



Strathmore
UNIVERSITY

**A COMPARISON OF EUROPE'S SOLVENCY 11 MODEL TO KENYA'S
RISK BASED CAPITAL FRAMEWORK.**

The case of General insurance.

NDUNG'U ANN WANJIRU
082755

**Submitted in partial fulfillment of the requirements for the Degree of
[BBS ACTUARIAL SCIENCE] at Strathmore University**

SCHOOL OF FINANCE & APPLIED ECONOMICS
Strathmore University
Nairobi, Kenya

[November 2017]

This Research Project is available for Library use on the understanding that it is copyright material and that no quotation from the Research Project may be published without proper acknowledgement.

DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

© No part of this Research Project may be reproduced without the permission of the author and Strathmore University

.....NDUNG'U ANN WANJIRU..... [Name of Candidate]

.....~~NDUNG'U~~..... [Signature]

.....27th November 2017..... [Date]

This Research Project has been submitted for examination with my approval as the Supervisor.

SAHIB KHOSLA [Name of Supervisor]



[Signature]

27 / 11 / 2017 [Date]

Strathmore Institute of Mathematical Sciences

Strathmore University

ABSTRACT.

Kenya has experienced a lot of growth on the insurance industry to the extent of being ranked the best insurance industry in the East African region. Part of this growth can be attributed to the change of the solvency framework to Capital Based risk model that has seen insurance companies become more stable.

This growth has however not reflected in the position of the Kenyan industry in comparison to the global markets.

This study has compared the solvency frameworks for Kenya to that of Europe which is among the leading insurance industries globally to find out what improvements Kenyan insurers can make to their framework to improve efficiency of the industry leading to increased growth.

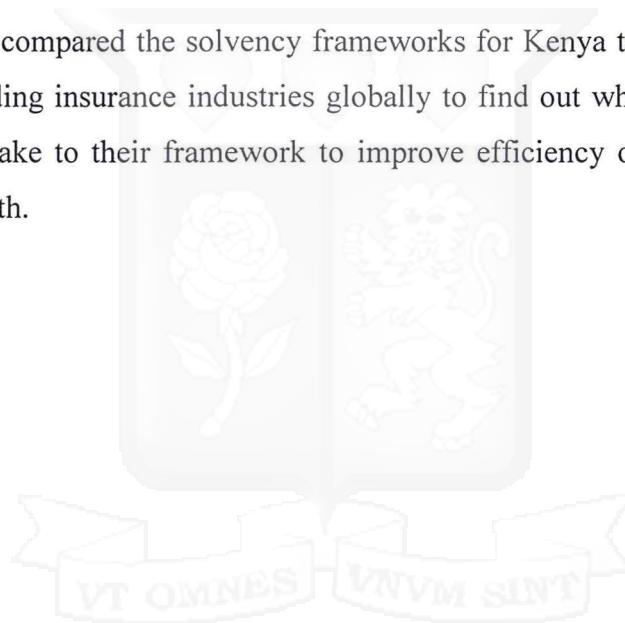


TABLE OF CONTENTS.

Table of Contents

DECLARATION	Error! Bookmark not defined.
ABSTRACT.....	iii
TABLE OF CONTENTS.....	iv
CHAPTER ONE: INTRODUCTION.....	1
1.1: BACKGROUND TO THE STUDY.....	1
1.1.1: THE HISTORY AND DEVELOPMENT OF SOLVENCY 11 FOR EUROPEAN COUNTRIES.	2
THE HISTORY AND DEVELOPMENT OF THE RISK BASED CAPITAL IN KENYA.	4
1.2: RESEARCH OBJECTIVES	5
1.3: RESEARCH QUESTIONS.....	5
1.4: PROBLEM STATEMENT.....	6
1.5: JUSTIFICATION OF THE STUDY.	6
CHAPTER TWO.....	7
LITERATURE REVIEW.	7
2.1 INTRODUCTION.....	7
2.2 THEORETICAL LITRETURE.	7
2.2.1: SOLVENCY 11.....	7
2.2.2: RISK BASED CAPITAL.....	8
2.3 EMPERICAL LITRETURE.	9
2.4: DISCUSSION OF WORKS.....	10
2.5: RESEARCH GAPS.....	11
CHAPTER THREE.	12

RESEACH METHODOLOGY..... 13

3.1: BRESEARCH DESIGN 13

3.2: Population 13

3.3: Sampling. 13

3.4: data collection and analysis..... 13

REFERENCES. 14



CHAPTER ONE: INTRODUCTION.

1.1: BACKGROUND TO THE STUDY.

Insurance is a means of protection from financial loss. It is a form of risk management primarily used to hedge against the risk of a contingent, uncertain loss.

