

FACTORS AFFECTING PROFITABILITY OF INSURANCE COMPANIES IN ETHIOPIA: PANEL EVIDENCE

Mengistu Tegegn

Nib International Bank, Ethiopia

Leta Sera

Jimma University, Ethiopia

Tesfaye Melaku Merra

Jimma University, Ethiopia

Abstract

Profitability is one of the most important objectives of financial management because one goal of financial management is to maximize the owner's wealth. This paper examined the effects of firm specific factors (age of company, size of company, leverage ratio, premium growth rate liquidity ratio and tangibility of assets) on profitability proxied by ROA. Profitability is dependent variable while age of company, size of company, premium growth rate, leverage liquidity ratio and tangibility of assets are independent variables. The sample in this study includes nine of the listed insurance companies for twelve years (2005-2016). Secondary data obtained from the financial statements (Balance sheet and Profit/Loss account) of insurance companies, financial publications of NBE are analyzed. Panel data analyzed using Random Effect Model (FEM) after testing the appropriateness of the model with Fixed Effect and Pooled regression model. From the regression results; size, premium growth rate and liquidity and age are identified as most important determinant factors of profitability hence premium growth rate and size, are positively related. In contrast liquidity and age negatively but significantly related with profitability. Lastly, leverage and tangibility of asset are not significantly related with profitability.

Keywords: ROA, profitability, insurance, regression, panel,

1. Introduction

The concept of insurance particularly the “social insurance program” dealing with socio-economic problems has been around Ethiopia for a long time. Members of a community pooled together resources to create a “social insurance fund”. The “premiums” ranged from material to moral support or other payments in kind. From the fund, “drawings were made out” to support the few unfortunate members exposed to perils. Here more the insurance in its basic essence meant the social investments in which the families in the single village used to prepare drinks, and invite other families in the village which could join hands on grass cultivations and diggings for that particular's farm till the end, this process continued for the whole village and the ones who did not participate, were abandoned and could not get the assistance when the matter comes to them on grass farming. However, the history of the modern development of commercial insurance in Ethiopia is closely related to the historical Emperor Menelik II and a representative of the British owned National Bank of Egypt to open a new bank in Ethiopia. Insurance provides protection by compensating financial loss that arises from fortuities. The loss must be measurable in monetary value. The insurer deals with thousands of insured party a

The history of Insurance service is as far back as modern form of banking service in Ethiopia which was introduced in 1905. At the time, an agreement was reached between Emperor Menelik II and a representative of the British owned National Bank of Egypt to open a new bank in Ethiopia. Similarly, modern insurance service, which were introduced in Ethiopia by foreigners, mark out their origin as far back as 1905 when the bank of Abyssinia began to

transact fire and marine insurance as an agent of a foreign insurance company. According to a survey made in 1954, there were nine insurance companies that were providing insurance service in the country.

After the change in the political environment in 1991, the proclamation for the licensing and supervision of insurance business heralded the beginning of a new era. Immediately after the enactment of the proclamation in the 1994, private insurance companies began to increase. Currently, there are 17 insurance companies in operation. Both public owned (1) and private (16) insurance companies which are operating as on December, 2016 throughout the country are listed in the following table 1.1

Table 1.1 Lists of Insurance Companies Operating in Ethiopia as on 2016

S/N	Name	Type	Establishment Year
1	Ethiopian Insurance Corporation	GENERAL	01/01/1975
2	National Insurance Company Of Ethiopia S.C	GENERAL	23/09/1994
3	Awash Insurance Company S.C	GENERAL	01/10/1994
4	Africa Insurance Company S.C	GENERAL	01/12/1994
5	Nyala Insurance Company S.C	GENERAL	06/01/1995
6	Nile Insurance Company S.C	GENERAL	11/04/1995
7	Global Insurance Company S.C	GENERAL	11/01/1997
8	The United Insurance S.C	GENERAL	01/04/1997
9	Nib Insurance Company S.C	GENERAL	11/04/2002
10	Lion Insurance Company S.C	GENERAL	01/07/2007
11	Ethio-Life And General Insurance S.C	GENERAL	23/10/2008
12	Oromia Insurance Company S.C	GENERAL	26/01/2009
13	Abay Insurance Company S.C	GENERAL	26/07/2010
14	Berhan Insurance Company S.C	GENERAL	24/05/2011
15	Tsehay Insurance S.C	GENERAL	28/03/2012
16	Lucy Insurance S.C	GENERAL	28/03/2012
17	Bunna Insurance S.C	GENERAL	21/05/2013

Source: <http://www.nbe.gov.et/financial/insurer.htm> accessed Dec 1, 2016

Profitability is one of the most important objectives of financial management. One goal of financial management is to maximize the owner's wealth and profitability which is very important determinants of performance. Measuring the performance of financial institutions has gained the relevance in the corporate finance literature because as intermediaries, these companies in the sector are not only providing the mechanism of saving money and transferring risk but also helps to channel funds in an appropriate way from surplus economic units to deficit economic units so as to support the investment activities in the economy. The insurance industry has an important role to resistant and keeps an economic system to have a successful operation of the industry by setting energy for other industries and development of an economy. To do so the insurance industry is expected to be financially solvent and strong through being profitable in operation. Hence, not only measuring the financial performance of insurance companies but also to have a clear insight about factors affecting financial performance in the industry which, is the main problem to be investigated. Therefore, the determinants of insurance company's performance have attracted the interest of various academicians, practitioners and institutional supervisors.

