

Factors Affecting Insurance Companies Profitability in Ethiopia

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Abstract

Background: Every firm is most concerned with its profitability. One of the most frequently used tools of financial profitability analysis is the profitability ratio. The aim of this study was determinants of Insurance company's profitability of in Ethiopia.

Methodology: To comply with the research objectives, the researcher focused on secondary data, which are obtained from annual reports of individual insurance companies and NBE. Both Descriptive statistics (frequency, percentage, mean, variance, etc.) and the Econometrics model (multiple linear regression model) were used to achieve the objectives of the study, and to analyze the data.

Results: The average and standard deviation for the profitability of insurance companies measured by using Return on assets (ROA) for Ethiopian insurance companies was 0.117 and 0.08, respectively. The result showed that the age of the company, Firm Growth, Company Size, Leverage, and market share are highly significant predictors of insurance companies' profitability in Ethiopia.

Keywords: Insurance Companies, Profitability, OLS, Mettu, Ethiopia.

List of Abbreviations

NBE- National Bank of Ethiopia

EIC- Ethiopian Insurance Corporation

ROA- Return on Asset

ROE- Return on Equity

ROIC- Return on Invested Capital

APT- Arbitrage Pricing Theory

MPT- Modern portfolio theory

NICE- National Insurance Company of Ethiopia

AGE- Age of Insurance Companies

LAV- Leverage Ratio of Insurance Companies

LIQ- Liquidity Ratio of Insurance Companies

OLS- Ordinary Least Square

SIZE- Size of Insurance Companies

TAN- tangibility of asset Ethics approval and consent to participate not applicable.

1. Introduction

The performance of any firm not only plays the role to increase the market value of that specific firm but also leads towards the

growth of the whole industry which ultimately leads towards the overall prosperity of the economy. A well-developed and evolved insurance sector is a boon for economic development as it provides long- term funds for infrastructure development at the same time strengthening the risk-taking ability of the country [1]. Every firm is most concerned with its profitability. One of the most frequently used tools of financial profitability analysis is a profitability ratio which is used to determine the company bottom line. Profitability measures are important to any one stock holders and managers. According to Malik (2011), profitability is one of the most important objectives of financial management since one goal of financial management is to maximize the owners' wealth, and profitability is very important determinant of performance [2]. According to Meaza (2014), financial industries profitability has attracted scholarly attention in recent studies due to its importance in performance measurement. However, in the context of the insurance sector particularly in Ethiopia, it has given a little attention and the existing studies only concentrated on firm's specific factor not considering macro-economic factors.

Various scholars have been doing empirical investigation on the factors affect insurer's profitability and arrived at different conclusions. According to Re, S. (2008), insurers' profitability is determined initially by underwriting performance (losses and expenses, which are affected by product pricing, risk selection, claims management, and marketing and administrative expenses and second, by investment performance, which is a function of asset allocation and asset management as well as asset leverage [3]. Ahmed, N., Ahmed, Z., & Usman, A. (2011) examined the determinants of insurers' profitability that size, volume of capital, leverage & loss ratio are significant determinants of profitability[4]. Ayele (2012) studied company specific factors affecting insurance profitability in Ethiopia and found out that size, volume of capital is positively and significantly related with profitability; whereas liquidity, and leverage are negatively but significantly related [5,6]. Mehari & Aemiro (2013) studied that insurers' size, tangibility and leverage are significant and positively related with profitability; however, loss ratio (risk) is statistically significant and negatively related with ROA [7]. Sambasivam & Ayele (2013) studied firm specific factors but they also ignored macroeconomic factors affecting profitability [8]. According to Meaza (2014) economic growths, managerial efficiency, size of the company is significant and positive effect on the company profitability besides to this leverage, tangibility of asset, liquidity ratio; loss ratios are a negative effect.

Most of the studies are conducted in the banking sectors. But, few studies are conducted on the insurance sector. Besides in Ethiopia, to the best understanding of the researcher knowledge, many studies are conducted on profitability of insurance firms which related with micro economic factors which affect the profitability of the insurance companies. The majority of those studies are concentrated on size, volume of capital, leverage, loss ratio, managerial efficiency and age of the firm for the last ten years in the insurance industries. The researcher that above described factors are not only the main determinants of profitability but in addition to that, Market share and Branch distribution of the insurance industry are may affect profitability of Ethiopian insurance company, but these variables are not considered by the above researchers. Therefore, the research gap of the study is to investigate those key determinants of profitability and the extent to which they impact profitability of Ethiopian Insurance industry. The main aim of the study is to analyze determinants of Insurance companies' profitability in Ethiopia.

