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Determinants of Profitability in Life Insurance Companies: Evidence from the Philippines

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Abstract. *Financial institutions serve as the lifeblood of the economy by facilitating the flow of capital. 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. As the dominant segment in the insurance market, the sustainability of the life insurance business is crucial for developing nations. This paper examines the profitability of the Philippine life insurance industry using pooled ordinary least squares on a balanced panel of 23 insurance companies for the years 2000-2012. The analysis makes use of Return on Assets (ROA) as a measure of profitability that is influenced by selected firm level, industry level and macroeconomic factors. The empirical results show that most of the firm level factors influenced ROA while industry level and macroeconomic factors have negligible effect on it.*

Keywords: Profitability, Life Insurance Companies, Philippines

Introduction

Financial institutions play a significant role in the socio-economic growth and development of a nation. Insurance companies, in particular, facilitate a nation's innumerable economic transactions through efficient and effective savings mobilization, risk transfer and indemnification, and financial intermediation processes (Salvatore, 2013; Mishkin, 2010). By mobilizing long-term savings, these companies provide financial security to a nation's citizens. Further, they enhance the government's accumulation of productive capital, which is primarily invested in long-term investment instruments that can be used for infrastructure development. As the dominant segment in the insurance market, the sustainability of the life insurance business is crucial for developing nations. They play an active role as the country's protection and repair system (Sambasivam & Ayele 2013). Ward & Zurbruegg (2000) observed that as insurance markets develop, the collection of productive capital

within the economy develops as well. The profitability of life insurance firms not only improves the insurers' ability to meet long-term financial obligations, but also emboldens policyholders and stockholders to provide funds to such firms, as an essential qualification for administrating insurance business (Akotey, Sackey, Amoah & Manso, 2013).

In the Philippines, the concept of insurance was non-existent during the pre-Hispanic era. It was during the Spanish colonization of the country when the insurance industry was started by Lloyd's of London, an insurer based in London's primary financial district. This was followed by the rapid establishment of other insurance companies in the country, both domestic and foreign (Insurance Commission, 2006).

Today, the Philippine insurance industry is a developing and evolving market (Santos, 2013). With the entry of banks, mutual funds, and financial institutions offering wide-ranging and highly diversified financial security products, further growth is anticipated in the sector.

Several studies have been conducted on the profitability of other financial institutions in the Philippines, concentrating on banks, credit unions and cooperatives (Sufian & Chong, 2008; Unite & Sullivan, 2003; Karim, 2001). There is, however, a dearth of comprehensive studies on the life insurance sector. This research aims to address the deficiency and add to the body of knowledge in the field of insurance research.

This research explores the microeconomic (firm level), mesoeconomic (industry level), and macroeconomic determinants of profitability in the Philippine life insurance sector. It seeks to answer the following questions:

a. To what extent do the selected microeconomic, mesoeconomic, and macroeconomic factors influence the profitability of Philippine life insurance companies?

b. Which are more important factors – microeconomic, mesoeconomic, or macroeconomic – in determining the profitability of Philippine life insurance companies?

The paper is structured as follows. Section 2 provides a selective review of related theoretical and empirical literature on the profitability of life insurance firms. Section 3 describes the data set, estimation techniques and empirical model. Section 4 presents the estimation results and the paper ends with some concluding remarks.

Review of Related Literature

Financial intermediaries such as banks, savings and loan associations, and insurance companies are fundamental institutions of economic growth. They contribute to the optimal allocation of scarce resources in an economy by borrowing the excess funds of their consumers/savers and lending these funds to those individuals and companies that require resources for productive investment opportunities (Mishkin, 2010; Gorton & Winton, 2002). This savings-investment process is primarily achieved through these intermediaries in the mechanism of lending and borrowing.

By putting these idle funds into productive use, the economy of the nation will benefit.