The profitability of insurance companies in Ethiopia has been fluctuating over time since their establishment. In developing countries, only smaller group of studies examined financial performance of insurance companies; hence there is a need for such studies in insurance sector in developing countries. This is because identifying the factors of financial performance help to avoid losses (Malik, 2011). Moreover, as noted in NBE (2016/17) annual report low contribution of the sector to Gross Domestic Product (GDP) despite the increasing contribution of the service

sector to GDP is also another indicator of low performance of the sector. Some of internal factors that affecting profitability in insurance sector are age of company, leverage, size of company, Growth rate, volume of capital, and liquidity growth rate according to some studies (Camelia, 2011; Hifza, 2011). However, others scholars also arguing that there are external factors which affecting profitability like GDP, inflation and interest rate in a given country at a national (Riaz & Mehar, 2013) and Fadzlan & Chong 2008). Chen-Ying Lee (2014) measured insurance company profitability by using operating ratio and return on assets (ROA) for the two kinds of profitability indicators to measure insurer's profitability while others also used the combination of ROA and ROE as indicator of profitability.

Various researchers from both developed and developing countries have showed an interest to do study on the profitability of banking sector rather than to investigate the financial performance of insurance industries. Hence, this results insufficient literatures availability in the study area. In Ethiopia concerning, determinants of insurance company's profitability is the one which motivates the researcher to analyzed and investigate what factors significantly affecting the financial performance of insurance companies in Ethiopia. Therefore, to achieve the intended objective of the study, the paper has included premium growth rate as an explanatory variable in addition to other studies which has been reviewed in this study. This study has expected that, the profitability of insurance companies in Ethiopia is being affected by internal factors like: age of company, size of company, Premium growth rate, leverage ratio, liquidity ratio, and tangibility of assets. The main objective of the study is that to identify the major determinants of profitability of Ethiopian insurance companies for the period 2005 to 2016.

2. Empirical Literature Review

The insurance companies of Ethiopia perform a wide range of activities such as service designing, preparing contract and policy, marketing and selling, underwriting, rating, reinsurance and other services and claim settlement. The governments owned insurance companies Ethiopian Insurance Corporation they get all the government insurance business.

According to the rule, all insurance need in the government sector is done through these nationalized insurance companies, so it enjoys a monopoly. None of the private insurance companies are allowed to offer insurance services to government organizations. Furthermore, this corporation is also allowed to underwrite private businesses, and people feel confident about its reliability. So they have not yet felt any strong need to practice marketing properly, and usually they have reported annually profits over the years.

The insurance industry forms an integral part of the global financial market, with insurance companies being significant institutional investors. In recent decades, the insurance sector, like other financial services, has grown in economic importance. This growth can be attributed to a number of factors including, but not exclusively: Rising income and demand for insurance, Rising insurance sector employment, and increasing financial intermediary services for policyholders, particularly in the pension business (Ward and Zurbrugg, 2002). Expanding on the link between GDP and insurance market development, it must be remembered that the insurance industry's primary function is to supply individuals and businesses with coverage against specified contingencies, by redistributing losses among the pool of policyholders. Insurance companies, therefore, engage in underwriting, managing, and financing risks. The importance of insurance in modern economies is unquestioned and has been recognized for centuries. But insurance also serves a broad public interest far beyond its role in business affairs and its protection of a large part of the country's wealth. It is the essential means by which the disaster to an individual is shared by many, the disaster to a community shared by other communities; great catastrophes are thereby lessened, and, it may be, repaired. Insurance is an essential element in the operation of sophisticated national economies throughout the world today. Without insurance coverage, the private commercial sector would be unable to function (Peter R. Haiss and KjellSumegi (2008).

Insurance enables businesses to operate in a cost-effective manner by providing risk transfer mechanisms whereby risks associated with business activities are assumed by third parties. It allows businesses to take on credit that otherwise would be unavailable from banks and other credit-providers fearful of losing their capital without such protection, and it provides protection against the business risks of expanding into unfamiliar territory – new locations, products or services – which is critical for encouraging risk taking and creating

and ensuring economic growth (Ward and Zurbrugg, 2002). Beyond the commercial world, insurance is vital to individuals. Lack of insurance coverage would leave individuals and families without protection from the uncertainties of everyday life. Life, health, property and other insurance coverage's are essential to the financial stability, well-being and peace of mind of the average person. Insurance is a financial product that legally binds the insurance company to pay losses of the policyholder when a specific event occurs. The insurer accepts the risk that the event will occur in exchange for a fee, the premium. The insurer, in turn, may pass on some of that risk to other insurers or reinsurers. Insurance makes possible ventures that would otherwise be prohibitively expensive if one party had to absorb all the risk. Advancements in medicine, product development, space exploration and technology all have become a reality because of insurance. Distribution of insurance is handled in a number of ways.

