Firm Specific Factors and Macroeconomic Determinant of Life Insurance Companies' Profitability in Indonesia

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Abstract: *Financial analysis is an important tools for insurance companies to enhance the profitability. In developing country, such as Indonesia, the empirical studies of firm-specific and macroeconomic factors are not so exhaustively analyzed. Therefore, the aim of this paper is to analyze the firm-specific factors and macroeconomic determinants of life insurance companies' profitability in Indonesia using panel data during the period 2010 to 2014. The study examines the firm-specifics factors consist of size of company, equity capital, premium growth, risk based capital ratio, leverage ratio and liquidity ratio, while macroeconomic factor is inflation rate. The findings indicate negative and significant influence of premium growth and risk based capital on profitability; and significant positive influence of equity capital, liquidity ratio, leverage ratio and size of company on profitability. Additionally, results reveal that inflation rate is not significantly influence the profitability of life insurance companies. The other finding iscompanies that have good level of total assets, equity capital, leverage ratio and liquidity ratios tend to have good achievement ROA ratio. Companies should be able calculating technical reserves appropriately, construct the optimal portfolio in order to be able to generate maximum profits and streamline expenses operating expenses to maintain the achievement of good profitability.*

Keywords: life insurance, profitability, panel data, firm-specific factors and macroeconomic determinants.

1. Introduction

Insurance is a financial institution that serves as an insurance agency or risk management. Insurance also serves as a platform collector of funds and can be used to finance economic development. Through the insurance sector, economic actors can move some or all of the losses suffered, so that financial stability is maintained. This is driving the need for the presence of insurance undertakings are resilient in overcoming various possible risks.

Insurance in Indonesia continues to increase with a positive trend of the growth rate of insurance penetration. Based on data released by the Financial Services Authority (FSA) in the Insurance Statistical Report 2014, insurance penetration in Indonesia is currently at 2.35 percent. This figure is greater when compared with previous years (ie about 2.13 percent, 2.06 percent; 1.95 percent). Such increase reflects the growing awareness of the importance of insurance as part of risk management activities that can provide security for property or a person's soul and affect the growth of the insurance industry in general. For life insurance companies management, it is a positive signal to obtain premium income and results greater investment that will affect the performance of insurance companies.

Insurance business which has the largest contribution in the national insurance industry is life insurance (FSA 2014), which is commercial businesses that provide coverage for risks insured in accordance with the agreements stipulated in the insurance policy. Risks insured under life insurance consist of the risk of death, injury and/or disability. Life insurance is a business with products and services in order to generate long-term profit and depends on the trust of stakeholders. Profitability greatly affect the company's operations and is part of the company's commitment to pay insurance claims, therefore, an understanding of profitability for life insurance companies is essential. Indicators of achievement of profitability in this study is the ratio of return on assets (ROA). According to Malik (2011), a key indicator of a company's profitability, especially in the insurance sector is ROA. ROA measures a company's ability to generate profits comprehensively.

Figure 1 shows that return on asset ratio of life insurance companies in Indonesia during the period 2010 to 2014 are fluctuating (Statistical Reports of Insurance Indonesia) and tend to go down in 2014.
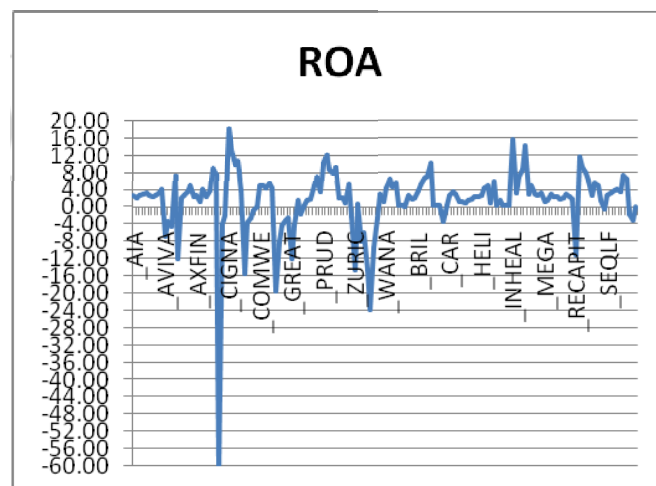

Figure 1: Return on Asset fluctuation of life insurance companies

The same thing happens in big, medium and small enterprises. Most of those values are still below the return on assets of life insurance industry, which is above 3% (see Table 4).