2. Research Methodology

2.1 Research Design

To comply with the objective of this research, the paper is primarily based on quantitative research, which constructed an econometric model to identify and measure the determinants of profitability.

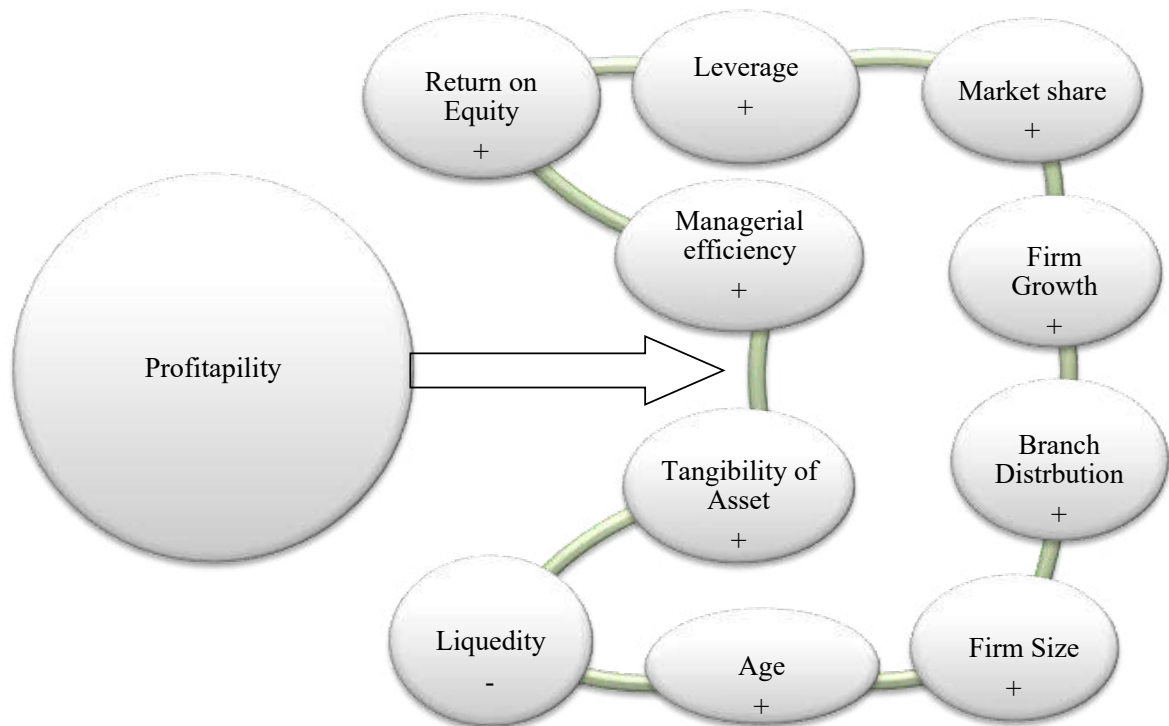
2.1.1 Data and Data Sources

To comply with the research objectives, the researcher focused on 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 Li Y (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 may be checked relatively easily by others, i.e. more open to public scrutiny. Therefore, enhance the reliability of the data. The principal secondary data sources for this paper are individual insurance companies' annual reports that contain detailed consolidated balance sheets and income statements and National Bank of Ethiopia, which can provide comprehensive database for all insurance companies.

The data collected and analyzed is a balanced panel of twelve insurance companies in Ethiopia operating over the last 6 years. Panel data is selected by the researcher in order to meet the research objectives as it best fits better than the single time series or cross-sectional alone. Chris Brookes (2014) in his book clearly presents the advantage of using panel data in the following way [9].

2.1.2 Variable in the Study

The dependent variable is the variables in regression that cannot be controlled or manipulated, designated as the Y, variables. Profitability of Insurance Company is the dependent variable for the purpose of this study. Independent variables are the variables in regression that can be controlled or manipulated and designated as the X variables. Effect of profitability of Insurance Company related factors will be taken as independent variables. This can be done either by testing the overall significance of the model or by testing the significance of the individual coefficients. Therefore, the following are covariate (predictor) variables in the study.



