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# Determinants of Insurance Firms' Profitability: An Empirical Study of Saudi Insurance Market*

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## Abstract

The insurance industry plays a vital role for households, companies, and economies. Among others, it provides risk transfer, indemnification services, and financial intermediation. While there has been a vast literature on factors affecting the profitability of insurance companies, limited attention has been paid to Saudi ones. This article fills this gap by examining the determinants of profitability in the Saudi insurance sector. The empirical analysis is based on data relative to a sample of 20 Saudi insurance companies between 2009 and 2017. For robustness checks, the empirical investigation employs a wide range of econometric techniques, including the fixed-effects model, random-effects model, Feasible Generalized Least Squares, Ordinary Least Squares with panel-corrected standard errors, Difference GMM and finally System GMM. The empirical findings suggest that the growth rate of written premium, the tangibility ratio and the fixed-assets ratio are the main factors affecting positively the profitability of Saudi insurance companies. Moreover, while the company size and the liquidity ratio are positively associated with profitability, their impacts are not statistically significant. On the contrary, the loss ratio, liabilities ratio, insurance leverage ratio, and to a less extent, the company age have negative effects on the profitability of Saudi insurance companies.

**Keywords:** Insurance Industry, Profitability, Dynamic Panel Data, Saudi Arabia

**JEL Classification Code:** G22, L25, G23

## 1. Introduction

The insurance industry dates back many centuries. According to Bodie et al. (2013), the first insurance activity seems to occur in the late 1600s in the coffee house of Edward Lloyd in London. Such activity primarily aimed to ensure the risks involved with maritime activities (Wright & Fayle, 1928). Since then, the insurance sector has grown rapidly, mainly due to economic activity expansion and the rise of risk and uncertainty (Alhassan & Biekpe, 2016; Canh et al., 2020). Nowadays, the insurance sector plays a vital role for households, firms, and economies. For households, the insurance industry allows protecting themselves from risks and providing them financial protection (Cai, 2016). For firms, the presence of a developed insurance sector allows transferring savings into the most productive investments in the economy (Cummins et al., 2018). As a financial intermediary, the insurance sector generates an additional financial competition source, which may stimulate productive efficiency and performance of firms (Azman-Saini & Smith, 2011). Finally, the insurance sector is also crucial for the whole economy since it provides risk transfer, indemnification services, and financial intermediation services (Ward & Zurbureg, 2000). As a provider of risk transfer and indemnification services, the insurance sector supports individuals and firms to engage in risky but productive activities. This is expected to affect the financial sector positively and consequently the expansion of the global economy. The insurance sector is also vital for the economy as it has a significant effect on the stability of the financial system (Trichet, 2005; French et al., 2015). Statistics indicate that world total (life and non-life) insurance premiums represented 7.23% of Gross Domestic

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Product in 2019. During the same year, the premiums per capita were about US$818 globally, 2723 in America, 589 in Europe, Middle East, and Africa, and only 417 in Asia-Pacific (Staib et al, 2020).

A boom in theoretical and empirical studies focusing on many issues related to insurance has followed the development of the insurance sector. Some studies focused on the effects of insurance on financial stability (Trainar, 2004; Trichet, 2005; French et al., 2015) and economic growth (Ben Dhiab & Jouili, 2015; Din et al., 2017; Apergis & Poufinas, 2020; Zulfiqar et al., 2020). A particular strand of the literature concentrated on factors driving the development of the insurance sector. Some studies, such as Beck & Webb (2003), Li et al. (2007), and Feyen et al. (2011), investigate the importance of many economic, financial, institutional, and demographic factors for the insurance sector at the country-level (developing and developed). Other studies have instead analyzed the firm-specific factors affecting the profitability of insurance companies (Lee, 2014; Öner Kaya, 2015; Marjanović & Popović, 2020; Sasidharan et al., 2020; Alqirem, 2020). The evaluation of the insurance performance is important to policyholders, experts, and policy authorities. It improves concerns of how the financial performance of insurance companies could be measured and the particular factors that affect the insurance profitability. Finally, exploring the importance of firm-specific factors is an initial and mandatory step that allows designing appropriate recommendations for the growth opportunities of the insurance sector.