This notion on the significance of the financial industry to economic growth has gained substantial interest in the growth and development literature in the 1960s to the 1980s. Greenwood and Jovanovic (1989) assert that there exists an inevitably closely-knit relationship between financial intermediation and economic growth: Financial intermediation promotes economic growth by allowing a higher rate of return to be gained on capital and this growth consequently accommodates the implementation of high-priced financial structures. This is also in line with the findings of Goldsmith (1969) and McKinnon (1973) who presented comprehensive evidence on the role of financial institutions in promoting long-run growth. In fact, Goldsmith (1969) affirmed this with data illustrating a clear-cut rising secular drift in the ratio of financial institutions' assets to GNP for developed and developing countries for the years 1860 to 1963. Levine (1997) contends that the financial system performed a crucial role in spurring England's industrialization by promoting the mobilization of capital for productive investment opportunities. Likewise, Rousseau & Wachtel (1998) identified the crucial role that financial intermediation played in the rapid industrial transformations that took place in the United Kingdom, Norway, Canada, Sweden, and the United States between 1870 and 1929. Valverde, Del Paso & Fernandez (2014) and Brainard (2008) reaffirm the said relationship between financial intermediation and economic growth in their respective studies.

As financial institutions, it has been established that insurance companies actively participate in contributing to the economic growth of nations. In fact, the United Nations Conference on Trade and Development, as noted by Outreville (1996), formally acknowledged in its first meeting in 1964 that "a sound national insurance and reinsurance market is an essential characteristic of economic growth" (p. 490).

In view of the foregoing, the performance of the insurance industry has been the subject of interest. In particular, the profitability of life insurance companies has been the focus of several studies in emerging economies across Asia, Africa and the Middle East with Return on Assets (ROA) as the most commonly used proxy for profitability and performance.

Charumathi (2012) studied the determinants of profitability for life insurance firms in India utilizing Ordinary Least Squares (OLS) on panel data from a sample of 23 life insurers for a period of three years (2008-2011). ROA was regressed against the following variables: insurance leverage (mathematical reserves / (capital+ surplus)), size of the firm (measured using the net premium = total premium earned - reinsurance ceded), premium growth (the change in new premium), liquidity (current ratio), underwriting risk (benefits paid / net premium) and equity capital. The results indicate that leverage, premium growth, and equity capital (3 explanatory variables) have negative relationships with ROA, while net premiums, liquidity, underwriting risk (3 explanatory variables) have

positive relationships with ROA. Firm size and liquidity (2 explanatory variables) positively and significantly influenced profitability. Although underwriting risks was determined to have a positive relationship with ROA, such relationship was deemed insignificant. Meanwhile, leverage, premium growth, and equity capital significantly but negatively affected the dependent variable.

A similar study made by Sambasivam and Ayele (2013) in Ethiopia used a smaller sample of 9 insurance companies. In determining profitability, the study identified seven factors as regressors namely: volume of capital, growth rate, company age, company size, leverage ratio, liquidity ratio, and tangibility of assets. The results that were derived from the regression indicate a positive and significant relationship between ROA – firm size, ROA – firm growth, and ROA – volume of capital. Meanwhile, there is a significant negative relationship between ROA and leverage ratio and, ROA and liquidity ratio (2 explanatory variables), while a negative yet insignificant relationships between ROA and company age, and ROA and tangibility of assets, (2 explanatory variables) respectively, were observed.

Finally, Almajali, Alamro and Al-Soub (2012) analyzed the financial performance of listed insurance firms in Jordan. Leverage, liquidity, company size, company age, and management competence index (5 explanatory variables) were selected as the independent variables. The sample size comprised 25 insurance companies for a period of six years (2002-2007). Also using the OLS method, the results of their study showed that leverage, liquidity, size and management competence index (4 explanatory variables) have positively significant relationships with ROA, and that age (1 explanatory variable) has no significant effect on ROA.

Data and Methodology

The study analyzes the profitability of the life insurance sector in the Philippines using the OLS method on a balanced panel of 23 life insurance companies from 2000-2012 (13 years). The sample firms represent 92% (23/25) of all life insurers registered with the Insurance Commission, the country's insurance industry regulator, as of December 2015. Limitations on the availability of data for 2013-2015 were encountered for many firms. All secondary data used to compute for the profitability measure and its selected predictors were sourced from the commission's database. For the empirical test, 11 variables were derived from 23 company annual reports for a period of thirteen years. The sample is composed of 3,289 observations.