Table 4: Return on Assets Ratio of Life-Insurance Industry (in million rupiah)

	Tahun				
	2010	2011	2012	2013	2014
EBIT	6.671.582	8.808.291	10.210.808	8.847.612	14.522.262
Total Asset	141.646.228	221.295.202	221.295.202	280.940.974	349.986.832
ROA (%)	4.71	3.98	4.61	3.15	4.15

It indicates that the insurance company should pay more attention to the achievement of profit in order to survive in the long term and able to compete with other companies in industry. It caused due to the global and national economic crisis. Although the economics go slowdown, life insurance still posted a positive performance as evidenced by the growth in total assets of23.3% and total premiums of 26.6% (Indonesian Life Insurance Association 2015). Entering the era of the ASEAN Economic Community (AEC) and the increasing number of life insurance companies in Indonesia requires insurance companies to be more competitive by having the right business strategy to enhance profitability.

The preparation of the business strategy undertaken by the company's management requires an analysis of the determinants of financial performance, measured by ROA, both from internal and macroeconomic factors, in order to be used as a basis for making the best decision.

1.1 Problem Statement

Profitability is one of the main objectives of life insurance companies' management. Profit attracts investors and improves the level of solvency. The better financial performance, the better a profile of the company for its stakeholders and the company will be able to compete in the national and global levels. Life insurance companies with better profitability level will survive in the long term business. Determinants of profitability have been debated for years, but until now there has been no solution, especially in developing country, such as Indonesia. Therefore, the study to investigate the factors determine profitability is essential, both firm-specific factors and macroeconomics for developing country.

1.2 Research Objective

The aims of this study is to analyze the firm-specific factors and macroeconomics determinants of life insurance companies' profitability in Indonesia during the period 2010 to 2014 and to formulate recommendations decision making to improve the profitability for the management company because profitability achievement of most life-insurance companies is below the industry's profitability.

2. Literature Review

Profitability is the main purpose of insurance company management. According Burca and Batrinca (2014), profit is an important prerequisite to improve the competitiveness of the insurance company in national and global markets. According to Greene and Segal (2004), profitability for life insurance companies becomes crucial because it affects their operations.

Size of company and the liquidity ratio has a significant and positive effect on profitability (Olaosebikan, 2013; Eliskovska 2015; Mehari and Aemiro, 2013; Malik, 2011). The level of solvency (RBC) positive effect on the profitability of insurance companies in Romania (Burca and Batrinca 2014), but a negative effect in Ethiopia (Reshid 2015). Equity capital and premium growth risk have a significant and negative effect on profitability (Charumathi 2012; Olaosebikan 2013; Burca and Batrinca 2014; Reshid 2015). The life insurance industry is very sensitive to changes in macroeconomic conditions, such as GDP and interest rates. Ciumaş et al. (2014), GDP per capita required by major influence on the development of life insurance in Romania. Increasing of GDP per capita stimulate the life insurance premiums (Eliskovska 2015). Inflation influence significantly and negatively to profitability (Kalengkongan 2013; Pervan 2010), whereas the effect of interest rates on profitability was positive and significant (Olaosebikan, 2013; Eliskovska 2015; Kalengkongan 2013).

3. Data

Data used in this research is secondary data obtained from various relevant website and agencies in Indonesia. The profitability (ROA) and firm-specific factors (size of company, age of company, equity capital, leverage ratio, premium growth, risk based capital ratio and liquidity ratio) are counted from financial statement of each life insurance companies and Indonesian Insurance Statistical Report. The macroeconomic data is from Central Bank. Statistical Descriptive is from Insurance Statistical Report from 2010 until 2014. The period used during 2010 to 2014. Depending on data availability, out of 50 life insurance companies registered in Indonesia Financial Services Authority during 2010 to 2014, 32 companies were selected because data completeness (see Table 1).