This study aims to contribute to this research field by empirically analyzing the factors affecting the profitability of insurance companies in Saudi Arabia. The above-mentioned problem is analyzed using a dataset of 20 Saudi insurance companies over the period 2009–2017. The study focuses on the Saudi insurance industry because it is the largest and oldest insurance market among Gulf Cooperation Council countries (GCC). Moreover, Naushad et al. (2020) state that the Saudi insurance industry is one of the largest industries in Saudi Arabia, responsible for a considerable part of the non-oil economy. The regulation of this sector by the Saudi Arabian Monetary Agency (SAMA) only began in 2003 (Samargandi et al., 2014). In the last ten years, the insurance companies in Saudi Arabia have submitted to a deep renovation due to privatization, foreign insurance investment, changes in the institutional environment, and improved effectiveness. The development of the Saudi Arabia economy was pursued by heightened progress in the insurance sector. Simultaneously, there has been scheduling of companies' consolidation mainly through SAMA. This consolidation of insurance companies led, among others, to a proliferation in insurance services quality and evolution of the insurance performance. As discussed above, the profitability of insurance companies is a well-debated subject discussed in many academic works. However, there is an absence of studies focusing on the key factors affecting the profitability of Saudi insurance companies. This study aims to fill this gap by identifying the profitability insurance firm's determinants operating in the Saudi insurance market. Furthermore, the study considers a wide range of internal factors that can affect insurance firms' profitability. Finally, various econometric methodologies are employed to estimate the impact of those potential internal factors on the profitability of Saudi insurance companies.

The paper is organized as follows: Section 2 focuses on literature review, while Section 3 describes the data, empirical methodology and selected descriptive statistics. The empirical results are discussed in Section 4. Section 5 is reserved to the conclusion.

## 2. Literature Review

In literature, extensive attention has been given to the determinants of companies' profitability in various financial areas. Compared to the banking performance sector, the insurance industry has been less explored, and most of the insurance sector studies are recent, being published after 2000. Moreover, much of the literature focused on developed countries due to the relative development of the insurance industry and the availability of firm-level datasets. Cummins and Nini (2002) analyze the determinants of the performance of the US insurance sector for 1993 to 1998. The empirical analysis includes a regression of capitalization performance and several other control variables, including line-of-business diversification. The authors conclude that the company size has a significant impact on the return on assets (ROA), which explains that higher profits are generated by larger companies. Adams and Buckles (2003) examine the determinants of operational performance in Bermuda insurance during 1993–1997 by considering 47 insurance companies. The findings indicate that high-leverage and low-liquidity companies have the best operational performance. Moreover, the company size and scope of activities have no substantial impact on the performance of insurance companies. A study conducted by Shiu (2004) examines the determinants of the performance of insurance companies in the United Kingdom between 1986 and 1999. The author uses a panel dataset and examines 12 explanatory variables based on three key indicators: investment yield, the percentage change in shareholders' funds, and return on shareholders' funds. The results show that the performance of insurance companies is positively related to interest rate, liquidity, solvency margin, and return on equity and negatively related to inflation and reinsurance dependence.

Malik (2011) examines the determinants of insurance performance in Pakistan during the period 2005–2009. The results confirm that capital size and volume positively affect insurance performance, while the leverage and loss ratio

