

# Corporate Governance and Performance of Insurance Companies in the Saudi Market\*

Mohamed Abdel Mawla OSMAN<sup>1</sup>, Durga Prasad SAMONTARAY<sup>2</sup>

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## Abstract

This paper investigates the association between key corporate governance characteristics and the performance of general insurance businesses listed on the Saudi stock exchange (TADAWUL). The methodology for the study is based on a pooled data collection for 11 Saudi general insurance companies from 2011 to 20. The linear regression model and the logarithm regression model are suggested to assess the relationship between performance and corporate governance characteristics. The dependent variable is firm performance measured using ROA, ROE, and Tobin's Q. The independent variables are corporate governance variables consisting of a complete set of board and audit committee characteristics. Insurer-specific control variables are introduced. The empirical results reveal that the characteristics of corporate governance influence the performance of insurance companies. In particular, the board size, board's tenure, the proportion of independent directors in the board, audit committee size, audit committee meeting frequency, and proportion of health insurance premiums have a positive impact. However, audit committee independence, size of the company, and proportion of reinsurance premiums have a negative impact on the performance of the Saudi general insurance companies. Finally, the empirical results indicated also that there is an unclear relationship between the performance and board meeting frequency, compensations of the Board, and the average age of the Board.

**Keywords:** Corporate Governance, Regression Model, Logarithmic Regression, ROA, ROE, Tobin's Q

**JEL Classification Code:** D53, F65, G22, G34, P13

## 1. Introduction

Corporate governance has been a topic of major interest in the finance literature, specifically concerning the question of why some firms perform better than others. Many finance studies show that the structure of corporate governance

has crucial impacts on firm performance, but most of this previous literature investigates that relationship in industries other than financial services (Cummins & Nini, 2002).

At the beginning of 2000, there has been increasing attention to corporate governance issues worldwide. After the financial crisis of 2008, corporate governance (Tran & Nguyen, 2021) gained specific importance from both academics and practitioners because it results in numerous advantages such as increasing investors' confidence and therefore improving investment opportunities (Ngatno et al., 2021) and elevating firm performance (Hermuningsih et al., 2020; Akbar et al., 2020; Bhagat & Bolton, 2019; Buallay et al., 2017; Othman & Al-Matarna, 2016), mentioned corporate governance variables play an important role in enhancing corporate performance.

Through exploring the Saudi insurance market, we find the profits of some insurance companies listed on the Saudi stock market declined during the second quarter of the financial year 2021, equivalent to SR 569 million, or a drop of 52.8% compared to the same quarter of last year, (for example, each of the United Group for Cooperative Insurance, the Salama Cooperative Insurer,

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<sup>1</sup>First Author. [1] Professor, Finance Department, King Saud University, Riyadh, Saudi Arabia [2] Insurance & Statistics Department, Tanta University, Tanta, Egypt. Email: maosman@ksu.edu.sa

<sup>2</sup>Corresponding Author. Associate Professor, Department of Finance, College of Business Administration, King Saud University, Saudi Arabia. ORCID ID: 0000-0003-3092-2084. [Postal Address: King Saud University, Riyadh, 11587, Saudi Arabia] Email: dsamontaray@ksu.edu.sa; drdpsray@gmail.com

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and the United Cooperative Insurer, Al Sagr Cooperative Insurer, Saudi Enaya Cooperative Insurer, and Gulf Union National Insurer for Cooperation, <https://www.alwatan.com.sa/article/1085098>). As a result, and to fade the losses and as a result of the importance of the insurance sector that represents a pivotal tributary to the economy of the Kingdom of Saudi Arabia, the Saudi Central Bank allowed insurance companies to go for merger and acquisition, in conjunction with the development of the financial sector program, some of the Saudi insurance companies had been merged together and some of the companies had been acquired by other insurance companies, with approval of Saudi the Central Bank.

As a result of the previous losses to many Saudi insurance companies and the importance of insurance companies in enhancing the development of the country through stabilizing the national economy, particularly in emerging insurance markets such as Saudi Arabia, studying the relationship between corporate governance variables and insurer's performance had become very important for shareholders of insurance companies, investors and other stakeholders.

