

Effect of the Micro and Macro Factors on the Performance of the Listed Jordanian Insurance Companies

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Abstract

One of the key performance indicators and a major concern for any type of organization in any industry is profitability; this paper seeks to investigate the effects of a firm's micro and macroeconomic factors on performance of Jordanian insurance companies measured by return on assets (ROA) which is considered as proxy of profitability. The study utilizes a panel data of 24 listed insurance companies during the time period of 2008-2014. Findings include that liquidity, leverage and under writing risks have a negative and a significant effect whereas size of the company, market share and GDP have statically a positive and a significant effect on the profitability of the Jordanian insurance industry. Findings also include that inflation has no significant effect on the profitability of the insurance industry in Jordan.

Keywords: Insurance, Organizational Performance, Strategic Management, Profitability, Firm-specific factors, Macroeconomic Factors.

JEL Classification: G22, D22, C1, C13, C23, L25.

1. Introduction

The Insurance sector in Jordan has become a safe shield for all economic sectors; it is considered a complementary sector for the financial, production and services sectors. In recent years the insurance system has been considered as an essential element for all economic activities. According to the universally accepted concepts, insurance itself is like any other activity that can be defined as is a cooperative device that spreads the losses of the insured over those that have agreed to protect themselves against that risk (Rejda and McNamara, 2014). There are several kinds of assts which consumers may wish to insure. For instance, before any person can be allowed to take an insurance policy for any property, that person must evidently have an insurable interest in the subject matter of insurance. (Mishra and Mishra, 2007). The insurance sector is a safe shield for all other sectors and is considered a very important as its performance will be inversely have an effect on other sectors, especially those that are unstable. This paper aims to analyze the internal and external factors that influence performance of insurance companies.

2. Jordanian Insurance Sector background

According to the Jordan insurance federation, insurance services first began in 1946 when the Egyptian Middle East company, which had been founded in 1921 by an Egyptian French capitalist, established a branch in Jordan. In the early fifties, Jordan experienced a significant growth within the insurance sector, specifically in the accidental and shipping activities. The "*Jordan Insurance Company*". Was the first insurance company to be established in Jordan? At that time, establishing an association of insurance companies was needed to regulate the insurance market. During the sixties, the number of insurance companies increased until the mid-eighties, where it reached 23 companies. Due to the economic recession during the eighties and random competition in the insurance sector resulting in many companies experiencing a loss of profitability, the government established, **Law No. 30 of 1984**, a regulatory law for monitoring the activities of insurance companies. This law was established to decrease the issuance of new licenses for insurance companies and raising the capital amount of an insurance company to 600,000 J.D, This forced some companies to merge with other companies, or shut down and exit the market, leading to a decline in the number of insurance companies to 17 in 1987. This number of companies remained stable until 1994.

In 1995, **Law No. 9** was established which provided the granting of licenses for new insurance companies with a capital of 1 million for companies carrying out direct insurance business, 0.2 million for reinsurance companies, 4 million for foreign insurance companies. As a result of the new law, in 1995, eight new insurance companies entered to the Jordanian market, and the number of operating companies increased to 25 domestic companies, till the number of companies reached in 2000 to 27.

In 2001 one company had shutdown, and the number of companies dropped to 26 until 2006. During 2007-2008, three new insurance companies have entered the Jordanian market and the number of companies rose to 29. At the end of 2008, "DARKOM" company left the sector to work in the finance sector, and the number of companies decreased to 28 until 2011. During 2012-2013 three companies had shutdown, and the number of operating companies in the sector decreased to 25. At the end of 2014 the number of companies was 24 (Jordan Insurance Federation JOIF, 2016).

3. Importance of study

The overlapping of insurance services in the economic activities and sectors through the forward and backward linkages¹ refers to the importance of an insurance sector in an economy. It has become one of the most important requirements to achieve financial and economic transactions. That was evidenced by Horizontal integration² of the insurance sector so that it has become a basic requirement of life requirements. Moreover, the importance of this paper enhanced when dealing with insurance companies because: 1) insurance companies' transfers risk in the economy 2) provide a mechanism to promote savings 3) promote investment activities (Kripa and Ajasllari, 2016).

