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The determinants of financial performance of non-life insurance companies in Algeria

محددات الأداء المالي لشركات التأمين على غير الحياة في الجزائر

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A B S T R A C T

Business performance has attracted researchers' attention in the literature of corporate finance over the past decades. However, in the context of insurance, it has been given very little attention. In this study, we tried to examine the impact of some internal and external variables on the financial performance of non-life insurance companies in Algeria during the span of nine years (2010-2018). The analysis of the results is based on a multiple regression model. The findings of this study indicates that the variables: Company size, liquidity ratio and Solvency Ratio has a statistically significant impact on financial performance of non-life insurance companies measured by Return on Assets (ROA). In which Company size and liquidity ratio showed a positive impact. While, solvency Ratio indicated a negative impact.

Key words: Non-life Insurance companies, Financial Performance, internal and external determinants, Return on Assets.
JEL Classification: C23, G22.

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الملخص

جذب موضوع الأداء المالي انتباه العديد من الباحثين في مالية المؤسسة على مدى العقود الماضية. ومع ذلك، لم يحظ هذا الموضوع باهتمام كبير في مجال التأمين. في هذه الدراسة، سنحاول دراسة تأثير العوامل الداخلية لشركات التامين (حجم الشركة، نسبة الرافعة المالية، نسبة السيولة، نسبة الملاءة المالية ونسبة الاستثمار) وبعض العوامل الخارجية (معدل التضخم والنمو الاقتصادي) على الأداء المالي لشركات التأمين على غير الحياة في الجزائر خلال الفترة (2010–2018). يعتمد تحليل النتائج على نموذج الانحدار المتعدد. تشير نتائج هذه الدراسة إلى أن المتغيرات: حجم الشركة، نسبة السيولة ذات معنوية إحصائية ولها تأثير إيجابي على الأداء المالي، بينما اظهرت نسبة الملاءة معنوية إحصائية ولكن بتأثير سلبي على الأداء المالي لشركات التأمين على غير الحياة والتي تم قياسها بواسطة العائد على الأصول.

الكلمات المفتاحية: *شركات التأمين على غير الحياة، الأداء المالي، المحددات الداخلية والخارجية، العائد على الأصول.*

تصنيفات **JEL** *:* G22،C23.

1. Introduction

Through the times, with major advancements happening in human life, the insurance industry has developed globally, as it became one of the most important economic activities in the tertiary sector, "services". This vital industry is always expected to be financially solvent and strong through being profitable in operation. Which emphasizes on the financial performance side of the activity being what makes or breaks the development of the insurance industry and therefore the economy in its entirety. And although the concept of financial performance has attracted researchers' attention in the literature of corporate finance over the past decades., in the context of the insurance, it has been given very little attention and studies on it are lacking. A study on the performance of the insurance industry is crucial since this activity is currently facing many challenges, including increased competition, consolidations, solvency risks,

and a changing regulatory environment. The question of the efficiency of the firms in this industry is clearly important in order to determine how the industry will respond to these challenges and which firms are likely to survive (Berger et. al, 1997).

The Algerian insurance market has 23 licensed insurance companies, with public, private and mixed ownership. wherein 12 of them offering mainly Non-life insurance products that cover property and causality, 8 of the remaining offering life insurance products. And the other 3 are specialized insurance companies. These companies are in continuous competition looking to maximize their profit and have the largest market share.

The main objective of this study is to identify the determinants of financial performance of non-life insurance companies in Algeria, by spotting exactly what internal and/or external elements have the most statistically significant impact on their financial performance, so that insurance managers can use and exploit these factors to further enhance the performance of their companies.

To achieve this goal, this paper was structured as follows, Starting off with a general presentation of the insurance industry in Algeria as a whole and non-life insurance in particular. Then, we moved on to showcase the methodological approach and research design of our study. Shortly afterwards, we went over a literature review of the determinants of financial performance that we used to explain the financial performance. Finally, we performed our data analysis phase where we fitted all the variables into a multiple regression model and analyzed it through SPSS. The findings at the end of the analysis will dictate what are the most important variables that impact the financial performance of non-life insurance companies in Algeria.

2. Non-Life Insurance in Algeria

The Algerian insurance market has 12 registered companies offering mainly Non-life insurance products That cover property and causality of all kinds. Four of them are public (SAA, CAAR, CASH, CAAT), Six are private companies (SALAMA, TRUST, ALLIANCE, CIAR, 2A, GAM), one of them has a mixed ownership (AXA) and the last one is a mutual insurance company (CNMA).