Table 1: List of Life Insurance Companies in Indonesia

Companies Name	
PT. AIA Financial	PT. Ace Life Assurance
PT. Asuransi Allianz Life Indonesia	PT. AJ AdisaranaWanaartha
PT. Astra Aviva Life	PT. BNI Life Insurance
PT. Avrist Assurance	PT. AJ BRIngin Life Sejahtera
PT. Axa Financial Indonesia	PT. AJB Bumiputera
PT. Axa Life Indonesia	PT. Central Asia Raya
PT. AsuransiJiwa Cigna	PT. Equity Life Indonesia
PT. CIMB Sunlife	PT. HeksaEka Life Insurance
PT. Commonwealth Life	PT. IndolifePensiontama
PT. AJ Generali Indonesia	PT. AJ MandiriInhealth
PT. Great Eastern Life Indonesia	PT. AsuransiJiwasraya
PT. AJ Manulife Indonesia	PT. AsuransiJiwa Mega Life
PT. Prudential Life Assurance	PT. Panin Dai-Chi Life
PT. AJ Sequis Life	PT. AJ Sequis Financial
PT. Sunlife Financial Indonesia	PT. AsuransiJiwaRecapital
PT. Zurich Insurance Indonesia	PT. AJ TuguMandiri

4. Methodology

According to Firdaus (2011), the approach of panel data is used to see the behavior of various individuals (cross section) at various time points (time series). Panel data in this study is used to look at the influence of firm-specific factors and macroeconomic determinants on the profitability of life insurance companies in Indonesia during 2010-2014. Regression analysis of panel data has three kinds of models, namely: (1) Common Effect Model, (2) Fixed Effect Model (FEM), and (3) Random Effect Model (REM).

There are several benefits to using panel data. First, the data panel incorporating information from the data time series and cross section so as to provide more data and better to do a regression that will reduce bias. Second, it can overcome the problems that arise when there is an ommited variable or lack of time series data. In addition, this research also used descriptive statistics to describe the condition of the Indonesian life insurance sector in terms of profitability.

The relationship between firm-specific factors and macroeconomic variables to return on assets (ROA) will be analyzed using the following models:

$$ROA_{ij} = \beta_0 + \beta_1 SIZE_{ij} + \beta_2 EC_{ij} + \beta_3 AGE_{ij} + \beta_4 LEV_{ij} + \beta_5 PG_{ij} + \beta_6 LIQ_{ij} + \beta_7 RBC_{ij} + \beta_9 INF_j + \varepsilon_{ij}$$

Where:
ROA_{ij} = return on asset insurer i at time j
$SIZE_{ij}$ = number of total assets insurer i at time j
EC_{ij} = equity capital insurer i at time j
LEV_{ij} = leverage ratio insurer i at time j
PG_{ij} = premium growth insurer i at time j
LIQ_{ij} = liquidity ratio insurer i at time j
RBC_{ij} = risk based capital ratio insurer i at time j
INF_j = inflation rate at time j
ε_{ij} = error term
i = 1,2,3,……N ; N = number of observation
j = 1,2,3,……T ; T = number of time series

Profitability is used as a proxy for financial performance and also an indicator of a company's ability to generate profits and guarantee the payment of claims and benefits to policyholders. Profitability also reflect the ability of insurance companies to grow and invest. Profitability is the main purpose of insurance company management. According to Burca and Batrinca (2014), profit is an important prerequisite to improve the competitiveness of the insurance company in national and global markets. According to Malik (2011), ROA is a key indicator of a company's profitability, especially in the insurance sector. ROA calculated by dividing a company's annual earnings by its total assets, ROA is displayed as a percentage.