According to the report that was issued by the Jordanian Ministry of Industry, Trade and Supply in 2016, the results of the Jordanian insurance sector for the year 2015 indicates a decline in insurance performance, where total written insurance premiums for 2015 rose to (550.4) million, posting an increase of 4.7% over the previous year, but an insurance sector had achieved a net profit before tax by amount 30.2 million J.D, compared with a profit was 41.1 million J.D in 2014. Moreover, the sector achieved a technical profit of subscription accounts in Jordan 34 million J.D, compared with a technical profit that was equal 34.9 million J.D in 2014.

The total investments of insurance companies in 2015 was estimated to be worth 533.6 million J.D compared with 534.4 million in 2014, and the total compensation paid in 2015 was worth 387 million J.D, an increase of 3.8% from the year 2014. The total profit for financial assets and investments was estimated to be 7.4 million J.D, compared with a profit of 8.8 million J.D. in 2014. This indicates a decline by 16%. The interest income was worth \$12.7 million compared to \$14.9 million in 2014. Therefore, the loss rate (ratio of net cost of compensation to net revenue from premiums) in insurance companies was 88.5% in 2015.

4. Problem Statement

High performance of any company determines the position of that company in the market it serves which enhances the market growth. The variation in the number of insurance companies over the last years may be caused by the variation of profits between insurance companies within the country, which leads to believe that both internal and external factors play a major role in determining profitability. The insurance market in Jordan is relatively small by comparing it with international insurance markets, where its contribution in GDP was about 2.07% for 2015. It is among the highest in the Middle East and North Africa region, which has average contribution about 1.9%, but still lower than the global level, which was at 6.23% in 2015 (Ministry of industry, trade and supply, 2016).

This study's problem arises from the fluctuations (ups and downs) in the number of insurance companies, where some of these companies suffer losses which force them to shutdown and exit from the market in recent years. In addition to a steep fall in profits of insurance companies by -88.5% in 2015, accompanied with an increase in total written insurance premiums by 4.7% during the years 2014-2015. The question is: what are the expected factors that affect on performance of the Jordanian insurance companies?

1 Forward and Backward linkages are describing the process of how a company in a given sector purchases and sells its inputs and outputs, or supplies from a company in a different sector.

2 Horizontal integration is the acquisition of additional business activities that are at the same level of the value chain in similar or different industries.

5. Literature review

The recent relevant literatures mentioned two groups of variables that have been found to share significant relationships with performance of insurance companies “profitability”. Where profitability of insurance companies is influenced by both internal and external factors and these factors divided into micro and macro variables. Research conducted by Browne et al. (2001); Boadi et al (2013); Lee (2014); Kaya (2015); Hailegebreal (2016); and Datu (2016), identified important economic and market factors and insurer specific characteristics related to life and non-life insurer performance.

For internal and micro factors that influence in insurer performance. Browne et al. (2001) found that firm performance was positively related to firm size, liquidity, bond portfolio returns. Almajali et al (2012) aimed to investigate the factors that mostly affect financial performance of Jordanian Insurance Companies. These factors were (Leverage, liquidity, Size, age, Management competence index). The results showed that the following variables (Leverage, liquidity, Size, Management competence index) had a positive statistical effect on the financial performance of Jordanian Insurance Companies.

Sambasivam and Ayele (2013) examined the effects of firm specific factors (age of company, size of company, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets) on profitability measured by (ROA). The results showed that leverage, size, volume of capital, growth and liquidity are most important determinant of performance of life insurance sector whereas ROA has statistically insignificant relationship with, age and tangibility. The findings show that liquidity does have a negative impact on profitability and provides further implication on the effective risk management practices in the companies.