Non-life insurance still to this day represents the main part of the total revenue of insurance sector, with an amount of 131.8 billion DA in 2019, against 126.1 billion DA in the same period of 2018 with 4.5% increase. 90 % of the insurance sector production were from Non-life insurance.

The main non-life insurance products offered by the companies in Algeria include car insurance, Property & Casualty, transport, agriculture and credit insurance. The car insurance segment dominates the market and contributes with 53% of the total general Non-life insurance production in 2019.

Table N°1: Market production by type of insurance in 2019.

Unit: Millions DA

Products	2019	
	Amount	**%**
Car insurance	69 613	53%
Property & Casualty insurance	51 911	40%
Transport insurance	6 287	5%
Agricultural Insurance	2 882	2%
Credit insurance	146	0%
Total	130 839	100%

Source: UAR- Insurance Annual Report 2019 data

Public sector insurers lead the non-life insurance market in Algeria with SAA, CAAT, CAAR having market shares of 20 %, 17 % and 11 %, respectively in 2019. In the private sector, CIAR is the leader in 2019 with market share of 7%, followed by SALAMA and ALLIANCE with 4%. In fact, the public sectoraccounted for a cumulative share of about 62% of the total production in the non-life insurance segment in 2019.

3. The Determinants of Financial Performance of Non-Life Insurance

There exists a multitude of elements that could explain financial performance. But we opted for the most common and widely approved ones:

3.1. Company Size

Several authors have suggested that firm performance is related to size. Some consider that size has a negative relationship with profitability, arguing that smaller firms generally have a greater level of risk, and investors are compensated with higher returns. On the other hand, other authors argue that size has a positive relationship with profitability. Their reasoning is that Large insurance companies normally have greater capacity for dealing with adverse market fluctuations than small insurance companies. Malik (2011) found that there is a significantly positive association between the size of a company and profitability. Likewise, (Ahmed, 2010; and Teece,2009) argued that Size can be determined by net premium which is the premium earned by an insurance firm after deducting the reinsurance ceded. The premium base of insurers dictates the quantum of policy liabilities to be borne by them. However, for firms that become exceptionally large, the effect of size could be negative due to bureaucratic and other reasons (Yuqi 2007).

H1: *Company size has a positive impact on Financial Performance.*

3.2. Liquidity Ratio

Liquidity refers to the degree to which debt obligations coming due in the next 12 months can be paid from cash or assets that will be turned into cash. The conclusions regarding the relationship between this variable and performance are not consensual. Deloof (2003) concludes that there is a positive relationship between cash holdings and returns. Safdar et al. (2016) analyze the relationship between liquidity and profitability in Pakistan, also finding evidence that liquidity causes a positive impact both on the ROA, concluding that managers can increase the firms' profitability and the shareholders' value if they invest effectively in liquid assets. However, Eljelly (2004) concludes that liquidity has a statistically negative effect on firm performance. According to Fama and Adams and Buckle (2003), among others, higher liquidity results in increased agency problems between managers and shareholders.

H2: *Liquidity ratio has a positive impact on Financial Performance.*

3.3. Leverage Ratio

Several researchers have studied firms' debt use and suggested the determinants of financial leverage by reporting that firm's debt-equity decision is generally based on a trade-off between interest tax shields and the costs of financial stress. This variable refers to the proportion of debt to equity in the capital structure of a firm. The financing or leverage decision is a significant managerial decision because it influences the shareholder's return and risk and the market value of the firm. (Almajali et al. 2012) argue that Leverage is sometimes useful because, it will improve profit of investors on shares of their capital and can put together proper utilization of tax benefits related to loans. However, Firms with more leveraged amount may face collapse of business due to its inability to arrange timely payment of loans. These firms may lose credibility in business environment and may face hardship in future loans.

H3: Leverage ratio has a negative impact on Financial Performance.

3.4. Investment Ratio

Organizations that engage in risky activities are likely to have more volatile cash flows than entities whose management is more averse to risk-taking. This could improve annual operational performance by encouraging managers to increase cash flows through risk taking. On the other hand, excessive risk-taking could adversely affect the annual performance of insurers and reinsurance companies. Furthermore, higher annual insurance losses will tend to increase the level of corporate management expenses that could further aggravate the decline in reported operational performance. (Daniel and Tilahun 2013).