The entity providing the insurance service is called the insurer and the party receiving insurance services is called the insured. The insurance transaction happens as follows, the insured agrees to give a defined payment or a series of payment to the insurer as a way of transferring the risk and financial implications from a contingent and uncertain event that the insured has insurable interest from himself to the insurance company. After this transaction is completed the insured receives a contract called a policy containing the terms and conditions on which he receives a financial compensation.

The insurance industry is a fundamental sector in the growth of any economy (Nagar, 2005) because it provides protection against losses and risks with great financial and non-financial risks that could determine the economic growth of an economy as well as contribute to the growth of the economy as an industry on its own. It is therefore important for the authorities to provide an adequate regulatory framework to ensure that consumers benefit from insurance competition as well as making sure that they receive adequate protection. One of the greatest regulation that ensures that the consumers of insurance policies are protected is the solvency requirement regulation which requires an insurance company holds so as to ensure that they are able to meet their obligation in the course of the next financial year.

Solvency can therefore be defined as the ability of an entity (insurance company) to meet its legal liabilities for example expected claims and expected expenses both in the long term and the short term, where the liabilities are estimates estimated by actuarial methods (Sandstorm, 2006). Because of the importance of solvency as a means of protecting consumers most countries have put regulations for most financial institutions and a regulatory body to ensure that financial institutions comply with all regulations set.

This study aims at comparing the solvency regulatory models for the European nations and those of the Kenyan insurance industry. The European nations use the solvency 11 model as a directive to calculate solvency requirements for their insurance company while Kenyans use a Risk Based Capital approach to determine solvency requirements for insurance companies.

1.1.1: THE HISTORY AND DEVELOPMENT OF SOLVENCY 11 FOR EUROPEAN COUNTRIES.

Europe introduced the first prudential directive (a legislative act that sets out a goal to be achieved by all European Union countries must achieve, as defined by the European commission) in 1970 as a step to a single market for insurance throughout the European commission. F Kempler et al (2010). In 1997 the conference of the insurance regulatory departments conducted a study to determine the areas of the regulatory framework that needed to be update

This lead to the solvency 1 reform that came to force in 2004 which was a rule based framework that highlighted the basic rules that insurance companies needed to follow. Solvency 1 gave the minimum guidelines that all members must comply with but allowed the members to add more rules they deemed necessary. This reform had a few limitations:

It lacked risk sensitivity: under solvency 1 the capital requirements were calculated using a factor approach which did not significantly factor in the risks faced by insurance companies.

It did not differentiate the risks of different product lines: the same capital calculations were used for all product lines not considering the difference in risks for different insurance products.

Policyholder protection was inconsistent: because there was a possibility for the requirements to vary in different countries, insurance companies operating in more than

one country therefore had inconsistencies in calculating requirements because of the implied variance in requirements.

This limitation ns led to a comprehensive review on solvency 1 giving rise to solvency 11 which according to a report by Sharma et al (2002) identified policy areas such as governance and risk management that were also in need of modernization.

Solvency 11 aims at providing more consistent protection to policyholders, to create a resilient insurance industry in Europe with low chances of failure. The Solvency II requirements are structured into three 'pillars' that cover: quantitative requirements; qualitative requirements and supervisory review; and reporting and disclosure. Solvency 11 requirements are a complete set of requirements to be applied in all Europe.

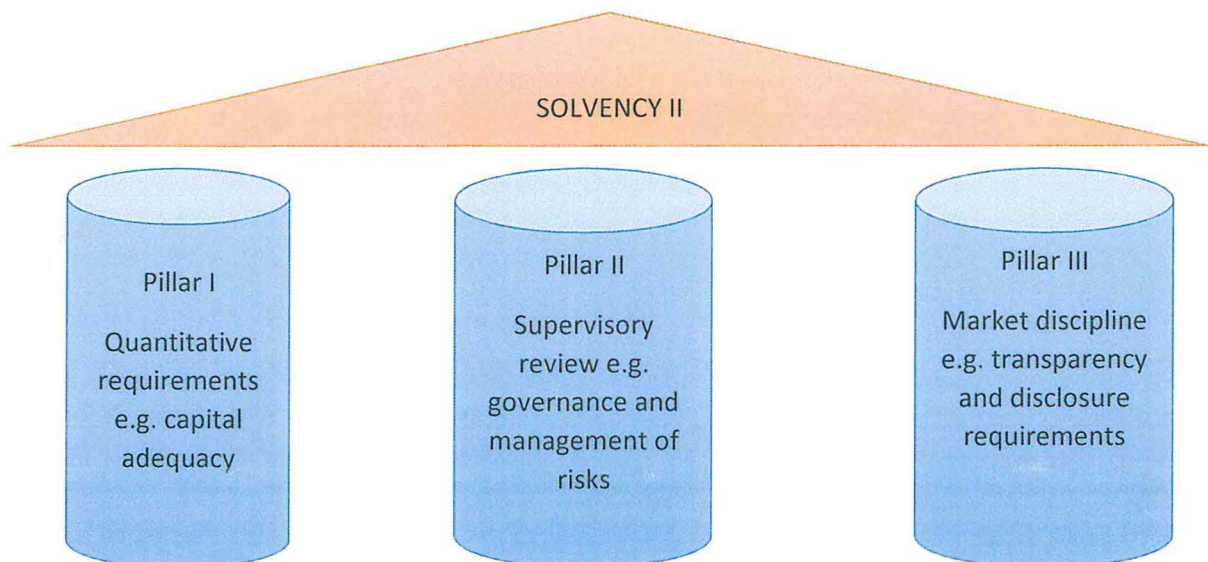
THE SOLVENCY II MODEL.