Boadi et al (2013), aimed to find out the determinants of the profitability of insurance firms in Ghana. The study measured profitability by (ROA), and the determinants were Leverage, Liquidity, Size, Risk, and firm growth. The study found that there is a positive relationship between leverage, liquidity and profitability of insurance firms in Ghana.

Lee (2014) investigated the relationship between firm specific factors like (Firm size, Financial leverage, Underwriting risk, Firm growth, Reinsurance, Return on investment, Market share, Diversification, Input cost) on profitability in Taiwanese property-liability insurance industry. Using operating ratio and return on assets (ROA) for the two kinds of profitability indicators to measure insurers’ profitability. The results show that underwriting risk, reinsurance usage, input cost, return on investment (ROI) and financial holding group have a significant influence on profitability in both operating ratio and ROA models. In a study conducted by Kaya (2015), eight independent variables were tested to determine the firm-specific factors that affect the profitability of non-life insurance companies that operate in Turkey. These are size of the company, age of the company, loss ratio, insurance leverage ratio, current ratio, premium growth rate, motor insurance, and premium retention ratio. Results show that the firm-specific factors affecting the profitability are the size of the company, age of the company, loss ratio, current ratio, and premium growth rate.

Kripa and Ajasllari (2016) identified that internal factors play a major role in determining profitability measure by (ROA). The study sought to identify the impact of growth rate, liabilities, liquidity, fixed assets, volume of capital and company size on the profitability of insurance companies. The results show that factors such as growth rate, liabilities, liquidity and fixed assets are the main factors affecting the profitability of insurers, where the growth rate is positively associated with profitability, while liabilities, liquidity and fixed assets are negatively correlated. Company size and the volume of capital are positively correlated with the profitability of insurance companies’, but their impact is statistically insignificant.

Hailegebreal (2016) conducted a study to identify the determinants of profitability (ROA) of Ethiopian insurance industry. The study examined the firms specific factors which are the age of company, size of company, leverage ratio, liquidity ratio, premium growth, technical provision, underwriting risk. The study revealed that underwriting risk, technical provision, and leverage have a negative and significant effect whereas premium growth, and age of the company, have a statically positive and significant relationship with the profitability of Ethiopian insurance industry. Datu (2016) also examined the relationship between firm specific factors and profitability (ROA). The empirical underpinning revealed that underwriting risk, reinsurance utilization, firm size, financial leverage and input cost significantly affect on profitability.

For external and macro factors that influence in insurer performance, Browne et al (2001) found that firm performance was negatively related to unanticipated inflation. Doumpos and Gaganis (2012) estimated the performance of non-life insurers and found that macroeconomic indicators such as gross domestic product (GDP) growth, inflation and income inequality influence the over performance of firms. Lee (2014) investigated the relationship between macroeconomics factors like (Economic Growth Rates, Inflation rates) and profitability in Taiwanese property-liability insurance industry. The results show that economic growth rate has significant influence on profitability in operating ratio model but insignificant influence on profitability in ROA model.

Study of Hailegebreal (2016) shows the importance of macroeconomic factors which are (GDP and Inflation rate) in determining the performance of insurance companies. The study found that GDP and performance are related positively, but inflation and performance are related negatively. Datu (2016) also examined the relationship between macroeconomics and profitability in Philippine non-life insurance market. Return on assets (ROA) and operating ratio were used for profitability. The results show that there is no evidence found in the Gross Domestic Product (GDP) and inflation rate on profitability in both ROA and operating ratio.

6. Research Methodology

6.1 Research design

According to the nature of research problem and the research perspective, a research design and method could be based on the both of quantitative and qualitative or a combination of these two approaches, a mixed method approach.

6.2 Target Population and sample size

According to Amman Stock Exchange, there are 24 listed insurance companies in Jordan. Through purpose sampling, companies established before the year 2008 were selected. Accordingly, 24 insurance companies were included in this study during the years 2008-2014.

6.3 Types and Sources of Data

This study employed Secondary data which was collected from the annual reports of each listed insurance company and through the Jordanian Statistics Department during the fiscal year of 2008 to 2014. Thus, this study will be utilizing the Panel data.

