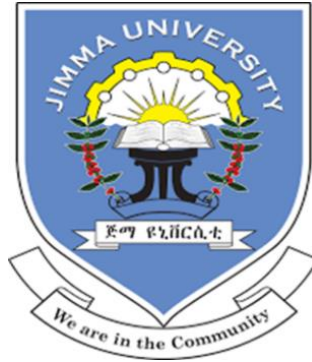


**FACTORS AFFECTING PROFITABILITY OF INSURANCE  
COMPANIES IN ETHIOPIA: PANEL EVIDENCE**



**JIMMA UNIVERSITY BUSINESS AND ECONOMICS  
COLLEGE  
ECONOMICS DEPARTMENT**

**MSC THESIS**

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**JUNE, 2021**

**JIMMA, ETHIOPIA**

***FACTORS AFFECTING PROFITABILITY OF INSURANCE  
COMPANIES IN ETHIOPIA: PANEL EVIDENCE***

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***MSc THESIS***

***A Thesis Submitted to the School of Graduate Studies of Jimma  
University in Partial Fulfillment of the Requirements for the  
Award of Degree of Masters of Science in Economics***

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**JUNE, 2021  
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## CERTIFICATE

*This is to certify that this thesis entitled **FACTORS AFFECTING THE PROFITABILITY OF INSURANCE COMPANY IN ETHIOPIA: PANEL EVIDENCE** accepted in partial fulfillment of the requirement for the award of the degree of masters of science in Economics (MSc) by the school of graduate study Jimma university through the college of business and economics, done by **Tahir Mohammed Abafita** in genuine work carried out by him under my guidance. The matter embodied in this thesis work has not been submitted earlier for the award of any degree or diploma.*

*The assistance and help received during the course of this investigation have been duly acknowledged. Therefore I recommend that it can be accepted as fulfilling the research thesis requirement.*

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**Main advisor**

**signature**

**date**

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**Co-advisor**

**signature**

**date**

**DECLARATION**

*I TAHIR MOHAMMED declare that this thesis entitled **FACTORS AFFECTING THE PROFITABILITY OF INSURANCE COMPANY IN ETHIOPIA: PANEL EVIDENCE** is the outcome of my own effort and that all sources of materials used for the study have been duly acknowledged. I have produced it independently except for guidance and suggestions of my advisor. This study has not been submitted for any degree in this university or any other university. It is offered for the partial fulfillment of the degree of masters of Science in **ECONOMICS**.*

*By: .....*

*Signature: -----*

*Date: -----*

*Place: Jimma University*

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## **ABBREVIATIONS AND ACRONYMS**

EIC	Ethiopian Insurance Corporation
GDP	Growth domestic product
GR	Growth rate
NBE	National bank of Ethiopia
ROA	Return on total assets
ROE	Return on equity
ROIC	Return on invested capital
UAE	united Arab Emirates
VIF	variance inflation factor
WACC	Weighted average cost of capital

## *ABSTRACT*

*The study was conducted to spotlight factors affects Profitability of insurance company. Profitability is one of the most important objectives of financial management because one goal of financial management is to maximize the owner` s wealth. The insurance company is part of immune and repair system of an economy and successful operation of the company can set energy for other industries and development of an economy. This study was aimed to identifying the major factor affecting the profitability of insurance company in Ethiopia. Return on total assets (ROA) - a key indicator of insurance company's performance- were used as dependent variable while age of company, size of company, volume of capital, leverage liquidity ratio, growth and tangibility of assets) were independent variables. The sample includes 9 insurance companies over the period 2011-2020. The sample in this study includes nine of the insurance companies for ten years. secondary data obtained from the financial statements (Balance sheet and Profit/Loss account) of insurance companies and financial publications of NBE was analyzed. The research design was descriptive form. Based on the regression results, the company specific variables such as the Size of a company, growth rate of a company, Leverage ratio, liquidity, capital and age of the company play strong impact on the profitability of the company and size of company is the most important determinant of insurance profitability.*

**Keywords:** *Factors, Insurance Company, Profitability, panel evidence*

## CHAPTER ONE

### 1.1 BACKGROUND OF THE STUDY

Insurance is serving as a means of saving money, transferring risk and channel finances in an appropriate way from surplus economic units to deficit economic units so as to support the investment activities in the economy of the country. To perform accordingly the insurance industry is expected to be financially solvent, strong enough to take risks and profitable in its operation. Since, profitability is the most important objectives of financial management to maximize the owner's wealth and profit in determining performance of company (Malik, 2011). Insurance companies are playing vital role through saving, pooling of funds for huge investment, risk sharing and protection from suffering from risk for economic growth of developed and developing countries. Insurance companies have importance both for individuals and businesses as they indemnify the losses and put them in the same positions as they were before the occurrence of the loss. In addition, insurers provide economic and social benefits in the societies, that is prevention of losses, reduction in anxiousness, fear and increasing employment. Dereje workie (2012) stated that financial institutions serve as a medium of exchange and facilitate business activities, support mobilization of resource through saving and allocate resources to activities with highest returns, follow up investments and exert and corporate governance and offer a diversity of financial instruments.

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Ethiopia's financial sector includes banks, insurance companies, microfinance institutions and pension funds, with banks dominating the sector (African Economic Outlook, 2016). Insurance company is also one of the financial institution sectors which provide a unique financial service by serving the societies in managing risk (Hanna, 2015). They offer financial protection to an individual or firm against the monetary losses which are suffered from unforeseen circumstances (Kihara, 2012). The indemnification and risk pooling properties of insurance facilitates commercial transactions and provisions of credit by mitigating losses and management of non-diversifiable risk to promote economic activities (Nдалu, 2017). Every firm is most concerned with its profitability. Profitability indicates

how well management of an enterprise generates earnings by using the resources at its disposal. In the other words the ability to earn profit e.i. profitability, it is composed of two words profit and ability. The word ‘ability’ reflects the power of an enterprise to earn profits, it is called earning performance.

According to Hifza 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. A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment. Hence, the ultimate goal of a business entity is to earn profit in order to make sure the sustainability of the business in prevailing market conditions. According to Lee (2014), profitability of insurers plays an essential role in persuading policyholders and shareholders by supplying funds into insurance firms through improvement of an insurer's solvency rate. Valuing the profitability of a non-life insurance company is difficult due to the unique format of financial statement which is used by the insurance companies (Boyjoo and Ramesh, 2017). As noted by Suheyli (2015), the firm ability to earn profit is composed of two words. The first word is profit which represents the absolute figure of profit but an absolute figure alone does not give an exact idea of the adequacy or increase in performance as shown in the financial statement of the enterprise. The second word is ability which reflects the power of an enterprise to earn that profit from their resource.

## **1.2 .BACKGROUND OF ETHIOPIAN INSURANCE INDUSTRY**

Insurance development always follows the changes takes place in the political, technological, legal, economic and social aspects of the society. All changes have significant impact on its development. World Vision Ethiopia (2014) stipulated the Ethiopian financial sector in the rural area consists of formal, semi-formal and informal financial service providers. Formal providers include commercial banks and MFIs while semi-formal providers are saving and credit cooperatives. Informal providers consists of social groups that provide savings and lending functions ,private money lenders , friends and relatives as well as trade partners.

Modern institutionalized financial service provision in Ethiopia has very short history. For long the people had been getting financial services through informal means, Iqqubs, Iddirs

and Mahbers are classic examples of informal financial service providers in which people joined neighborhood or affinity group in order to save and access borrowings through a pool of funds and to cover emergent needs of finance. Modern forms of insurance service which were introduced in Ethiopia by Europeans, trace 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. In 1923, the Swiss insurer Balois set up a Branch office in Addis Ababa and soon followed by other foreign companies working on an agency basis. During the Italian occupation from 1936 to 1941 only Italian insurance companies operated in the country. When Italians left, insurance companies from other European countries are restarted to operate insurance activities in Ethiopia.

Axco (2017) described the communist government was overthrown in 1991 and in 1994 legislation allows private insurance companies to be formed and compete with state owned Ethiopian Insurance Corporation, but foreign shareholders were barred. The logic behind the prohibition was that the local industry was weak and needed time to build up its capital reserves; rapid opening of the market would expose Ethiopian companies to domination by financially much stronger foreign insurers. Today the total number of insurance companies, branches and their capital increased significantly. Currently, there are seventeen insurance companies in operation. Ethiopian Insurance Corporation (EIC) is state owned while the rest are private.