ROA, a proxy for profitability, is used as the dependent variable. A total of ten independent variables are used. The microeconomic explanatory variables are firm size, firm age, liquidity, leverage, number of locations, foreign-affiliation, and bank-affiliation. The selected mesoeconomic

explanatory variable is the number of life insurance policies in-force, while the macroeconomic explanatory variables are GDP and inflation rate.

Table 1. Descriptive Statistics

	Mean	Median	Maximum	Minimum	Standard Deviation
ROA	0.145	0.087	1.05	0.002	0.167
GDP	4.773E+12	4.716E+12	6.312E+12	3.581E+12	8.568E+11
Inflation	0.049	0.040	0.093	0.028	0.020
Number of Policies	3.757E+6	3.506E+6	4.567E+6	3.337E+6	4.594E+5
Leverage	3.983	2.346	67.353	-115.739	9.674
Liquidity	7.875	4.032	75.448	0.184	10.084
Firm Age	41.565	45.000	102.000	1.000	21.059
Firm Size	9.464E+9	1.755E+9	1.168E+11	3.195E+7	1.808E+10
Number of Locations	21.147	14.000	104.000	1.000	22.89966
Foreign Affiliation	0.261	0.000	1.000	0.000	0.440
Bank Affiliation	0.348	0.000	1.000	0.000	0.477

The method of estimation chosen for this study is that of the pooled OLS method under panel data analysis. Panel analysis is characterized as cross-sectional and observed over a certain period of time. It is used by the researchers since there is more data to work with and the analysis would run into lesser risk of obtaining biased results, considering that the observed samples are arranged according to the determined period (Doane & Seward, 2010).

The study shall base its analysis on this general equation:

$$Y = f(x) \qquad \text{[Equation 1]}$$

This means that Y will be affected by whatever movement of log of X. In this case, the equation to be used by the researchers will have multiple independent variables (X) affecting the dependent variable (Y). The resulting equation shall be:

$$Profitability = f\ (Philippine\ GDP, Inflation\ Rate, Log\ of Leverage, Log\ of\ Liquidity, Log\ of\ Firm\ Size, Log\ of\ Firm\ Age, Log\ Number\ of\ Branches\ of\ the\ Firm, if\ home\ grown\ or\ foreign\ affiliated, if\ bank\ affiliated\ or\ not, Log\ of\ Number\ of\ Policies\ In-force) \qquad \text{[Equation 2]}$$

The functional form of the said specification is:

$$Y_{it} = \beta_0 + \beta_i X_{it} + u_{it} \qquad \text{[Equation 3]}$$

Plugging in the independent variables into the model, the resulting equation is as follows:

$$logROA_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 INF_{it} + \beta_3 logNPI_{it} + \beta_4 logLEV_{it} + \beta_5 logLIQ_{it} + \beta_6 logSIZE_{it} + \beta_7 logAGE_{it} + \beta_8 logNOL_{it} + \beta_9 AFH_{it} + \beta_{10} ABN_{it} + u_{it}$$

[Equation 4]

Where: β_i - y-intercept of the independent variables; u_{it} - error term between firms; ROA – Return on Assets (Measure of Profitability); GDP – GDP; INF – inflation rate; NPI – number of policies in-force; LEV – leverage; LIQ – liquidity; SIZE – firm size; AGE – firm age; NOL – number of locations; AFH – affiliation: foreign- affiliated or home- grown; ABN – affiliation: bank- affiliated or not.

Results

This section presents the correlation matrix and the outcome of the tests to check for multicollinearity, heteroscedasticity and autocorrelation of the data. The pooled regression estimates of profitability with regards to the chosen explanatory variables are then presented and discussed.

On the correlation matrix the correlation coefficients reveal the linear relationship between any two variables. For any correlation pair, the estimated significance level is an indication of how strongly linked these two variables are. As may be observed, ROA is negatively correlated with eight of the variables, with the exception of number of insurance policies and inflation rate. These numbers suggest that as these variables increase, ROA correspondingly decreases.