The most common is through the use of insurance intermediaries. Insurance intermediaries serve as the critical link between insurance companies seeking to place insurance policies and consumers seeking to procure insurance coverage (Ward and Zurbrugg, 2002). According to Hifza Malik (2011) insurance plays a crucial role in fostering commercial and infrastructural businesses. From the latter perspective, it promotes financial and social stability; mobilizes and channels savings; supports trade, commerce and entrepreneurial activity and improves the quality of the lives of individuals and the overall wellbeing in a country. Michael Koller (2011) in his investigation identified that insurance companies are playing the role of transferring risk channeling funds from one unit to the other (financial intermediation) such as general insurance companies and life insurance companies respectively. This implies that insurance companies are helping the economy of a country one way by transferring and sharing of risk which can create confidence over the occurrences of uncertain event and in another way insurance companies like other financial institutions plays the role of financial intermediation so as to channel financial resources from one to the other. Therefore, we can divide insurance companies in to two broad categories based on their role to the economy; the general insurance companies and life insurance companies. For instance, Renbao Chen et.al (2004) summarized firm specific factors affecting property/liability which is general insurers and life/health insurance profitability separately that again provide valuable guidelines for insurers financial health. This is because life/health insurance companies are different from property/liability insurers in terms of operation, investment activities, vulnerability and duration of liabilities. Life insurers are said to function as financial intermediaries while general insurers function as risk takers, Renbao Chen et.al (2004). Accordingly, Hifza Malik (2011) in Pakistan, Sylwester Kozak (2011) in Poland, Hamadan Ahamed Ali Al-Shami (2008) in United Arab Emirates (UAE), Swiss Re (2008) in Egypt and Jay Angoff Roger Brown (2007) in United Kingdom conducted their research concerning determinants of profitability in property/liability or general insurance companies where as Naveed Ahmed, Zulfqar Ahmed, Ahmad Usman (2011), in Pakistan, Adams M., Hardwick P. and Zou H., (2008) in Canada, Desheng Wu Z., Sandra V. & Lianga (2007), Wright, K. M. (1992), and others conducted their study on determinants of life and health insurance companies.

Profitability in insurance companies could be affected by a number of determining factors. These factors, as explained above could be further classified as internal, industry, and macroeconomic factors.

Hence, most of the researchers and also our study focused on internal factors affecting profitability and most of the factors considered are age of company, asset size of company, leverage ratio, growth rate, premium growth rate, tangibility of assets and liquidity ratio. Most literatures focus on factors affecting profitability of banks rather than insurance companies. Therefore, there are fewer literatures concerning insurance companies as compared to banks. The existing literatures concerning insurance companies could be classified into two: determinants of financial performance of General and life Insurance companies. Empirical evidences regarding determinants of insurance companies focused only on internal factors such as age, size, leverage, premium growth rate, tangibility of assets and liquidity ratio. The results found by the researchers mentioned above in the empirical revealed inconsistencies according to the country in which the research is conducted regarding some variables.

3. Research Methodology

3.1. Data Type and Data Sources

The study was used secondary data, which are obtained from annual reports of individual insurance companies and NBE. And this is because the advantage of using secondary data includes the higher quality data compared with

primary data collected by researchers themselves Stewart and Kamins, (1993) as cited by Yuqi Li (2007); the feasibility to conduct panel evidence, which is the case in this study; and the permanence of data, which means secondary data generally provide a source of data that is both permanent and available in a form that be checked relatively easily by others, i.e. more open to public scrutiny.

3.2. Research Approach

The deductive approach introduces a high level of objectiveness in research through external observation insofar as the choice of questions and subsequent phrasings are not subjective. In contrast, the inductive approach provides a high level of subjective and a number of theoretical possibilities based on the context of the individual research situation Yuqi Li (2007).

This study examines the previous findings in the literature, and applies the model in Ethiopian insurance companies. Therefore, a deductive approach is adopted by constructing an empirical model and hypothesizing its collinear relationship between determinants and its dependent variable: profitability of insurance companies in Ethiopia.

3.3. Econometric Model Specification

The literature generally, in so far as it is discuss, comes to the conclusion that the appropriate functional form for testing is a linear function although there are dissenting. The Davidson, Godfrey, MacKinnon (1985) as cited by Swiss Re (2008) specification test was also applied with results that supported the use of the linear function. The regression model is used to identify the relationship between the profitability of insurance companies and age of company, leverage ratio, company size, premium growth rate, Liquidity and tangibility of asset.

Data analyze are with one dependent variable (profitability) and six independent variables (age of companies, size of companies, premium growth rate, leverage ratio, tangibility of assets, liquidity and previous profitability). The generally accepted way of choosing between fixed and random effects is running a Hausman test.

Random effects is give better P-values as they are a more efficient estimator, so random effects regression should be adopted if it is statistically justifiable to do so. The Hausman test checks a more efficient model against a less efficient but consistent model to make sure that the more efficient model also gives consistent results. It tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effect estimator.

For estimation purposes, the study is use following general linear model:

$$[(ROA)]_{i,t} = \alpha + \sum_{j=1}^6 [\beta_j X_{i,t}^j + v_{i,t}] \dots\dots\dots (1)$$

Where, $[(ROA)]_{i,t}$ is the return on assets of insurance i for period t ;

α is the regression constant;

$X_{j,t}$ denote insurance specific determinants;

$v_{i,t} = \epsilon_{i,t}$ is the disturbance term. By using the model and comparing the co-efficiency of each explanatory variable, it is generate the finding that which factor is more significant in relation to insurance companies "profitability" and the finding is correspond to the evidence in the literature.