Solvency II model is a three pillar model addressing how insurance companies run the companies and how they should be supervised.

Pillar I is concerned with financial requirements with regard to capital adequacy and the balance sheet.

Pillar II: this is more qualitative and explains aspects of governance, management of risk, the role of the supervisor and the process of supervision.

Pillar III: interests in supervisory reporting and public disclosure.



This study has its focus on pillar I that is based on the following concepts:

- A clear forecasts of the insurer's financial position by valuing the balance sheet at market values. It assumes market value as the best estimator of realistic economic value.
- The financial position of an insurer is subject to market and technical risks.
- That an insurer is required to hold own capital in addition to technical provisions to act as protection against adverse risks. The Solvency Capital Ratio (SCR) and Minimum Capital Ratio (MCR) are calculated from quantifiable risks of the insurer.

1.1.2 THE HISTORY AND DEVELOPMENT OF THE RISK BASED CAPITAL IN KENYA.

The idea of insurance has been in Africa for a long period (J, 1962). The first form of insurance in Kenya before independence was the social security programs where members of a society put together resources to form a social security fund and premiums were of any form ranging from material to moral support.

With the growth of Kenyan economy there was increased and more advanced insurance agents and the government saw it necessary to regulate the industry after independence. In 1960 the insurance act was based on the UK legislation until 1978 when an act was passed that all insurance companies had to be locally incorporated.

An act was passed in 1986 that introduced the office of an insurance regulator and set the requirements for registration of an insurance company, brokers, agents, loss adjusters and other service providers in the insurance industry.

According to the Insurance Regulatory Authority (IRA) guidelines for the risk based model the capital requirement ratio will be the ratio of capital required to the minimum capital required. The capital requirement ratio should always be equal to or greater than that set by the regulator and an insurance company should report to the regulator in the case it goes below. When the company is at the minimum capital ratio strongest supervisory action is taken. The factors in calculating minimum capital ratio include: whether it is paid up or not, availability of capital to absorb losses, ranking in the case of a wind up, extent of

obligations to pay dividends, term to maturity and the existence of incentives to redeem capital.

The risk based capital is calculated as the square root of the square of the sum of insurance risk, market risk and credit risk plus the operational risk.

$$\sqrt{[\textit{insurance risk}^2 + \textit{market risk}^2 + \textit{credit risk}^2]} + \textit{operational risk}$$

1.2: RESEARCH OBJECTIVES

To find the differences between Europe's solvency 11 framework and Kenya's Risk Based Capital framework.

To find the similarities between Europe's solvency 11 framework and Kenya's Risk Based Capital framework.

To find out what the insurance industry can learn from solvency 11.

1.3: RESEARCH QUESTIONS.

What are the differences between Europe's solvency 11 framework and Kenya's Risk Based Capital framework?

What are the similarities between Europe's solvency 11 framework and Kenya's Risk Based Capital framework?

What lessons can the insurance industry can learn from solvency 11?

1.4: PROBLEM STATEMENT.

The insurance industry in Kenya has become one of the most attractive industries in Africa close the insurance industry in South Africa which is currently the best. Kenya has the best insurance industry as compared to the other countries in East Africa. This is however not the case when measuring the performance of the Kenyan market alongside that of global insurance industry.

It is in this light that this study aims to determine the differences in the regulatory framework between a global insurance industry (European Union) and the Kenyan framework to identify possible insurance regulatory improvements that could grow Kenya to a global insurance industry.

1.5: JUSTIFICATION OF THE STUDY.

This study will be beneficial to:

The insurance regulators in Kenya, this is because it will provide suggestions on how to improve the solvency regulations for insurance companies in Kenya leading to growth in the industry.

The insurance companies in Kenya because adjustments made to the solvency framework will increase stability of insurance companies which will increase customer satisfaction thus improving the insurance industry.

Other insurance industries that use the risk based capital by suggesting improvements they can make to their solvency frameworks to increase growth in the insurance industry which will lead to the growth of the economies.