Looking at the relationship between ROA and GDP, the pair has a weak inverse relationship that is statistically significant at 5%. This may mean that as the Philippine GDP increases, there is corresponding small percentage decrease in ROA. ROA and number of policies have a correlation coefficient of 0.101 with a statistical significance at 10%. This means that the pair has a weak positive relationship with one another. ROA and leverage, on the other hand, have a negative moderate relationship with a correlation coefficient of -0.424 which is significant at 1%. Firm age and ROA display a negative relationship with a correlation of -0.239 that is significant at 1%. This indicates a negative weak relationship. Firm size and ROA show a correlation of -0.641, which is significant at 1%. This indicates a strong negative relationship. The number of locations and ROA, meanwhile, exhibit a negative moderate relationship with a -0.374 correlation which is significant at 1%. For bank affiliation and ROA, the pair demonstrates a negative weak relationship with a correlation of -0.231 which is significant at 1%.

Multicollinearity is the instance wherein there is an underlying correlation among the independent variables used in a model. It is a situation where there is a perfect or near perfect linear relationship among the predictor variables (Gujarati, 2004). A way to detect multicollinearity is by observing if there is a high pair-wise correlation among the regressors. If the correlation coefficient of two regressors is at least, in

excess of 0.800, then multicollinearity might be a problem. There are no correlation values exceeding the cut-off point of 0.800. The highest value in the matrix is that of the correlation between firm size and leverage which is 0.606. With all the correlation values not exceeding the cut-off value, it can be assumed that there is no multicollinearity present among the independent variables in the study.

Autocorrelation or serial correlation is the instance wherein there exists a correlation with a variable's past and future values. It is when the errors in one time period will have lingering effects in the errors of observations in subsequent time periods (Doane & Seward, 2010). It is assumed that the errors of observations in a given sample must be independent of one another. When this is violated and error terms of observations somehow affect one another, making them dependent on each other, there is autocorrelation.

According to Sambasivam and Ayele (2013) to detect if autocorrelation exists, one may examine the Durbin-Watson Statistic which can be found in the model. If the DW static shows the d_{test}value is beyond 2, there is evidence of autocorrelation.

An excerpt from Table 3 shows the value of the Durbin-Watson statistic:

Durbin-Watson stat	1.128591

It can be observed that the value of this statistic is less than 2. As such, it can be assumed that there is no autocorrelation in the variables.

Heteroscedasticity occurs if the variance of the error term in not constant. This means that in order for the model to be considered homoscedastic, the disturbances in the model must all have the same variance (Sambasivam & Ayele 2012; Doane & Seward, 2010; Gujarati, 2004). In order to determine if heteroscedasticity is present, White's General Heteroscedasticity Test can be used. The said test is based on the following hypotheses:

H0: No Heteroscedasticity

H1: Model is Heteroscedastic

Table 2. White Test

F-statistic	0.735	Prob. F(62,229)	0.924
Obs*R-squared	48.471	Prob. Chi-Square(62)	0.895
Scaled explained SS	169.451	Prob. Chi-Square(62)	6.406e-12

If the probability of the computed chi-square (Obs*R-squared) is significant, then it is assumed that the null hypothesis must be rejected. According to the table above, the probability is equal to 0.895 which means it is not significant at all. Therefore, the null hypothesis will be accepted. In other words, the assumption is that the model is homoscedastic.

Lastly, the results of the pooled regression functions are presented in Table 3. Out of the ten regressors, seven are noteworthy namely: leverage, liquidity, firm age, firm size, foreign affiliation, and bank affiliation.