exert adverse effects on ROA. Kozak (2011) focuses on the profitability of 25 Polish non-life insurance companies between 2002 and 2009. The empirical study shows that the amount of gross written premiums has a significant and positive impact on the profitability of insurance companies. Moreover, the profitability is adversely impacted by the share of car insurance in the company's portfolio. According to Pervan et al. (2012), the ROA of insurance companies in Bosnia and Herzegovina during the period 2005-2010 is determined by the company size, underwriting risk, and equity returns. Moro and Anderloni (2014) investigate the influence of specific factors on insurance performance in 198 European insurance companies between 2002 and 2014. The authors conclude that asset size and diversification negatively affect ROA, while reserves dimension and asset turnover positively impact. A study by Burca and Batrinca (2014) focusing on the Romanian insurance sector suggests that the insurance performance is affected by some specific factors, such as financial leverage, company size, growth of gross written premiums, underwriting risk ratio, and solvency margin. Yuvaraj and Abate (2013) conclude that the insurance firms' profitability is positively affected by the size and volume of capital, while liquidity ratio and leverage ratio negatively affect the insurance profitability. Mehari and Aemiro (2013) show that the size, risk ratio, leverage, and tangibility are the important determinants of insurance performance in Ethiopia. On the other hand, growth in writing premium, age, and liquidity have a statistically insignificant impact on ROA.

Kripa and Ajasllari (2016) examine the drivers of profitability of Albanian Insurance Companies during the period 2008-2013. It has been shown that the profitability is positively impacted by the growth rate and negatively impacted by liabilities, liquidity and fixed assets. Based on a sample of Polish insurance companies over the period 2006–2013, Ortyński (2016) concludes that the insurance performance negatively responds to net claims ratio and net operating expenses, while profitability is positively affected by company size the ratio of technical activity. Hidayat and Firmansyah (2017) focus on a sample of 15 Islamic insurance companies in Indonesia between 2011 and 2015. The findings show that the board of directors has no significant impact on the performance of the company. However, leverage, institutional ownership and managerial ownership allow increasing their profitability. Derbali and Jamel (2018) focus on firm-level determinants of profitability in 19 Tunisian insurance companies and conclude that the age and premium growth rate positively affect ROA, while the size is negatively correlated to the performance of Tunisian insurance companies. Abebe and Abera (2019) examine the determinants of financial performance in the Ethiopian Insurance market during 2010–2015. The results indicated that capital adequacy, liquidity, size, age, loss, leverage are the main determinants of financial performance. Marjanović and Popović (2020) focus on the factors influencing the profitability of 14 insurance companies in the Republic of Serbia between 2006 and 2016. The authors conclude that some firm-specific factors, such as the firm's age, capital adequacy, investment performance, and market share, have statistically significant effects on the firm's performance, as measured by the ROA. It is worth noting that very few recent studies focused on Saudi insurance companies profitability. Guendouz and Ouassaf (2018) examine the factors affecting the performance of six insurance companies in Saudi Arabia between 2010 and 2016. The empirical analysis indicates that the age, size, premium growth rate, and loss ratio have significant effects on the profitability of insurance companies. In another study, Akhtar (2018) examines the performance of insurance companies in Saudi Arabia over the period 2010–2015. The study suggests that the efficiency of Saudi insurance companies is affected by the market share and profitability.

## 3. Methodology and Data

### 3.1. Model and Econometric Methodology

The firm performance and maximization of profitability represent the main objectives of financial management. The current study aims to investigate the crucial drivers affecting the financial performance of Saudi insurance companies. To this end, we use data relative to the 20 largest insurers in the Saudi insurance market. The considered insurance companies have together about 80% of gross written premium in this market. Annual data relative to 22 Saudi insurance companies covering the period 2009–2017 were used in the empirical analysis.

The initial model to be estimated is represented by the following linear equation:

$$y_{i,t} = \alpha + \beta x_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $i$ denotes the cross-section dimension, and $t$ denotes the time dimension. $y$ represents the dependent variable (the profitability of the insurance company $i$ at time $t$), while $x$ represents the potential determinants of profitability to be discussed later, and $\beta$ is the set of coefficients to be estimated. Finally, $\alpha$ and $\varepsilon$ are, respectively, the constant and error term.