CHAPTER TWO: LITERATURE REVIEW.

2.1 INTRODUCTION.

The primary aim of insurance regulations is to protect the insurance policyholders. This is done by ensuring the safety of the insurer's fund on one hand and minding the insurance affordability thus regulations are set on pricing of insurance products (Stoyanova*, 2015). Given the importance of regulations a number of studies have been done relating to different solvency requirements for different financial institutions in different countries.

2.2 THEORETICAL LITRETURE.

2.2.1: SOLVENCY 11

In a study of the regulatory framework in the insurance industry (Dragos, 2013), establishes that prudent regulations are based on three elements: the requirement for holding adequate provisions, solvency margins (minimum amount of regulatory capital held against uncertain events) and rules on eligibility of assets. The study highlights two weaknesses of the solvency 1 framework that led solvency two to be the inability to create a common European Union market and difficulty in use of modern risk management techniques. This study found the following impacts of solvency 11 regime: an increased own capital due to reduction of reserves for life insurance companies and an increased solvency requirement for general insurance due to increased underwriting risks. A study by EIOPA found that there was a 50% decrease in own capital for general insurance companies as a result of implementation of solvency 11. This study suggests further efforts will be necessary in the future to maintain the practicability of the regime in the future and concludes that implementation of solvency 11 is significant in Europe because it creates transparency in the insurance industry by changing company's view on governance, risk and capital management.

2.2.2: RISK BASED CAPITAL.

A study by (Thomas L. Hogan Neil R. Meredith and Xuhao (Harry) Pan, 2015) aimed at finding out whether Risk based capital model outperformed old capital regulations. This study was an improvement of a study done by Avery and Berger (1991) but with the use of current data from 2001 to 2011. The findings of this study were consistent with those of Avery and Berger that risk based capital outperformed older capital requirements as risk predictors.

(Singh, 2009) Argues that given all the evolutions in the regulatory framework it is certain that no regulatory framework is perfect thus risk management should be viewed as always evolving due to emergence of new concepts and theories for example the economic capital model that features risk simulations specific to a company.

(Martin F. Grace, 1998) in a study of risk based Capital and solvency screening for property liability tested the hypothesis that risk based capital is efficient in identifying financially weak insurers as compared to the traditional financial analysis tracking systems (FAST). They concluded that the risk based capital ratios were inefficient in comparison to the traditional method but suggests that performance of risk based capital could improve if the model is adjusted to factor in more factors other than just capital and solvency requirement ratios.

1

(Rand, 2004) Comments that there is increased customer dissatisfaction in the insurance industry arising from insurers failing to meet customer needs. His study was a comparison of customer satisfaction in the insurance industry in Kenya and Greece. He did this by using five factors he believed were important for customer satisfaction. The first fact he called tangibles which was a review of what physical factors are essential for customer satisfaction for example: convenient location and physical assets such as attractiveness of furniture and adequate parking space. The second factor was reliability which was concerned with provision of indemnity without hassle, ease of understanding the underwriting process on the clients' end, sincere interests in solving complaints and

keeping promises in the promised time line. The third factor was responsiveness of the insurer to the insured for example proper communication to customers in clarity and transparency. The fourth factor was assurance, that customers are more satisfied if they have certainty of attention, accurate representation of products and the competence of employees to perform services and create products. The last factor was empathy, that customers seek integrity and trustworthiness of employees, positive attitude to complaints and criticisms, commitment to ethical behavior, reliable knowledge and distribution outlets and adequate differentiation of products.

2.3 EMPERICAL LITRETURE.

The study on the solvency two framework (Dragos, 2013) used an analysis of the quantitative impact studies (QIS) to evaluate the solvency two framework. A series of QIS were done by the EIOPA since 2005. The first was aimed at testing the level of prudence in the framework. The second tested the provisions and calculations of solvency capital requirements and the minimum capital requirements. The third QIS tested the calibration of parameters used to calculate solvency requirements while the next two build on the first three. The findings from the QIS studies will be used to establish the performance factors to be studied in order to give the relevant differences and similarities for the solvency models for both Kenyan insurance company and those of the European Union.

The study on risk based capital used a comparison approach of capital ratios and risk based capital ratios to evaluate their impact on factors affecting performance of banks namely: income, standard deviation of income, non-performing loans, and loan charge-offs and probability of failure. This study is useful in highlighting key performance measures for the financial institutions that are necessary in finding out to what extent the insurance industry should borrow from the solvency 11 framework in order to grow to a better performing industry.

The study by (Martin F. Grace, 1998) suggests room for improvement in the risk based capital model which this study aims to identify the adjustments that risk based capital

model can borrow from the solvency 11 framework in order to better identify troubled insurers in the industry with the aim of improving insurance consumer protection.