3. Method of Data Analysis

Data analysis section of this study is based on both descriptive and regression. It means that this section provides the descriptive analysis of the time serial data and variables for the study in collaboration with some important test such as normality of data, discusses the correlation analysis between dependent and independent variables, deals the results of the linear regression and data analysis that constitute the main findings of this study. Statistics used to describe only the observed group or sample from which they were derived; summary statistics such as percent, averages, and measures of variability that are computed on a particular group of individuals. Descriptive statistics are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data.

The descriptive statistics explores and presents an overview of all variables used in the analysis. In this section the mean, minimum, maximum, standard deviation of the variables are produced for the variables under study for the period 2012 to 2016. Descriptive statistics utilizes numerical and graphical methods to look for patters in a data set to summarize the information which reveled in a data set and to present the information in convenient form. The main purpose of descriptive statistics to provide an over view information which collected. In most cases, descriptive statistics used to examine or explore one variable at a time. Always analysis of statistical data begun by describing the raw data; in order to achieve this, descriptive statistics plays an important role. Descriptive statistics describes the data collect though numerical measurement, chart, frequency distribution and so on.

3.1 Inferential Statistics

Inferential statistics describes the data with making any

inferences by generalization and by summarizing sources of numerical data into meaningful form. In this study regression will be used to identify potential risk factor that affects profitability of Ethiopian insurance company.

3.2 The Correlation Analysis

This section shows how variables are related with each other. The results of this analysis represent the nature, direction and significant of the correlation of the variables considered under this study. The correlations coefficient used to measure the degree of linear association between two variables. In our case, we have to correlate the relation between Independent and dependent variables.

3.3 Regression Analysis

The regression analysis is used to examine the relationship between the profitability of Ethiopian insurance companies and explanatory variables such as age, size, leverage, liquidity, growth and previous year profitability of the companies. The result of a regression analysis is an equation that represents the best prediction of a dependent variable from several other independent variables. In terms of regression analysis, as panel data is adopted in this study, corresponded regression model is selected from fixed effect and random effect regression.

Fixed effects regression is the model to use when researcher want to control for omitted variables that differ between cases but are constant over time. It allows using the changes in the variables over time to estimate the effects of the independent variables on dependent variable. Otherwise random effect estimation model is used and it is the models to use when researcher want to control for omitted variables that change over time but are constant between cases. It allows using the variation between cases to estimate the effect of the omitted independent variables on dependent variable. The method of data analysis to measure

the functional relationship between the dependent variable and one or more independent variables is a regression analysis. A linear regression equation of the dependent variable Y on K independent variables X_1, X_2, \dots, X_K is given by $Y = B_0 + B_1 X_1 + B_2 X_2 + \dots + B_K X_K + \Sigma_t B_t$, B_1, B_2, \dots, B_K are the slopes (the change in Y for the unit change in the explanatory variable x_{1i}).

After fitting a linear regression model by estimating the coefficients, the researcher tested significance. This can be done either by testing the overall significance of the model or by testing the significance of the individual coefficients. The test about the overall significance of the model will employ F -test and t -test to check whether at least one of the coefficients are significantly different from zero. The test about individual coefficients will employ the t -test and test whether each independent variable is statistically significant in determining the dependent variable. B_0 is the value of Y when all independent variables assume zero value and Σ_t is the random disturbance term.

The primarily objective of regression analysis is the development of regression model to explain the given population. A regression model is the mathematical equation that provides prediction of values of dependent variables based on the known values of one or more independent variables. Linear regression has many practical uses. Most applications of linear regression fall into one of the following two broad categories: If the goal is prediction, or forecasting, linear regression can be used to fit a predictive model to an observed data set of y and X values. After developing such a model, if an additional value of X is then given without its accompanying value of y , the fitted model can be used to make a prediction of the value of y .

Given a variable y and a number of variables X_1, \dots, X_p that may be related to y , then linear regression analysis can be applied to quantify the strength of the relationship between y and the X_p , to assess which X_j may have no relationship with y at all, and to identify which subsets of the X_j contain redundant information about y , thus once one of them is known, the others are no longer informative.

4. Variable Selection and Measurement

As previously mentioned, the empirical part of this paper attempts to examine the main determinants of profits of insurance companies' "measurement of profitability. According to Al-Shami (2008), three important measures of firm's performance are: profitability, size and survivorship [10]. 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 reflect its 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.