3.4. Variable Selection and Measurement

This paper is attempted to examine the main determinants of profits of insurance company's measurement of profitability. According to Hamadan Ahamed Ali Al-Shami (2008), three important measures of firm's performance are: profitability, size and survivorship. Profitability indicates the firm's ability to achievement of the rate of return on a company's assets and investment funds. With regard to size, it is revealed in his work as a firm's ability to expand its size could be a reflection of it success as earnings are reinvested and external funding could be easily found. Whereas survivorship indicates the ability to earn sustainable development concerning competitive advantages beyond initial opportunities like an economic upturn or the early growth stage of an industry.

In line with earlier studies that examined the determinants of insurance companies' profitability, accounting ratios are used as measurement of individual variables. In specific, the dependent variable, profitability of insurance companies, is measured by ROA. In order to select the determinants as explanatory variables in the model, previous studies have also been reviewed and literature suggests that the following factors exert strong impact on insurance company's profitability as internal determinants; therefore, they are adopted in the constructed model. And following is the details of variables selected.

Profitability: There are many different ways to measure profitability, as shown in previous studies. In this study net income before tax to total assets (ROA) is used to measure profitability, because most of the studies regarding the subject used this ratio to determine the profitability of insurance companies.

Age of company: This variable is measured by the number of years from the date of establishment until 2005- 2016 for 12 consecutive years.

Company size: In different studies, different researchers use different measurements of company size such as number of employees and total assets of a company. However, most of the researchers use the log value of total assets as a measure of size in such area. Therefore, company size is measure by total assets in log value.

Leverage: The amount of debt used to finance a company's assets. A company with significantly more debt than equity may consider to be highly leveraged. This variable is measured by total debt to total equity value of the company.

Premium Growth Rate: The main source of income earned by insurance companies resulting from insurance activities is the gross written premiums. The increase in premium growth rate is ensuring the growth of the company and increase of its market share.

Liquidity: Liquidity from the context of insurance companies is the probability of an insurer to pay liabilities which include operating expenses and payments for losses/benefits under insurance policies, when due and therefore, measured by total current assets to total current liabilities.

To capture the tendency of profits to be persistent over time, the researcher was tried to adopt a dynamic specification of the model, with a lagged dependent variable among the repressor. Cheris Brooks (2008) in his book for introductory econometrics for finance argued that lagged values of variables may capture important dynamic structure in the dependent variable that might be caused by a number of factors such as inertia of the dependent variable and overreactions. This yields the following model specification:

$$ROA_{i,t} = \alpha + \gamma ROA_{i,t-1} + \sum \beta_j + v_i \text{-----}(2)$$

Where $ROA_{i,t-1}$ is the one period lagged profitability and

γ measures the speed of mean reversion. A value of delta between 0 and 1 indicates that profits are persistent, but they are eventually returned to the equilibrium level.

Specifically, values close to zero denote a high speed of adjustment and imply relatively competitive market structure, while a value closer to 1 implies slower mean reversion, and therefore, less competitive markets.

Taking all these explanatory variables into consideration, the extended equation to reflect the variables is formulated as follows:

$$ROA_{i,t} = \alpha + \gamma ROA_{i,t-1} + \beta_0 AGE_{i,t} + \beta_1 LNSize_{i,t} + \beta_2 LEV_{i,t} + \beta_3 PGR_{i,t} + \beta_4 TANG_{i,t} + \beta_5 LIQ_{i,t} + \epsilon_{i,t} \text{-----}(3)$$

Where:

Table 3.1 Variable Formula

A	is constant
B	coefficient of independent variables
ROA_{i,t}	Return on Assets (ROA)= Net Income before Taxes / Total Assets
SIZE_{i,t}	Size=total assets in log value
TANG_{i,t}	Tangibility = (Fixed assets / total assets)
LIQ_{i,t}	Liquidity = (Current Assets / Current Liabilities).
PGR_{i,t}	Premium growth rate = the percentage increase in gross written premiums (GWP(<i>t</i>) – GWP(<i>t</i> –1))/GWP(<i>t</i> –1)
AGE_{i,t}	Age = (The difference between the current year and the year of establishment of the company).

$LEV_{i,t}$	Leverage = (total debt / total assets).
$\epsilon_{i,t}$	The error term.

4. Result and Findings

4.1. Descriptive Analysis

This section concerns with the overall summary of all the Variables involved in the model aimed to understand their distinct behavior independently through computing their mean value, standard deviation and related statistics whereas the joint behavior of each variable with the rest of the others are also assessed using correlation analysis. This part of the analysis aimed in providing supportive evidences for the econometric model as well as simultaneously checks if there exist unusual values such as out layer in the data.

4.1.1. Descriptive statistics

Table 4.1: Descriptive statistics

Variable	Mean	Std Deviation	Min	Max
ROA	0.080	0.055	-0.05	0.40
AGC	2.11	0.873	1.47	7.72
LVC	0.67	0.086	0.45	0.84
SZC	8.379	0.447	7.36	9.45
LQC	0.981	0.259	0.26	2.31
PGC	7.800	23.43	-0.14	221
TAC	0.183	0.109	0.04	0.54

Source: Own computation and STATA reg, 2018.