Therefore, the aim of this study is twofold. First, to investigate the relationship between a complete set of corporate governance variables and Saudi insurers' performance. Second, to explore the relationships between the variables of corporate governance and insurers' performance.

In summary, the objective of this paper is to investigate the effects of corporate governance variables on insurer's performance. In this paper, the researchers will investigate the effects of corporate governance (board of directors and audit committee variables) on the performance of insurer-specific control variables in the Saudi insurance market.

The rest of this paper is organized as follows: related literature review and hypotheses in the following section. In the second section, we describe the data and measurement of Variables. In the third section, the research methodology has been explained. In the penultimate section, we conduct regression analyses of the relationships between corporate governance variables and insurers' performance. Then findings of the paper were mentioned, followed by conclusions.

## **2. Literature Review and Hypotheses**

### **2.1. Corporate Governance and Firm Performance**

A number of researchers have examined the relationship between the set of corporate governance variables and firm performance, where the impact of corporate governance on firm performance has been discussed widely

around the world. Also, different performance measures were used to explore the effect of corporate governance on firm performance. Desoky and Mousa (2012) indicated principles of corporate governance that include transparency and disclosure. Alkazali et al. (2021) analyzed firm size, the board size, board financial experience, board meetings, and external audit quality. Alshaboul and Ahmad Abu Zraiq (2020) conceptualized the principles of corporate governance using board size, board independence, board meeting frequency, and CEO duality for Jordanian companies. Alkazali et al. (2021) explored the relationship between corporate governance and bank performance. Bourakba and Gherbi (2014) measured corporate governance using five principles: the composition and size of the Board of Directors, the number of committees of the Board, the number of Sharia Supervisory Board, and ownership concentration. Corporate governance was assessed using board size, board diligence, audit committee size, and audit committee diligence (Warrad & Khaddam, 2020).

Arora and Sharma (2016) measured corporate governance by Board size, Board independence, Board activity intensity, CEO duality, and institutional ownership. Fallatah and Dickins (2012) investigates the relationship between corporate governance characteristics and firm performance in Saudi-listed companies on a sample of 292 observations for the period from 2006 to 2009 using the ROA measure, found that corporate governance and firm performance are unrelated. But a study by Ahmed and Hamdan (2015) revealed that corporate governance is significantly correlated with firm performance (ROA) in Bahrain listed companies. It is found in Nigerian commercial banks that return on equity is positively affected by the ownership structure and the board size (Onakoya et al., 2014). Fooladi and Nikzad (2011) investigated the effect of corporate governance on Malaysian firms' performance, found that corporate governance is negatively associated with ROE and ROA. Fallatah and Dickins (2012) had investigated the relationship between corporate governance characteristics and firm performance in Saudi-listed companies on a sample of 292 observations for the period from 2006 to 2009 using the Tobin's Q measure, found that corporate governance and firm value (measured as Tobin's Q and market value of equity) are positively related.

### **2.2. Corporate Governance and Insurer's Performance**

Although the Saudi government has spent a lot of effort on improving corporate governance, there are no studies examining the impact of corporate governance on insurers' performance, despite the relationship between corporate governance and insurers' performance being well established

in the literature globally. Najjar (2012) studied the impact of corporate governance on the insurance firm's performance (ROE) in Bahrain, found that firm size, the board size, and the number of block-holders have a significant impact on firm performance. The corporate governance study of Zahra and Pearce (1989) increasingly recognized that the board of directors plays a critical role in decreasing agency problems. Li-Ying Huang et al. (2011) had hypothesized that the independence of the audit committee, the proportion of directors with financial expertise on the audit committee, and the proportion of block shareholding are all positively associated with firm performance, the board size, board tenure, the number of appointments (directorship) that directors serve concurrently, the proportion of insider seats on the board, and dependence of auditors are all associated with firm performance.