Most researches whose investigative reports focused on the effect of risk on profitability have conflicting results. Jian-Shen et al (2006), Malik (2011) and Daneiel and Tilahun, regarding investment ratio, they found out a negative but significant relationship with profitability, arguing that the capital structure and operational risk have a major influence on it.

H4: *Investment ratio has a negative impact on Financial Performance.*

3.5. Solvency Ratio

This variable represents the amount of capital thatan insurance company has in relation to probable claims. It is a key indicator of the insurer's financial stability. A positive linkage between this variable and the insurer's financial performance is expected, since the insurer's financial stability is an important benchmark to potential customers (Burca and Bartrinca, 2014)

H5*: Solvency Ratio has a negative impact on Financial Performance.*

3.6. Economic Growth

Some studies analyzed the relationship between macroeconomic variables and firm performance. Although Issah and Antwi (2017) find that real GDP shows a negative relationship with the ROA, most of the studies undertaken so far find a positive relationship between GDP and performance. Ali et al. (1992) suggests that the macroeconomic

environment has a strong impact on the firms' financial positions. Gan et al. (2006) conclude that the GDP has a significant and positive impact on firm performance.

H6: Economic growth has a positive impact on Financial Performance.

3.7. Inflation Rate

The effect of inflation on the profitability of insurance companies is not adequately investigated, Olaosebikan (2012); Poposki et al (2012); Hussain (2012) and Chen-Ying Lee (2014) are amongst others to investigate the effects of inflation on insurance companies' profitability. The general consensus is that, in most cases, inflation seems to have a negative correlation with financial performance.

H7*: Inflation rate has a negative impact on Financial Performance.*

4. Methodological Approach

In the following we will present our sampling mechanism and the nature of the data collected:

4.1. Population of Study

The population of this study comprised all the 12 Non-Life insurance companies established and serving in the specified period of time of 9 years from 2010 to 2018, which led us to obtaining a total of 107 observations. Companies used in this study Were all Non-Life Insurance companies operating in Algeria. Four of them are public companies, seven are private and one is a mutual insurance company.

4.2. Source and nature of the collected data set

The data used in this study is secondary data collected from financial reports and financial statements (balance sheets and income statements) of Non-life insurance companies and macro-economic data for the span of nine years (2010-2018).

Most of the data required was drawn from the CNRC (Centre National du Registre du Commerce), some from annual Insurance reports and the

macroeconomic data was drawn from the website of the national statistics office and the World Bank website.

4.3. Presentation of the variables

Our regression model is shaped around 8 variables including 7 independent explanatory variables.

Table N°2: Measurement of explanatory variables

	Variable	Type	Measurement	Previous studies
1	**Financial Performance**	Dependent	Return on Assets	Abate (2012) Malik (2011)
2	**Company Size**	Independent / Internal	Natural Log of total assts	Daneiel and Tilahun (2013) Sumaira and Amjad (2013)
3	**Liquidity Ratio**	Independent / Internal	Current assets/Current liabilities	Liargovas and Skandalis, (2008)
4	**Leverage Ratio**	Independent / Internal	Debt/Equity	Amal et al. (2012) Adams and Buckle (2003)
5	**Investment Ratio**	Independent / Internal	Investment/Total assets	Daniel and Tilahun (2013)
6	**Solvency Ratio**	Independent / Internal	Equity/Net solvency margin	Burca and Bartrinca, (2014)
7	**Inflation Rate**	Independent / External	Annual Inflation Rate	All studies that include it
8	**Economic Growth**	Independent / External	Annual GDP growth	All studies that include it

Source: Self-made

4.4. Model Specification

Based on the chosen variables, the study employed a preliminary multiple regression model given by:

$$FP_i = \alpha + \beta_1 CS_i + \beta_2 Lq_i + \beta_3 Lv_i + \beta_4 Inv_i + \beta_5 Sv_i + \beta_6 Inf_i + \beta_7 EG_i + \varepsilon_i$$

Where:

FP = Financial performance of a Non-life insurance company; α = Intercept, a sample-wide constant; CS = Company Size; Lq = Liquidity Ratio; Lv= Leverage Ratio; Inv = Investment Ratio; Sv = Solvency Ratio; Inf = Inflation Rate; EG = Economic Growth; i = Time period; ε = Error term; $\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$, $\beta 5$, $\beta 6$, $\beta 7$= coefficients for the respective determinants.