Based on the table above (table 4.1) the average values of all the variables involved in the model are limited within the range of 8 to 0.08. The maximum mean value is registered by size of the company where as the minimum value belongs to the dependent variable (ROA). The profitability of the companies (ROA) on average is estimated to be around 8 for Ethiopian insurance companies during the study period with the standard deviation of 0.055 implying that the variability of the profit is relatively low in the sector. The minimum variability is the most important aspect not only in insurance companies but also in any business so as to be able to predict its future prospects.

The average value of leverage as measured by the ratio of debt to equity is estimated to be 0.67 with the variability of 0.08 indicating that the sample companies are at relatively similar position in terms of their leverage. The average value of age is 2.11 years along with the standard deviation of 0.87 years indicating that there is a little variation of companies in terms of their year of establishment where their age may be associated with their ability to reap economies of scale in the sector. Relative similarity of age may be viewed in terms of the absence of a monopoly power in the sector, at least due to the accumulated experiences and associated reduction in the cost of service delivery in the sector.

The mean value of the size of the company, on the other hand, is about 8.39 ranging from 7.36 to 9.45. Given this information, it can be concluded that the sample insurance companies are relatively similar in terms of their size as the 0.44 standard deviation also strengthens this argument.

Similarly the mean value of liquidity ratio and premium growth respectively are 0.98 and 7.8 with their respective standard deviation of 0.26 and 23.4 respectively where the variability as measured by standard deviation for premium growth is exceptionally large ranging from the minimum value of -0.14 to 221. This might imply that there is a significant difference among insurance companies in Ethiopia in terms of their premium growth. In terms of tangibility, on the other hand, insurance companies in Ethiopia are relatively in a similar position as the mean value is

0.18 with the associated variability of only 0.11. Its value ranges from the minimum of 0.14 to 0.5. As indicated in appendix 2; profitability measured by ROA for different insurance companies considered for this study for nine consecutive years is different. Identification of the internal factors that affect the profitability of these companies is the task of the researcher for this study.

4.2. Correlation Analysis

The correlation among the variables included into the model is computed in order to give a supportive evidence for the relationship of different variables assumed as explanatory variables that are expected to influence the profitability of a firm. The reported statistics disregard the cause-effect relationship among the variables by simply measuring the association (co-movement) of the variables. Accordingly, the negative sign implies that the two variables under consideration move to the opposite direction and vice versa.

Table 4.2. Correlation among the variables

Variable	ROA	AGC	LVC	SZC	LQC	PGC	TAC
ROA	-						
AGC	-0.042	-					
LVC	-0.074	-0.150	-				
SZC	0.259	0.057	0.504	-			
LQC	0.263	0.079	-0.323	-0.050	-		
PGC	0.510	-0.075	0.027	0.025	0.126	-	
TAC	-0.222	0.195	-0.388	-0.324	-0.373	0.188	-

Source: Own computation and STATA reg., 2018

Given the whole dataset into consideration, there exists a negative correlation between profitability of a company and its age. In a literal sense, this relation is against the common sense as profitability is expected to increase with age, because of the fact that companies are expected to prepare themselves in the long run, for more competition engaging into research and development so as to be competent as well as the degree of competitiveness is expected to increase with increase in age as economies of scale will improve in the long run. On the other hand, leverage and companies profitability move to the opposite direction as expected. Whereas, company's tangibility as measured by fixed asset per unit of total asset is negatively correlated with the profitability.

Other variables such as size of the company, liquidity and premium growth have a positive association with profitability with slightly different degree of association. Premium growth (PGC) has relatively strong positive association (0.51) followed by liquidity and size of a company respectively.

4.2.1. Diagnostic Test

Table 4.3 unit-root test

Variable	Harris-Tzavali Unit-root Test		Breitung unit-root test	
	Statistics	P-value	Statistics	P-value
ROA	0.135	0.00	-1.86	0.43
AGC	0.044	0.00	1.35	0.09
LVC	0.570	0.00	-2.37	0.00
SZC	0.834	0.75	3.69	0.06
LQC	0.21	0.00	-1.36	0.08
PGC	0.456	0.00	2.12	0.15
TAC	0.726	0.02	-1.252	0.07

Source: Own computation and STATA reg., 2018

As it is common in time series econometrics that the existence of unit root problem leads to spurious regression and which obviously applies for panel data because of the time dimension in the panel data framework. The unit root problem is particularly the concern in data obtained at different point in time (Culver, 1997). And hence, this section detects the presence of a unit root problems by adopting two commonly used tests (Harris Tzavali and Breitung unit root tests) as reported in Table 4.2. The first tests assume common autoregressive parameters and include panel mean as well as time trends whereas the second test assumes both time and space components to be asymptotically infinity.

Both test statistics claim the existence of unit root (non-stationarity) problem in the panel under the null against the alternative hypothesis claiming the Panels data under consideration are stationary.