### **1.3. STATEMENT OF THE PROBLEM**

In the current era, strong financial institution systems such as banks and nonbank financial institutions and insurance companies are playing a vital role in the economic development of a given country (Dare, 2016). Financial institutions serve as the lifeblood of the economy by facilitating the flow of capital among an organization. Insurance firms, in particular, reinforce monetary and investment activities by providing long-term funds for physical and social infrastructure while simultaneously boosting risk-taking abilities (Cudiamat and Siy, 2017)

Profitability is one of the major objectives of business companies. Profit is an essential prerequisite for an increasing competitiveness of a company. Besides, profit attracts investors and improves the level of solvency and thus strengthens consumer's confidence. The financial analysis of insurance companies serves as an important tool used by actuaries

in the process of decision making on underwriting and investment activities undertaken by them. Their financial performance is also relevant within the macroeconomic context since the insurance industry is one the financial system components fostering economic growth and stability. Therefore, the determinants of an insurance company's performance have attracted the interest of academicians, practitioners, manager's regulatory body, and policy makers.

Different scholars have been doing empirical investigation on the determinants of insurer's profitability and arrived at different conclusions. Khan (2013) revealed that leverage, size, earnings volatility and age of the firm are significant determinants of profitability while growth opportunities and liquidity are not significant determinants of profitability.

Daniel & Tilahun (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. Yuvaraj and Gashaw (2013) studied firm specific factors but they also ignored macro-economic factors affecting profitability.

The absence of empirical studies in Ethiopia concerning determinants of insurance company's profitability is then what motivated the researcher to put his own contribution on what factors affect the financial performance of insurance companies. While taking into consideration the absence of empirical inquiry into the factors affecting insurance company's financial performance, the researcher attempts to work on such untouched empirical evidence in the country. Hence, these are important issues to be investigated for the insurance managers, professionals, regulators and policy makers to support the sector in achieving the excellence so that required economic outcomes could be obtained from the help of the sector in Ethiopia by understanding the success and failure factors of profitability.

## **1.4 Objectives**

### **1.4.1 General objectives**

The main objective of this study is to investigate factors that affect profitability of insurance companies operating in Ethiopia depend on panel evidence.

### **1.4.2 Specific objectives**

- To identify the main factors affecting profitability of insurance company.
- To measure the extent of factors affecting profitability of insurance company
- To rank the factors according to their degree of influence on insurance companies

- To determine the relationship between these factors and profitability in insurance Companies

## **HYPOTHESIS**

Based on review of relevant and related literatures, it is hypothesized that volume of capital, growth, age and size of company, leverage ratio, liquidity ratio and previous profitability are expected to influence firms' profitability as measured by Return on Assets (ROA). Accordingly, the following hypotheses were formulated in this study:

H1: There is a positive relationship between age and profitability of insurance companies in Ethiopia.

H2: There is a positive relationship between size and profitability of insurance companies in Ethiopia.

H3: There exists a positive relationship between any increase in volume of capital and profitability of insurance companies in Ethiopia.

H4: There is a negative relationship between leverage and profitability for Ethiopian insurance companies.

H5: There is a positive relationship between growth and profitability of Insurance companies in Ethiopia.

H6: Tangibility of assets of insurance companies and their profitability are negatively related.

H7: Liquidity ratio and profitability of insurance companies are negatively related.

## **1.5 Methods Adopted**

In achieving the objectives and obtaining answers for research questions, the study adopted quantitative method research approach. The method adopted consists of the survey of financial statements of individual insurance companies. With regard to the survey, the target population consists of nine insurance companies. The number of total insurance companies under study is nine and observation is also for ten years and then nine times ten, becomes ninety total observations included.



## **1.6 Limitation and scope**

Even though there are other formal, semiformal and informal financial institutions, the study focus only on the determinants of profitability of insurance companies in Ethiopia. As the researcher tried to point out the scope of the study, the horizon of the study confined merely on the quantitative measure of determinates of insurance companies profitability (financial performance) in Ethiopia without any overall performance measurement tool. It would have also been very useful, if it includes macro-economic factors of profitability. But due to time and accessibility of the required financial information, the researcher was obliged not to include the factor as a study variable. However, due to the constraints, the researcher is forced to limit the study on this small concern. This study will be delimited on the firm specific determinants of profitability of insurance companies in Ethiopia from 2011 to 2020 for ten years.

## **1.7 Significance and expected outcome of the study**

This research will help that policy makers and managers of insurance companies in Ethiopia to identify the main/major determinants of insurance industry in Ethiopia. Despite the role of insurance companies in the growth of the country's economy (that is affected by the performance or profitability of the industry), only few researches are conducted on the area. The main reason for this study is that most of the researchers have not focused on this area in Ethiopia. Most of the studies previously focused on the banks rather than on insurance industries as well as some give attention on only analysis of financial performance not on factors affecting the financial performance. Therefore, this study is expected to provide empirical evidence on the profitability (financial performance) of insurance companies in Ethiopia. Thus, this research is aimed at filling this gap; motivate other researches to the area and providing appropriate recommendation.

## **1.8. Organization of the study**

The study was organized into five chapters. Chapter one is introduction. Where background of the study, statement of the problem, research hypothesis, objectives of the study, significance of the study, scope of the study, limitation of the and finally how the

study was organized. Chapter two was review of literature in which theories, empirical evidence and conceptual frame work was framed out. Chapter three was statement of the research methodology employed in the study. Chapter four was findings and discussions in which the finding results were interpreted. Finally, Chapter five dealt with conclusion and possible recommendations up on the outcome of the study.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 The concept of insurance companies and their financial performance

Insurance can be defined as a service provided as a financial benefit in favor of an individual, association or business in exchange for collected premiums that provides a benefit in case a risk occurs. It is an economic sector that includes the conception, production and marketing of this type of service (Berteji and Hammami, 2016). The insurance firms reinforce monetary and investment activities by providing long-term funds for physical and social infrastructure while simultaneously boosting risk-taking abilities (Cudiamat and Siy, 2017).

Profitability is one of the most important objectives of financial management because one goal of financial management is to maximize the owner`s wealth and profitability which in turn indicates better financial performance. 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 (2013) 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. According to Al-Shami (2013) there are different ways to measure profitability such as: ROA, return on equity (ROE) and return on invested capital (ROIC). ROA is an indicator of how profitable a company is relative to its total assets. It gives us an idea as to how efficient management is in using its assets to generate earnings whereas ROE measures a company`s profitability which reveals how much profit a company generates with the money shareholders have invested. ROIC is a measure used to assess a company`s efficiency in allocating the capital under its control in profitable investments. This measure gives a sense of how well a company is in using its money to generate returns. Comparing a company`s ROIC with its

weighted average cost of capital (WACC) reveals whether invested capital is used efficiently or not. In contrast, William Hailegebrel (2016) argued that the performance of insurance companies in financial terms is normally expressed in net premium earned, profitability from underwriting activities, annual turnover, return on investment, return on equity. These measures could be classified as profit performance measures and investment performance measures. However, most researchers in the field of insurance and their profitability stated that the key indicator of a firm's profitability is ROA defined as the before tax profits divided by total assets. Kader *et al.*, 2010) and Hafiz Malik (2011) are among others, who have suggested that although there are different ways to measure profitability it is better to use ROA. Therefore, being profitable means that insurance companies are earning more revenues than being disbursed as expenses. As explained above just to analyze the drivers of profitability, it is useful to decompose either the return on asset ROA or ROE into their main components. According to Capital and Re (2008) Profits are determined first 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. The first division of the decomposition shows that insurers ROE is determined by earnings after taxes realized for each unit of net premiums (or profit margin) and by the amount of capital funds used to finance and secure the risk exposure of each premium unit (solvency). That is why most researchers use ROA as a measure of profitability in financial institutions.

## **2.2. Global insurance industry**

The insurance industry forms a vital 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 wholly: Rising income and demand for insurance, Rising insurance sector employment, and increasing financial intermediary services for policyholders, particularly in the pension business (Hussels *et al.*, 2005). 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 (Haiss and Sumegi, 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 (Han *et al.*, 2010). 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.

Insurance intermediaries serve as the critical link between insurance companies seeking to place insurance policies and consumers seeking to procure insurance coverage (Outreville, 2013).

According to Hifza (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. Teklit and Jasmindeep (2017) conduct the study on topic entitled internal and external determinant of insurance companies of profitability in Ethiopia for the 2006-2015 through panel data consecutive years. In the study, eight dependent variables were used such as size of insurance companies, capital adequacy, leverage ratio, liquidity ratio, and loss ratio and market share, growth rate of GDP and inflation rate. In order to achieve this objective, the fixed effect model was used instead of random effect model following the

result of Hausman test. Panel data covering 10 years' period from 2005-06 to 2014-15 were analyzed for seventeen (17) insurance companies.

The results of the regression analysis revealed that size of insurance, capital adequacy, and liquidity ratio and growth rate of GDP were the major factors that significantly affect the profitability of insurance companies. On the other hand, leverage ratio, loss ratio, market share and inflation rate were found to have insignificant effect on insurance companies' profitability. the liquidity, loss ratio, Growth rate of GDP and inflation rate is negatively related with the profitability measured by the ROA. Based on the finding, the study suggested that managers of insurance companies as well as the policy makers in the country should take crucial measures by framing policies and strategies that aimed in improving the overall profitability of insurance companies.

