Strathmore
UNIVERSITY

Determinants of Insurance Penetration and Density in under developed, developing and developed countries.

Otieno, Dansol Obondo 068469

Submitted in partial fulfillment of the requirements for the Degree of Actuarial Science at Strathmore University

School Of Finance and Applied Economics
Strathmore University
Nairobi, Kenya

November, 2015

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.

OTIENO DANSOL OBONDO ..... [*Name of Candidate*]

..... [*Signature*]

13th NOV 2015 ..... [*Date*]

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

JOHN OUECHE ..... [*Name of Supervisor*]

..... [*Signature*]

12/11/2015 ..... [*Date*]

School of Finance and Applied Economics

Strathmore University

Contents

Declaration 1

Abstract 4

Chapter 1. Introduction 5

1.1 Problem Statement 6

1.2 Objectives 6

1.3 Significance of the research 7

Chapter 2. Literature Review 7

2.1 Theoretical Studies 8

2.2 Insurance Development in Developed Countries 9

2.2.1 United Kingdom (U.K.) 10

2.2.2 United States (U.S.) 11

2.2.3 South Africa (S.A.) 11

2.3 Insurance Development in Developing and Under Developed Countries 13

2.3.1Africa 13

2.3.2 Asia 15

2.3.3 Latin America 16

Chapter 3. Research Methodology 18

3.1 Hypothesis 18

3.2 Research Design 18

3.3 Population 18

3.4 Sample Size and Sampling Technique 18

3.5 Research Instruments 19

3.6 Data Collection Procedure 19

3.7 Data Analysis and Presentation 19

Chapter 4. Empirical Results 22

4.1 Life Insurance Penetration 22

4.1.1 High Income Countries 22

4.1.2 Upper Middle Income 23

4.1.3 Lower Middle Income 24
4.2 Life Insurance Density 25
4.2.1 High Income Countries 25
4.2.2 Upper Middle Income 26
4.2.3 Lower Middle Income 27
4.3 Low Income Countries Analysis 28
4.4 Conclusion 28
Chapter 5. Appendices 31
Chapter 6. Bibliography 34

Table 1: Determinants of Insurance Penetration and Density 31
Table 2; Low Income Analysis 31
Table 3; Lower Middle Income Density Analysis 32
Table 4; Lower Middle Income Penetration Analysis 32
Table 5; Upper Middle Income Penetration Analysis 32
Table 6; Upper Middle Income Density Analysis 32
Table 7; High Income Analysis 33

Determinants of Insurance Penetration and Density in under developed, developing and developed countries.

Abstract

The need for greater Insurance penetration in both life and non-life segments has been underscored by economic surveys. Insurance penetration has remained low not only in Kenya but in Africa as a whole and other under developed and developing countries. This study is set out to establish factors causing the low Insurance uptake, the challenges faced by the insurers in marketing their products and subsequently identify strategies the Insurance Companies can adopt to enhance Insurance uptake. This is through the studying the relationship more so between Insurance Penetration and Density and their determinants in developed, developing and under developed countries, with the aim of finding out if there exists a relationship and why this relationship holds. This is to help in understanding why developed countries with high insurance penetration and low market shares among firms, both competing and non-competing are doing better than those with the inverse of this relationship more so under developed countries. Secondary data was collected via financial reports of insurance firms and insurance performance within countries via the regulatory bodies. In as much as there are various obvious ways of improving insurance penetration in countries, this study highlights that various insurance policies and regulations governing the insurance industry have an effect on the performance within the insurance firms in as much as the mechanisms to promote rapid insurance penetration do exist, by studying the above phenomena.

Chapter 1. Introduction

Insurance refers to the pooling mechanism for reducing the down-side of risk through resource reallocation. This is carried out by insurance firms that provide policy covers to individuals or organizations that then in return pay premiums so as to be compensated upon the occurrence of the insured risk.

The ability of insurance firms to cushion individuals and financial institutions against financial risks leads to increased need for people to invest and develop more capital, leading to an increase in the economy performance consequently the GDP.

Hence the insurance market poses as a necessity in promoting the growth of a country's economy. The first step is to spotlight the most important issues for the development of insurance markets. (Pietro Masci, L. T. ,2007.)

Insurance penetration in the world today is still very small, below average, with countries in the EU having among the highest penetration e.g. Finland (Life 7.7%), Sweden (Life 6.0%), 14.28 % in South Africa and 13% in EU.

While countries in developing and under developing countries having the least insurance penetration, mostly Latin, Asia and African countries. E.g. Nigeria 0.68%, Philippines 0.8%, China 1.8%.

Having noted this, it would be interesting to understand that market shares among insurance firms in countries with high insurance penetration range relatively between 1-5% the highest having 5%, more relatively distributed, unlike in developing and under developed countries where market shares among insurance firms are widely unevenly distributed, with market leaders having dominant market shares e.g. 87% in Namibia.

The aim of this paper is to study if there exists a correlation or relationship between the Insurance penetration level and density and relevant insurance factors that eventually affect each firms' market shares and why this inverse exists in countries with low insurance penetration level.

This is an indication that insurance penetration may not affect the market share of certain insurance firms which is an irony in comparison to firms in developed countries where

market share of firms grow in tandem with the market penetration level; since market shares add up to a hundred percent, this means that more firms increase their market share eventually as others remain stagnant or fall, but the overall effect is that more firms have considerable market share rather than a few.

Such relationships will aid in understanding how to improve the insurance penetration in developing countries while and the same time find out how to create a competitive insurance market in the region.

1.1 Problem Statement

Insurance penetration levels in a country indicate the markets willingness to adopt insurance as a strategy for mitigation of risk and source of investment.

It's an indication of the collectiveness of insurance firms in the region to gain access to new markets, through constructive competition that'll lead to development of innovative products and or aggressive marketing strategies.