(Rand, 2004) The study identifies that there are more considerations that customers make in search for satisfaction when it comes to the insurance industry. This factor analysis shows that as much as solvency requirement and the solvency of a company is important to a policyholder, policyholders need assurance of care and integrity from the insurance. This gives a lead to the inadequacy of the risk based capital solvency framework which solely depend on capital and solvency ratios to determine stability of insurance company thus this study aims to find out what the insurance regulators in Kenya can learn from Europe's solvency framework to increase consumer protection as well as increase policyholder satisfaction.

2.4: DISCUSSION OF WORKS.

The studies done by other people prior to this have an important role in establishing the development and evolution of solvency regulation framework for both the Kenyan insurance industry and that of the European Union insurance industry.

Most of the studies done on solvency 11 framework especially by the EIOPA show the sufficiency of the solvency two framework to counter the challenges posed by those of the preceding regulatory frameworks. The limitations with this studies is that they only focus on improving areas where the previous solvency framework do not touch on and do not consider new improvements that can be added to the models that are not necessarily a shortcoming of the previous models.

The studies done on Risk Based Capital model seem to agree that Risk Based Capital model is a good measure of instability in insurance companies as compared to traditional methods of determining solvency requirements but suggest that the limitations of the framework need improvement in order to keep Kenyans insurance industry at par with the international solvency requirements and growth rates. However a study by (Martin F. Grace, 1998) finds out that the risk based capital framework underperforms in identifying weak insurers compared to a traditional Factor Analysis Tactical System. (Martin F. Grace, 1998) Argues

that calculation of only the solvency and capital ratios does not give enough information to judge the stability or probability of ruin of an insurance company or any financial institution.

This studies also fail to address the issue of solvency in the industry as a whole but instead break it down to subsections for example solvency for life insurance and solvency for general insurance or health insurance and property liability insurance. This makes it difficult to analyze the solvency needs of the whole insurance industry as different sub sections have different solvency needs for example general insurance is more of short term thus high solvency requirement as compared to life insurance which is long term thus low solvency requirements.

2.5: RESEARCH GAPS.

The limitations of the studies above give rise to more research work that need to be done in order to create a well-fitting solvency requirement models. Some of the research gaps include:

This research only compares solvency II pillar I and no much attention is paid to pillar II and III. More research can be done to see how aspects in pillar II&III differ from RBC.

A comprehensive research on all the factors that determine stability of insurance companies.

Research to find out to what extent solvency regulations affect growth of the insurance companies and the industry as whole.

A comparison study of all the regulation frameworks for calculating solvency requirements to determine the adequacy, strengths and drawbacks of each framework.

CONCEPTUAL FRAMEWORK.