Based on the Harris-Tzavalis test, except the size of the company (SZC) all variables are Stationary at least at 10 percent level of significance. As it can be viewed from the table above, all variables are stationary at least based on one of the two test statistics and hence, it can be generalized that a unit root problem is not a series problem in the model.

4.3. Regression Analysis

Aimed to test the hypothesis established earlier, the researcher has employed a regression analysis using the model compatible for panel data (fixed effect model and random effect model). Fixed effect and random effect models may be the popularly used models with panel data. As to which model to employ, Hausman test is used. In running a Hausman test the null hypothesis claims the preferred model is random effects against the alternative, the fixed effects.

It basically tests whether the unique errors (ϵ_i) are correlated with at least one of the regressors, such that the null hypothesis claims they are not correlated. If the null hypothesis is rejected, the conclusion is that the random effect is not appropriate and that we may be better off using fixed effect model (FEM), in which case statistical inferences will be conditional on the ϵ_i in the sample.

Table 4.4: Hausman Test statistics

Variables	Coefficients			
	Fixed Effect	Random Effect	Difference	Std. Error
AGC	-.0035174	-.0041597	.0006423	.004871
LVC	-.1664678	-.1715774	.0051095	.0548795
SZC	.0577347	.0483027	.0094319	.0103894
LQC	.0221213	.0249822	-.0028609	.0142596
PGC	.0009172	.0010817	-.0001645	.0001051
TAC	-.0143101	-.0237003	.0093902	.0402843
chi2(6)=	3.15			
Prob>chi2 =	0.7892			

Source: Own computation and STATA reg., 2018

Based on the table above (4.5) the Hausman test reveals that the appropriate model is random effect model as the null hypothesis of the model which claims the difference in coefficients are not systematic (random), can't be rejected at any level of significance based on the Chi2 value reported above. Accordingly, the model selected for the data under consideration is random effect (Error component) model. By selecting the random effect model, we acknowledge that the error term is not systematically correlated with any of the explanatory variables involved in the model and any variation in the error term is subject to chance.

Table 4.5. Estimation results of the random effect model

ROA	Coefficients	Z-Value	Probabilities
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AGC	-0.0041597	-1.79	0.074***
LVC	-.1715774	-2.47	0.013**
SZC	.0483027	5.52	0.000*
LQC	.0249822	1.22	0.224
PGC	.0010817	21.33	0.000*
TAC	-.0237003	-1.02	0.307
Cons	-.228719	-3.62	0.000*
Number of obs	= 108		
Wald chi2(6)	= 9374.64		
Prob> chi2	= 0.0000		
R-sq: within	= 0.3517		
between	= 0.7946		
overall	= 0.4071		

*, ** and *** represent the coefficient under consideration is statistically significant at 1 %, 5% and 10% level of significance respectively

Source: Own computation and STATA reg.,2018

The Wald Chi2 statistics, as reported in the table above (table 4.6), ensures the overall significance of the estimated coefficients, as the null hypothesis which claims the parameters are simultaneously equal to zero, would be rejected at 1 per cent significance level. Given the R-sq (0.407), out of the total variation of the dependent variable (returns on asset), 41 percent is explained by (due to) the variation of the explanatory variables involved in the model.

Given the regression result reported above, (table 4.6) Size of a company (SZC), Premium growth rate (PGR) of a company, Leverage (LVC) and age of the company (AGC), are statistically significant at 1, 5 and 10 percent level where the first two variables are significant at one percent level where as the remaining two variables are significant at five percent and ten percent level respectively. On the other hand, liquidity of a company (LQC) and tangibility of a company (TAC) are statistically insignificant in affecting profitability of the insurance company under consideration at any reasonable significance level.

Among the statistically significant variables in affecting the profitability of the firm, leverage and age have negative impact on profitability while the other two variables such as size and premium growth have a positive and significant impact on profitability of the company.

4.3.1. Age of the Companies

Age of the company is negatively related with profitability of insurance companies in Ethiopia. The estimation result of the random effect model reveals that there is a negative and significant relation between profitability and age of the company with the estimated coefficient of -0.004. It can be interpreted as a one year increase in the age of the company would result in a 0.4 percent decrease in the profitability of the company keeping other things unchanged. This result is against the expectation as well as against the theory and hence is not consistent with the hypothesis of the study. It is expected that as the years of operations increases both their experiences in the sector will increase as well as the company is expected to get enough time to engage in research and development so as to increase its market share leading to increased profitability. On the other hand it is also expected that in the initial years of their operation, increased initial cost is expected which is associated with lower profitability.

Literatures also provide inconclusive evidence in relation to the profitability-age relationship in the insurance sector as some researcher such as Ali Al-Shami (2008) reported the absence of any significant relationship between the two variables whereas Swiss Re (2008) confirms this finding by concluding younger firms are relatively more profitable (grow faster) as compared to the older one based on his research finding conducted on insurance Companies located in Egypt.

4.3.2. Size of the Companies

Size of the company, as measured in terms of their total asset, is positively and significantly influencing the profitability of the firm. The coefficient obtained from the regression (0.048) implies that keeping all else constant, a one percent increase in the size of the company causes a 4.8 percent increase in the profitability. The finding is in

line with both theory and expectation supporting the fact that both economies of scale and market power would be built as size increases. The find is supported by different literatures such as Abate (2012), Al-Shami (2008) and Swiss (2008) all claiming the existence of positive and significant relationship between size and profitability in the insurance companies.