Increased insurance penetration in a country with fair market shares among firms shows the commitment each firm has in boosting their market shares, while with unfair market shares where few dominant firms have high market shares is an indication that only selected firms have the capability or willingness to acquire more market while restrictive measures are placed on others preventing them from increasing their market share regardless of insurance penetration level.

Hence the problem the paper tries to study is the insurance penetration level and density and their determinants in developed countries while comparing them to developed or underdeveloped countries, by understanding factors that contribute to the insurance penetration and density in countries with high insurance penetration that may lack in countries with low insurance penetration.

1.2 Objectives

- To establish the determinants of insurance penetration and density in selected countries

- To establish whether there exists a relationship between insurance penetration and density and the determinants under study of insurance firms in selected countries.
- If a relationship exists; what's the reason for the relationship.

1.3 Significance of the research

This research will benefit insurance regulators as they will be able to understand which factors are to be considered when encouraging insurance penetration in their countries. It will also help insurance institutions to be aware of these factors therefore designing their products to best suit their target market.

Chapter 2. Literature Review

Whereas several studies establish that financial development is an important determinant of national economic growth, understanding the causal relationship between insurance market growth and economic development is still lacking; which could be an aid in understanding how it affects the insurance market share of individual firms.

According to Patrick (1966), economic expansion can be led by supply-led through growth in financial development or, alternatively, financial development can be demand-led through growth in the economy.

In this case Insurance expansion could facilitate increased market share of firms and consequently improved economy or, alternatively increased market share among individual firms would foster insurance market penetration.

For a relationship to be established there is need to recognize the economic benefits of insurance which is conditioned by national regulations, economic systems, and culture, arguing that examination of the interrelationships between insurance penetration and insurance market share must be done country-by-country. (Pietro Masci, L. T. (2007))

In 2012, the global insurance industry grew 4.4 percent, continuing the pattern observed in the past few years of growth in insurance lagging slightly behind nominal GDP growth (4.6 percent). The world's insurance industry is dominated by wealthy developed countries.

Premiums / GDP is a good measure for insurance penetration as it highlights the importance of insurance activity relative to the size of the economy. (Jordan Kjosevski 2012).

2.1 Theoretical Studies

Several theories have been put forward to explain insurance penetration in countries via studying consumer insurance consumption behavior. Yaari (1965) became the first person to come up with a theoretical model to explain the demand for life insurance, by developing a life-cycle utility model of a consumer while deducing the optimal consumption and optimal savings plan of a consumer

Lewis (1989) used Yaari's model and extended it to incorporate the preferences of other members of the household he also suggested that life insurance should be purchased to satisfy the needs of survivors. Not only is insurance consumption driven by consumer demand but also price, regulations, monetary policies, urbanization and banking sector development, which he incorporates in his model.

In a nut shell, the theories states that factors such as income, interest rate, savings, wealth influence insurance consumption and penetration.

Beck and Webb (2002) researched over 68 countries worldwide regarding the causes of variance in insurance consumption between different countries. Using four different metrics of life insurance consumption while using different demographic, economic and institutional factors in their research. They found out that countries with higher income per capita level consume larger amounts of life insurance, which also influenced by private savings rate and real interest rate. With other factors such as life expectancy, education and size of social security appear not to have any major influence on insurance consumption.

Contrary to the above Ward et al (2002) states that improved civil rights and political stability leads to an increase in the consumption of life insurance in the Asian region as well in the Organization for Economic Co-operation and Development (OECD) region.

Low penetration in less developed countries has been due to unsuitable products, inadequate distribution channels compared to the large target, campaigns poorly targeted and expensive, premiums too expensive, rigid premiums collection system or inadequate, lack of interactive contacts with policyholders, malfunctioning after sales services and religious and cultural barriers (African Insurance Organization 2013) Some of this traits are shared with less developed countries in Asia and Latin America.

Discussed below are the insurance penetration rates and market shares of firms in the selected countries.

2.2 Insurance Development in Developed Countries

It's important to note that, the Group of Seven (G7) alone accounts for almost 65% of the world's insurance premiums even though it covers just over 10% of the world's population. In those seven countries, an average of US$3,910 was spent on insurance premiums per capita in 2012, according to the reinsurer Swiss Re. In comparison, people in emerging markets spent an average of US$120. (KPMG, 2014)

	(US$ billion)	(%)	Capita (US$)
Advanced Asia	936	11.8	4387.5
North America	1,393.40	8.03	3996.3
Western Europe	1,462.70	7072	2716.3
Oceania	97.1	5.6	2660.2
South & Central America	168.7	3	281.9
Central & Eastern Europe	72.5	2.01	223.4
Middle East	40.9	1.35	124
Emerging Asia	369.4	2.96	101.9
Africa	71.9	3.56	66.4
World	**4,612.50**	**6.5**	**655.7**

Sources: Swiss Re, UN Population Division, International Monetary Fund, African Insurance Organisation, NKC Research

The insurance penetration ratio, which is the gross value of insurance premiums as a percentage of GDP, is often used as a measure of how deep a country's insurance market is. From the table above we get to see that developed countries seem to have a high insurance penetration levels compared to developing or underdeveloped countries.

Average insurance penetration in Europe fell slightly from 7.7% in 2011 to 7.6% in 2012. A review of life and non-life business shows that both average penetration rates in Europe decreased in 2012, amounting to 4.5% (4.6% in 2011) and 3.12% (3.14% in 2011) respectively. (Insurance Europe, 2014)

Significant disparities can be seen between European countries when it comes to insurance penetration. Excluding Liechtenstein, the countries with the highest penetration levels are the UK and the Netherlands (around 12.5%). High levels of penetration can also be found in Finland (10.3%) and Switzerland (9.6%). Conversely, Latvia (0.9%), Romania (1.3%) and Turkey (1.4%) are still experiencing low levels of insurance penetration. Slovenia has the highest penetration rate in central and Eastern Europe (5.7%), placing it above Spain and Austria. (Insurance Europe, 2014)

2.2.1 United Kingdom (U.K.)

Speaking of developed countries the UK insurance industry is the largest in Europe and the third largest in the world. It plays an essential part in the UK's economic strength, managing investments of £1.8 trillion. In U.K just under 2/3rds of the market is dominated by Top 10. However, such Top 10 dominance is even more concentrated in other Western Economies/Mature Markets. Despite highly competitive market, most classes show an underwriting profit. (LLYOD)

From the table below the U.K's market share of its top 5 firms by 2012 was 50.96% with its highest firm having a market share of 13%; Standard Life, by total business.