This research is concerning only on profitability of insurance companies in Ethiopia as a financial performance and the internal factors that determine profitability. Hence, seven characteristics

are used as internal determinants of performance. Referring to previous studies, the use of ratio in measuring leverage, liquidity, tangibility and profitability performance is common in the literature of finance and accounting practices. Hafiz Malik (2011) AL-Shami (2008) and Ahmed, Ahmed, & Usman, (2011) used ratio in measuring insurance company's financial performance [2,10,4]. The greatest advantage for using ratio index in measuring performance is that it compensates disparities created by size Li, Y. (2007) In line with earlier studies that examined the determinants of insurance company's 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 companies' profitability as internal determinants; therefore, they are adopted in the constructed model. And following is the details of variables selected.

4.1 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. $ROA = \text{Net profit before tax} / \text{Total Assets}$

4.2 Firm Size

In this study company size was measured by total asset in the log value.

4.3 Leverage

Leverage is the amount of debt used to finance a company's assets. A company with significantly more debt than equity is considered to be highly leveraged. The leverage in this study was measured by total debt to total equity value of the company.

4.4 Liquidity

Liquidity of the insurance companies in this study was measured by the ratio of current assets to Current liabilities. $\text{Liquidity} = \text{Current Assets} / \text{Current Liabilities}$.

4.5 Managerial Efficiency

The ratio of operating expense to operating income was used to measure managerial efficiency and the higher the ratio the lower the managerial efficiency. $\text{Managerial efficiency} = \text{Operating Expense} / \text{Operating Income}$

4.6 Firm Growth

In this study growth of the insurance companies is measured by the percentage change in total Assets of insurance companies

4.7 Age of Company

This variable is measured by the number of years from the date of establishment until 2016 for five consecutive years.

4.8 Tangibility of Asset

Tangibility is defined in respect to this study as the ratio of fixed assets to total assets. Tangibility=Fixed assets divided by total assets.

4.9 Market Share

Market share is defined to this study as the ratio of total asset of the Company to total asset of the Industry

Market share= Fixed asset of the Company divided by total fixed asset of the Industry

5. Results and Discussion

5.1 Descriptive Results for Selected Important Variables

The mean and standard deviation of the profitability of insurance

company were 0.117 and 0.08, respectively.

The average value of managerial efficiency was 0.798 with a standard deviation of 1.855. The average value of firm growth is 0.217 and the value of standard deviation for the same variable is 0.114 which shows that there were slightly significant variations among the values of firm growth as measured by the change in total assets over the years across the sample insurance companies. On average the liquidity ratio is 1.03 and the value of standard deviation is 0.25. The average value of market share is 0.084 and the value of standard deviation for the same variable is 0.0822 which shows that there were no significant variations among the values of market share (Table 1).

Variable	Observations	Mean	Std. Dev.	Min	Max
ROA	60	0.117	0.08	0.002	0.53
Age	60	16.58	9.108	2	41
Branch Distribution	60	25	12.904	3	70
Managerial Efficiency	60	0.798	1.855	0.114	14.239
Firm Growth	60	0.217	0.114	0.017	0.505
Company Size	60	8.6105	0.3535	7.687	9.45
Tangibility	60	0.175	0.134	0.028	0.68
Leverage	60	2.5105	1.140368	0.954	7.34
Liquidity	60	1.03	0.25	0.263	1.632
Market share	60	0.084	0.0822	0.01	0.367

Table 1: Summary Results Between Measurable Variable and Predictor Variables

In our case, all of the VIFs are below 10 and all of the tolerances are close to one indicating that there is no problem of multicollinearity in our data (Table 2).

Variable	VIF	1/VIF
Market share	10.41	0.096097
Company share	8.18	0.122261
Branch distribution	5.24	0.190909
Age	4.17	0.239588
Leverage	2.83	0.353100
Liquidity	2.31	0.432482
Firm growth	2.29	0.435971
Tangibility	1.85	0.539545
Managerial	1.25	0.800549
Mean VIF	4.28	

Table 2: Multicollinearity Information of Predictor Variables

5.2 Bivariate Analysis Results

Based on the results nine of the five explanatory variables considered in this study were found statistically significantly associated with the return of assets ($p < 0.25$). They are age of companies, firm

growth, company size, and leverage and market share.

From the outputs in univariable analysis, one can observe that

the predictors age of company, Firm

Growth, Company Size, Leverage and market share are highly significant in the univariable analysis

However, Branch distribution, Managerial efficiency, Liquidity and Tangibility is not a significant

factor for the profitability at 25% level of significance (Table 3).