6.4 Variables with its measurement

Table 1 shows variables of the study with its measurement (See Appendix).

6.5 Model specification

This paper employs ordinary least square (OLS) regression model to analyze the panel data and examine the effects of firm specific factors and macroeconomics on profitability of insurers. The study determines which of the two models (fixed effect (FE) and random effect (RE)) is best fit by applying the Hausman test for random effects. Through literature review, this study constructs an empirical regression model below:

$$ROA_{it} = C + \beta(X_{it}) + U_{it}$$

Where ROA is return on assets, X_{it} is dependent variables for insurers "i" at time "t", C is constant, β is the coefficient and U is the error term.

7. Results and Discussion

The data collected from annual reports of each insurance company and department of statistics were analyzed utilizing the (E-views 9) software and then were interpreted in the following section.

7.1 Testing stationary problem

To ensure the stability of the variables, this study used the (LLC) test which was used by Levin, Lin and Chu (2002) and this test takes the following formula:

$$\Delta Y_{it} = \alpha_i + \rho Y_{i,t-1} + \sum_{k=1}^n \phi_k \Delta Y_{i,t-k} + \delta_i t + \theta_t + \mu_{it}$$

LLC concedes an appropriate test in a small sample, this model allows to existence of fixed effects in two directions (Two-way Fixed Effects), the first direction is α_i and it refers to the fixed effects for each company, the second direction is θ_t and it refers to the fixed effects for each year (Baltagi, 2005).

Fixed effects for each company is the most important as it allows the existence of a differentiation in the properties of companies. Moreover, LLC test assumed that (Cross-sectional Independent) between companies, under this assumption, the test uses the least squares method to estimate ρ parameter which takes the form of a normal distribution. The null hypothesis (H0) for LLC test indicates for existence of unit root (instability) in the data, if (t-Probability < 0.05), the data will be stationary (Asteriou and Hall, 2007).

Table 2 presents unit root test (**See Appendix**), according to t-statistic value and its probability the results show that all variables are stationary in their level, which means reject H0 and there is no unit root in model's variables.

7.2 Testing multi-co linearity problem

Multi-co linearity between the explanatory variables can be tested by (Variance Inflation Factors (VIF)) test, This test analyzes the linear regression between the explanatory variables, assuming that one of the explanatory variables is the dependent variable, and other explanatory variables to be independent, and this process is repeated for all the explanatory variables. After regression analysis of all the explanatory variables, test runs (VIF) to use the coefficient of determination (R_j^2) for each explanatory variable except the variable (j). the results were as table 3 (**See Appendix**).

Table 3 presents the multi-collinearity among the independent variables. According to Robert (2007), the variance inflation factor (VIF) above 10 or the tolerance value (1/VIF) below 0.1 is an indication that there is a problem of multi-collinearity among the variables. The above table shows that there is no VIF greater than 10 and 1/VIF below 0.1; in turn reveals any of the independent variable included in this study is not explained by the other. Hence all variables can be retained in the model of this study.

7.3 Testing autocorrelation problem

Autocorrelation (AC) and partial autocorrelations (PAC) can be tested by correlogram-Q-statistic test and its associated p-value. If there is no serial correlation, AC and PAC at all lags should be nearly zero and Q-statistic should be insignificant with large p-values. Table 4 shows the Autocorrelation results (**See Appendix**). Table 4 presents AC and PAC test, according to Q-statistic and its associated p-value the results show that there is no AC and PAC problem between model's variables. Moreover, The Durbin-Watson (DW) statistic is a test for first-order serial correlation. More formally, the DW statistic measures the linear association between adjacent residuals from a regression model. The Durbin-Watson is a test of the hypothesis ($\rho=0$) in the specification:

$$u_{it} = \rho u_{it-1} + \varepsilon_{it}$$

If there is no serial correlation, the DW statistic will be around 2. The DW statistic will fall below 2 if there is positive serial correlation (in the worst case, it will be near zero). If there is negative correlation, the statistic will lie somewhere between 2 and 4. A rule of thumb is that test statistic values in the range of 1.5 to 2.5 are relatively normal. The results show that DW statistic in our model equals to 2.02, which means DW is relatively normal and there is no serial correlation.