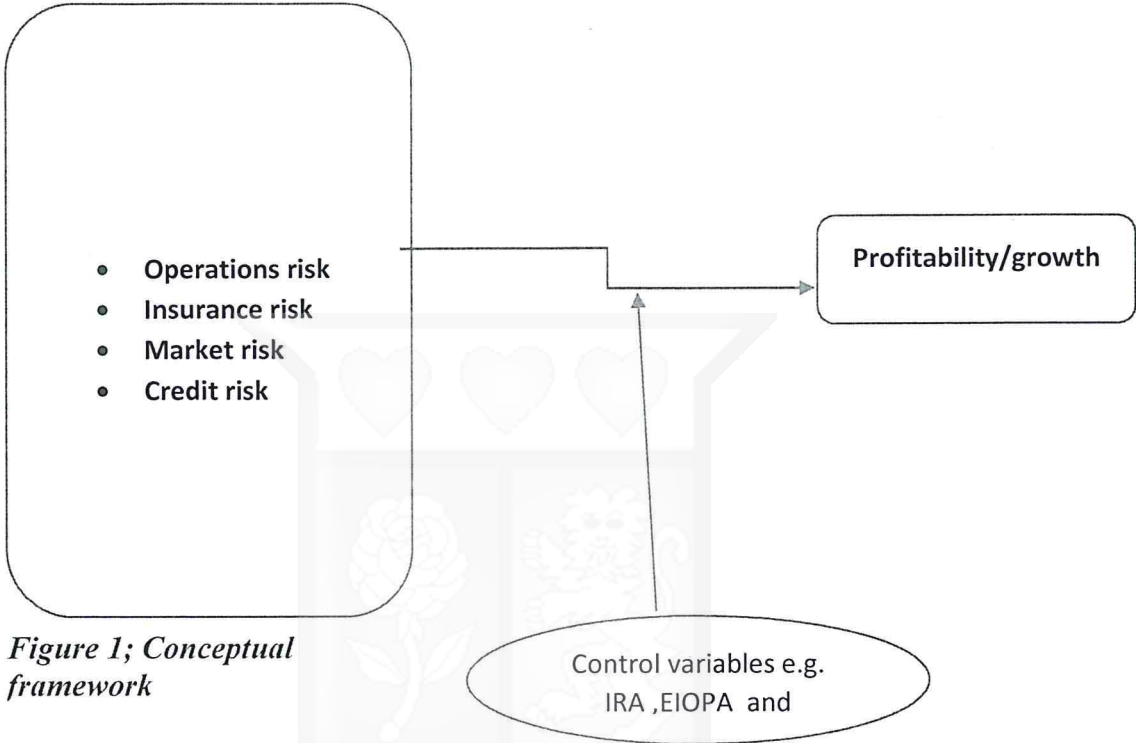


Figure 1; Conceptual framework



CHAPTER THREE: RESEACH METHODOLOGY.

3.0: INTRODUCTION

This chapter highlights the method in which the research is carried out.

3.1: RESEARCH DESIGN

The research design for this study is comparative because it seeks to establish the differences and similarities of two solvency frameworks by analyzing the determinants or components of each solvency frameworks.

The research is both qualitative and quantitative in nature. The qualitative aspect of this study will be to explain how the three components of the balance sheets re valued for both models.

The quantitative will be an analysis of the difference capital ratio generated from a Kenyan company by both Solvency II framework and the RBC framework.

3.2: Population

The population for this study was all operational general insurance companies in Kenya.

3.3: Sampling.

The sample size for the study was one of the twenty five general insurance companies operating in Kenya.

The sampling technique will be random sampling. The company will be randomly selected.

3.4: Data collection and analysis

The data used for this study will be secondary data from reports of insurance regulators and associations.

Data analysis will be done using factor analysis and ranked in order of importance to determine what the best determinants of solvency requirement are.

CHAPTER FOUR.

DATA ANALYSIS.

This chapter highlights the data analysis for this study. Data was collected and analyzed in response to the problem stated in chapter one of this study. The goals that drove collection of data and the subsequent analysis of this study were: to find out what are the differences between the RBC model and the Solvency II model, what the similarities between the two models are and finally what improvements can be made to Kenyan RBC model from the Solvency II model. The objectives were achieved.

The findings for this study are presented below with regard to the components, formulas and solvency ratio results generated from both models for one Kenyan General insurance company. The results are generated from a Kenyan general insurance company's financial statements.

Capital adequacy ratios.

Risk Based Capital model.

Risk based capital model calibrates its Solvency Capital Ratio (SCR) at 85% confidence level and all insurers are expected to maintain a Prescribed Capital Requirement (PCR) of 200% of the Minimum Capital Requirement (MCR).

$$RBC = \sqrt{(\textit{Insurance risk capital}^2 + \textit{market risk capital}^2 + \textit{credit risk}^2) + \textit{operational risk}}$$

Solvency II model

Solvency II calculates SCR at 99.5% confidence level over a one year period.

Solvency Capital Requirements can be violated when earlier of the following conditions occur:

- The company's own funds are equal to or less than 75% of the Solvency Capital requirements.

- If an infringement of Solvency Capital Requirement is not resolved within a two month period.

$$SCR = BSCR + Adj + SCR_{OP} + SCR_{part}$$

Where:

BSCR – Basic Solvency Capital Requirement

Adj – Adjustment for the risk absorbing effect of deferred taxes

SCR_{op} – The capital requirement for operational risk

SCR_{part} – The capital requirement for strategic participations. Insurance participations in the same sector (e.g. life insurance or non-life insurance) as the insurer are to be stressed in the SCR Participations module.

$$BSCR = \sqrt{\sum_{ij} Corr_{ij} * SCR_i * SCR_j}$$

Where i and j are market risks and non-life risks respectively.

One of the differences that really stand out between the two models is the how detailed the solvency II model in breaking down the model components compared to the RBC model where components are more generalized.

Another difference is the use of correlations in the Solvency II model while RBC model ignores correlation of risks.

A similarity between the two models is that both use VaR to calibrate the SCR but the confidence levels are higher for Solvency II than for the RBC model.

KEY RISKS.

Insurance risks.

In both models insurance risks is defined as the risk that there are variations in the time of occurrence, frequency and severity of insured events from the expected during underwriting.

Premium reserve risk capital.

Risk margin is included as part of premium reserves in both models.

Claim reserve risks:

Risk margin is included in both the Solvency II and the RBC models as part of claim reserves. The Solvency II model calculates risk margins at 99.5% confident level over a one year period while the Risk Based Capital model calculates risk margins at 75% confidence level.

Solvency II model uses the cost of capital approach to calculate the risk margins while Risk Based Capital does not specify the methodology used to calculate margins.