Demis (2016) conducted the study on macroeconomic and firm specific determinants of profitability of insurance industry in Ethiopia. The study considers the firm specific factors which consist of age of company, size of company, leverage ratio, liquidity ratio, premium growth, technical provision, underwriting risk, solvency, re-insurance dependency and tangibility of assets and macroeconomic factors; GDP and Inflation on profitability of Ethiopian insurance industry.

The study identifies that underwriting risk, technical provision, leverage and inflation have negative and significant effect whereas premium growth, age of the company, solvency ratio and GDP have statically positive and significant effect on the profitability of Ethiopian insurance industry. However, the study found that liquidity, re-insurance dependency, tangibility of assets and company size have no significant effect on the profitability of insurance industry in Ethiopia. Based on the finding, the study suggests that, insurance companies should critically consider underwriting risk and should minimize the accumulation used for technical provision and the level of leverage.

Simon (2016) investigates the internal factors affecting financial performance of insurance companies in Ethiopia by using the panel data over the period of 2005 to 2012. The Return on Asset was used as a proxy for measuring profitability which is dependent variable. The independent variable was identified from the annual audited financial statements such as balance sheet and the income statements. The data that collected from the financial statements of insurance companies is analyzed with the multiple regression analysis by using the STATA version 11.0. The finding of the study demonstrates that leverage ratio, liquidity ratio, company size, Management competence index and company growth rate are

influential factors of financial performance. But, age of company and loss ratio has no effect on the financial performance of Insurance Companies in Ethiopia.

Base on the finding of the study, the author recommends that high consideration of increasing the company assets, using internal sources of financing and having highly qualified employees in the top managerial staff is advisable for insurance companies currently operating in Ethiopia to enhance their performance.

Asrat and Tesfahun (2016) investigate the determinant of profitability, particularly in eight Ethiopian private insurance companies from the period of 2005- 2015 through panel data. The data were analyzed by using multiple linear regression analysis. The firm specific factors used in this study include underwriting risk, reinsurance dependence, solvency ratio, premium growth, company size and three macro factor was used such as GDP, Inflation and interest rate. Mistire (2015) has studied the determinant of profitability on insurance sector in Ethiopia. The study investigates both of the firm specific variables and macro-economic variables by using sample of nine companies over period duration of 2003 to 2014 by collecting through panel data and primary data. The firm specific variables used in this study include age of companies, size of companies, leverage, tangibility of assets, liquidity, premium growth, loss ratio, reinsurance dependence, solvency margin and the macroeconomic variable used in the is only GDP growth rate. The finding of the study states that loss ratio and leverage ratio is significant and negative impact on profitability of insurance companies, whereas all other variables have positive and significant impact on profitability.

Based on the finding the study recommends that the management of the companies should pay great attention on ways to increasing the company assets, ways to control the companies leverage and finally the companies must employ highly qualified staffs at top management position to get from the customer acceptance in Ethiopian general insurers.

Hanna (2015) conducted the determinant of profitability in Ethiopian insurance companies by considering both external and internal factors. The internal independent variables used in the study are company size, leverage, liquidity, firm growth, age, volume of capital and tangibility are used. Moreover, as external explanatory variables, inflation and GDP are used. The return on assets were used as the proxy of measuring profitability. In the study, a panel data covering the period of 2005 to 2014 are analyzed for a sample of nine insurance companies to reach on the final conclusions.

The finding of the study shows that internal factors leverage, firm growth and tangibility of assets are the most significant determinants of profitability of insurance companies in

Ethiopia, of which, firm growth has positive impact, on the other hand leverage and tangibility of assets have negative impact on profitability of insurers. From macroeconomic factors, inflation has a negative and significant impact on insurers' profitability as well as company size, company age and GDP growth shows positive but insignificant relationship with insurers' profitability. And liquidity has negative and insignificant relationship with insurers' profitability.

Based on the finding the authors recommend that an insurance company's management and investors should focus on how they promote the growth which significantly affects the profitability since the sector is still at the early stage of development.

Hadush (2015) investigates the determinants of profitability by considering both exogenous and endogenous variables such as liquidity, tangibility, volume of capital, premium growth, claim ratio, real GDP and inflation on general insurance companies operating in Ethiopia proxied by ROA to measure profitability. The econometric analyses have performed on a panel data for a sample of nine Ethiopian general insurance companies for the study period of 2005-2014.

Based on the above data the finding of the study reveals that tangibility, volume of capital, premium growth, claim ratio, and real GDP are the most important determinants of profitability hence tangibility, volume of capital, premium growth is significant and positively related. In contrast, claim ratio and real GDP are negatively but significantly related with profitability. However, liquidity and inflation are not significantly related with profitability.

Suyehli (2015) also examine the determinants of the of insurance companies' profitability in Ethiopia. The mixed research approach was used in the studies which consist of depth interview with manager and annual report of the firm. Panel data covering eleven-year period from 2004 – 2014 are analyzed for a sample of nine insurance companies in Ethiopia. The find from the study demonstrate that underwriting risk, technical provision and solvency ratio have statistically significant and negative relationship with insurers' profitability. However, reinsurance dependence has negative but insignificant relationship with profitability. On the other hand, variables like liquidity, company size and premium growth have a positive and statistically significant relationship with insurers' profitability. In addition, economic growth rate has significant influence on profitability whereas inflation has insignificant influence on insurers' profitability. The study provides evidence that underwriting risk, technical provision and liquidity are the most important factors that affect profitability of insurance companies in Ethiopia. And finally, the study recommends



that, the insurance companies' managers as they give high attention to underwriting risk, technical provision and liquidity which increases profitability of the sector significantly.

Meaza (2014) conducted a study on the effects of firm specific factors (size of company, leverage ratio, liquidity ratio, loss ratio/ risk, tangibility of assets, growth and managerial efficiency) and macroeconomic factors (economic growth and inflation) on profitability proxied by ROA (dependent variables). In the study, the data is collected from a sample of ten insurers by using panel data with the time duration of 2008-2013 for six consecutive years.

The result of the study demonstrates that size, leverage, tangibility of asset, loss ratio, firm growth and managerial efficiency have significant impact on profitability (ROA). Whereas firm size, tangibility of asset, firm growth and, managerial efficiency is positively related. In contrast, leverage and loss ratio are negatively and significantly related with profitability. Liquidity, inflation, and economic growth are not significant determinants of profitability.

Based on the finding the study recommended that, the insurance managers and policy makers should give more attentions to firm-specific determinants of profitability than macroeconomic variables; since investigating the effects of macroeconomic variables on profitability of companies more use longer period observations.

Mehari and Aemiro (2013) conduct their study on factors determining insurance companies' performance in Ethiopia by considering the variables (size, leverage, tangibility, Loss ratio (risk), growth in writing premium, liquidity and age) on performance of insurance companies in Ethiopia which measured by (ROA). In order to conduct the study, the sample of nine insurance companies was selected over the period of 2005-2010 through the panel data. The finding of the study shows that insurers' size, tangibility and leverage are statistically significant and positively related with return on total asset; however, loss ratio is statistically significant and negatively related with ROA. Thus, insurers' size, Loss ratio, tangibility and leverage are important determinants of performance of insurance companies in Ethiopia. But, growth in writing premium, insurers' age and liquidity have statistically insignificant relationship with return on asset.

Based on the data, that analyzed through SPSS, the regression results demonstrate that growth, leverage, volume of capital, size, and liquidity are identified as most important determinant factors of profitability hence data growth, size, and volume of capita are positively related. In contrast, liquidity ratio and leverage ratio are negatively but

significantly related with profitability. The age of companies and tangibility of assets are not significantly related with profitability.

### **2.3. Internal Determinants**

The internal determinants of insurance companies' profitability are those management controllable factors which account for the inter-firm differences in profitability, given the external environment. Accordingly, Hafiz (2011) defines internal determinants of profitability as factors that could be influenced by management decisions. As stated by Hamadin (2011) internal determinants can be broadly classified into two sub-categories namely financial statement variables and non-financial statements variables. The financial statement variables are determining factors which are directly driven from items in a balance sheet and profit & loss accounts of the insurance companies. On the other hand, the non-financial statement variables are those factors which are not directly displayed on the financial statements accounts.

According to Yuqi (2007) financial institutions non-financial statements variables are classified as management quality, efficiency and productivity, age and number of branches. Most researches concerning insurance companies are conducted with respect to only financial statement variables. Hence, Hamadin (2008) in his dissertation regarding UAE used financial statement variables such as size, leverage, liquidity, tangibility of assets, volume of capital.