4.3.3. Leverage Ratio of the Companies

Leverage, as measured by total debt divided by total asset, is happen to be one of the limiting factor in firms' profitability in the insurance sector in the country. According to the random effect model estimation, the coefficient of leverage is happens to be negative and significant at five per cent level of significance. A negative 0.17 estimated coefficient of leverage can be interpreted as; a one percent increase in the leverage of the company would cause a decrease in the profitability by 17 percent point, in a citrus-paribus condition. The negative sign is expected on both theoretical and empirical ground. On the other hand there are literatures who argue the existence of some threshold values of leverage below which profitability is directly related with leverage and when the leverage increases above its optimum mix, it influences the profitability negatively.

The finding of this paper is also in conformity with other previous researches, such as Renbao and Wong (2004), Al-Shami (2008), Malik (2011)and Abate (2012)who came up with a negative relation between leverage and profitability based on the study in different parts of the world.

4.3.4. Premium growth rate Of the Companies

Referring to the table above, Premium growth rate (PGC) has a positive and significant impact on profitability of the insurance companies with the estimated coefficient of 0.001 which is significant at 1 % level of significance. The coefficient obtained from the regression (0.001) implies that keeping all else constant, a one percent increase in the premium growth rate of the company causes a 1 percent increase in the profitability. The positive sign is in line with our expectation, as the increase in premium growth rate ensures the growth of the company as well as the increase in its market share. This finding is supported by other literatures such as Yuqi Li (2007) and Al-Shami(2008) as both researches claim the existence of positive and significant relation between premium growth rate and companies' profitability. On the other hand it is against the findings of Chen and Wong (2004) and Mistresisay (2015) who claimed the absence of any significant relationship between the two variables.

4.4. Consistency of the estimated Coefficients Across different Models

For further inferences using the estimated coefficients, the estimated coefficients should not be too volatile from one model to the other, so that its value should not be arbitrary and hence relayed upon. To make sure that the estimated coefficients of the random effect model is consistent, alternative models are employed such as the fixed effect model as well as the Ordinary list square model (OLS) as reported in the table below (table 4.6). In terms of their sign and magnitude as well as statistical significance, variables are more or less consistent in all the three models.

Table 4.6: Coefficients across different Models

	Coefficients		
ROA	RE	FE	OLS
AGC	-0.0041	-0.0035	-0.0042
LVC	-0.1715*	-0.1664	-0.1741*
SZC	0.0483***	0.0577***	0.0465***
LQC	0.0249	0.0221	0.0251
PGC	0.0010***	0.0009***	0.0011***

TAC	-0.0237	-0.0143	-0.0302
Cons	-0.228*	-3.62***	-0.2111*
Chi2	64.32	-	-
AIC	-	-370.70	-361.03
BIC	-	-351.92	-342.25

Legend: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Own computation and STATA reg., 2018

The negative result obtained from the random effect model for age, leverage and tangibility remain negative in all the three models whereas the remaining variables are positive. In terms of their statistical significance, except leverage which is not significant in the fixed effect model while significant in the other two models, the remaining coefficients are either significant or insignificant in all the three models.

5. Conclusion

According to the descriptive statistics using covariance analysis, variables such as age of the company, leverage ratio and liquidity of the company are negatively correlated with the profitability of the firm while the remaining variables (size of the company and premium growth rate) have a positive association with the profitability. To this end, the negative relationship between age and profitability as well as leverage and profitability from the descriptive statistics is also confirmed using the econometric model and the sign is consistent between fixed and random effect models.

Based on the regression results, the company specific variables such as the Size of a company, Premium growth rate of a company, Leverage ratio and age of the company play strong impact on the profitability of the company. On the other hand, liquidity of the company and tangibility of a company do not have any significant impact in affecting the profitability. Among the statistically significant variables in affecting the profitability of the firm, leverage ratio and age of the companies have negative impact on profitability while the other two variables such as size of the company and premium growth rate of the company have a positive and significant impact on profitability of the companies. Through, it needs further study in the area so as to confirm using alternative research, the negative relation between age and profitability is unexpected and against the research hypothesis. This may be due to the old system and technology adopted by the earlier established companies may cause the loss of their customers, as the unsatisfied customers may migrate towards the newly established Companies so that as more and more companies join the market, the older companies may lose their market share in the industry.

References

- Abate, G. ,&Yuvaraj, S. (2013). A Study on Performance of Insurance Companies in Ethiopia. *International Journal of Marketing, Financial Services and Management Research*, 2(7),
- Abreu, M. and Mendes B. (2002), *Commercial Bank Interest Margins and Profitability: Evidence form E.U Countries*, Porto Working Paper Series.
- Aburime T. (2008), *Determinant of Bank Profitability: Company Level Evidence from Nigeria*, Working Paper, Department of Banking and Finance, University of Nigeria.
- Adams M., Hardwick P. And Zou H., (2008), "Reinsurance and Corporate Taxation in the United Kingdom Life Insurance Industry", *Journal of Banking and Finance*, Vol. 32.
- Agiobenebo, T.J and Ezirim B.C. (2002) "Impact of Financial Intermediation on the Profitability of Insurance Companies in Nigeria", *First Bank of Nigeria Quarterly Review*; Vol. 2, No.1.
- Athanasoglous P. Et Al., (2005), *Bank-Specific, Industry- Specific and Macroeconomic Determinants of Bank Profitability*, Bank of Greece Working Paper, No. 25

Belayneh Hailegeorgis Damena (2011), Determinants of Commercial Banks Profitability: An Empirical Study on Ethiopian Commercial Banks, Addis Ababa University.