Liquidity (LIQ) describes the degree to which an asset or security can be quickly bought or sold in the market without affecting the asset's price. liquidity measures the ease with which an individual or company can meet their financial obligations with the liquid assets available to them.

Leverage ratio (LEV) consists elements of debt and each debt has a risk, the greater the leverage will give a greater risk as well. The use of debt will reduce the profitability of the company, therefore the company must reduce the debt ratio to produce a better profit level. LEV is one of several financial measurements that look at how much capital comes in the form of debt (loans), or assesses the ability of a company to meet financial obligations.

Risk-based capital (RBC) requirement refers to a rule that establishes minimum required liquid reserves or regulatory capital for financial institutions. Risk-based capital requirements exist to protect financial firms, their investors, their clients and the economy as a whole. These requirements ensure that each financial institution has enough capital on hand to sustain operating losses while maintaining a safe and efficient market.

Size of companies (SIZE) is measured by total assets. The companies with more total assets expects to generate more profit. So, it is expected that size of companies has significant and positive influence to insurance companies profitability.

Equity Capital (EC) derived from share premium, retained earnings and other equity components. The greater the equity capital means the company will be able to expand the business, for example, the company will be able to open a new branch of the company, making and issuing new life insurance products according to the needs of society, purchase new technology, etc.

Premium Growth (PG) is the percentage of premium income changes from year to year. Premium growth can be positive or negative. The greater the premium growth illustrate the growing demand for life insurance. Positive premium growth is expected to have a positive and significant impact to the profitability of the life insurance company.

Inflation (INF) is a phenomenon in which the prices of economic goods or services have increased. Inflation indicates weakening purchasing power, followed by the decline in the real value of the currency of a country. The inflation rate is very low will cause economic growth to be very sluggish. In addition, the high inflation rate will lower the price of shares of banking assets, affecting the profitability of the company. In corporate activity, high inflation will cause a decline in the profitability of a company. According to research Kalengkongan (2013), inflation has a significant negative effect on the profitability of insurance companies.

Table 2: Variables Used and The Formulas

Variables	Formula
ROA	= Income (Losses) Before Tax/Total Assets
SIZE	= Ln (total assets)
EC	= Ln (equity capital)
LIQ	= Current Assets/Current Liabilities
RBC	= The Minimum Solvency Margin/Minimum Risk-Based Capital
LEV	= Total Liabilities/Total Assets
PG	= The Difference Premium Growth Between This Year And The Previous Year
INF	= Percentage of Inflation Rate based on Central Bank Report

These variables cover the main activities of life insurance sector in Indonesia, both firm-specific factors and macroeconomic determinants, and determine the profitability. The following theoretical hypotheses are checked in this study as follows:

1. There is a significant and positive relationship between the size of company and the profitability.
2. There is a significant and negative relationship between the equity capital and the profitability.
3. There is a significant and positive relationship between the risk based capital of company and the profitability.
4. There is a significant and negative relationship between the premium growth and the profitability.
5. There is a significant and positive relationship between the liquidity ratio and the profitability.
6. There is a significant and negative relationship between the leverage ratio and the profitability.
7. There is a significant and negative relationship between the inflation rate and the profitability.

5. Result and Empirical Analysis

Table 3: Statistics Descriptive (in percentage)

Var	Obs	Mean	Stdv	Min	Max
ROA	160	1.52	7.74	-62.14	18.04
SIZE	160	14.78	1.53	11.40	17.80
EC	160	13.07	1.71	0.00	15.70
LEV	160	73.66	21.48	6.70	151.69
PG	160	60.98	340.14	-100.17	3850.24
LIQ	160	469.32	582.27	89.00	4307.90
RBC	160	558.89	624.74	109.51	5269.00
INF	160	5.64	0.96	4.28	6.97

Descriptive studies shows the mean, standard deviation, minimum and maximum value of each variables observed during 2010 to 2014, computed based on the 160 observations recorded. The return on assets (ROA) fluctuates between -62.14% and 18.04% with an average value 1.52%. PT. CIGNA has the highest ROA ratio in 2010, 18.04%. The proportion of the company's revenue or earning before tax compared to total assets in 2010 is large enough. CIGNA also has the highest average ROA than the others companies during period 2010 to 2014, which is 11.13%.On the other side, PT. Axa Life Indonesia has the lowest ROA, -62.14% in 2012 and also has the lowest average ROA, -10.33%.In 2012, PT. Axa Life has suffered a great loss (nearly as big as the amount of total assets), so that it'sreturn on assets ratio became negative.In that year, the company's premium income decreased by 90%, whereas the cost of the company increased by almost 30% compared to the previous year.