		Total Business Premium (£m)		Market Share	
2013 (2012)		2013	(2012)	2013	2012
1 (1)	Standard Life	11703.03	9677.579	12.6%	12.9%
2 (4)	Lloyds Banking Group	8397.6	7158.744	9.3%	9.5%
3 (2)	Aviva plc	8273.014	9350.834	12.2%	12.5%
4 (5)	Legal & General	6938.995	6867.339	9.0%	9.2%
5 (7)	Aegon NV	6030.364	5252.014	6.9%	7.0%
6 (3)	Prudential	5368.863	8312.888	10.9%	11.1%
7 (6)	Friends Life	4570.512	6044.442	7.9%	8.1%
8 (10)	Royal London Mutual	3765.685	2997.351	3.9%	4.0%
9 (11)	Pension Insurance Corporation (PIC)	3663.501	1512.266	2.0%	2.0%
10 (13)	FIL Ltd	2697.843	1337.438	1.7%	1.8%
11 (8)	Zurich Financial Services	2692.112	4937.359	6.4%	6.6%
12 (9)	Old Mutual	2449.801	3336.92	4.4%	4.5%
13 (18)	Swiss Re	1892.044	1183.414	1.5%	1.6%
14 (14)	Rothesay Life	1670.2	1282.447	1.7%	1.7%
15 (20)	Canada Life	1347.092	944.317	1.2%	1.3%

2.2.2 United States (U.S.)

The U.S. is the biggest market for life insurance in the world and accounts for one-fifth of total premiums written globally. According to the National Association of Insurance Commissioners (U.S Insurance Regulator at the National Level), MetLife is the market leader in terms of direct premiums with a market share close to 10%.

Aflac Group comes is next in the list of life insurers with a market share of 7% followed by Prudential Financial (NYSE:PRU) with 6% market share. Northwestern Mutual and New York Life Group come at number four and five, respectively. John Hancock, the U.S. arm of Canadian insurer Manulife (NYSE:MFC), is seventh in the list of life insurers with a market share of 3.25% while AIG (NYSE:AIG) lies outside the top 10 in 11th spot with 2.21% market share.

2.2.3 South Africa (S.A.)

It's the only country in Africa that can truly be considered to have a well-developed insurance market – both in the life and non-life insurance segments. The country has a

penetration rate of 14.2%, which is among the highest in the world. Despite its high penetration rate, South Africa's insurance industry still has scope for further growth.
The SA non-life market is largely dominated by Motor and Property, which combined account for 79% of the market. The top five insurers represent a 46% share of the market, with Sanlam continuing to dominate the non-life market with 19%.

So far it is to be understood that with greater insurance penetration in a region; a developed country, the market share among its competitors tends to be smaller; leaving each other with relatively less margins, and a larger number of insurance firms dominating the market. This assertion is a tendency portrayed in developed countries such as the ones with high insurance penetration.
Now we start studying the insurance penetration level and market shares of insurance firms in developing and under developed countries, we take look at Africa, Latin America and Asia. (KPMG, 2014)

2.3 Insurance Development in Developing and Under Developed Countries

2.3.1Africa

In Africa we will study Kenya, Namibia and Botswana.

The Size of the African Insurance Industry in 2012

Country	Penetration Rate (%)
South Africa	14.28
Morocco	2.97
Nigeria	0.68
Egypt	0.68
Kenya	3.17
Algeria	0.60
Angola	1.00
Namibia	7.50
Tunisia	1.81
Ghana	2.00
Mauritias	5.78
Botswana	3.17
Tanzania	0.90
Gabon	1.30
Senegal	1.40
Libya	0.21
Zimbabwe	1.70
Rwanda	2.30
Uganda	0.66
Togo	1.09

Sources: Swiss Re, UN Population Division, International Monetary Fund, African Insurance Organisation, NKC Research

According to the reinsurer Swiss Re's global insurance report, total premiums in Africa amounted to US$71.9 billion in 2012, which translates into a penetration rate of 3.65%. As one would expect, this is well below the global average, which is 6.5%, though it is above the average for emerging markets of 2.65%.

As shown in the table, Africa performs better than some regions, including the Middle East, Central & Eastern Europe, and South & Central America. Still, it is notable that Africa's insurance density (the ratio of premiums per capita) is the lowest of any region in the world. On average, each African paid US$66.4 in insurance premiums in 2012, roughly one-tenth of the global average.

2.3.1.1 Namibia

Much like South Africa, a sizable proportion of Namibia's population is wealthy enough to afford insurance. Namibia's insurance industry has also benefited immensely from the country's openness to foreign investment in the sector, which has led to the presence of large South African companies. In turn, this has provided the foundation for a competitive and efficient industry. (KPMG, 2014)

Namibia's life insurance market is the fourth largest in Africa after South Africa, Morocco and Egypt, even though its population is among the smallest on the continent.