7.4 Regression Analysis

To determine which model of effects FE or RE is appropriate to study's regression model, Hausman test was conducted. According to Chi-square statistic 19.955 and its probability 0.005 the Hausman test shows that FE is appropriate for the regression model. The results of regression analysis were as table 5 (**See Appendix**).

The regression result in the table 5 shows the relationship between profitability as proxied by Return on Assets (ROA) and liquidity (LQW) is negative and significant (p-value of 0.01) at 0.99 percent confidence interval. This is an indication that when the liquidity increases, its return on assets will fall. This result is similar with the result of Hailegebreal (2016), Kripa and Ajasllari, (2016), Ayele (2013), and Almajali et al (2012). Perhaps the reason is that the financing of liquidity in capital structure of insurance companies in Jordan relies heavily on debt rather than equity. Thus the insurance companies in Jordan should reconsider its capital structure.

Leverage (LAV) and return on assets of Jordanian insurance industry have a negative and a significant (with p-value of 0.00) relationship. Showing that while the leverage of companies increased, the profitability of the industry will move to the opposite direction. These results identify while the insurance companies increase their debt (if the insurance companies operate with huge debt), the profitability of the industry will significantly decrease. These results were also achieved by Hailegebreal (2016), Datu (2016), Kaya (2015), Lee (2014), Ayele (2013), and Almajali et al (2012).

The results show that size of the company has a positive and a statistically significant (p-value of 0.00) effect on the Jordanian insurance industry's profitability. This is an indication that when the size of the company increases, its return on assets will decrease. The results of this research is similar with the previous studies done by Hailegebreal (2016), Datu (2016), Kripa and Ajasllari, (2016), Kaya (2015), Lee (2014), Ayele (2013), and Almajali et al (2012).

Market share (MS) and return on assets of Jordanian insurance industry have a positive and a significant (with p-value of 0.00) relationship, Showing that while the market share of companies increased, the profitability will increase as well. The high market share might result in high profit, mainly because high market share boosts a firm's market advantage and its ability to set prices, which helps the firm to boost profit and achieve economies of scale. These results are consistent with the previous study done by Lee (2014).

As identified in this study, underwriting risk (UWRR) has a negative and a significant effect (p-value 0.00) on Jordanian insurance industry's profitability. These results are consistent with the previous studies conducted by Hailegebreal (2016) and Datu (2016). This is an indication that when the underwriting risk increases by 1%, its return on assets will decrease by 5%.

As indicated in previous studies, the economic growth proxied by GDP is the most important determinants of insurance industry's profitability in the world. Likewise, it is proved in this study that GDP growth has positive and significant effect (p-value 0.04) on Jordanian insurance industry's profitability. This shows that the economic growth is a favorable factor for the rise of profitability of insurance industry in Jordan; which indicates an increase in economic activities and transactions that require more and more insurance services. The result of this study was similarly proved in previous studies done by Doumpos and Gaganis (2012), Lee (2014), and Hailegebreal (2016). This is an indication that when the GDPG increases by 1%, return on assets for Jordanian insurance industry will increase by 28%.

In most cases, inflation is a macro-economic challenge for the development and profitability of insurance industry in any country. However, the result of this study indicates that the relationship between inflation and profitability is negative, but not significant. These results are similar to previous studies done by Browne et al (2001), Doumpos and Gaganis (2012), Lee (2014) and Hailegebreal (2016), that found no significant relationship between profitability of insurance industry and inflation.

The results in table 5 show that the value of R-square is 64%, meaning 64% of the profitability variation of insurance industry in Jordan is explained by the independent variables. Durbin Watson coefficient (DW=2.02) is close to 2, meaning that there is no evidence of autocorrelation between the residuals as a rule of thumb. Moreover, F-statistic and its probability show that the overall regression model is statistically significant. Under these circumstances, the panel analysis seems to be appropriate for this research model.