We calculated a large number of potential determinants of profitability with 32 cross-sections and five years of time series, so it is required to check the multicollinearity between explanatory variables before use the regression. Table 5(a) and 5(b) indicate the correlation between predictors in the model.

Table 5(a): Pair wise correlation matrix

	ROA	EC	LIQ	PG	RBC
ROA	1.0000				
EC	0.2754	1.000			
LIQ	0.0121	0.0359	1.000		
PG	-0.2926	-0.1578	-0.0629	1.000	
RBC	-0.2456	0.1484	0.0542	0.0320	1.000
SIZE	0.3084	0.5335	0.0508	-0.2388	-0.0850
LEV	0.1972	-0.0647	-0.0176	-0.0823	-0.4864
INF	0.0987	0.0357	-0.0978	-0.0198	0.2001

Table 5(b): Pair wise correlation matrix

	SIZE	LEV	INF
SIZE	1.0000		
LEV	0.4761	1.0000	
INF	0.0896	-0.0357	1.0000

Table 5(a) and 5(b) show that there are no multicollinearity, because there are no high correlations (more than 0.8) between explanatory variables. Therefore, panel data can be used.

To choose among estimation methods of panel data models, Likelihood Ratio (LR) test, Hausman test and Lagrange Multiplier (LM) test were conducted (see Table 5). The hypothesis' of these tests is written below:

1. LR test.
    H0: Ordinary Least Square (OLS)
    H1: Fixed Effect Model (FEM)
2. Hausman test.
    H0: Random Effect Model (REM)
    H1: Fixed Effect Model (FEM)
3. LM test.
    H0:OLS
    H1: REM

H0 was rejected if the probability value of the test is less than 0.05.

Table 6: The results of LR, Hausman and LM tests

Test		ROA Model
LR test	F-statistic	2.397769
	Probability	0.0004
Hausman test*	Chi-square statistic	0.000000
	Probability	1.0000

*Cross-section test variance is invalid. Hausman statistic set to zero.

According to the result of the LR test, because the F-statistic value is significant at the level 5%, the null hypothesis was rejected so that FEM is the appropriate model. Then, we should do the Hausman test. The result shows that cross-section test variance is invalid or Hausman test can't be applied, so that the appropriate model estimation for ROA is FEM. To determine whether autocorrelation problem exist in the fixed effect model, the Durbin-Watson (DW) test was employed. DW test's value approaching two, 1.929461, shows that there is no autocorrelation between independent variables (see Table 7)

Table 7: The results of Fixed Effects Model

Variabel	Dependent Variable: ROA
EC	0.321558 0.0000*
LIQ	0.000585 0.0000*
PG	-0.003269 0.0000*
RBC	-0.000255 0.2055*
SIZE	1.479189 0.0000*
LEV	0.064998 0.0000*
INF	0.091665 0.3531
C	-29.76091 0.0000*
Adjusted R-squared	0.794380
Durbin-Watson statistic	1.929461
F-statistic	17.16500
Probability	0.000000

*significant at level 25%;

Based on the result, the representation model of FEM estimator is:

$$ROA = 0.322 \cdot EC + 0.0650 \cdot LEV + 0.00059 \cdot LIQ - 0.0033 \cdot PG - 0.00026 \cdot RBC + 1.479 \cdot SIZE + 0.092 \cdot INF - 29.76 + [CX=F]$$

The result of regression analysis indicate that SIZE, EC, LIQ and LEV have significant and positive influence to ROA at significance level of 25%. RBC and PG have significant and negative influence to ROA at a significance level of 25%. Meanwhile, INF is statistically insignificant. The Adjusted R-squared shows that 79.44% of variations in dependent variable (ROA) are explained by the variations in the seven independent variables, while 20.56% variations of ROA is explained by the other factors outside the model. F-statistic shows the validity of model as its value 17.165 is well above its Probability (F-statistics) value of 0.000.