Above is our preliminary multiple regression model that represents the collected cross-sectional data and be used as a study subject and be analyzed using SPSS. The predictors that don't have a significant impact will be filtered out at the end of our research to obtain the final model.

5. Descriptive Statistics

Before presenting the estimation results, it is necessary to present some descriptive statistics relating to the panel data set first. The table below provides a brief description and summarizes the whole set.

Table N°3: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
FP	107	-0,242	0,074	0,02076	0,044339
CS	107	9,300	10,956	10,15070	0,438095
Lq	107	0,273	1,546	0,88076	0,312346
Lv	107	0,000	3,038	0,20403	0,288557
Inv	107	0,032	0,864	0,49510	0,181399
Sv	107	0,325	6,599	2,70250	1,505086
Inf	107	0,029	0,089	0,04948	0,017338
EG	107	0,013	0,040	0,02911	0,009418
Valid N (listwise)	107				

Source: Researcher – SPSS Output

Financial performance measured by ROA ranged from a low negative 24.2% to a high of 7.4% with a mean of 2.08% and a standard deviation of 4.43%.

Company size measured by natural log of assets ranged from a low of 9.3 to a high of 10.956 with a mean of 10.15 and a standard deviation of 0.438. Liquidity ratio ranged from a low of 27.3% to a high of 154.6% with a standard deviation of 31.23%. Leverage ratio with a mean of 20.4% and a standard deviation of 28.85%. The Investment ratio which is a ratio of assets invested to total assets ranged from a high of 86.4% to a low of 3.2% with a mean of 49.5%.Inflation rate and economic growth being external variables ranged from a low of 2.9% and 1.3% to a high of 8.8% and 4%, averaging 4.9% and 2.9% respectively.

6. Correlation Matrix

The correlation matrix is used to ensure the relationship between the variables of our model. Showing whether the impact is positive or negative.

Table N°4: Correlation matrix

		FP	CS	Lq	Lv	Inv	Sv	Inf	EG
FP	**Pearson Correlation**	1							
CS	**Pearson Correlation**	0,265**	1						
Lq	**Pearson Correlation**	-0,026	-0,129	1					
Lv	**Pearson Correlation**	0,077	-0,045	-0,072	1				
Inv	**Pearson Correlation**	0,141	0,059	-0,755**	0,062	1			
Sv	**Pearson Correlation**	-0,164	0,405**	0,144	-0,225*	-0,116	1		
Inf	**Pearson Correlation**	-0,122	-0,011	0,056	-0,039	0,010	0,055	1	
EG	**Pearson Correlation**	-0,074	-0,091	0,084	-0,156	-0,012	0,115	-0,028	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Researcher – SPSS Output

As per the above table, there was a positive correlation between Financial Performance and company size, leverage and investment ratio. While, there was a negative correlation between Financial Performance and liquidity, solvency ratio, inflation rate and economic growth.

The correlation between FP and Liquidity is -0.026, which is the smallest correlation coefficient as compared to the other variables, this means that liquidity has a small and negative association with FP. As well as, solvency ratio and economic growth and inflation rate. However, company size, investment and leverage ratio have the highest correlation with FP compared to other variables at 0.265, 0.141 and 0.077 respectively. Which indicates that these variables increase the Financial performance of insurance companies the most.

There exists no case of multicollinearity between the independent variables as shown in the table (the highest correlation is 0.75<0.8 between investment ratio and liquidity). This also can be tested with SPSS using VIF/tolerance test to prove the absence of multicollinearity.

7. Regression Results

The model summary shows us the total differences in the financial performance explained by the model. This then indicates the percentage of the variability in the dependent variable explained by factors included in the study.

Table N°5: Model Summary

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,777	0,604	0,522	0,027077	1,358

Source: Researcher – SPSS Output

From the table above, the standard error of the regression was found to be 0.027 which means that the average distance of the data points from the fitted line is about 2.7% of ROA. The R Square shows that the model predicts 60.4% of the dependent variable, which is a decent percentage for a nine-year period, while the Adjusted R Square shows that the model accounts for.52.2% financial performance after adjusting for errors. Objectively speaking, this model is fairly fit for the analysis we required.