The model in Equation 1 is estimated using many econometric techniques. We start by using the fixed effects and random effects models. To decide which model is appropriate for our analysis, we will run the Hausman specification test. However, the fixed- and random-effects models may violate some mandatory assumptions, such as serial correlation and heteroscedasticity. To avoid such issues, the study further employs the Feasible Generalized

Least Squares (FGLS) estimator and the Ordinary Least Squares with Panel-Corrected Standard Errors (PCSE) estimator. For robustness check, we finally use a dynamic specification to explain the profitability of Saudi insurance companies. More specifically, we use the Generalized Method of Moments (GMM) to account for endogeneity. The GMM estimator allows estimating a dynamic profitability function. As in Nguyen (2021), we use the difference GMM and System GMM estimators to ensure the robustness of results.

### 3.2. Data

The current study is based on firm-level data. The dependent variable (profitability) is measured by the return-on-assets (ROA) ratio. It is well known that the ROA ratio captures the amount of companies' profits produced by total assets and is the most used proxy to capture firms' profitability. Regarding the potential determinants of insurers' profitability, the study considers a wide range of potential variables. More specifically, nine explanatory variables are considered, namely, the insurance size (SIZE), insurance liquidity ratio (LIQ), growth rate of written premium (GWP), tangibility ratio (CAP), fixed assets ratio (FIX), loss ratio (LOSS), liabilities ratio (LIAB), insurance leverage ratio (LEV) and company age (AGE). Table 1 reports detailed definitions of all variables.

The data on the above-mentioned variables are extracted for 20 Saudi insurance companies between 2009 and 2017, which gives a total of 180 observations. Selected descriptive statistics of the dependent and independent variables are presented in Table 2.

**Table 1:** Definition and Sources of Variables

| Abbreviation | Variables | Definition |
|---|---|---|
| ROA | Assets profitability ratio | Net financial result / Total assets |
| SIZE | Size of the Insurance Company | Natural log of total asset |
| LIQ | Liquidity of insurance firm | Current liabilities / Current assets |
| GWP | Growth rate of written premium | the growth rate of gross written premium |
| CAP | Tangibility ratio | Shareholder assets / Total assets |
| FIX | Fixed assets ratio | Fixed assets / Total assets |
| LOSS | Loss ratio | Net claims incurred / Net earned premiums |
| LIAB | Liabilities ratio | Total equity / Total assets |
| LEV | Insurance leverage ratio | Total debt / Equity |
| AGE | Company age | The difference of observation year and establishment year of the company |

**Table 2:** Descriptive Statistics

| Variables | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| ROA | 180 | 0.0079459 | 0.1072396 | –0.2815745 | 0.6919762 |
| GWP | 180 | 0.2365285 | 0.4036508 | –0.565332 | 2.040177 |
| LIQ | 180 | 0.5590101 | 0.2357327 | 0.0485609 | 1.367347 |
| CAP | 180 | 0.0296017 | 0.3501449 | –1.35484 | 2.246503 |
| SIZE | 180 | 0.6848858 | 0.495393 | –0.3128723 | 3.024936 |
| LEV | 180 | 0.7057661 | 0.1253759 | –0.020137 | 0.9274197 |
| FIX | 180 | 0.4717501 | 2.042131 | –4.191489 | 11.15581 |
| LOSS | 180 | 0.0064445 | 0.1163533 | –0.3741368 | 1 |
| LIAB | 180 | 0.2540997 | 0.1451829 | 0.0489786 | 0.9687483 |
| AGE | 180 | 11.85556 | 12.69897 | 1 | 53 |

The mean value of the ROA ratio is 0.79%, while the standard deviation, measuring the dispersion of ROA from its mean, shows that profitability deviates 10.72% from its mean. The minimum value of the ROA is –28.15% while the highest value of firm's performance in the sample is about 69.19%.

# 4. Empirical Results

## 4.1. Correlation Analysis

In the context of panel data models, it is indispensable to analyze the correlation between independent variables to approve that there is no problem of multicollinearty. The results in Table 3 confirm that there is no evidence of multicollinearty as values of the Pearson correlation coefficients are generally very low and not exceed 20%.