At the end of 2012, the short-term insurance market consisted of 12 insurance companies and one reinsurer, while the long-term insurance market consisted of 16 insurers and one re-insurer. However, the market is highly concentrated with the top five companies accounting for the vast majority of premiums. The life segment is highly concentrated, with the top five companies accounting for 87% of the overall net written premium in 2010. (KPMG, 2014)

2.3.1.2 Botswana

Although small in absolute terms, Botswana's insurance market is one of the most developed in Africa. The country has a penetration rate of 3.2%. In 2012, the market consisted of two reinsurers, 12 general (non-life) insurance companies, seven life insurance companies, and 42 insurance brokers, according to the Non-bank Financial Institutions Regulatory Authority (NBFIRA). (KPMG, 2014)

The life insurance market is fairly concentrated, with two companies accounting for 91.3% of total assets in the 2011/12 financial year. The largest is Botswana Insurance Fund Management (BIFM), while the second largest is Botswana Life.

Both these companies are subsidiaries of Botswana Insurance Holdings Limited, which in turn is 54% owned by South Africa's Sanlam. Although the largest by assets, BIFM is more of an asset management firm and is not a big player in terms of providing life insurance, accounting for only 0.1% of written premiums according to the NBFIRA. In that respect, Botswana Life dominates the market, accounting for 82.3% of life insurance premiums in 2011/12.

The other five life insurers are also South African owned companies, namely Metropolitan (which accounts for 5.2% of premiums), ABSA Life (4.5%), Momentum (3.2%), Regent Life (3.2%), and Liberty Life (1.5%). (KPMG, 2014)

2.3.1.3 Kenya

The Insurance industry in Kenya has 45 players in total, 22 in general/short-term insurance, 9 in life insurance and 14 composite companies. The short-term insurance space is fragmented with the top 5 companies controlling 60% of the market (single largest market share of 10.98% held by Jubilee Insurance). However, the life market is concentrated as the top 5 companies account for 70% of premiums.

2.3.2 Asia

2.3.2.1 China

China's insurance industry is highly concentrated in the top three largest players in both life and non-life sectors (the top three largest players accounted to 54% market share in life and 65% for non-life).

Foreign insurers have negligible market shares, which are increasing, but very slowly.

It has a low insurance penetration standing at 2.96% end of 2012, compared with 6% to 12% in developed markets around the world.

This indicates the relatively small size and spread of the insurance industry in the Chinese economy. Looking deeper, life insurance penetration rate was 1.7% and non-life only 1.3% having in mind that China is the world's second largest economy with an average 10% GDP growth over the last 30 years. (Overview of Asian Insurance Markets, 2012)

2.3.2.2 Other Asian Countries

Chinese's similar scenario is replicated in the other Asian countries such as Malaysia (3.2%), Thailand (2.5%), Vietnam (0.6%), Indonesia (0.7%), but with Philippines being dominated by foreign insurance firms with Indonesia and Vietnam being led by one foreign insurance firm. The data to support this is found in (2012). Overview of Asian Insurance Markets. Hong-Kong. (Overview of Asian Insurance Markets, 2012)

2.3.3 Latin America

The Latin American region presents rich growth potential in 2014, particularly for companies that pursue specific market niches. Overall, insurance penetration rates still remain low in many Latin American countries, particularly on the life insurance side despite continuing economic growth and reduced poverty levels. It deemed to have the fastest growing insurance market in the world in the next 5 years, with Brazil and Mexico accounting for 66% of the region's premium in as much as having the lowest insurance penetration of all the world regions (2.8% of GDP). In fact, Chile shows the highest penetration rates in the region. (Pietro Masci, L. T. ,2007.)

2.3.3.1 Mexico

Although Mexico is the second-largest country in the region, insurance penetration is relatively low, with non-life insurance accounting for US$8.6 billion in written premiums, according to the Comisión Nacional de Seguros y Fianzas (CNSF).

This represents approximately 0.8% of GDP, lower than that of other Latin American markets. The region has higher level of competition with top 5 insurance firms representing 44% of the market share. (Pietro Masci, L. T. ,2007.)

2.3.3.2 Brazil

Brazil is the largest and most populated country in Latin America, and the fifth largest in the world by size and population. Brazil's non-life market (US$24 billion) accounts for over half of the total gross written premium in the region, although the premium as a percentage of GDP is still very small, indicating that its insurance market is still relatively underdeveloped. Brazil's non-life market has been growing steadily over the last several years because of economic reforms introduced by the government, deregulation, and the opening of the market to foreign insurers and reinsurers. Penetration has been slow to grow.

2.3.3.3 Argentina

The Argentina insurance market is the 24th largest in the world with 0.49 percent of global non-life premiums, and the fourth largest in Latin America after Brazil, Mexico and Venezuela. Total premium to GDP stood at 2.8 percent in 2010, with 0.5 percent for the life insurance and 2.2 percent for non-life insurance segments.

Argentina's insurance market is fragmented, comprising 100 active non-life companies, including 17 specialist workers' compensation insurers and several small niche players. Many of the multinational insurance groups are present in the market, with about 40 percent of the non-life premiums, with its top 5 insurance firms dominating the insurance market with a percentage of more than 50.

From the above data it's to notice that in us much as insurance penetration is low in most developed and underdeveloped countries, market shares of firms ironically maintain a very high market share among themselves into scenarios where one insurance firm in Botswana having a market share of 87%.

Chapter 3. Research Methodology

3.1 Hypothesis

If there exists a relationship in insurance penetration level and density in developing, developed and underdeveloped countries.

3.2 Research Design

This study will adopt a descriptive research design. Descriptive research design was chosen because it enabled the study to generalize the findings to a larger population.
The study will carry out a hypothesis test since the study is trying to understand the relationship between the phenomena. The usual measure of a relationship is correlation coefficient. I will determine the correlation coefficient, and also carry out a hypothesis test to show that the significance of the coefficient is not due to sampling. This will then give me the green card to go on with carrying out a simple linear regression.

I will first define the characteristics of my phenomena; that being insurance penetration and the market share in developing, developed and under developed countries. After which I will then do a comparison between the two phenomena in order to get an answer to my hypothesis, then after find the reasons as to why the hypothesis holds or not.