Similarly, Hafiz (2011) in Pakistan used such variables mentioned above and age as a non-financial statement variable. Sylwester (2011) in Poland, Hamadan (2008) in United Arab emirates (UAE), Swiss (2008) in Egypt and Jay (2007) in United kingdom, Naveed *et al.*, (2011), in Pakistan, Adams *et al.*, (2008) in Canada, Desheng *et al.*,(2007), and Flamini *et al* (2009) in Sub-Saharan countries are among others used financial statement variables as independent variables. The following are the variables used in researches concerning profitability of insurance companies and related financial institutions and the details of internal financial statement and one non-financial statement variable are discussed in detail in this section.

#### **2.3.1 Company Age**

In this study, age of the company represents the number of years during which the insurance companies have been operating in the Ethiopian insurance industry. It is expected that in connection with the increase in years of operations for the insurance

companies that operate in the industry, both their experiences in relation to the Ethiopia insurance industry and their reputation in the industry will also increase. Newly established Insurance is not particularly profitable in their first years of operation, as they place greater emphasis on increasing their market share, rather than on improving profitability. Similarly, indicate that older Insurance expected to be more profitable due to their longer tradition and the fact that they could build up a good reputation. Obviously, the above studies those include age as one of their explanatory determinant indicates a positive relationship between age and profitability. 23 Several studies have been conducted to examine the effect of age on firm profitability. However, the empirical evidences of the linkage between profitability and firm age are somewhat inconsistent. For example, evidence collected by Philip Hardwick and Mike Adams (1999) from UK companies suggests that there is an inverse relation between profitability and firm age.

Similarly, the research conducted on the relationship among firm characteristics including size, age, location, industry group, profitability and growth by Swiss (2008) indicated that larger firms are found to grow faster than smaller and younger firms found to grow faster than older firms. In contrast, Hamadan (2008) found no significant statistical relation between age and profitability of insurance companies in UAE but there exist a positive and statistical significant relation between firm size and profitability.

Similarly, Hafiz (2011) in his Pakistan study found that there is significantly positive association between age & size of the company and profitability. The older the firm the more may be the profitability of the firm. This could be justified as experience and efficiency in the operation process may decrease cost of production and he found even that age is the strongest determinant of profitability. In most literatures the effect of size on banks profitability are represented by total asset. Flamini (2009) indicated that size is used to capture the fact that larger firms are better placed than smaller firms in harnessing economies of scale in transactions and enjoy a higher level of profits.

### 2.3.2 Company Size

The company size can be expressed by many variables such as number of employees, number of branches, or total assets. Most researchers of the field use total assets to express the size of the company (Omondi and Muturi, 2013), (Burca and Batrinca, 2014); (Al-Shami, 2013); (Swiss 2008); (Çekrezi, 2015); (Malik, 2011).

The size of the company is considered as an influential factor because it shows that larger companies are better positioned in the market, operate with economies of scale, and thus

enjoy higher benefits (Flamini, McDonald, and Schumacher, 2015). Most studies conclude that there is a statistically significant positive correlation between the size of the company and its profitability, expressed by ROA (Swiss, 2008), (Malik, 2011) and (Al-Shami, 2013).

However, there are discussions about the optimal size of the company, which positively affects profitability. A growth in assets that extends an optimal ratio may have negative effects, due to increased bureaucracy (Yuqi, 2007). Hence, the size-profitability relationship may be expected to be non-linear. Therefore most studies use the real assets in logarithm and their square in order to capture the possible non-linear relationship. Athanasoglou (2006) and Yuqi found positive relationship between size and profitability.

### 2.3.3 Liquidity Ratio

This refers to the ability of an insurer to meet its short term obligations when it is due. It is commonly measured by the ratio of current assets to current liabilities. It also shows the ability of an insurer to convert its assets in to cash as quickly as possible. Liquidity for insurance companies shows the ability of insurers to pay current liabilities, which have the nature of operating expenses or payment of compensation in case of damage when due then shows us that more current assets are held and idle if the ratio becomes more which could be invested in profitable investments.

An insurer can use liquid assets in order to finance its activities and investments in times when there is less availability of external sources of funds. Low liquidity ratio indicates that an insurer is facing difficulties in meeting its short term obligations. On the other hand, an extremely high ratio of liquidity could also mean that the insurer is keeping idle cash that could have generated income by investing in profitable areas.

Accordingly, Renbao Chen and Kie (2004), cash flow (mainly premium and investment income) and liquidation of assets are the main sources of liquidity. Empirical evidences with regard to liquidity revealed almost inconsistent results.

Naveed. (2011) research article in his investigation in Pakistan found that ROA has statistically insignificant relationship with liquidity. Similarly, several other studies also have been conducted to measure the performance of the insurance companies. In contrast, Chen and Wong (2004) examined that, liquidity is the important determinants of financial health of insurance companies with a negative relationship. Similarly, Hakim and Neaime (2005) observed that liquidity, current capital and investment are the important determinants of banks profitability. Flamini, Calvin and Liliana (2009) in their

investigation regarding Sub-Saharan countries found significant and negative relationship between bank profitability and liquidity.

#### 2.3.4 Leverage

The leverage ratio of an insurance company is defined as the ratio of debt to equity. It indicates the amount of debt used to finance the assets of a given firm. An insurance company with significantly more debt than equity is considered to be highly leveraged. The risk of an insurer may increase when it increases its leverage. The trade-off theory suggests a positive relationship between profitability and leverage ratio and justified by taxes, agency costs and bankruptcy costs push more profitable firms towards higher leverage. Hence more profitable firms should prefer debt financing to get benefit from tax shield. In contrast to this pecking order theory of capital structure is designed to minimize the inefficiencies in the firms' investment decisions.

Due to asymmetric information cost, firms prefer internal finance to external finance and, when outside financing is necessary, firms prefer debt to equity because of the lower information costs. The pecking order theory states that there is no optimal capital structure since debt ratio occurs as a result of cumulative external financing requirements. Literatures in capital structure confirm that a firm's value will increase up to optimum point as leverage increases and then declines if leverage is further increased beyond that optimum level.

For instance, Renbao and Rie (2004) stated that leverage beyond the optimum level could result in higher risk and low value of the firm. Empirical evidences with regard to leverage found to be statistically significant relationship but negative. For instance Renbao and Kie (2004), in Asia, Hamadan (2008) in UAE, Hifza (2011) in Pakistan, Sylwester (2011) in UK, Swiss (2008) in Egypt and Flamini (2009) in Sub-Saharan countries found that negative but statistically significant relationship between leverage and profitability of firms.

Harrington (2009) stated that the relationship between leverage and profitability has been studied extensively to support the theories of capital structure and argued also that insurance companies with lower leverage will generally report higher ROA, but lower ROE. Since an analysis for ROE pays no attention to the risk associated with high leverage.

### 2.3.5 Tangibility of Assets

Tangibility of assets in insurance companies in most studies is measured by the ratio of fixed assets to total assets. A recent study by Naveed, Zulfqar and Ahmad (2011) investigates the impact of firm level characteristics on performance of the life insurance sector of Pakistan over the period of seven years. For this purpose, age, risk, growth and tangibility are selected as explanatory variables while ROA is taken as dependent variable. The results of OLS regression analysis revealed that leverage, size and risk are most important determinant of performance of life insurance sector whereas ROA has statistically more of insignificant relationship with, tangibility of assets. However, Hafiz (2011) found that there exists a positive and significant relationship between tangibility of assets and profitability of insurance companies and argued that the highest the level of fixed assets formation, the older and larger the insurance company. In contrast to this, Yuqi (2007) in UK found no significant relationship between tangibility of assets and profitability of insurance companies.

### 2.3.6 Growth Rate

Growth as measured by the percentage change in total assets or sometimes percentage change in premiums of insurance companies is expected to positively related with profitability of insurance companies in Ethiopia. Insurance companies having more and more assets over the years have also better chance of being profitable for the reason that they do have internal capacity though it depends on their ability to exploit external opportunities. Empirical evidence by Naveed Ahmed et al (2011) in Pakistan, Yuqi Li (2007) in UK and Hamadin Ahmed Ali Al-Shami (2008) in UAE of their investigation found a positive and statistically significant relationship between growth and profitability of insurance companies.

## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.1. INTRODUCTION**

This chapter specifically gives a brief description of the research method that is employed to capture determinant factors affect profitability of insurance companies in Ethiopia.

This include a detail description of quantitative research design tools which embraces research approaches and design adopted, sample design of the study, data type, source and data collection mechanism, variable definition and hypothesis development, empirical model specification, type of data analysis and link between hypothesis and data source are also discussed.

To comply with the objective of this research, the paper is primarily based on survey of quantitative research, which constructed an econometric model to identify and measure the determinants of insurance companies' profitability. Regression analysis based on the results of panel regression analysis is adopted to measure the effect of determinants on insurance companies' profitability by using E-views software packages.

#### **3.2 RESEARCH DESIGN**

A research design is a master plan that specifies the methods and procedures for collecting, analyzing the needed information (william G.Zikmund,et al 2013).the research design constitutes the blue print for collection measurement, and analysis of data.