8. Conclusion

Profitability considered as one of the main objectives of financial management and economics because it maximize the owner's wealth. This study attempts to examine the effects of firm specific factors (liquidity ratio, leverage ratio, size of company, market share, underwriting risk) and macroeconomic factors (GDP and Inflation) on profitability of Jordanian insurance industry. 24 listed insurance companies established before 2008 were included in the study. This study found that liquidity, leverage and under writing risk have a negative and a significant effect whereas size of company, market share and GDP have a statically positive and a significant effect on the profitability of Jordanian insurance industry. However, this study identified that inflation has no significant effect on the profitability of insurance industry in Jordan. This study suggests that insurance companies should critically reconsidering its capital structure and underwriting risk and should minimize the level of leverage. This study also suggests the merger between those companies that are threatened by a loss in order to increase their market share as the market share affect positively on profitability.

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Appendix

Table 1: Variables Measurement

	Variable	Measures	Sig n	Source
Dependent	Profitability (ROA)	Net profit/Total Assets		
Independent	Liquidity (LQW)	Current Assets/Current Liabilities	-	Hailegebreal (2016), Kripa and Ajasllari, (2016), Ayele (2013), Almajali et al (2012)
	Leverage (LAV)	Total liability/Total Assets	-	Hailegebreal (2016), Datu (2016), Kaya (2015), Lee (2014), Ayele (2013), Almajali et al (2012)
	SIZE	Natural logarithm of total assets	+	Hailegebreal (2016), Datu (2016), Kripa and Ajasllari, (2016), Kaya (2015), Lee (2014), Ayele (2013), Almajali et al (2012)
	Market Share (MS)	Firms' Gross premium / Sectors' Gross premium	+	Lee (2014)
	Underwriting risk (UWR)	claim incurred / premium earned	-	Hailegebreal (2016), Datu (2016)
	Inflation (INF)	(CPIt – CPIt-1) / CPIt-1	-	Browne et al (2001), Doumpos and Gaganis (2012), Lee (2014), Hailegebreal (2016)
	Gross Domestic Production Growth GDPG	(GDPt – GDPt-1) / GDPt-1	+	Doumpos and Gaganis (2012), Lee (2014), Hailegebreal (2016)

Sources: empirical literatures

Table (2): Testing stationary problem

Variable	t-statistic	Probability	Stationary
ROA	3.101	0.001	Level
LQW	7.552	0.000	Level
LAV	5.840	0.000	Level
SIZE	-5.218	0.000	Level
MS	8.776	0.000	Level
UWR	5.900	0.000	Level
INF	1.797	0.036	Level
GDPG	6.720	0.000	Level

Table (3): Testing multi-colinearity problem

Variable	VIF	1/VIF
LQW	2.574	0.389
LAV	3.158	0.316
SIZE	1.916	0.521
MS	1.635	0.611
UWRR	1.111	0.900
GDPG	1.120	0.892
INFL	1.346	0.742
Mean VIF	1.83	

Table (4): Testing autocorrelation problem

Lags	AC	PAC	Q-statistic	Probability
1	-0.069	-0.069	0.7028	0.402
2	-0.127	-0.132	3.0903	0.213
3	-0.119	-0.142	5.2117	0.157
4	-0.051	-0.095	5.6081	0.230
5	-0.048	-0.104	5.9617	0.310

Table (5): Regression Analysis

ROA = -2.32 - 0.04 LQW -0.21 LAV + 0.34 SIZE + 0.01 MS - 0.05 UWRR + 0.28 GDPG - 0.03 INFL								
t-statistic	[-7.34]	[-2.47]	[-4.47]	[7.22]	[5.62]	[-6.20]	[2.06]	[-0.86]
P-value	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.04)	(0.39)
R²	F-statistic		F-Probability		Durbin-Watson Stat.		Observation	
0.64	8.31		0.000		2.02		168	