3.3 Population

The target population for this study consisted of Advanced Asia, North America, Western Europe, Oceania, South & Central America, Central & Eastern Europe, Middle East and Emerging Asia. The same population targeted by Insurance scholars such as Outreville (1996), Beck and Webb (2002) and Jordan Kjosevski (2012).

3.4 Sample Size and Sampling Technique

Following the large number of developed, developing and underdeveloped countries, the study will include 9 low income countries, 16 Lower Middle Income countries, 25 Upper Middle Income countries and 33 Higher Income OECD countries.

3.5 Research Instruments

The study mostly collected secondary data. Secondary data were obtained from published documents and materials and any other relevant materials like the organizations' annual reports.

It also includes yearly analysis by Insurance Regulatory bodies in each country under study.

3.6 Data Collection Procedure

Data collection involved downloading financial reports of insurance firms mostly those in Kenyan, regulatory bodies' reports on insurance performance in the regions under study in each country and insurance reports of insurance firms in countries under study. Life insurance penetration and life insurance density are obtained from Sigma, Swiss Re Economic Research & Consulting, Swiss Re, Zurich and national insurance associations.

3.7 Data Analysis and Presentation

The study will generate both qualitative and quantitative data. Descriptive statistics data analysis method will be applied to analyze both quantitative data with the help of Microsoft Excel and R software. Descriptive statistics will help to compute measures of central tendencies and measures of variability (Bell, 2007). Descriptive analyses are important since they provide the foundation upon which correlational and experimental studies emerge; they also provide clues regarding the issues that should be focused on leading to further studies (Mugenda & Mugenda, 2003).

Qualitative data will be analyzed using content analysis. The analyzed findings will then be presented inform of frequency tables, pie charts and bar charts since they are user friendly.

Following similar approach used by Beck and Webb (2003), I will use two measures as a demand for life insurance: life insurance penetration and life insurance density.

- From the definition of insurance penetration above critical analysis through its definition showed that it's not a perfect measure of consumption since it is the product of price and quantity. A higher premium volume ends up reflecting a

higher quantity; a higher price. Hence lack of completion and costly regulations might increase the price of insurance without implying a higher level of insurance consumption.

- The second indicator of insurance consumption is insurance density. An indicator of how much each person in a country spends on average on insurance in real dollars. Those who purchase insurance policies insuring their dependents against mortality risk will eventually buy more hence a higher face value in developed countries, as the death benefit will have to replace a higher income. (Jordan Kjosevski, 2012)

From the above stated hypothesis I construct two separate panel data regression models. The models are different since life insurance demand is represented by two different dependent variables: Insurance penetration and insurance density. This approach is also used by Jordan Kjosevski. The specifications of the underlying models will be as:

Model 1

$$Y_{(\text{insurance penetration})} = \beta_0 + \beta_1 X_1$$

Model 2

$$Y_{(\text{insurance density})} = \beta_0 + \beta_1 X_1$$

The study will conduct a simple linear regression analysis so as to assess whether insurance penetration is affected by market shares of firms in the countries under study. The study will apply simple linear regression analysis because it has one explanatory variable, (Acted CT3) which with reference to my study would be the market shares, hence a suitable method for qualitative research.

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (insurance penetration) and (insurance density) that is explained by the independent variable (market share).

From the regression findings, the substitution of the equation $Y = \beta_0 + \beta_1 X_1$. Where Y is the dependent variable (insurance penetration) and (insurance density), X_1 is market share, β_1 will show that a unit increase in market share will lead to a β_1 increase in insurance penetration. This will be done for developed, developing and under developed countries.

There will also be need to get the R^2 in order to understand how the variables that were studied, explain the variance in insurance penetration as represented. This is so as to ascertain the importance of studying other factors

Chapter 4. Empirical Results

The models used in this study have been introduced at the end of previous chapter. In this section, we present original results and interpretations concerning both of the observed models. The data required for the study was easily made available by the World Bank and insurance regulatory authorities in the selected regions. The method of analysis used was multiple linear regression, this method suited the study because it involved studying several insurance determinants against insurance penetration and density, and it is a highly recommended approach that was used by scholars in previous studies like Yaari (1965), Lewis (1989), Beck and Webb (2002).

4.1 Life Insurance Penetration

4.1.1 High Income Countries

The R squared shows that the independent variables have a significant effect of 82% to insurance penetration.

The significance of F being lesser than 0.05 indicates the model reveals a statistically significant relationship between Insurance penetration and density and its determinants; outlined above, it implies that the means differ more than they would be expected by chance alone.

The results in this Table 7 shows that the variation of life insurance penetration across countries significantly and positively depends on Government Effectiveness, control of corruption, Voice and Accountability, Voice and Accountability and Old dependency Ratio. These five variables show significant coefficients. Whereas the results for GDP, Real Interest Rate, Young Dependency Ratio, Rule of Law , Education Index and Regulatory Control are less robust.

Contrary to most previous studies, real interest rates are found to be an insignificant factor in affecting the insurance penetration in High income countries; hence we conclude that an increase in current interest rate and real interest rate or price situation does have a -0.11984995 effect on insurance penetration.

The results underline the importance of a high level of institutional quality for insurance consumption. The coefficient on average years of schooling indicates that the rise in average years of schooling by a year decreases insurance penetration by 5.42949 percentage points. The assumption being the more educated people become in high income countries the more aware they become about alternative forms of risk transfer other than insurance as they can transfer this risks to the financial markets.

Contrary to low and middle income countries the relationship between old dependency ratio and insurance demand is surprising in high income countries since they are more aware about the need of insurance compared to the young which has coefficient of 0.

The results of our three indicators of institutional quality (Regulatory Quality and Rule of Law) are insignificant and have a negative sign. This can be interpreted as lack of evidence that these supply side determinants are important.

4.1.2 Upper Middle Income

The R squared shows that the independent variables have a significant effect of 57% to insurance penetration.

The significance of F being less than 0.05 indicates the model reveals a statistically significant relationship between Insurance penetration and density and its determinants; outlined above, it implies that the means differ more than they would be expected by chance alone.