Equity Capital (EC)
Equity capital has a significant and positive effect to profitability. The greater the equity capital is owned by the insurance company, then the company will be able to develop its business better, for example by expanding or opening a new branch of the company, create new life insurance products as required by the participants and use the new technology to reduce cost, etc. These are expected to contribute positively and significantly to the level of profitability of life insurance companies.

Liquidity Ratio (LIQ)
Liquidity ratio has a positive and significant effect. The life insurance company with higher liquidity ratios will have a lesser chance for failure of payment obligations to policyholders. Companies with good liquidity will be able to meet all its obligations at maturity despite the difficult circumstances due to the large supply current assets. It is intended that the company is able to create a larger profit in line with the increase in current assets.

Premium Growth (PG)
Premium growth has a significant negative effect to profitability. Excessive premium growth will pose a greater risk underwriting. The greater the risk requires the company to provide more funds to cover such risks. Underwriting risks that are too high will erode income earned by the company to cover the magnitude of the risks involved, therefore PG has a significant and negative impact on ROA.

Size of Company (SIZE)
Size of company has a positive and significant effect of ROA. According to Malik (2011), size has a significant influence and positive impact on ROA. These results are also supported by research conducted by Chen and Wong (2004), Mehari and Aemiro (2013). Life insurance company's assets consist of assets investment and non-investment assets. Investments made by the insurance company in the financial markets and capital markets. These types of investments undertaken include deposits, bonds, securities, mutual funds, stocks and other investments permitted under the rules of finance ministers. The investment is expected to create profits for the company. The greater and effective the investment assets, the possibility of acquiring profits will be greater too.

Risk Based Capital (RBC)
Risk based capital ratio has significant and negative effect on ROA. The income of insurance companies (ROA) influenced by claim expenses and operating expenses. The increasing of total assets will advance the RBC, but it will not necessarily improve the ROA. So that, increasing of RBC will erode the revenues (ROA) of the insurance companies.

Leverage Ratio (LEV)
Leverage ratio (LEV) has significant and positive effect on ROA. Liabilities of life insurance company consists of Debt and Technical Reserves account. Technical reserves has the largest portion of the company's liabilities. The greatest element of Technical Reserves is Premium Reserves. Premium Reserves is the amount of money collected by the insurance company obtained from the difference between the value of benefits and cash value insurance payment at a time in preparation for the payment of claims.

Companies that are able to calculate the premium reserve accurately will be able to fulfill all of its obligations properly without erode its profits. So that, the effect of this determinant is positive to profitability ratio (ROA) of life insurance companies.

6. Conclusion

Based on the analysis of the factors that affect the profitability of the life insurance company, it can be concluded as follows:
1) Variable equity capital (EC), liquidity ratio (LIQ), size of company (SIZE), premium growth (PG), risk based capital (RBC) and leverage ratio (LEV) is an important variable that must be considered by the management to draw up the company's business strategy. EC, LIQ, LEV and SIZE positive effect on ROA, meaning that an increase in these

variables will increase ROA of life insurance companies. PG and RBC variables have negative effect on ROA. It is means that an increase in that variables will decrease ROA of life insurance companies. The inflation rate has no effect on ROA life insurance companies.

2) Profitability is determined by the amount of wealth owned by the company. Companies that have good level of total assets, equity capital, liquidity ratio and leverage ratio tend to have good achievement ROA ratio. Effort to maintain the achievement of good profitability are companies should be able calculating technical reserves appropriately, construct the optimal portfolio in order to be able to generate maximum profits and streamline expenses operating expenses.

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