Literature has provided substantial evidence to indicate that boards of directors play important monitoring roles with regard to insurers' performance. Several factors may serve as important determinants of board effectiveness; in particular, larger board size might enhance the firm performance (Goodstein et al., 1994; Firstenberg & Malkiel, 1994; Singh & Harianto, 1989; Dalton et al., 1999). The board independence, measured as the percentage of outside directors, may represent another important factor for effective board monitoring (Fama & Jensen, 1983; Rosenstein & Wyatt, 1990), which may increase shareholders' wealth. Wen-Yen and Pongpich (2010) studied more of the characteristics of corporate governance that influence the efficiency performance of Thai non-life insurers. In particular, board independence, board meeting frequency, and firm size revealed a positive impact on efficiency performance. Audit committee size, meeting frequency, the divergence between voting rights and cash flow rights, board tenure, board age, and board ownership have found a negative impact. At the same time, their results showed an unclear relation between an insurer's efficiency performance and the board size, the proportion of financial experts on an audit committee, and the board compensation.

The researchers think this study adds to the literature in two aspects. First, there are no studies on this subject that specifically utilizes the Saudi general insurance companies' data in order to investigate the relation between corporate governance and performance. This study is important since poor corporate governance had caused more losses for many insurance companies in Saudi Arabia. Second, we investigate the impact of a more complete set of characteristics on a performance i.e. Independent non-executive directors, the proportion of independents in board size, audit committee size, number of the audit committee, Proportion of independents non-executive on the audit committee, an average of age of board member, Proportion of Compensation for Board to total assets, Firm Size, Proportion of premiums of health

insurance to total premiums, and Proportion of reinsurance premiums to total premiums.

### 2.3. Research Hypotheses

**Board Size:** According to Huang et al. (2008), a larger board size should benefit a firm's efficiency; however, researchers discovered a positive relationship between board size and corporate performance (Dalton et al., 1999; Dwivedi & Jain, 2005; Abidin et al., 2009; Belkhir, 2009; Downen, 1995). In contrast, results show that board size is negatively related to return on equity (Pathan et al., 2007) and corporate performance (Bhagat & Black, 2002; Wang et al., 2007). As well, Yermack (1996) argued that large boards may be less cohesive and more difficult to coordinate, and easier to control by the CEO; thus, larger boards would harm performance. Finally, Connelly and Limpaphayom (2004) found board size does not have any relation to firm performance. Based on these inconsistent results, increasing board size may not necessarily improve the performance. Therefore, the researchers propose the following hypothesis:

**H1:** *There is no relation between board size and insurer performance.*

**Director Tenure:** Olson (2000), Golden and Zajac (2001), Dulewicz and Herbert (2004) found a positive relation between board tenure and firm performance. On the contrary, Mason and Wallace (1987) have mentioned that directors with excessive tenure may become increasingly complacent towards the management, thus tolerating poor performance. So, the average tenure of directors on firm performance is unclear, and consequently, the researchers propose the following hypothesis:

**H2:** *There is a negative relation between the average tenure of directors and insurer performance.*

**Board Independence:** Wen-Yen and Pongpich (2010) mentioned that independent directors are used as a proxy of board independence and are an important factor in measuring the effectiveness of board monitoring. The independent directors on the board can work freely without any influence; therefore, they are more likely to question and monitor management to prevent fraud because they have no economic or psychological connection with management. Fama and Jensen (1983) had suggested that independent directors have more motivation to build up and improve their reputations by providing effective monitoring and reducing the opportunity for fraud in accounting and financial statements (Beasley, 1996). As well, Pathan et al. (2007) have found that board independence is associated

with higher profitability. On the contrary, Hardwick et al. (2004) found that board independence negatively correlates with efficiency. Hence, the researchers propose the following null hypothesis:

**H3:** *There is no relation between board independence and insurer performance.*

**Board Meeting Frequency:** Conger et al. (1998) and Vafeas (1999) mentioned that the frequency of board meetings may indicate active monitoring by the board. However, Rebeiz and Salameh (2006) argued that the frequency of a board meeting is less important to its quality. Specifically, a large number of meetings in a year suggests that the board is inappropriately playing an operating role instead of an oversight role, given that the function of the board is not to manage the firm but rather to govern its management. Based on the unclear relationship, the researchers suggest the following hypothesis:

**H4:** *There is no relation between board meeting frequency and insurer performance.*

**Audit Committee Size:** Wen-Yen and Pongpich (2010) found a mixed relationship between an audit committee size and a firm's performance. Klein (2002) has found that an audit committee size is positively correlated with more extensive monitoring. However, studies could not establish any relation between an audit committee size and profitability (Kajola, 2008), firm performance (Almoneef & Samontaray, 2019). The mixed empirical evidence leads to suggest the following hypothesis:

**H5:** *There is no relation between audit committee size and insurer performance.*

**Audit Committee Meeting Frequency:** Studies explore that, audit committee meeting frequency is associated with its effectiveness (Kalbers & Fogarty, 1993) and performance (Abbott et al., 2003; Almoneef & Samontaray, 2019). On the contrary, Rebeiz and Salameh (2006) argued that the quality of meetings is also important and that increasing the number of meetings doesn't necessarily enhance a firm's performance. Also, Huang et al. (2008) suggested that there is no relation between an audit committee meeting frequency and a firm's performance. Collectively, the researchers suggest the following hypothesis:

**H6:** *There is no relation between audit committee meeting frequency and insurer performance.*

**Audit Committee Independence:** Some researchers have revealed a positive relationship between the independence

of the audit committee and firm performance (Weir et al., 2002; Erickson et al., 2003; Chan & Li, 2008; Klein, 1998). Almoneef and Samontaray (2019) found no relationship between audit committee independence and firm performance. Hence, the following null hypothesis is proposed by the researchers:

**H7:** *There is no relation between audit committee independence and insurer performance.*

**The average age of Board Directors:** Core et al (1999) report that a percentage of outside directors who are over age 70 on the board is associated with weaker corporate governance and in turn higher executive compensation. On the contrary, Larcker et al. (2007) did not find evidence of an association between average director age and performance. Drawing on these arguments, the researchers propose the following null hypothesis:

**H8:** *There is no relation between the average age of board directors and insurer performance.*

**Compensation of Board Directors:** Alqirem et al. (2020) found that CEO compensation doesn't affect performance.

**H9:** *There is no relation between the compensation of the board Director and insurer performance.*

**Firm Size:** Alqirem et al. (2020), suggested that the larger the size of the organization, the better the performance. In contrast, Aljaaidi et al. (2021) explored a negative relationship between firm size and performance.

**H10:** *There is no relation between the size of the insurer and insurer performance.*

In addition to the previous variables of corporate governance and their relations of insurer performance, the researchers suggest two other important variables in the Saudi insurance market, which are the proportion of health insurance premium and the proportion of reinsurance premium. The reasons for the addition of these variables are that they are an important mechanism to improve corporate performance behavior, particularly, in emerging insurance markets, (Saudi insurance market). Moreover, the market comprises more small insurance companies, most of them have capital of no more than 100 million Saudi Riyals, and proportion of health insurance premiums more than 68.5 % of total premiums in 2020, where health insurance is still the dominant business line as indicated in the following table (Table 1).

**Table 1:** Net Written Premiums by Line of Business (2016 to 2020 in Millions of Saudi Riyals)

| Year             | 2016     |      | 2017     |      | 2018     |      | 2019     |      | 2020     |      |
|------------------|----------|------|----------|------|----------|------|----------|------|----------|------|
|                  | Amount   | %    |
| Health Insurance | 18,095.0 | 58.7 | 18,411.6 | 59.7 | 19,319.4 | 64.3 | 21,622.0 | 68.3 | 21,924.7 | 68.5 |

Source: Saudi Central Bank (SAMA) Over period 2016–2020.

According to the said reasons, the researcher proposes the following null hypotheses for the suggested two variables from the Saudi perspective:

*H11: There is no relation between the proportion of health insurance premiums and insurer performance.*

*H12: There is no relation between the proportion of reinsurance premiums and insurer performance.*

### 3. Data and Methodology

#### 3.1. Sample

The study population consists of 30 insurance companies, 28 companies of them are practicing general insurance, and two companies are excluded (reinsurer and one is specialized in Health insurance, and four companies were removed due to merger and acquisition. We select 11 companies as a random sample from the remainder of the companies (24). The proportion of the sample represents 45.8 % of Saudi insurance companies (Table 2).

The Data was collected for 11 insurance companies from the Saudi stock exchange database (TADAWUL) for a period from 2010 to 2020. Firms in the sample have not been turned off or merged with other firms during the research period. We used in our sample the pooled data, which combines both time series data and cross-sectional data in our sample. The number of observations is 121 observations (number of firms (11 firms) times “firm-years” (11 years) over the period 2010–2020.