Market risk:

This can be defined as risks arising from market fluctuations that may result to changes in the value of assets held by a company or the amount of liabilities.

Risk Based Capital model calculates market risk as the sum of capital requirements held for: equity risk, interest rates risks, currency risk and property risks.

The difference with the solvency II is the use an adjustment that prevents sale of equity when markets are in distress. Property shocks in Solvency II is at 25% while in RBC is at 30% or 40% depending on the property.

Operational risk capital

Operational risk is defined as the loss arising from failure in the internal processes, workers and systems of a company.

In the Risk Based Capital model operational risk capital is calculated as:

- 30% of the square root of sum of squares of the capital required for insurance risk, market risk and credit risk; and 3% of the previous year's gross earned premium.

Operational risk in both RBC and Solvency II models is assumed to be uncorrelated with other risks.

Solvency II model calculates operational risk capital as:

$$SCR_{op} = \min(0.3 * BSCR; op)$$

Where $op = \max(3\% \text{ of total insurance liability}, 3\% \text{ of gross earned premiums})$ which is the same as the calculation using the RBC model.

RBC CAPITAL CALCULATION.

RBC capital is divided into two tier 1 and 2. Tier one has the highest quality, most permanent and most available for loss absorbing. Capital is divided mainly based on whether its paid up or not, availability for loss, ranking in liquidation and time to redemption or maturity.

Tier 1 will be the aggregate of; issued and fully paid up ordinary shares, share premium; statutory reserves and profits retained by the insurer.

Tier 2 shall consist of: irredeemable preference shares, capital loan stocks and other similar capital instruments held by the insurer; subordinated loans subject to approval by authority convertible preference shares issued by the insurer; revaluation reserves for self-occupied properties, other assets owned by the insurer; and general reserves held by the insurer.

RBC model excludes the following in calculating capital: goodwill and other intangible assets, deferred tax assets, assets pledged to support the credit activities, all credit facilities granted by an insurer and secured by the insurer's own shares; prepayments made by the insurer; the fixed assets of the insurer; the unsecured loans advanced by the insurer; receivables from other insurers; inventory; and other assets held or owned by the insurer. (Insurance Regulatory Authority Kenya (ira), 2017)

Classification of own funds for solvency II is the same as in RBC but tiers are divided into three, the lists compositions of each tier is the same as the RBC model but with more criteria for classification.

VALUATION OF ASSETS

RBC assets that are listed on a licensed security exchange will be valued at the last price quoted on the exchange.

In other cases unlisted assets will be valued at the price obtained a willing buyer and a willing seller (market value).

Solvency II framework also values assets using the market value.

VALUATION OF LIABILITIES.

Solvency II liabilities are defined as policyholder's liability which are equal to the best estimate of technical provisions and a risk margin. Where best estimate is calculated at a market consistent basis at 99.5 confidence level over a one year period and risk margins are calculated using the cost of capital approach. (CEIOPS, 2015)

Risk based capital also estimates liabilities using best estimate and risk margin. one of the differences is that RBC does not specify the risk margins calculation methodology but the regulator gives rates to be applied to different classes.

QUANTITATIVE DATA ANALYSIS.

Quantitative data analysis for this model was carried out using two existing models, QIS5-V6-20101006 (for solvency II) and RBC model for general insurers. The Solvency model from Prudential Authority Regulations and the RBC model as provided by Insurance Regulatory Authority of Kenya.

SOLVENCY II RESULTS.

Solvency	Capital requirement	Eligible capital	Solvency ratio	MCR as % SCR
SCR	2,016,533,621.5	9,390,985,000.0	465.7%	45.0%
SCR (internal model)	0.0		-	
MCR	907,440,129.7	9,390,985,000.0	1034.9%	0
MCR without corridor or constraints	925,797,670.0	9,390,985,000.0	1014.4%	98.0%

Total assets (excluding other financial sector assets of groups)	0	0	52273
Total liabilities (excluding other financial sector liabilities of groups)	0	0	16120
Assets less liabilities	0	0	36153
Total Basic own funds before adjustments	0	0	17110
Total Basic own funds before adjustments under transitional measures	0	0	17110
<i>Total available own funds to meet SCR, before eligibility assessment</i>	9,390,985,000	0	0

The table below shows correlation matrices for solvency II.

CorrSCR=	SCRmkt	SCRdef	SCRlife	SC health	SCRnl
SCRmkt	1	0.25	0.25	0.25	0.25
SCRdef	0.25	1	0.25	0.25	0.5
SCRlife	0.25	0.25	1	0.25	0
SCRhealth	0.25	0.25	0.25	1	0
SCRnl	0.25	0.5	0	0	1

RBC MODEL RESULTS.