## 4.2. Estimation Results

As outlined earlier, the main determinants of Saudi insurance profitability are checked using a wide range of econometric methodologies. We start by using the fixed and random effects models. For robustness checks, we also use the Feasible Generalized Least Squares (Feasible GLS) and Panel Corrected Standard Errors (PCSE), which control for serial correlation and heteroscedasticity. Finally, the difference and system GMM are implemented. Results of the fixed and random effects models are presented in Table 4.

**Table 3:** Correlation Matrix

| Variables | GWP | LIQ | CAP | SIZE | LEV | FIX | LOSS | LIAB | AGE |
|---|---|---|---|---|---|---|---|---|---|
| GWP | 1 | | | | | | | | |
| LIQ | 0.1661 | 1 | | | | | | | |
| CAP | –0.1504 | –0.0117 | 1 | | | | | | |
| SIZE | –0.1069 | –0.9292 | –0.0449 | 1 | | | | | |
| LEV | –0.0681 | 0.0122 | 0.0183 | –0.0459 | 1 | | | | |
| FIX | –0.1817 | –0.0495 | 0.6624 | 0.0679 | 0.0240 | 1 | | | |
| LOSS | –0.2292 | –0.0951 | 0.3914 | 0.1882 | 0.1099 | 0.6104 | 1 | | |
| LIAB | 0.0169 | –0.1842 | –0.0231 | 0.3388 | –0.7616 | 0.1283 | 0.0982 | 1 | |
| AGE | –0.1766 | –0.0153 | 0.2392 | –0.0246 | 0.2580 | 0.2149 | 0.0812 | –0.1951 | 1 |

**Table 4:** Results of Fixed and Random Effects Models

| Variables | Fixed Effects | | Random Effects | |
|---|---|---|---|---|
| | Coefficient | *p*-value | Coefficient | *p*-value |
| GWP | 0.0144*** | 0.008 | 0.0106* | 0.056 |
| LIQ | 0.0898** | 0.027 | –0.0126 | 0.697 |
| CAP | 0.1575*** | 0.000 | 0.1614*** | 0.000 |
| SIZE | 0.0346* | 0.057 | –0.0030 | 0.853 |
| LEV | –0.1866*** | 0.000 | –0.1316*** | 0.000 |
| FIX | 0.0247*** | 0.000 | 0.0249*** | 0.000 |
| LOSS | –0.0784*** | 0.003 | –0.0784*** | 0.002 |
| LIAB | –0.3248*** | 0.000 | –0.2403*** | 0.000 |
| AGE | –0.0012 | 0.145 | 0.0002 | 0.202 |
| constant | 0.1507*** | 0.000 | 0.1543*** | 0.000 |
| *R*-squared | 0.881 | | 0.931 | |
| Prob. (*F*-Statistics) | 0.000 | | 0.000 | |
| Hausman test | 33.14 (0.000) | | | |

Note: ***, **, and *Represent the statistical significance at the 1%, 5% and 10% levels, respectively.

The regression results in Table 4 indicate that the determination coefficient *R*-Squared is equal to 0.881 for the fixed-effects model and 0.931 for the random-effects model. This means that the considered independent variables explain 88.10% of the firm performance when considering the fixed-effects model and 93.10% when considering the random-effects model. The obtained *R*-squared are relatively high and confirm the relevance of variables considered in the analysis. It is also evident from Table 4 that not all variables are statistically significant. Indeed, the fixed-effects model suggests that the age of the company is not significant, while the random-effects shows that the age and size of the company have no significant effects on its profitability. Overall, there is evidence that the age and size of the company are not important determinants of the Saudi insurance companies profitability. Furthermore, the insurance profitability is positively related to the growth rate of premiums, liquidity ratio, tangibility ratio, firm size and fixed assets ratio. While, it is negatively affected by growth rate of premiums, leverage ratio, loss ratio and liability ratio. The random effects model results are different from those obtained by the fixed effects model. Indeed, the random effects model shows that the liquidity ratio and the size have no significant effects on ROA, confirming that the profitability of firm does not depend upon the size of the insurance company.