Accordingly in this study, the researcher conducted the research using quantitative approach and data was collected from purposefully selected insurance companies in Ethiopia using ten years data from 2011-2020. Secondary source of data included balance sheet, income statements and Revenue account, of the insurance companies obtained from the NBE and other data that could not obtained from financial statements were collected from the insurance companies themselves. Secondary sources are the most reliable one, as these financial statements are already audited by independent auditors and accepted by the users of the information.

### **3.3 Research Method**

The methodology of carrying out this research is based on the objectives of the paper and the availability of relevant information. 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. Specifically, multiple regression analysis is adopted to measure the effect of determinants on profitability. The use of panel regressions considers the simultaneous relationships amongst the multiple numbers of independent and dependent variables found across the regression model, therefore suited to the nature of the study.

The significance of the impact of the independent variables on dependent variable is, at the same time, highlighted in using classical linear regressions. Panel regressions are further utilized to examine the associate relationships between variables in terms of relative importance of the independent variables and predicted values of the dependent variables.

For the initial construction of the decomposed model an exploratory study was carried out through a search of the available literature to identify the exact components of the model. Further literature search was conducted to find other factors which could potentially and clearly affect profitability of insurance companies in Ethiopia. By summarizing previous studies, liquidity, volume of capital, firm size, age, leverage, growth and tangibility of assets are selected to be included as explanatory variables in the model.

### **3.4 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. 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 nine insurance companies in Ethiopia. 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.

### **3.5 Sampling Mechanism**

Given the research objectives coupled with research questions, it is considered that purposive sampling is employed so as to include all insurance companies established and



serving with in the specified period from 2011 to 2020 and the size for sample is nine insurance companies. Ten years is assumed to be relevant because five years and above is the recommended length of data to use in most finance literatures.

### **3.6 Data Analysis**

Data analysis section of this study is based on descriptive analysis and regression analysis. It means that the this section provides the descriptive analysis of the panel 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.

#### **3.6.1. Descriptive Analysis**

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 2011 to 2020.

#### **3.6.2. 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.

#### **3.6.3. 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, volume of capital, growth and previous year profitability of the companies. The panel regression results were the best prediction of the dependent variables from several 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. As the Eviews version 10 shows that, the relationship of the independent variables (age) have positive relationship with the dependent variables (profitability) ROA. 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 researchers 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.

## CHAPTER FOUR

### RESULTS AND DISCUSSIONS

#### 4.1 Introduction

This chapter analyzes the determinants of insurance company's profitability, using the annual balanced panel data, where all the variables are observed for each cross-section and each time period. The study has a time series segment covering from the period 2011 up to 2020 and a cross section segment which considered nine Ethiopian insurance companies. The chapter is organized into four sections. Section one presents descriptive statistics of variables, model specification and tests for the classical linear regression model assumptions. Section two discuss the Diagnostic Testing for the model, section three model selection criteria, finally section four is about analysis result and interpretation.

#### 4.2 Descriptive Statistics of the Variables

The major purpose of this study is to investigate factors that affect profitability of insurance companies operating in Ethiopia depend on panel evidence. In this section, the study examined the descriptive statistics for dependent variables; Return on Asset (ROA), and the explanatory variables; size (SIZE.), liquidity (LIQ.), leverage (LEV.), capital (CAP), tangibility (TAN), growth rate (GROW), and age involved in the regression model are presented. Mean, maximum, minimum and standard deviation values are included in the Table 4.1 below. These figures give the overall description about data used in the regression models. The summary of descriptive statistics that was intended to give general descriptions about the data (both dependent and independent variables) is presented in Table 4.1. Totally 90 observations from 9 insurance were included in the study, which were collected from 2011-2020. Some outlier values were adjusted for the purpose of analysis. Accordingly, mean, median, standard deviation, minimum and maximum values of each variable were used so as to show the overall trend of the data over the period under consideration.

**Table 4.1;** Summary of descriptive statistics for dependent and independent variables

	ROA	LEV	TAN	GR	CAP	AGE	SIZE	LIQ
Mean	0.091	0.989	0.709	17.390	0.117	2.9590	19.488	0.1964
Median	0.094	0.890	0.623	15.540	0.129	2.6950	19.995	0.180
Maximum	0.104	1.990	2.332	39.800	0.279	4.0000	24.999	1.050
Minimum	0.061	0.135	0.166	2.120	0.009	2.0000	10.025	0.071
Std. Dev.	0.013	0.548	0.449	11.691	0.060	0.7117	2.837	0.118
Skewness	-0.825	0.188	1.090	0.397	-0.270	0.6086	-0.914	4.422
Kurtosis	2.605	1.942	4.532	1.965	2.253	1.7998	4.181	31.194
Observations	90	90	90	90	90	90	90	90

**Source:** Own computation and Eviews 10, 2021

As indicated in the above table, the profitability measures (ROA) shows that Ethiopian insurance company achieved on average a positive over the last ten years. For the total sample, the mean of ROA was 9.1% with a maximum of 10.4% and a minimum of 6.1%. That means the most profitable insurance company among the sampled earned 10.4% of profit before tax for a single birr invested in the assets of the firm. This indicates that there is not a good movement by insurance company towards maximizing ROA in the sample years. The difference between the minimum 6.1% and the maximum 10.4% of ROAs indicate the margin that ROAs ratio of insurance company ranged over the sample period. Regarding the standard deviation, it means the value of ROA deviate from its mean to both sides by 1.3 percent which indicates there was low variation from the mean. This implies that insurance companies incurred loss need to optimize the use of their assets to increase the return on their assets. This result was supported by Mengistu *et al*, (2020), his result shows that the profitability of the companies (ROA) on average was around 8% with the standard deviation of 0.055.

Among the specific independent variables, from the total of 90 observations over the sample period of 2011 to 2020, GR has a standard deviation of 11.691 which indicates the existence of high variation on the growth rate of the company based on its assets among insurance company. The other specific variable liquidity had standard deviations of .449; leverage had standard deviations of .548, capital had standard deviation of 0.06, age had standard deviation of 0.7117 and insurance size had standard deviations of .2.837.

With regard to total asset (size) as shown in the Table 4.1 above, the average size is 19.488 and there exists significant variation across the sample insurance companies for the reason that the mean value of size is 19.488 and the value of the standard deviation is 2.837. The maximum and minimum values of size were 24.999 and 10.025, respectively. Hence, the

varieties of size among insurance companies might have significant impact on profitability of insurance companies.

In terms of tangibility, on the other hand, insurance companies in Ethiopia are relatively in a similar position as the mean value is 0.709 with the associated variability of only 0.449. Its value ranges from the minimum of 0.166 to 2.332.

The leverage in this study is defined as total debts divided by total assets. This study used leverage as one of the determinants variables of profitability of insurance firms in Ethiopia. From the descriptive statistics Table 4.1, insurance firms in Ethiopia total debts as a proportion of their total assets ranges from minimum of 0.135 to 1.990. The mean value and standard deviation of leverage is 0.989 and 0.83, respectively. This imp

lies that, there were differences among leveraged level as measured by debt to equity ratio across the sample insurance companies under this study, and it also indicates those insurance companies are leveraged because they used debt than equity for financing purpose. The maximum value of leverage was 1.942 and the minimum was 0.135. The trade of theory suggests a positive relationship between profitability and leverage ratio. It says more profitable firms should prefer debt financing to get benefit from tax shield. In contrast to this, pecking order theory implies due to asymmetric information cost, firms prefer internal finance to external finance and, when outside financing is necessary, firms prefer debt to equity because of the lower information costs. This theory states that there is no optimal capital structure since debt ratio occurs because of increasing external financing requirements.

The average value for capital has become 0.117 with a standard deviation of 0.06. The maximum value of capital was 0.279 and the minimum was 0.009. Therefore, on Table 4.1 there exists very significance variation among the values capital across the sample insurance companies included in this study.

Concerning the mean value of growth is 17.390 and the value of standard deviation for the same variable is 11.691 on Table 4.1, which shows that there were no significant variations among the values of growth as measured by the change in total assets over the last ten years across the sample insurance companies. The maximum and minimum rate is 39.80 and 2.120 rate, respectively.

The average value of age is 2.959 years along with the standard deviation of 0.7117 years. The maximum and minimum rate is 4.00 and 2.00 years, respectively. This 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. For instance Swiss Re (2008) in Egypt indicated that larger firms are found to grow faster than smaller firms found to grow faster than older firms.

Liquidity has been defined in the model as the ratio of current assets to current liabilities. Similarly, the mean value of liquidity ratio is 0.1964 with the value of standard deviation 0.118, which also shows us the existence of moderate difference among the values of liquidity ratio for insurance companies under consideration. The maximum and minimum values of liquidity are 1.050 and 0.071, respectively. Therefore, this study conducted to what extent the variations in factors affect the profitability of insurance companies in Ethiopia. Liquidity has been defined in the model as the ratio of current assets to current liabilities. This result was consistent with Mengistu *et al*, (2020), mean value of liquidity ratio was 0.98 with standard deviation of 0.26.