The table below shows analysis for variance statistics (**ANOVA**):

Table N°6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0,096	18	0,005	7,302	0,000
	Residual	0,063	86	0,001		
	Total	0,159	104			

Source: Researcher – SPSS Output

The model reveals a statistically significant relationship between financial performance and the variables chosen (Sig=0.000<0.05) with F = 7.302. This is a strong indication that Company Size, Inflation Rate, Leverage Ratio, Economic Growth, Investment Ratio, Solvency Ratio and Liquidity do in fact affect the profitability of Non-Life insurance companies in Algeria.

The table below shows the significance of each coefficient (β) for each variable and the sample wide constant (α):

Table N°7 : Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1,805	0,465		-3,880	0,000
	CS	0,166	0,041	1,817	4,045	0,000
	Lq	0,073	0,039	0,575	1,894	0,065
	Lv	-0,019	0,011	-0,139	-1,664	0,100
	Inv	0,020	0,067	0,091	0,296	0,768
	Sv	-0,009	0,004	-0,341	-2,487	0,015
	Inf	-0,160	0,156	-0,070	-1,025	0,308
	EG	0,291	0,331	-0,070	0,879	0,382

a. Dependent Variable : FP

Source: Researcher – SPSS Output

The findings indicate that the significant predictors of financial performance were; Company Size (β = 1.817, p=0.000), Liquidity Ratio (β = 0.575, p=0.065) Solvency Ratio (β = -0.341, p=0.015).

Financial performance of non-life insurance companies was not significantly predicted by the remaining variables, Leverage, Investment, inflation and economic growth, due to having Betas greater than 10%.

The results of the study indicate that the relationship between financial performance of non-life insurance companies and the selected factors is statistically significant (p=<0.05) for three variables namely; Company Size, Liquidity Ratio and Solvency Ratio, and the sample-wide constant.

Out of all the variables selected, only company size, Liquidity Ratio and investment ratio are the ones that showed a positive relationship with

financial performance, which confirms the hypotheses H1 and H2, While H4 is rejected. On the other hand, leverage ratio, solvency, inflation and economic growth showed a moderate negative relationship between them and financial performance of non-life insurance companies in Algeria. Therefore, we accept hypotheses H3, H5 and H7. Although, it should be noted that both coefficients (Leverage Ratio, Inflation Rate) were statistically insignificant. Meaning, their impact is negligible. Finally, according to our findings, Economic growth have a negative impact on Financial Performance. Therefore, we reject hypotheses H6. Also, the coefficient was statistically insignificant. Meaning, his impact is negligible.

The analytical model Is therefore finalized as:

$$FP_i = -1.805 + 1.817CS_i + 0.575Lq_i - 0.341Sv_i$$

At last, in an attempt to pinpoint what elements, affect the financial performance of non-life insurance companies in Algeria, whether internal or external, and by going through multiple steps and levels to compile a somewhat concrete panel data set to achieve the aspired goal, we conclude our research with the model above that represents the final form of the study in its entirety by showcasing the most important and statistically significant variables on financial performance.

Conclusion

The purpose of this article was to discover and determine the main variables that affect the financial performance of the Algerian Non-life insurance companies, by analyzing the compiled data of twelve non-life insurance companies for the span of nine years (2010-2018), and using different tools and techniques, such as the analysis of financial statements (Balance sheet, Income statement..), analysis by the ratio method and multiple linear regression analysis using least square dummy variable approach. That being said, the results of our research were as follows:

The study found that the financial performance of the Algerian Non-life insurance companies is indeed affected by different variables: Company size, liquidity ratio, leverage ratio, solvency ratio, investment ratio, inflation rate and economic growth. But not all of them were equally as significant.

In view of these findings, we can confirm that There exists a plethora of determinants such as: Company size, liquidity ratio, leverage ratio, solvency ratio, experience, investment...etc. Each one having a level of impact on financial performance, but not all are equally important. Furthermore, on studying each and every variable presented in this research, we found that only three of the seven variables' coefficients were statistically significant within the chosen model. Having Company Size and Liquidity Ratio showed a positive significant impact on financial performance of Non-life insurance companies. While, Solvency Ratio showed a negative significant impact. all three of them being statistically significant in comparison to the other determinants, were deemed as the most essential elements affecting non-life insurance companies in Algeria. Also, the result of this study showed that there is no significant relationship between the financial performance of Non-life insurers companies in Algeria and the remaining variables, Leverage, Investment, inflation and economic growth.

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