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	-0.658	0.684		-0.961	0.341
	Age	0.005	0.002	0.602	2.467	0.017
	Branch distribution	-0.004	0.002	-0.612	-2.238	0.03
	Managerial efficiency	-0.009	0.006	-0.215	-1.614	0.113
	Firm growth	-0.094	0.126	-0.134	-0.743	0.461
	Company size	0.076	0.077	0.338	0.989	0.328
	Tangibility	0.019	0.097	0.032	0.198	0.844
	Leverage	0.027	0.014	0.391	1.948	0.0057
	Liquidity	0.092	0.058	0.287	1.584	0.12
	Market share	-0.175	0.375	-0.18	-0.468	0.642
	a. Dependent Variable: ROA					

Table 3: Regression Coefficients

Multivariable Analysis of Regression Model

Multivariable analysis indicates that age, branch distribution and leverage were significantly affected and managerial efficiency, firm growth, liquidity, market share, tangibility and company size were not significantly affecting the profitability of company (Table 4).

b. Predictors: (Constant), market share, managerial efficient, tangibility, Firm growth, liquidity, leverage, age, branch distribution Company size. The variables

which passed the stepwise variable selection procedure as candidate to be included in the model are: Branch distribution, age and liquidity. One can say that the reduction in the total variation in ROA is about 28.8 % when accounting for market share, managerial efficient, tangibility, Firm growth, liquidity, leverage, age, branch distribution and Company size.

5.3 Model Adequacy

The coefficient of determination (R²=68.8%) the goodness of the fitted model approximately good model (Table 5).

Model	R Square	Adjusted R Square	Std. Error of the Estimate
1	.688	.659	.0733
			268

Table 5: Model Summary

5.4 Final Regression Model for Significant Variables.

From the final fitted regression model the intercept, age, and branch distribution are -0.658, 0.005 and 272 -0.004 respectively.

Therefore, for every unit increase in age of company the profitability (ROA) increased by 0.005 there is also positive relationship between age of company and return on assets.

Variables	Coeff.	Std.Error	t-value	p-value	Confidence Interval
Age	0.0028926	0.0010881	2.66	0.010	[0.0007145, 0.0050707]
Branch distribution	0.0005328	0.0008105	0.66	0.514	[-.0010896 ,0.0021551]
Managerial efficiency	-0.0056258	0.0056095	-1.00	0.320	[-.0168545 ,0.0056029]
Firm Growth	-0.105677	0.0907648	-1.16	0.249	[-0.2873625, 0.0760084]
Company Size	0.0351333	0.0293344	1.20	0.236	[-0.0235859 ,0.0938524]
Tangibility	-0.0621576	0.078025	-0.80	0.429	[-0.2183417, 0.0940265]
Leverage	0.0114974	0.0090805	1.27	0.211	[-.0066791 ,0.0296739]
Liquidity	0.0264127	0.0419521	0.63	0.531	[-0.0575635 ,0.1103889]
Market share	0.2352307	0.1239301	1.90	0.063	[-0.0128422 ,0.4833037]

The average profitability of company is decreased by keeping other variables are constant and if the distribution of branch will increase by one unit the profitability of company decreased by 0.004, keeping other predictor variables, if leverage increases by one unit the profitability of company will be increased by 0.027 birr. The constant coefficient is -0.658 which indicates the value of the dependent variable (profitability of company) when both of the independent variable (age and branch distribution) are zero. The coefficient associated with age is 0.005 that means when the age of company increases by 1, the amount of profitability of company is expected to increase by holding branch distribution and leverage constant. The coefficient associated with branch distribution is 0.004 that means profitability will decrease by 0.004 birr on average when branch distribution increases by 1 birr keeping the other independent variable (age and leverage) constant. The coefficient associated with leverage is that means profitability will increased by birr on average when leverage increases by 1 birr keeping the other independent variable (age and branch distribution) constant.

The value suggest that a one unit increase in age of insurance company, on average an increase of about 0.57 units in profitability of insurance company. Similarly, one unit increase in branch distribution leads to a decline of about units in profitability. Finally, one unit increase in leverage ratio leads to an increase of about units in profitability and also suggests a positive relationship between profitability and leverage ratio.

5.5 Model Diagnosis and Checking Assumption

5.5.1 Normality of Data

Since the appearance of a histogram can be strongly influenced by the choice of intervals for the bars, to confirm these we can also look at a normal probability plot of the residual (Figure 1).

5.5.2 Checking for the Linearity of Continuous Predictor in the Regression Model

The plots of residual confirm that age of a patient have no linear relationship with the profitability of company (Figure 2).