The results in Table 5 shows that the variation of life insurance penetration across countries significantly and positively depends on Government Effectiveness, Rule of Law, Voice and Accountability, Education Index, Inflation and Young dependency Ratio. These six variables show significant coefficients. Whereas the results for GDP, Real Interest Rate, Old Dependency Ratio, control of corruption, voice and Accountability, Political Stability and Regulatory Control are less robust.

Contrary to most previous studies, real interest rates are found to be an insignificant factor in affecting the insurance penetration in upper middle income countries, hence we

conclude that an increase in current interest rate and real interest rate or price situation does have a -0.0668 effect on insurance penetration.

The results underline the importance of a high level of institutional quality for insurance consumption. The coefficient on average years of schooling indicates that the rise in average years of schooling by a year improves insurance penetration by 1.41709 percentage points.

The relationship between young dependency ratio and insurance demand is not surprising in upper middle income countries since they are more aware about the need of insurance compared to the old which has a negative coefficient of 0.084 who in upper middle income countries have little awareness of insurance penetration.

The results of our three indicators of institutional quality (Regulatory Quality, Control of Corruption and Political Stability and Violence) are insignificant and have a negative sign. This can be interpreted as lack of evidence that these supply side determinants are important.

4.1.3 Lower Middle Income

The R squared shows that the independent variables have a significant effect of 85% to insurance penetration.

The significance of F being lesser than 0.05 indicates the model reveals a statistically significant relationship between Insurance penetration and density and its determinants; outlined above, it implies that the means differ more than they would be expected by chance alone.

The results in Table 4 shows that the variation of life insurance penetration across countries significantly and positively depends on GDP, Inflation, real Interest Rate and Education Index. These four variables show significant coefficients. Whereas the results for young dependency ratio, old dependency ratio, rule of law, control of corruption, voice and Accountability, Political Stability, Regulatory Control and government effectiveness are less robust.

As suggested in the previous studies, GDP per capita has a positive and significant influence on insurance penetration. The results suggest that a unit increase in GDP per capita is associated with an increase of about 1.49 percentage points in insurance penetration. The results are consistent with the models of Campbell (1980) and Lewis (1989). Truett and Truett (1990), Browne and Kim (1993), Outreville (1996), and Beck and Webb (2002) obtain similar coefficients.

Similar to most previous studies, real interest rates are found to be a significant factor in affecting the insurance penetration in low middle income countries, hence we conclude that current interest rate and real interest rate or price situation does affect in insurance penetration.

The results underline the importance of a high level of education for insurance consumption. The coefficient on average years of schooling indicates that the rise in average years of schooling by a year improves life insurance penetration by 0.1667 percentage points.

The relationship between young dependency ratio and insurance demand is not surprising in low middle income countries since they are more aware about the need of insurance compared to the old which has a coefficient of 0 who in low income countries have little awareness of insurance penetration.

The results of our five indicators of institutional quality are insignificant and have a negative sign. This can be interpreted as lack of evidence that these supply side determinants are important.

4.2 Life Insurance Density

4.2.1 High Income Countries

The R squared shows that the independent variables have a significant effect of 86% to insurance density.

The significance of F being lesser than 0.05 indicates model reveals a statistically significant relationship between Insurance penetration and density and its determinants;

outlined above, it implies that the means differ more than they would be expected by chance alone.

The results in Table 7 show that the variation of insurance density across countries significantly and positively depends on Control of Corruption, Education Index, Regulatory Quality, Voice and Accountability and GDP. These five variables show significant coefficients. Whereas the results for Real interest rate, Unemployment Index, Rule of Law, Inflation, Education Index and Rule of Law are less robust

The indicators of institutional quality prove to be of great importance in influencing the insurance density, only Rule of Law is negatively correlated and insignificant, with the rest of the economic factors.

Contrary to most previous studies done by (Kjosevski, 2012) the coefficient on the GDP rate is insignificant in all specifications and 1% increase in GDP rate would increase life insurance density by 0.04973352 percentage points.

4.2.2 Upper Middle Income

The R squared shows that the independent variables have a significant effect of 64% to insurance density.

The significance of F being lesser than 0.05 indicates the model reveals a statistically significant relationship between Insurance penetration and density and its determinants; outlined above, it implies that the means differ more than they would be expected by chance alone.

The results in Table 6 shows that the variation of insurance density across countries significantly and positively depends on Government effectiveness, Education Index, Rule of Law ,Voice and accountability, unemployment Index, and Inflation. These six variables show significant coefficients. Whereas the results for GDP, Political Stability and Violence, Real interest rate, old dependency ratio, Control of Corruption and Regulatory Quality are less robust. These observations are similar to observations made from insurance penetration.

The indicators of institutional quality prove to be of great importance in influencing the insurance density, only Control of Corruption, Political Stability and Violence and regulatory standards are negatively correlated and insignificant.

Contrary to most previous studies the coefficient on the GDP rate is insignificant in all specifications. So 1% increase in inflation rate would increase life insurance density by 8.12659 percentage points.

4.2.3 Lower Middle Income

The R squared shows that the independent variables have a significant effect of 97% to insurance density.

The significance of F being lesser than 0.05 indicates the model reveals a statistically significant relationship between Insurance penetration and density and its determinants; outlined above, it implies that the means differ more than they would be expected by chance alone.

The results in Table 3 shows that the variation of insurance density across countries significantly and positively depends on Government effectiveness, Control of Corruption, Voice and accountability, unemployment Index, Real interest rate and Inflation. These six variables show significant coefficients. Whereas the results for GDP, Political Stability and Violence, young dependency ratio, Education Index, Regulatory Quality and Rule of Law are less robust. These observations are totally contrasting observations made from insurance penetration.

The indicators of institutional quality prove to be of great importance in influencing the insurance density, only rule of law and regulatory standards are negatively correlated and insignificant.