Absolute Amount Minimum1	14	600,000,000
Volume of Business Minimum2	15	-
Risk Based Capital Minimum	16	1,163,930,607
Minimum Required Capital	17	1,163,930,607

Capital Adequacy Ratio	18	150%
-------------------------------	----	-------------

CHAPTER FIVE.

CONCLUSIONS AND RECOMMENDATIONS.

From the results earlier presented in chapter four of this study, this study concluded that solvency II model is a more prudent solvency framework compared to the Risk Based Capital model.

This conclusion was drawn from the results above where for the same financial statements solvency II gives an adequacy ratio of 98% while Risk Based Model returns a solvency ratio of 150%.

This maybe as a result of use of risk correlation between risks assumed in the solvency II model while the RBC model assumes that there is no correlation of risks.

The difference may also be attributed to the prudence in estimating liabilities, solvency II uses 99.5% confidence level for VaR over a one year period while RBC model uses 85 confidence level.

Lastly this difference could be as a result of the difference in the model inputs. Although both models have very closely similar balance sheet structures, the solvency II model parameters are more granulated compared to the Risk Based Capital Model.

However the comparison of the two models proved quite difficult because the two models are not very similar.

Recommendations.

RBC model can try to accommodate more detailed parameters, although the model is still young, this can be a consideration in future model improvements.

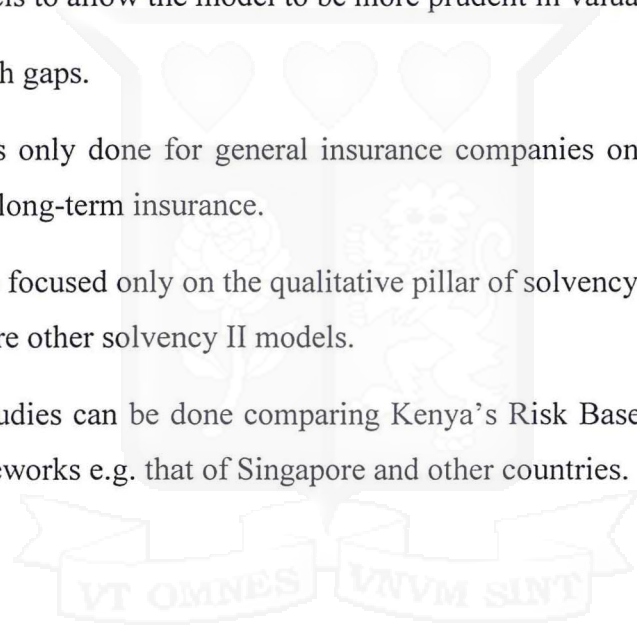
With time, data acquired over the life of the model can be used to determine better calibration levels to allow the model to be more prudent in valuating liabilities.

Further research gaps.

This study was only done for general insurance companies only another study may be carried out for long-term insurance.

This study also focused only on the qualitative pillar of solvency II and more study can be done to compare other solvency II models.

Lastly other studies can be done comparing Kenya's Risk Based Capital model to other solvency frameworks e.g. that of Singapore and other countries.



REFERENCES

.Kempler, C, Flamée, M, Yang, C and Windels, P (2010), Global perspectives on insurance today, Palgrave Macmillan, Chapter 5

Conference of insurance supervisory services of the member states of the European Union — prepared under chairmanship of Paul Sharma (2002), ‘Prudential supervision of insurance undertakings’, available at www.ec.europa.eu/internal_market/insurance/docs/solvency/impactassess/annex-c02_en.pdf.

KPMG (2002), ‘Study into the methodologies to assess the overall financial position of an insurance undertaking from the perspective of prudential supervision’, available at www.ec.europa.eu/finance/insurance/docs/solvency/impactassess/annex-c01a_en.pdf.

Dragos, S.-L. (2013, may). regulatory framework in the insurance industry. *International Journal of Academic Research in Business and Social Sciences*, 3(ISSN: 2222-6990).

Stoyanova*, R. (2015). Safety Versus Affordability as Targets. *Journal of Insurance Regulation* .

Nagar, W. (2005). The Insurance Industry and Financial Stability: International Perspective and an Assessment of the Situation in Israel, Discussion Paper Series, Financial Stability Sphere, Bank of Israel.

Sandstrom, A. (2006). Solvency II: An Integrated Risk Approach for European Insurer, Boca Raton: Chapman and Hall/CRC.

Dragos, S.-L. (2013, may). regulatory framework in the insurance industry. *International Journal of Academic Research in Business and Social Sciences*, 3(ISSN: 2222-6990).

Thomas L. Hogan Neil R. Meredith and Xuhao (Harry) Pan. (2015). RISK BASED CAPITAL REVISITED. *Journal of Financial Regulation and Compliance*.

Martin F. Grace, S. E. (1998). risk based capital and solvency screening in property liability. *journal of risk and insurance*.