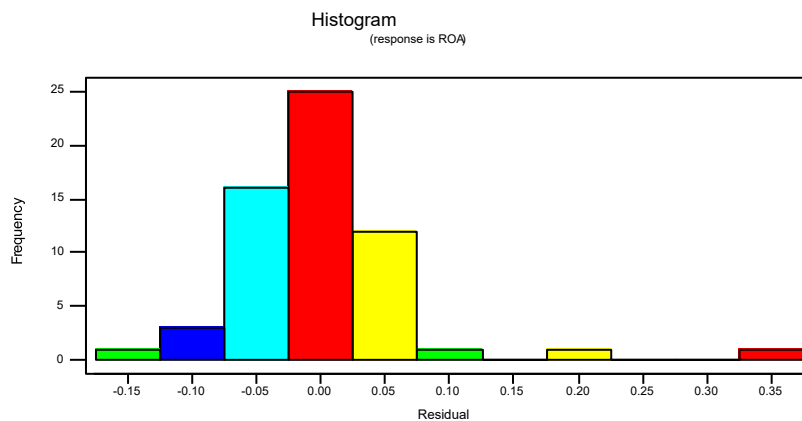


Figure 1: Histogram Plots for Normality of Data

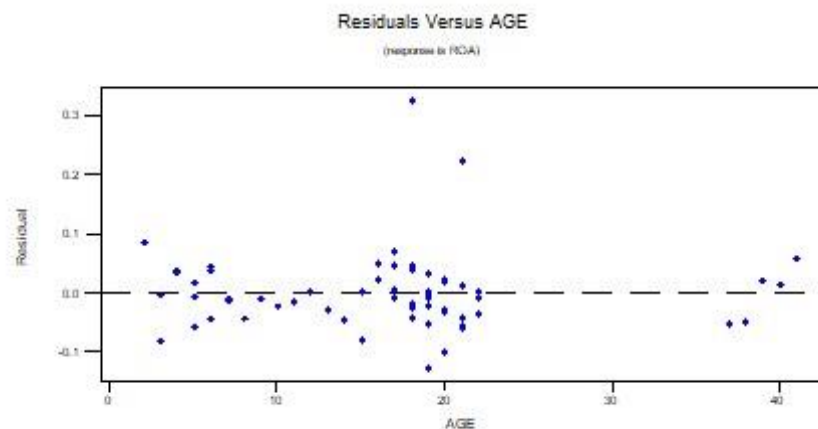


Figure 2: Plots of Residual for Linearity of Data

6. Discussion of the Results

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. Statistical analysis revealed the presence of good variations of profitability across the profitability of insurance companies included for this study and the average is 0.117. This is much higher compared to Abate Gashaw Ayele (2012), which found showing that the average profitability as measured by ROA for Ethiopian insurance companies during the study period is about 0.06. Regression coefficient of age of company at 0.005 indicates that when firm size increases by 1% the profitability will increase by 0.5%. Regression coefficient of branch distribution at -0.004 indicates that when branch distribution increases by 1% the profitability of company will decrease by 0.4%.

Regression coefficient of Leverage ratio at 0.027 indicates that when leverage increases by 1% the Profitability will increase by 2.5%. This result is higher in accordance with the studies from showing that regression coefficient of Lev at -0.035. There was a significant positive relationship between Age, company size, tangibility, and liquidity with profitability of insurance company. Similarly, Managerial efficiency, firm growth and market share had a negative significant impact on profitability of insurance company.

Leverage has a positive and significant effect on profitability of Ethiopian insurance companies. This is inconsistent with similar study from Mistre Sisay(2015) which showing that negative and significant impact of leverage on profitability of insurance companies in Ethiopia [11]. It is implied that highly profitable insurance companies are more likely relied on internally generated funds and equity capital than debt capital as the source of financing. According to our findings, age of company, branch distribution and leverage ratio has found significant variables for insurance company profitability. Similar studies have also shown that leverage ratio, loss ratio/ risk, tangibility of asset, growth and managerial efficiency have significant effect on profitability of the company but, branch distribution and market share is not assessed by previous studies.

Limitations

This research paper is limited to the determining factors those affect profitability of Insurance Company in Ethiopia which is based on 5-year secondary data.

Consent for Publication

Not applicable.

Availability of Data and Materials

Upon request, the data in excel format is available for this manuscript (Corresponding Author is responsible for the data availability).

Competing Interests

The authors declare that there is no competing interest.

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