#### **4.3 The relationship between company specific variables and profitability in insurance Companies**

Pearson correlation matrix was used to determine the strength of association in the model that which variable best explained the relationship between company specific variables and profitability in insurance Companies. According to Wajahat (2010), before the start of regression analysis it is important to check the correlation test between dependent variable and independent variables. The Pearson correlation scale ranges from -1 to 1, any value greater than zero indicate a positive direct relationship between the two variables, which implies that every increase in the independent variable will lead to increase the dependent variable, while any value less than zero indicate a negative indirect relationship between two variables, this means that every increase in the independent variable will lead to the decrease on the dependent variable (Hafiz, 2007). Different authors suggest different interpretations; However, (Saunders *et.al*, 2009) suggests about strength of relationship as:  $r = 0$  to 0.39 or 0 to -0.39 small(weak) relationship,  $r = 0.4$  to 0.69 or -0.40 to -0.69 medium (moderate) relationship and 0.70 to 1 or -0.70 to -1 large (strong) relationship. The following table shows the relationship between each variable.

**Table 4.2 :** Correlation matrix among independent variables

	ROA	LIV	LIQ	GROW	CAP	AGE	SIZ	TAN
ROA	1							
LEV	<b>-0.256</b>	1						
LIQ	<b>-0.054</b>	0.106	1					
GR	<b>0.259</b>	0.170	0.006	1				
CAP	<b>0.238</b>	-0.034	0.098	0.147	1			
AGE	<b>0.124</b>	-0.146	-0.098	-0.178	-0.200	1		
SIZ	<b>0.354</b>	-0.081	0.133	0.044	-0.030	0.225	1	
TAN	<b>0.168</b>	0.169	0.505	-0.049	0.169	-0.136	0.073	1

Based on the output of the correlation matrix in table 4.2; growth rate, capital, age, size and tangibility have a weak positive relationship with profitability in insurance companies, but leverage and liquidity have a weak negative relationship profitability in insurance companies.

#### 4.4 Diagnostic Testing

Diagnostic tests are robust statistical tests carried out to verify if the data used have met the assumptions underlying the ordinary least squares regression and where possible to remove problems associated with panel data. When the assumptions of classical linear regression model hold true, the coefficient estimators of both  $\alpha$  (constant term) and  $\beta$  (independent variables) that are determined by OLS will have a number of desirable properties, and usually known as Best Linear Unbiased Estimators (BLUE). Hence, the following sections discuss results of the diagnostic tests (i.e., normality, heteroscedasticity, autocorrelation and multicollinearity) that ensure whether the data fits the basic assumptions of classical linear regression model or not. The diagnostic tests carried out in the study are detailed below.

##### 4.4.1 Test for normality

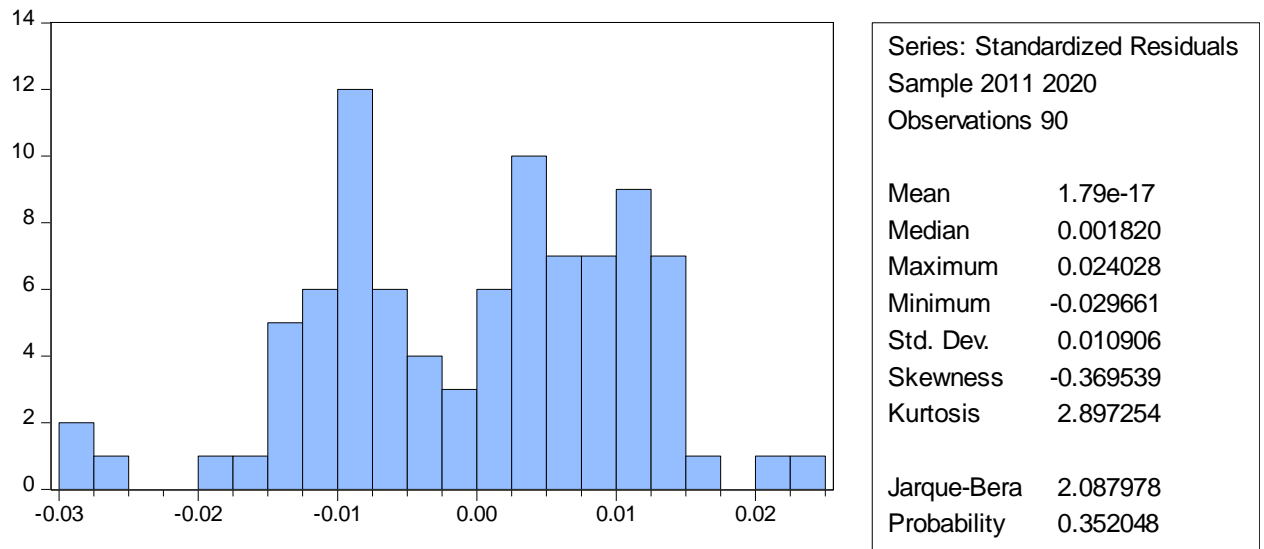
Normality is a condition in which the variables to be used in the model follow the standard normal distribution. The Jarque-Bera statistics was used to test the normality of the variable under different conditions and under the hypotheses;

$H_0$ : The data is normally distributed.

$H_1$ : The data is not normally distributed.

If the series are normally distributed, the histogram should be bell shaped and the Jarque-Bera (J\_B) statistic is insignificant. It thus follows that series will be normally distributed

at 5% level of significance if the probability of J\_B statistic is greater than 0.05. The normality test done for this study is follows as:



**Figure 1; Jarque-Bera Normality Test**

As the result shows the Jarque Berta probability is greater than 0.05 (i.e. 0.556). Then the null hypothesis is accepted (not rejected) and the data satisfied the assumptions of normally.

#### 4.4.2 Test for Heteroskedasticity

According to (Brooks, 2008), Heteroskedasticity means that error terms do not have a constant variance. If heteroskedasticity occur, the estimators of the ordinary least square method are inefficient and hypothesis testing is no longer reliable or valid as it will underestimate the variances and standard errors. There are several tests to detect the Heteroskedasticity problem, which are Harvey Test, Glesjer Test, Breusch-Pagan-Goldfrey Test, White's Test and Autoregressive Conditional Heteroskedasticity (ARCH) test. This study used Breusch-Pagan-Goldfrey test to detect the presence of Heteroskedasticity.

**H<sub>0</sub>**: There is no heteroskedasticity problem.

**H<sub>1</sub>**: There is problem on heteroskedasticity.



**Table 4.3; Heteroskedasticity Test**

<b>Heteroskedasticity Test: Breusch-Pagan-Godfrey</b>			
F-statistic	0.809474	Prob. F(7,82)	0.5819
Obs*R-squared	5.817155	Prob. Chi-Square(7)	0.5613
Scaled explained SS	4.580879	Prob. Chi-Square(7)	0.7110

Table 4.3 showed that the p value is greater than the significant level 0.05 then accept  $H_0$ . Therefore, the data is no heteroskedasticity problem.

#### **4.4.3 Test for serial correlation**

Serial correlation is usually a result of model misspecification or genuine autocorrelation of the model error term. In the presence of such a phenomenon, ordinary least squares are no longer BLUE (Best Linear Unbiased estimators). In such cases R-squared may be overestimated. There was thus every need to test for serial correlation in the residuals.

According to Brooks (2008) when the error term for any observation is related to the error term of other observation, it indicates that autocorrelation problem exists in this model. In the case of autocorrelation problem, the estimated parameters can still remain unbiased and consistent, but it is inefficient. The result of T-test, F-test or the confidence interval will become invalid due to the variances of estimators tend to be underestimated or overestimated. Due to the invalid hypothesis testing, it may lead to misleading results on the significance of parameters in the model. Breusch-Godfrey Serial Correlation LM Test was used to detect autocorrelation problem.

The hypothesis for the model specification test was formulated as follows;

$H_0$ : There is no autocorrelation problem.

$H_1$ : There is an autocorrelation problem.

**Table 4.4; Autocorrelation Test**

#### **Breusch-Godfrey Serial Correlation LM Test:**

F-statistic	11.98982	Prob. F(2,80)	0.3216
Obs*R-squared	20.75568	Prob. Chi-Square(2)	0.3891

Table 4.4 showed that the p value is greater than the significant level 0.05 then  $H_0$  is not rejected. Therefore, the data is no autocorrelation problem. Durbin-Watson stat = 1.915 in table 4.7 also shows there is no autocorrelation problem, since its value is around 2.