Contrary to most previous studies the coefficient on the GDP rate is significantly negative in all specifications. So 1% increase in inflation rate would reduce life insurance density by 0.005 percentage points.

4.3 Low Income Countries Analysis

Looking at the R^2s in Table 2 they are all insignificantly low to affect both the insurance penetration and density of low income countries contrary to the rest of the world.

Looking at the Significance of F they are greater than the critical value 0.05 hence the effects are found to be of no significant, then the differences between the means are not great enough to allow the researcher to say that they are different. In that case, no further interpretation is attempted.

4.4 Conclusion

In this paper we have analyzed the determinants of life insurance demand in panel of 10 Low Income Countries, 16 Lower Middle Income Countries, 25 Upper Middle Income Countries, 33 Higher Income OECD and non OECD Countries during the period 2000 - 2012, using two indicators of life insurance demand, life insurance penetration and life insurance density.

The results were able to show that there was relationship between the variables and insurance penetration and density as brought forward from the research objectives, with reasons for this relationships explained below.

Consistent with previous research done by Yaari (1989), we find that life insurance penetration and life insurance density increase with higher per-capita income, especially in low middle income countries. The results indicate that, increase in per-capita income level have the robustly impacted the life insurance demand. As overall income level and the share of middle class rises, we can expect demand for life insurance to rise too.

The results also imply that real interest rates do not have robust link on life insurance density. Inflation appears to have negative influence on life insurance demand, which is widely supported by previous researchers. Therefore, macroeconomic stability plays an important role in the development of life insurance market.

From the demographic factors we find that higher level of education lead to a higher life insurance penetration and higher life insurance density. This finding suggests a need for elevating the education level of population. It would be useful to enhance the

understanding of financial products presented on the market and possible benefits from using them by potential consumers. But also bearing in mind countries where there is higher education standards showed low insurance penetration with the assumption that these individuals would be sourcing alternative risk transfer methods in the financial markets.

Contrary to previous studies the results from institutional factors underline the importance of Government effectiveness in life insurance penetration and density; more so in middle income countries and high income countries with low income countries mostly are influenced by the GDP. Therefore, it is worth noticing that government efficiency and policies set will facilitate the demand of life insurance policies.

An analysis on the low income countries has indicated inverse results as compared with the rest of the world a case in hand is where institutional factors greatly affect the insurance penetration and density in middle income countries and high income countries whilst in lower middle income countries economic factors have a greater effect on the insurance penetration and density.

From the analysis of low income countries which showed that most of these factors bear no great influence on insurance penetration and density of these countries. A closer look as to why it is so we got to find out that most of the insurance firms in low income countries are a hand full to the case of Zimbabwe that has only one life insurance company that controls the whole market and most of which are set up and controlled by the government. Hence may not be affected by the factors under study since the government would alter policies so as to keep the firms running if need be.

Also the institutional factors have been seen to have a greater effect to insurance density as compared to the insurance penetration.

In the future research when more data becomes available, it would be useful to take a much bigger sample in terms of countries and periods this would lead to a greater understanding and knowledge of determinants of insurance demand especially in low income countries but looking at a different angle like the determinants of financial performance of insurance companies. To better understand other factors that affect

insurance penetration and density in low income countries. This will take care of the limitations of the study such us fewer number of low income countries studied, the assumption that the variables affecting the insurance penetration and density in each country are the same.

Chapter 5. Appendices

Table 1: Determinants of Insurance Penetration and Density

	Key
GDP Per Capita	GDP
Inflation	INFL
Real Interest	RealInt
Education Index	EduIndx
Unemployment Index	UnplyIndx
Age dependency ratio	ADR
Age dependency ratio, young	ADR,Young
Age dependency ratio, old	ADR,Old
Voice and Accountability	VnA
Political Stability No Violence	PSNV
Government Effectiveness	GE
Regulatory Quality	RQ
Control of Corruption	CoC
Rule of Law	RoL

Table 2; Low Income Analysis

	Penetration		**Density**	
	R Squared	*Significance F*	R^2	*P- Value*
GDP	0.0017	0.9157	0.0112	0.7867
INFL	0.0686	0.4960	0.1082	0.3874
RealInt	0.0022	0.9054	0.0143	0.7592
EduIndx	0.0133	0.7674	0.0023	0.9024
UnplyIndx	0.1331	0.3343	0.1470	0.3083
ADR	0.0091	0.8070	0.0011	0.9320
ADR,Young	0.0163	0.7438	0.0043	0.8667
ADR,Old	0.1438	0.3141	0.1111	0.3807
VnA	0.2642	0.1569	0.2296	0.1918
PSNV	0.3439	0.0970	0.3483	0.0943
GE	0.0792	0.4633	0.0629	0.5152
RQ	0.0184	0.7282	0.0097	0.8014
CoC	0.0248	0.6858	0.0227	0.6990
RoL	0.0124	0.7758	0.0029	0.8899

Table 4; Lower Middle Income Penetration Analysis

	Coefficients
Intercept	4.678912822
GDP	1.490091126
INFL	1.203594787
RealInt	0.403668123
EduIndx	0.166783266
UnplyIndx	0.098220598
ADR	0.046778853
ADR,Young	0.025772731
ADR,Old	0
VnA	-9.88293E-06
PSNV	-0.09053981
GE	-0.214924869
RQ	-1.534622995
CoC	-3.324942917
RoL	-3.399638283

Table 3; Lower Middle Income Density Analysis

	Coefficients
GE	266.0833789
CoC	193.9113569
VnA	55.50647239
UnplyIndx	15.32732953
RealInt	6.534812129
ADR	4.773371089
INFL	3.848570777
ADR,Old	0
GDP	-0.005042704
PSNV	-3.523340355
ADR,Young	-6.313568289
EduIndx	-32.40692751
Intercept	-51.03374868
RQ	-216.9273574
RoL	-302.700383