After putting on both panel models, we have to decide the most appropriate panel data model to explain effectively the determinants of insurance profitability. Therefore, we have to run the Hausman specification test. A significant result of this test means that we should reject the null hypothesis "difference in coefficient is not systematic" and approving the fixed-effects panel data. An insignificant result of the Hausman specification test involve that the random-effects panel data model is more appropriate to estimate the determinants of insurance profitability. The Hausman specification test for this study is presented at the bottom of Table 4. Based on these results, the probability of the Hausman test is equal to 0.000 so that the fixed-effects model is the most appropriate to identify the determinants of Saudi insurance profitability.

For robustness check, we move to the use of the FGLS and PCSE estimators to examine the drivers of the Saudi insurance companies profitability. Results are presented in Table 5.

The findings of the Feasible GLS and PCSE estimators partially confirm those of the fixed- and random-effects models. The insurance profitability is positively affected by the growth rate of premiums, tangibility ratio, and fixed-assets ratio. However, the leverage ratio, loss ratio and liability ratio exert negative and significant effects on the ROA ratio. The main difference between Tables 4 and 5 is that the liquidity ratio is found to be insignificant when using the Feasible GLS/PCSE estimators, while the fixed-effects model show a positive effect of liquidity ratio. Results of Table 5 are more reliable than those of Table 4 since the Feasible GLS and PCSE methods account for heteroscedasticity and serial correlation when estimating the determinants of insurance companies profitability.

Finally, the present study implement the difference GMM developed by Arellano and Bond (1991) and the system GMM developed by Blundell and Bond (1998). The difference GMM estimator identifies only two insignificant variables, which are the liquidity ratio and the size of the company (Table 6). These two variables have been

**Table 5:** Results of Feasible GLS and PCSE Models

| Variables | Feasible GLS | | PCSE | |
|---|---|---|---|---|
| | **Coefficient** | ***p*-value** | **Coefficient** | ***p*-value** |
| GWP | 0.0128*** | 0.003 | 0.0120** | 0.023 |
| LIQ | 0.0191 | 0.484 | –0.0064 | 0.864 |
| CAP | 0.1432*** | 0.000 | 0.1520*** | 0.000 |
| SIZE | 0.0142 | 0.310 | 0.0017 | 0.920 |
| LEV | –0.1538*** | 0.000 | –0.1425*** | 0.000 |
| FIX | 0.0273*** | 0.000 | 0.0242*** | 0.000 |
| LOSS | –0.0809*** | 0.001 | –0.0675** | 0.048 |
| LIAB | –0.2922*** | 0.000 | –0.2564*** | 0.000 |
| AGE | 0.0000 | 0.495 | 0.0003 | 0.166 |
| constant | 0.1542*** | 0.000 | 0.1543*** | 0.000 |

Note: ***, **, and *Represent the statistical significance at the 1%, 5% and 10% levels, respectively.

**Table 6:** Results of Difference and System GMM Estimators

| Variables | Difference GMM | | System GMM | |
|---|---|---|---|---|
| | Coefficient | *p*-value | Coefficient | *p*-value |
| Lagged ROA | 0.1690*** | 0.000 | 0.1475*** | 0.000 |
| GWP | 0.0110** | 0.029 | 0.0066*** | 0.002 |
| LIQ | –0.0006 | 0.988 | 0.0091 | 0.761 |
| CAP | 0.1801*** | 0.000 | 0.2015*** | 0.000 |
| SIZE | 0.0141 | 0.475 | 0.0077 | 0.606 |
| LEV | –0.3293*** | 0.000 | –0.2308*** | 0.000 |
| FIX | 0.0111*** | 0.001 | 0.0100** | 0.017 |
| LOSS | –0.0952** | 0.013 | 0.0154 | 0.740 |
| LIAB | –0.3497*** | 0.000 | –0.2846*** | 0.000 |
| AGE | –0.0051*** | 0.000 | –0.0009*** | 0.001 |
| constant | 0.3752*** | 0.000 | 0.2359*** | 0.000 |
| AR(1) test | –2.0357 (0.041) | | –1.9209 (0.547) | |
| AR(2) test | 1.6145 (0.106) | | 1.4269 (0.153) | |
| Sargan test | 9.7243 (0.999) | | 12.0780 (0.521) | |