#### 4.3.4 Test for Multicollinearity

Multicollinearity is the linear relationship between explanatory variables that creates biased regression model. This problem occurs when the explanatory variables are very highly correlated with each other (Brook, 2008). Predictor variable should be strongly related to dependent variable but not strongly related to each other. This may lead to the paradoxical effect, whereby the regression model fits the data well but, none of the explanatory variables (individually has a significant impact in predicting the dependent variable. For this purpose, variance inflation factor (VIF) and tolerance test were used to check Multicollinearity for variables if the value of VIF is less than 10 there is no Multicollinearity and on the other hand if VIF greater than or equal to 10 there is a serious Multicollinearity problem.

According to Gujarati, (2003) to avoid serious problem of Multicollinearity omitting the variable with 10 and more from the analysis, in addition tolerance is an indicator how much of the variability of independent variable is not explained by the other independent variable in the model and is calculated using the formula  $1 - R^2$  for each variable. If the value is very small (less 0.1), it shows the multiple correlation with other variable is high.

**Table 4.5: Multicollinearity**

Variance Inflation Factors  
Date: 06/14/21 Time: 09:08  
Sample: 1 90  
Included observations: 90

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LIV	5.29E-06	4.708831	1.097529
LIQ	9.80E-06	4.811809	1.367063
GROW	1.17E-08	3.572967	1.103691
CAP	0.000430	5.262055	1.097246
SIZ	1.98E-07	53.63467	1.101233
TAN	0.000147	5.385568	1.426368
AGE	3.34E-06	21.53935	1.165620
C	0.000106	73.92909	NA

Table 4.5 shows that the division result that the value of VIF for all variables were by far less than 10 and the value of tolerance statistics being above 0.1 they were accepted entered in to regression model for the estimation of variables.

#### 4.4 Model selection criteria (Random vs. Fixed effect model)

In this study the method used in each model is selected based on the Correlated Random Effects-Hausman Test. The Hausman test that examines whether the unobservable heterogeneity term is correlated with explanatory variables, while continuing to assume that repressors are uncorrelated with the disturbance term in each period. The null hypothesis for this test is that unobservable heterogeneity term is not correlated or random effect model is appropriate, with the independent variables. If the null hypothesis is rejected then we employ Fixed Effects method (Padachi, 2006).

$H_0$ : Random effects model is appropriate

$H_1$ : Fixed effects model is appropriate

#### Table 4.6; Hausman Test

Correlated Random Effects - Hausman Test

Equation: Untitled

Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	12.782976	7	0.0776

Since the results presented in table 4.6 showed that the p value is greater than 0.05 then  $H_0$  is not rejected. Therefore, this study implemented random effects model.

#### 4.5 Results of Regression analysis

EViews regression output is divided into three panels. The top panel summarizes the input to the regression, the middle panel gives information about each regression coefficient, and the bottom panel provides summary statistics about the whole regression equation. The two most important numbers, “R-squared” (the one who answered how much percent of the variance in the dependent variable in the regression accounted for) and “S.E. of regression.” and the one that shows how far is the estimated standard deviation of the error term. Five other elements, “Sum squared residuals,” “Log likelihood,” “Akaike info criterion,” “Schwarz criterion,” and “Hannan-Quinn criter.” are used for making statistical comparisons between two different regressions. The next two numbers, “Mean dependent

var” and “S.D. dependent var,” report the sample mean and standard deviation of the left hand side variable Brooks, (2008).

“Adjusted R-squared” makes an adjustment to the plain-old to take account of the number of right hand side variables in the regression. Measures what fraction of the variation in the left hand side variable is explained by the regression. The adjusted, sometimes written, subtracts a small penalty for each additional variable added.

“F-statistic” and “Prob (F-statistic)” come as a pair and are used to test the hypothesis that none of the explanatory variables actually explain anything. Put more formally, the “F-statistic” computes the standard *F*-test of the joint hypothesis that all the coefficients, except the intercept, equal zero. “Prob (F-statistic)” displays the *p*-value corresponding to the reported *F*-statistic.

The final summary statistic is the “Durbin-Watson,” the classic test statistic for serial correlation. A Durbin-Watson close to 2.0 is consistent with no serial correlation, while a number closer to 0 means there probably is serial correlation Brooks, (2008). Hence, as concluded in the Hausmantest above the random effects model is appropriate regression analysis to this study.

#### **4.6 Discussion of Regression results**

This section discusses in detail about the analysis of the results for each explanatory variable and their importance in determining ROA in Ethiopian commercial banks. The model developed for this study was:

$$ROA = \beta_0 + \beta_1 LEV + \beta_2 TAN + \beta_3 GR + \beta_4 CAP + \beta_5 SIZE + \beta_6 AGE + \beta_7 LIQ$$

The descriptions of all the variables included in the equation are discussed in the methodology part of the study. The regression result for this model is as follow:

**Table 4.7:** Panel Regression Results

Dependent Variable: ROA

Method: Panel EGLS (Cross-section random effects)

Date: 06/01/21 Time: 22:19

Sample: 2011 2020

Periods included: 10

Cross-sections included: 9

Total panel (balanced) observations: 90

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEV	-0.004682	0.002235	-2.094741	0.0393*
TAN	0.003340	0.003044	1.097325	0.2757
GR	0.000276	0.000105	2.620316	0.0105*
CAP	0.071449	0.020151	3.545632	0.0007*
AGE	0.003674	0.001776	2.069110	0.0417*
SIZ	0.001904	0.000433	4.397236	0.0000*
LIQ	-0.023490	0.011793	-1.991804	0.0497*
C	0.120077	0.010010	11.99610	0.0000

Effects Specification		S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		0.011044	1.0000

Weighted Statistics			
R-squared	0.373856	Mean dependent var	0.090600
Adjusted R-squared	0.320405	S.D. dependent var	0.013782
S.E. of regression	0.011362	Sum squared resid	0.010585
F-statistic	6.994341	Durbin-Watson stat	1.915211
Prob(F-statistic)	0.000002		

Unweighted Statistics			
R-squared	0.373856	Mean dependent var	0.090600
Sum squared resid	0.010585	Durbin-Watson stat	1.915211

**Note:** \*denotes significant at 5%**Source:** Regression results from EVIEWS 10

The estimated results reported in Table 4.7 showed that, The R-squared and an adjusted R-squared value is 0.373856 and 0.320405, respectively. This means about 37.4% of the variations in ROAs of insurance company were explained by independent variables included in the model. The remaining 62.6% of changes was explained by other factors, which are not included in the model thus unobserved variables to may explain chapter three empirical analyses. Thus, independent variables collectively, are good explanatory variables of the profitability of insurance companies. According to table 4.7 also showed that, the F-statistic was 6.994 and the probability is significant and rejecting the null hypothesis that there is statistically a significant relationship existing between the dependent variable (ROA) and the independent variables, it also tells that the overall model is highly significant and all the independent variables are jointly significant causes on the variation of profitability of insurance company.

Furthermore, the above table showed that the panel regression model of the study. Which were used to analyze the effect of each factor on return on assets (ROA), while controlling the other independent variables in the model. Accordingly among seven predictor variables included in this study leverage (LEV), liquidity (LIQ), growth rate (GR), capital (CAP), age (AGE), size (SIZE) were found to be significant predictors for determinant of return on assets (ROA) at 5% level of significance. But tangibility was found to be insignificant predictors for determinant of return on assets (ROA) at 5% level of significance. Thus based on the result presented in table 4.7, the estimated model for this study is given by:

$$ROA = 0.120077 - 0.004682 LEV + 0.00276 GR + 0.071449 CAP + 0.003674 AGE + 0.001904 SIZE - 0.023490 LIQ$$

#### **Age of the Companies**

Age of the company is positively related with profitability of insurance companies in Ethiopia. The estimation result of the random effect model reveals that there is a positive and significant relation between profitability and age of the company with the estimated coefficient of 0.003674. It can be interpreted as a one year increase in the age of the company would result in a 0.36 percent increase in the profitability of the company keeping other things unchanged. This result is consistent with the expectation as well as the theory. 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.

Literatures also provide conclusive 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 old 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.

### **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 (0.0019) implies that keeping all else constant, a one percent increase in the size of the company causes a 0.19 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.

### **Leverage**

Leverage considers the capital structure of the firm and the evaluation of the relative risk and return associated with liabilities especially (long term debt) and equity or ownership (G.Giroux 2003). 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 -0.0046 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 0.46 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. Literatures in capital structure confirm that a firm's value will increase up to optimum point as leverage increases and then declines if leverage is further increased beyond that optimum level. Previous studies with regard to leverage also found statistically significant relationship but negative. For instance, Yuvaraj and Abate Gashaw (2013), Shami and Ahmed (2008) Chen-Ying Lee (2014) Yana Safarova (2010), Anila Çekrezi (2015) investigated factors that affect financial performance of Albanian. In their studies all found that leverage have negatively and significantly influence on insurance company profitability.