Table 5; Upper Middle Income Penetration Analysis

	Coefficients
GE	4.775314247
RoL	4.295191453
VnA	2.643047199
EduIndx	1.417099623
UnplyIndx	0.148858593
INFL	0.126871357
ADR,Young	0.054525773
ADR	0
GDP	-1.03658E-05
RealInt	-0.066885507
ADR,Old	-0.084060037
PSNV	-0.997582993
Intercept	-1.199880807
RQ	-2.110549733
CoC	-5.829229996

Table 6; Upper Middle Income Density Analysis

	Coefficients
GE	402.9007144
EduIndx	379.7913522
RoL	285.1159485
VnA	166.7634901
UnplyIndx	10.22527533
INFL	8.126596471
ADR,Young	2.770832195
GDP	0.023839677
ADR	0
RealInt	-2.139039069
ADR,Old	-9.634783203
PSNV	-45.3856161
RQ	-153.5274214
Intercept	-362.7462129
CoC	-443.1913652

Table 7; High Income Analysis

Penetration	Coefficients
CoC	2.235020321
Intercept	1.204485932
GE	1.020445633
VnA	0.667063191
PSNV	0.606264382
ADR	0.128688425
ADR,Old	0.066938694
GDP	1.35893E-05
ADR,Young	0
UnplyIndx	-0.025773002
INFL	-0.103991231
RealInt	-0.11984995
RQ	-0.938593144
RoL	-1.768605158
EduIndx	-5.429493956

Density	Coefficients
CoC	1088.714069
RQ	766.1276087
PSNV	606.7362563
ADR	102.1971653
VnA	100.6732364
GDP	0.049733502
ADR,Young	0
ADR,Old	-0.548185983
UnplyIndx	-1.886854724
GE	-20.4492533
RealInt	-40.70373389
INFL	-58.63530155
EduIndx	-236.1972876
RoL	-1709.152593
Intercept	-4491.924947

Chapter 6. Bibliography

(2013). *2013 Global Insurance Outlook.* Global Insurance.

(2014). *2014 Kpmg South Africa Insurance Survey.* Kpmg.

Bank, S. I. (2013). *Kenya Insurance Sector, Initiation Of Coverage.* Nairobi.

Beck, T. &. (2002). Economic, Demographic, And Institutional Determinants Of Life Insurance Consumption Across Countries. *World Bank Economic Review, 17*, 51-88.

Beck, T. &. (2003). Determinants Of Life Insurance Consumption Across Countries. *World Bank And International Insurance Foundation.*

Bell, C. (2007). Using Spss. *Journal Of Statistics, 22(1)*, Pp.13-19 .

Capital, S. (2014). *Kenya's Insurance Sector Update.* Nairobi.

(24 June 2014). *China's Insurance Market Overview.* Dagong Europe.

(October 2014). *Class Review South Africa.* Lloyds.

(2013). *Europe, Middle East And Africa (Emea).* Marsh Risk Management Research.

(2014). *European Insurance In Figures.* Insurance Europe.

Fund, I. M. (2012). *Mexico: Detailed Assessment Of Observance Of International Association Of Insurance* . Washington, D.C.: International Monetary Fund Publication Services.

German Insurance Association. (2013). *The Positions Of German Insurers, 2013.* Berlin: German Insurance Association.

(2014). *Insurance In Africa.* Kpmg.

(2013). *Insurance Industry Analysis.* Pricewaterhousecoopers.

Insurers, T. A. (2013). *Insurance Industry Annual Report.* Nairobi.

Kiragu, S. M. (2014). Assessment Of Challenges Facing Insurance Companies In Building Competitive Advantage In Kenya: A Survey Of Insurance Firms. *International Journal Of Social Sciences And Entrepreneurship*, Vol.1, Issue 11,.

Kjosevski, J. (2012). The Determinants Of Life Insurance Demand In Central And Southeastern Europe. *International Journal Of Economics And Finance*, Vol. 4, No. 3.

Lewis, F. D. (1989). Dependents And The Demand For Life Insurance. . *American Economic Review 79*, 452-466.

Mugenda, O. M. (2003). *Research Methods: Quantitative And Qualitative Approaches.* Act Press.: Nairobi, Kenya.

Nagy, C. M. (N.D.). *The Development Level Of Insurance Markets In The Eu.* Romania.

(2013). *National Association Of Insurance Commissioners Life And Fraternal Insurance Industry.* National Association Of Insurance Commissioners.

Nyala Insurance Company. (2015, March 8). *Home.* Retrieved October 12, 2015, From Www.Nyalainsurancesc.Com/: Http://Www.Nyalainsurancesc.Com/Backup-Oldwebsite-8-3-2015/Index.Php/Component/Content/Article/8-News/63-News10

(2012). *Overview Of Asian Insurance Markets.* Hong-Kong.

Pietro Masci, L. T. (2007). *Insurance Market Development.* Washington, D. C.: Ifm Publications.

Society Of Actuaries. (February/March 2014). The U.K Insuransce Market. *The Actuary Magazine*, Volume 11, Issue 1.

(N.D.). *The Insurance Industry In Namibia, Key Trends And Opportunities To 2016.*

(2014). *The Italian Insurance Market.* Pricewaterhousecoopers.

(N.D.). *U.K. Market Presentation.* Llyod.

(2014). *Uk Insurance Key Facts.* Association Of British Insurers.

Ward, D. &. (2002). Law, Politics And Life Insurance Consumption In Asia. *Geneva Papers On Risk And Insurance, 27*, 395-412.

World Bank. (2004, June 28). Retrieved From Openknowledge.Worldbank.Org: Https://Openknowledge.Worldbank.Org/Bitstream/Handle/10986/8300/33440.Txt?Sequence=2

Yaari, M. (1965). Uncertain Lifetime, Life Insurance, And The Theory Of The Consumer. . *Review Of Economic Studies, 32*, 137-150.