#### 3.2. Measurement of Variables

##### 3.2.1. Dependent Variables

The researchers will try to investigate the effects of corporate governance on different performance variables. Following, Almoneef and Samontaray (2019), the company performance is measured using three proxies, ROE, ROA, and Tobin’s Q. Those three performance aspects were used as dependent variables in three different regression models. ROE is the ratio of insurers’ net income before tax and zakat divided by shareholder’s equity. ROA is the ratio of insurers’ net income before tax and zakat divided

by total assets. Tobin’s Q is a measure for measuring the value of an insurer and is calculated by dividing the total market value of the insurer by the book value of the total asset of the insurer (Investopedia.com). ROA is an internal performance measure from an accounting perspective, ROE from a financial perspective, and Tobin’s Q is a measurement from the market perspective.

##### 3.2.2. Independent Variables

The independent variables comprise three sets of variables. The first set of variables is a board of directors including board size, board independence, and board meeting frequency to proxy for a board of directors’ effectiveness. The second set of variables is audit committee variables that consist of audit committee size, audit committee, meeting frequency, and audit committee independence to proxy for audit committee effectiveness. The third set of variables is insurer-specific control variables that consist of board tenure, board age, board compensation, the proportion of health insurance premiums, the proportion of reinsurance premiums, and the size of the insurer. The definitions and predicted signs of corporate governance variables are summarized in Table 2.

#### 3.3. Descriptive Statistics

We conduct a regression analysis with performance as dependent variables and insurer characteristics as the independent variables. We adopt three measures to represent the performance of insurers – that is ROE, ROA, and Tobin’s Q, to serve as a proxy of performance.

The summary statistics of the key variables applied in the analysis, including performance measures such as ROE, ROA, and Tobin’s Q, and corporate governance variables are indicated in Table 3. To investigate how corporate governance variables, influence the performance of insurance companies in Saudi Arabia, we then analyze regression results to provide more insightful analyses.

Small insurance companies had realized losses. For example, Enaya Cooperative Insurance Company loosed 50% of its capital, and thus, both ROE and ROA have negative values (see the minimum values are –1.590 and –0.160, respectively). Hence, the performance of some

**Table 2:** Corporate Governance Variables Definitions

| Labels                       | Variables                    | Predicted Sign | Definition                                 | Measurements                                                         |
|------------------------------|------------------------------|----------------|--------------------------------------------|----------------------------------------------------------------------|
| <b>Dependent Variables</b>   |                              |                |                                            |                                                                      |
| ROE                          |                              |                | Return on Equity                           | The ratio of net income before zakat divided by shareholder's equity |
| ROA                          |                              |                | Return on Assets                           | The ratio of net income before tax and zakat divided by total assets |
| Tobin's Q                    |                              |                | A measure of the market value of a company | Total market capitalization divided by total asset value of the firm |
| <b>Independent Variables</b> |                              |                |                                            |                                                                      |
| Bsize                        | Board size                   | ?              | The board of directors                     | Number of directors on the board                                     |
| Btenur                       | Director Tenure              | ?              | Tenure in board                            | Number of years on the board                                         |
| NdepBsiz                     | Dependent members            | ?              | Dependent members in the board             | Number of dependent members in the board                             |
| NindepBsiz                   | Independent members          | ?              | Independent members in the board           | Number of independent members in the board                           |
| PindepBsiz                   | Independent members          | ?              | Independent members in the board           | Proportion of independent members in the board                       |
| NmeetBsiz                    | Meetings                     | ?              | Meetings of the board of directors         | Number of meetings for board                                         |
| Auditsize                    | Audit committee size         | ?              | Audit committee                            | Number of the Audit committee                                        |
| NmeetAudit                   | Meetings of Audit            | ?              | Meetings of the Audit committee            | Number of meetings for Audit committee                               |
| PindepAudit                  | Independent members in Audit | ?              | Independent members in the Audit committee | Proportion of independent members in Audit committee                 |
| AgeBsiz                      | Average age                  | ?              | The average age in Board                   | The average age of members of the board                              |
| PcompBsize                   | Compensations                | ?              | Compensations of the board of directors    | The proportion of total compensations for members in the board       |
| SizeComp                     | Company size                 | ?              | Size of insurer                            | Total assets of insurer divided by 1 million                         |
| PHealthPrem                  | Health insurance             | ?              | Premiums of Health insurance               | The proportion of premiums of Health insurance to total assets       |
| PReinPrem                    | Reinsurance                  | ?              | Premiums of reinsurance                    | The proportion of premiums of reinsurance to total assets            |

companies is unprofitable because their market values are very small (see values of Tobin's Q, ranging from 0.047 to 8.35). So, CAMA encourages small companies to merge with big companies.