Table 3. Regression of Potential Correlates with Firm Profitability

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-2.624598	6.455215	-0.406586	0.6846
Log of Size	-0.287452	0.045875	-6.265944	0.0000***
Log of Age	0.155136	0.084003	1.846800	0.0658*
Log of Liquidity	-0.009631	0.004195	-2.295817	0.0224**
Log of Leverage	-0.073961	0.039075	-1.892811	0.0594*
Log of Number of Locations	-0.054778	0.032961	-1.661880	0.0977*
Foreign Affiliation	0.318505	0.162348	1.961868	0.0508*
Bank Affiliation	-0.014847	0.095761	-0.155040	0.8769
GDP	2.89E-14	5.81E-14	0.498197	0.6187
Inflation	1.724079	2.027955	0.850157	0.3960
Log of Number of Insured Individuals	0.388998	0.408275	0.952783	0.3415
R-Squared	0.450140			
Adjusted R-squared	0.430573			
Durbin-Watson stat	1.128591			
F-statistic	23.00396			

*** significant at 1 percent level.
** significant at 5 percent level.
* significant at 10 percent level.

Firm Size. Profitability decreases the bigger an insurance firm grows suggesting diseconomies of scale as a result of the Insurance Commission's tighter regulation of large firms. The result for the Philippines is inconsistent with that of other developing countries reviewed in the empirical literature of this paper (Section 2).

The commission's stricter regulation of larger firms, specifically on companies' capital adequacy requirements and their use of scarce economic resources, could have led the big players in the life insurance industry to become more risk-averse. The diseconomies happen if instead of a large asset base providing firms with additional resources intended for growth, such assets are idled (e.g., place in a reserve)or not used in a productive manner as to result to higher profits.

Firm Age and Foreign Affiliation. Profitability is positively correlated to firm age and foreign affiliation, separately. These can be attributed to the benefits of longer operating history and access to both foreign business expertise and capital, respectively. The Insurance Commission's move to increase foreign ownership limit to 51% from 49% in 1999 helped increase profits for some firms. While foreign affiliation was not used in the literature reviewed, majority of the empirical studies presented in Section 2 report statistically insignificant relationship between profitability and firm age (Sambasivam & Ayele 2013; Almajali et al., 2012). Despite the insignificant result, Almajali et al (2012) postulated that older means more experienced as such firms may have fostered routine techniques of doing insurance after much time in the business (learning curve).

Number of locations. Profitability decreases the more locations an insurance firm operates in implying that costs outweigh the benefits of greater opportunities for selling with more outlets. This variable is unique to the study and has not been used as a factor in any of empirical studies reviewed.

Bank Affiliation. This is another unique factor that was used in the study in light of the rapid growth in the bancassurance industry which essentially combines banking and insurance services (Unite & Sullivan, 2003). Still, the jury is out whether combining the two will be a profitable endeavour in the long run given the highly-regulated nature of both the banking and insurance industries. Additionally, there is stiff competition for clients and capital in both sectors (Sufian & Chong, 2008; Insurance Commission, 2006).

Liquidity and Leverage. Profitability is lower in firms with larger liquidity and solvency reserves. This is attributable to the risk reduction measures imposed by the Insurance Commission where a certain amount of cash and capital is tied up in a reserve fund preventing productive use of the said resources.

For liquidity, Sambasivam & Ayele (2013) presented a negative yet statistically insignificant result for Ethiopian insurers. The other studies (Almajali et al., 2012; Charumathi, 2012) show significantly positive results for Jordan and India, respectively. For leverage, Sambasivam & Ayele (2013) and Charumathi (2012) showed similar results while Almajali, et al. (2012) reported the opposite.

Conclusion

This study analyzes the profitability of the Philippine life insurance sector for the years 2000-2012, with ROA as the dependent variable. The microeconomic explanatory variables are firm size, firm age, liquidity, leverage, number of locations, foreign-affiliation, and bank-affiliation. Meanwhile, the selected mesoeconomic explanatory variable is the number of life insurance policies in-force, while the macroeconomic explanatory variables are GDP and inflation rate. The results demonstrate that the profitability of Philippine life insurance companies is negatively correlated with liquidity, leverage, and number of locations. Older, foreign affiliated companies are found to be more profitable than younger, domestic companies. Moreover, total assets decrease with profitability, suggesting a negative correlation between firm size and ROA. Bank affiliation has a negative correlation with ROA. Conversely, the number of life insurance policies in-force, GDP and inflation were shown to have no statistically significant effects on ROA. In sum, the profitability of life insurers in the Philippines are primarily influenced by microeconomic (firm level) factors while mesoeconomic (industry level) and macroeconomic factors have minimal or no influence.

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