0.000		0.000	
R-squared	0.244		0.1278		0.0576		0.0276		0.3299		0.2189	
R Hausman χ	8.274				9.475				7.573			
prob > χ^2	0.1418				0.0916				0.1814			
Insurers	79		79		79		79		79		79	
Observations	558		558		558		558		558		558	

*Notes: ROA=return on assets; ROE=Return on equity; UPROF=Underwriting profits; REINS=Reinsurance ratio; SIZE=Firm size; LEV=Leverage; DIV=Business line diversification; URISK=Underwriting risk; Values in brackets are standard errors. REM=Random Effects Model; FEM=Fixed Effects Model. ***, ** and * denotes significance at 1%, 5% and 10% respectively. Source: Authors estimation form research data*

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Introduction

The final chapter of this study seeks to provide a summary of the findings in the previous chapter, conclude on the findings, provide recommendations to stakeholders and highlight the limitations of the study for further research. Reinsurance as it plays a crucial role in the insurance industry has a direct relationship with financial performance. The presence or absence of risk management via ceding of gross premiums can impact the operations of an insurer. Ceding a high portion of gross premiums can inversely affect financial performance whiles low exposure to reinsurance increases the risk profile of a firm.

5.2 Summary of findings and conclusion

The study's objective was to examine the relationship that exist between reinsurance and financial performance of 79 short-term insurers in South Africa from 2007 to 2014. It went further to understand the relationship that exist between underwriting risk, firm size, leverage and diversification.

The findings of this study indicate that there is a negative relationship between reinsurance and financial performance. 44% of average gross premiums were ceded by short term insurers to reinsurers. As reinsurance ratio increases, insurers are expected to report lower financial results due to over-reliance on re-insurance. A positive relationship is likely to exist between retention ratio and financial performance as high retention means more net premiums available to be shared to shareholders in the event of low claims by the insured.

A negative relationship was observed between underwriting risk and financial performance of short term insurers. As underwriting risk exposure increases, insurers are expected to report lower profitability. The size of a short-term insurer correlates positively with financial performance. Large insurance corporations in South Africa perform better than smaller sized insurers. Which means the bigger the better, for short-term insurers. As a result, mergers and

acquisitions are recommended for the industry since consolidation will positively impact bottom-line. The average firm size is 13% for short-term insurers.

The use of leverage positively impacts financial performance of insurers. Average leverage ratio of short-term insurers is 57% of total assets. This means that more than 50% of assets of insurance companies are financed with debt. As a result, most insurers in South Africa are reducing their income tax payable due to interest payment to debt holders. Equity holders effective profit after tax has been reduced marginally reduced. A positive relationship exist between diversification of business lines and financial performance.

Insurers that have multiple policies for the respective types of policies under general insurance; represent over 46% of insurers that are fully diversified based on the different product types. Diversified insurers increase gross premiums from the same client whiles reducing cost due to the scale of transactions. Hence diversification has a positive impact on financial performance of short-term insurers.

The study concludes that the financial performance of short-term insurers in South Africa is negatively and significantly influenced by the reinsurance ratio. Also underwriting risk negatively impacts the financial performance of insurers. Diversification and leverage have positive impact on the financial performance of short-term insurers. The size of a firm will also have a positive impact on the financial stability of the insurer.

5.4 Recommendation

This study recommends that for short-term insurers to improve their performance on their ROA, ROE and UPROF, they will have to increase their retention ratio through the reduction of reinsurance contracts. This will lead to low reinsurance ratios allowing room for net premiums to be available to the firm. Another way to increase profitability will be to diversify the business lines of insurers, increase leverage and increase the asset size of the firm. However, having multiple business lines will require additional set-up and regulatory costs i.e. capital whiles high leverage has the potential to cripple the business due to high debt cost. Insurers have to employ strong and experienced underwriters to ensure minimal underwriting

risk which has the potential to increase the financial performance of insurers in the short-term insurance market.

5.5 Recommendations for Future Research

This study looked at the impact of reinsurance on the financial performance of short-term insurers in South Africa. It also considered four other variables before concluding on their impact on financial performance. This study therefore recommends that another study should be conducted which will focus on other factors of reinsurance such as the impact of reinsurance on solvency, liquidity and capital requirements. Another consideration will be to conduct a similar study that covers more recent data including 2017 financials of short-term insurers. The study can be improved by a further research which employs various measures of financial performance like cash flows, earnings per share and revenue growth.

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APPENDIX: LIST OF SHORT-TERM INSURANCE COMPANIES IN SA

No.	Name of player
1	Abacus
2	Absa
3	Absa Idirect
4	Absa Risk
5	AECI Captive
6	AGRe
7	AIG
8	Alexander Forbes
9	Allianz Global
10	Attorneys
11	Aurora
12	Auto & General
13	Bidvest
14	Bryte Insurance
15	Bryte Risk
16	Budget Insurance
17	Centriq
18	Chubb
19	Clientele General
20	Coface
21	Compass
22	Constantia
23	Corporate Guarantee
24	Credit Guarantee
25	Densecure
26	Dial Direct
27	Discovery
28	Emerald
29	Enpet Africa
30	Escap Limited
31	Etana Insurance
32	Export Credit
33	Exxaro

34	FEM
35	First Central
36	First For Women
37	Firstrand
38	G4S
39	Genric
40	Guardrisk
41	HDI Global
42	Hollard Insurance
43	Home Loan
44	IGF
45	Indequity Specialised
46	Infiniti
47	Khula Credit Guarantee
48	King Price
49	Landbank
50	Legal Expenses
51	Lion of Africa
52	Lombard
53	Miway
54	Momentum Alternative
55	Momentum STI
56	Momentum Structured
57	Monarch
58	Mutual & Federal
59	Mutual & Federal Risk
60	Nedgroup
61	New National
62	NMS
63	Nova Risk
64	Oakhurst
65	Oakleaf
66	Old Mutual Health
67	Orange
68	Outsurance

69	PPS
70	Rand Mutual
71	Regent
72	Relyant
73	Renasa
74	Sabsure
75	Safire
76	SAHL
77	Santam
78	Santam Structured
79	Sasguard
80	Sasria
81	Saxum
82	Shoprite
83	Standard Insurance
84	Sunderland Marine
85	Unitrans
86	Vodacom
87	Western National
88	Workers Life