Note: ***, **, and *Represent the statistical significance at the 1%, 5% and 10% levels, respectively.

previously shown to be insignificant when using the random-effects model, Feasible GLS and PCSE estimators. On the other hand, seven variables are significant, which means that insurance profitability is affected mainly by growth rate of premiums, tangibility ratio, leverage, fixed-assets ratio, loss, liability ratio and the age of the company. The growth of written premiums represents the growth of insurance companies has a positive effect on the profitability. The growth of premiums reinforces the market position of the firm and makes it more competitive and able to take new opportunities. The tangibility ratio is also positively and significantly related to the insurance profitability. Tangibility reflects the positive effect of the importance of capital in the insurance profitability.

The results show that the leverage is a significant and important determinant of profitability and a negative relationship is proved between leverage and insurance profitability. This means that insurance firms with large debt have restrained profitability. The fixed assets are positively and significant related to the firm's profitability. This positive relationship shows that if an insurance company reduces its fixed assets then their profitability will be increased. Liability has a negative relationship and this relationship is statistically significant. This means that high level of liabilities exposes the insurer to solvency risk, negatively affecting its profitability. The age of the company is also found to be negative and statistically significant, meaning that new insurance firms have more chance to raise their profitability levels. These findings contradict previous results obtained based on the fixed-effects, random-effects, Feasible GLS and PCSE models.

Finally, only the difference GMM reveals a negative and statistically significant impact of losses on the profitability of Saudi insurance companies. These findings represent an argument on the detrimental role of loss on profitability, as increased losses induce high levels of liabilities and rising solvency risk and uncertainty, which may harm the profitability of firms. It is worth noting that the lagged profitability ratio is positive and statistically significant when using the difference of system GMM. These findings suggest that the profitability of insurance companies in a given year is dependent on its profitability in the previous year. Consequently, making profits allows making more profits in the future. Finally, the AR(2) test for autocorrelation and Sargan test for over-identifying restrictions reveal the absence of autocorrelation and the validity of the used instruments.

## 5. Conclusion

The aim of the current study is to examine empirically the factors affecting the profitability of the Saudi insurance

companies. The analysis is based on a dataset relative to 20 insurance companies between 2009 and 2017, collected from the annual reports of the Saudi Central Bank. To check the robustness of findings, a wide range of econometric techniques, namely, the fixed-effects model, random-effects model, Feasible Generalized Least Squares, Ordinary Least Squares with panel-corrected standard errors, Difference GMM and finally System GMM. The results of the study show that the profitability of insurance companies in Saudi Arabia during the study period is affected by the growth rate of written premium, the tangibility ratio, the fixed assets, the loss ratio, the liabilities ratio, the leverage ratio, and the company age. More specifically, there is a strong evidence that the growth rate of written premium, the tangibility ratio and the fixed assets have positive effects on the performance of insurance companies, while the loss ratio, the liabilities ratio, the leverage ratio and the company age negatively impacted the performance. The analysis also shows that the company size and the liquidity ratio have no significant impacts on profitability.

Insurance companies in Saudi Arabia should pay more attention to these specific internal factors given their important role in affecting their financial performance. Specific internal factors depend on the decisions of the company itself, and therefore by optimizing their decisions, companies can maximize their profitability. These results are applicable, not only to Saudi insurance companies, but also to insurance companies operating in other Gulf Cooperation Council, as they have comparable environments. Future studies may analyze the macroeconomic factors affecting the profitability of the insurance sector in Saudi Arabia. The Gulf Cooperation Council may also be considered in forthcoming studies, giving the rise of the insurance sector in almost all member countries.

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