Born H. P. (2001), "Insurer Profitability in Different Regulatory and Legal Environments", *Journal of Regulatory Economics*, Vol. 19, Issue. 3.

Demirguc-Kunt, A. And H. Huizinga. (2000). Financial Structure and Bank Profitability.

Desheng Wu Z., Sandra V. & Lianga (2007), "Simultaneous Analysis of Production and Investment Performance of Canadian Life and Health Insurance Companies", *Computers and Operations Research*, Vol. 34, Issue. 1.

Ephraim W. T. Chirwa (2001) Market Structure, Liberalization and Performance in the Malawian banking Industry, African Economic Research Consortium, Nairobi.

Gujarati, D.N. (1995), Basic Econometrics, McGraw-Hill, New York 2

Hailu Zeleke (2007). Insurance in Ethiopia: Historical Development, Present Status and Future Challenges. Addis Ababa: Master Printing Press.

Hifza Malik, (2011) Determinants of Insurance Companies Profitability: An Analysis of Insurance Sector Of Pakistan, Academic Research International, Volume 1, Issue 3, Available at Www.Journals.Savap.Org.Pk.

Kosmidou, K., Pasiouras, F., Zopounidis, C. & Doumpos, M. (2006). A Multivariate Analysis of the Financial Characteristics of Foreign and Domestic Banks in the UK. *Omega*, Vol. 34 ,No. 2.

Kozak S., (2010). Consolidation and Efficiency of the Non-Life Insurance Sector in Poland, *Electronic Journal of Polish Agricultural Universities* Vol. 13, Issue 1, Available On: [Http://Www.Ejpaau.Media.Pl/Volume13/Issue1/Art-03.Html](http://Www.Ejpaau.Media.Pl/Volume13/Issue1/Art-03.Html)

Kozak S., (2011) Determinants of Profitability of Non-Life Insurance Companies in Poland during Integration with the European Financial System, Volume 14, Issue 1. Available Online: [Http://Www.EJPAU.Media.Pl](http://Www.EJPAU.Media.Pl).

Kozo Kiyota, Barbara Peitsch and Robert M Stern (2007), Research Seminar in International Economics, the Case for Financial Sector Liberalization in Ethiopia, the University of Michigan.

Levine, R., Loayza, N., & Beck, T. (2000), Financial Intermediation and Growth: Causality and Causes. *Journal of Monetary Economics*.

Mattoo, A., Rathindran, R., & Subramanian, A. (2006) Measuring Services Trade Liberalization and Its Impact on Economic Growth: An Illustration. *Journal of Economic Integration*. 3

N.K Childambaran Et.Al. (1997) an Investigation of the Performance of the U.S Property/Liability Insurance Industry, the *Journal of Risk and Insurance*, Volume 64.

Naveed Ahmed, Zulfqar Ahmed, Ahmad Usman (2011), Determinants of Performance: A Case Of Life Insurance Sector of Pakistan, *International Research Journal of Finance and Economics*, Eurojournals Publishing, Inc. 2011 Available at [Http://Www.Eurojournals.Com/Finance.Htm](http://Www.Eurojournals.Com/Finance.Htm)

Philip Harwick and Mike Adams (1999) Firm Size and Growth in the UK Insurance Industry.

Rashiah Devinaga (2010) Review of Literature and Theories on Commercial Bank Profitability, *Journal Of Performance Management*.

Rebao Chen and Ann Wong (2004) Determinants of Financial Health of Asian Insurance Companies, the Journal of Risk and Insurance Volume 71 Number 3.

Swiss Re (2008), Profitability of Non-Life Insurance Industry, Egypt, Available At [Www.insuregypt.com](http://www.insuregypt.com).

Tesfaye Boru Lelissa (2007), The Impact Of Financial Liberalization One Ownership, Market Structure And Performance of The Ethiopian Banking Industry, Addis Ababa University.

Valentina Flaminin. Et.Al. (2009), Determinants of Commercial Bank Profitability In Sub-Saharan Africa, International Monetary Fund (IMF) Working Paper, Wp/09/15.

W.Greene (2000), "Econometric Analysis" Fourth Edition, Prentice Hall.

William H. Greene and Dan Segal (2004) Profitability and Efficiency in the U.S Life Insurance Industry, Journal of Productivity Analysis, Kluwer Academic Publisher, Netherlands.

www.nbe.gov.et 4Wright, K. M. (1992), "The Life Insurance Industry in the United States an Analysis of Economic and Regulatory Issues", Country Economics Department the World Bank Policy Research Working Paper 857

Yuqi Li (2007) Determinants of Banks' Profitability and Its Implication on Risk Management Practices: Panel Evidence from the UK, the University of Nottingham..