### **Growth rate of the Companies**

Referring to the table above, growth rate (GR) has a positive and significant impact on profitability of the insurance companies with the estimated coefficient of 0.00276 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 growth rate of the company causes a 0.27 percent increase in the profitability. The positive sign is in line with our expectation, as the increase in 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.

### **Liquidity**

The result of regression analysis confirmed the hypothesis raised at the beginning of the paper, so there is a statistically less significant negative correlation between the profitability of insurance and their liquidity. The reason for this result on Table 4.6 is explained by the fact that the greater is the current ratio (through which represented liquidity) the smaller is the profitability (Chen & Wong, 2004) as funds held in the form of liquidity can be invested and ensure higher profitability (Chen, 2004) & Wong, 2004). For liquidity Ayele (2013) presented a negative yet statistically significant. The study also shows, an increase by 1 % in liquidity, there is negatively (decrease) in profitability by 2.34% significantly.

### **Capital**

From model it is indicate that there is a positive relationship between capital strength and profitability. The coefficient of the CAP was 0.071449, showing that an increase in volume



of capital will result in increased profitability. This is in line with the expectation as an insurance company with a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability. Hence finding in this study is consistent with previous studies. For instance, Hamadin Ahamed Ali-Alshami (2008) in UAE, Hafiz Malik (2011) in Pakistan Yuqi Li (2007) in UK and indicates that well capitalized insurance companies face lower costs of going bankrupt, which reduces their cost of funding or that they have lower needs for external funding which results in higher profitability.

## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATION

#### 5.1 Conclusion

The objective of this study is to examine the factors that affect the profitability of insurance companies in Ethiopia. The study used the secondary data from 2011-2020, on the nine insurance companies. Descriptive statistics and regression analysis were performed to describe the profitability of insurance companies among insurance companies.

Leverage ratio and liquidity were negatively correlated with the profitability of the firm while the remaining variables (size of the company, capital, age of the company, and growth rate) have a positive association with the profitability.

Based on the regression results, the company specific variables such as the Size of a company, growth rate of a company, Leverage ratio, liquidity, capital 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.

The coefficient of variable size is positive and statistically significant at 5% level. This predicts that performance of large size insurance companies are better than small size companies. The positive relationship between size and ROA implies that size is used to capture the fact that larger insurance companies are better placed than smaller ones in harnessing economies of scale in transactions and enjoy a higher level of profits.

The positive and significant relationship between volume of capital and profitability of insurance companies in Ethiopia implies that a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability. Hence indicates that well capitalized insurance companies face lower costs of going bankrupt, which reduces their cost of funding or that they have lower needs for external funding which results in higher profitability.

The positive and statistically significant relation between growth rate and profitability of insurance companies in Ethiopia implies that insurance companies with high rate of growth in terms of their total assets are also in a better position of being profitable.

## **5.2 Recommendation**

On the basis of the findings of this study, the researchers have drawn the following recommendations:

- As size of company is the most important determinant of insurer's profitability, insurance companies should grow more and expand their activities to be more profitable.
- In order to increase the profitability or return on asset, a concerted effort should be directed towards the sector economy to enhance sustainable economic growth through increased profitability.
- Companies better to raise the majority of their capital by borrowing rather than by capital. Borrowed money can be used to increase production volume, and thus sales and earnings. It also enables a company to modernize, add to its product line, or expand internationally. The additional diversification will likely result in the company performing better.
- Other issues that could be covered in future research include whether insurance companies effectively and efficiently indemnify risks and intermediate savings for the provision of risk to the other sectors in the economy, or whether they allocate resources and manage risks efficiently hence factors affecting profitability of insurance companies and their implications in risk management practices.
- Finally, the study sought to investigate the determinant of profitability in insurers' company in Ethiopia. However, the variables used in the statistical analysis did not include all factors that can affect profitability of private insurers' company in Ethiopian it only include few quantitative variables. Thus, future research shall conduct on the issue like impact of government regulation policy and other directives and non- financial determinant of insurance profitability such as management quality, efficiency and productivity and etc.

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## APPENDIX

### Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.809474	Prob. F(7,82)	0.5819
Obs*R-squared	5.817155	Prob. Chi-Square(7)	0.5613
Scaled explained SS	4.580879	Prob. Chi-Square(7)	0.7110

Test Equation:  
 Dependent Variable: RESID^2  
 Method: Least Squares  
 Date: 06/14/21 Time: 09:07  
 Sample: 1 90  
 Included observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000264	0.000149	1.777017	0.0793
LIV	-1.75E-05	3.32E-05	-0.526183	0.6002
LIQ	-6.82E-05	4.52E-05	-1.507415	0.1355
GROW	1.10E-07	1.56E-06	0.070524	0.9439
CAP	-6.45E-05	0.000299	-0.215322	0.8301
SIZ	2.89E-06	6.44E-06	0.449500	0.6543
TAN	-2.88E-06	0.000175	-0.016458	0.9869
AGE	-4.43E-05	2.64E-05	-1.679435	0.0969
R-squared	0.064635	Mean dependent var		0.000118
Adjusted R-squared	-0.015213	S.D. dependent var		0.000163
S.E. of regression	0.000164	Akaike info criterion		-14.50695
Sum squared resid	2.21E-06	Schwarz criterion		-14.28474
Log likelihood	660.8126	Hannan-Quinn criter.		-14.41734
F-statistic	0.809474	Durbin-Watson stat		1.757232
Prob(F-statistic)	0.581906			

**Breusch-Godfrey Serial Correlation LM Test:**

F-statistic	11.98982	Prob. F(2,80)	0.3216
Obs*R-squared	20.75568	Prob. Chi-Square(2)	0.3891

Test Equation:  
 Dependent Variable: RESID  
 Method: Least Squares  
 Date: 06/14/21 Time: 09:09  
 Sample: 1 90  
 Included observations: 90  
 Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LIV	0.000814	0.002054	0.396355	0.6929
LIQ	-0.001333	0.002875	-0.463473	0.6443
GROW	3.99E-07	9.61E-05	0.004151	0.9967
CAP	-0.000236	0.018487	-0.012788	0.9898
SIZ	0.000214	0.000398	0.538481	0.5917
TAN	0.008680	0.011425	0.759696	0.4497
AGE	-0.001594	0.001702	-0.936571	0.3518
C	-0.001044	0.009343	-0.111717	0.9113
RESID(-1)	-0.164698	0.110666	-1.488247	0.1406
RESID(-2)	0.441291	0.109872	4.016406	0.0001
R-squared	0.230619	Mean dependent var	-3.05E-17	
Adjusted R-squared	0.144063	S.D. dependent var	0.010906	
S.E. of regression	0.010090	Akaike info criterion	-6.250165	
Sum squared resid	0.008144	Schwarz criterion	-5.972408	
Log likelihood	291.2574	Hannan-Quinn criter.	-6.138157	
F-statistic	2.664405	Durbin-Watson stat	2.007500	
Prob(F-statistic)	0.009330			

**Correlated Random Effects - Hausman Test**

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	12.782976	7	0.0776

\*\* WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LIV	-0.004341	-0.004682	0.000008	0.9042
LIQ	0.001013	0.003340	0.000005	0.2778
GROW	-0.000484	-0.000276	0.000000	0.0802
CAP	0.084549	0.071449	0.000067	0.1086
AGE	0.003982	0.003674	0.000000	0.5920
SIZ	-0.002526	-0.001904	0.000000	0.0464
TAN	-0.012868	-0.023490	0.000072	0.2118



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Cross-section random effects test equation:

Dependent Variable: ROA

Method: Panel Least Squares

Date: 06/14/21 Time: 09:12

Sample: 2011 2020

Periods included: 10

Cross-sections included: 9

Total panel (balanced) observations: 90

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Variable	Coefficien t	Std. Error	t-Statistic	Prob.
C	0.132597	0.011090	11.95619	0.0000
LIV	-0.004341	0.003613	-1.201425	0.2334
LIQ	0.001013	0.003723	0.271950	0.7864
GROW	-0.000484	0.000159	-3.046734	0.0032
CAP	0.084549	0.021742	3.888679	0.0002
AGE	0.003982	0.001866	2.133631	0.0362
SIZ	-0.002526	0.000534	-4.731009	0.0000
TAN	-0.012868	0.014542	-0.884888	0.3791

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Effects Specification

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Cross-section fixed (dummy variables)

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R-squared	0.466086	Mean dependent var	0.09060
Adjusted R-squared	0.357861	S.D. dependent var	0
S.E. of regression	0.011044	Akaike info criterion	0.01378
Sum squared resid	0.009026	Schwarz criterion	2
Log likelihood	286.6304	Hannan-Quinn criter.	6.01400
F-statistic	4.306611	Durbin-Watson stat	8
Prob(F-statistic)	0.000011		-
			5.56959
			8
			-
			5.83479
			6
			2.23506
			6

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