The average board comprises 8.72 members and is similar to Diacon and O'Sullivan (1995) and O'Sullivan and Diacon (2003), who report boards with less than 10. The average directors' tenure is 4.96 years, which is lower than other studies (e.g., 9.2 years, Anderson et al., (2004). The

independent directors in the Board account for 46.9 percent, whereas Yermack (1996) and Vafeas (1999) document that the boards of non-financial services firms contain 52–56 percent outside directors. Thus, board independence levels are low. The average meeting frequency of the board is 5.49 times yearly. The size of the audit committee is approximately 4.033 members. The average meeting frequency of the audit committee is 7.47 times yearly, which is higher than the average in other studies (Wen-Yen & Pongpich, 2010).

**Table 3:** Descriptive Statistics of Variables

| Variables   | Mean        | Std dev      | Minimum   | Maximum    |
|-------------|-------------|--------------|-----------|------------|
| ROE         | 0.05118004  | 0.319977329  | -1.590127 | 2.320268   |
| ROA         | 0.01367469  | 0.053902077  | -0.160664 | 0.270574   |
| Tobin's Q   | 1.07617851  | 1.023342124  | 0.047266  | 8.347558   |
| Bsize       | 8.727273    | 1.5599145    | 5.0000    | 12.0000    |
| Btenur      | 4.966942    | 1.0949420    | 3.0000    | 8.0000     |
| NindepBsiz  | 4.041322    | 1.3868231    | 2.0000    | 8.0000     |
| NdepBsiz    | 3.735537    | 1.1886168    | 2.0000    | 6.0000     |
| PindepBsiz  | 0.469778    | 0.1604583    | 0.2500    | 0.8889     |
| NmeetBsiz   | 5.495868    | 2.6271784    | 2.0000    | 12.0000    |
| Auditsiz    | 4.033058    | 1.3658568    | 3.0000    | 8.0000     |
| NmeetAudit  | 7.471074    | 3.1439741    | 2.0000    | 16.0000    |
| PindepAudit | 0.332314    | 0.0637019    | 0.2500    | 0.5000     |
| AageBsiz    | 49.867769   | 8.1013807    | 39.0000   | 75.0000    |
| PcompenBsiz | 0.001801    | 0.0038117    | 0.0000    | 0.0393     |
| SizofComp   | 2157.283752 | 2856.4290161 | 156.0960  | 14257.4260 |
| PHealthPrem | 0.223112    | 0.2187487    | 0.0001    | 0.7534     |
| PREinsPrem  | 0.188746    | 0.1821162    | 0.0000    | 0.5619     |

The proportion of independent directors on the audit committee is 33.23 percent which is very low. Consequently, the Saudi companies are confronting the problem of independence of audit committees by SAMA, because most of the members in the audit committee are executive directors. and that leads to low governance for the Saudi companies.

The compensations of the board of directors are 0.0393 percent of total assets in spite of the existence of losses in some companies. The average size of Saudi companies range is 2157.28 million, so many Saudi companies are very small. The proportion of premiums of health insurance is very large at an average of 0.223 of total premiums, which influences corporate governance. Also, the proportion of the premiums of Reinsurance is very high in some insurance companies amounting to 56,19 % of total premiums.

### 3.4. The Empirical Model

The model is built in light of the relation between the insurer performance which is measured using three proxies, ROE, ROA, and Tobin's Q and corporate governance variables. In the model, the researchers will add two variables, the reinsurance ratio and the proportion of written premiums in health insurance, because they affect the performance of insurers and the health business is the dominant line in the insurance industry in Saudi Arabia.

The linear regression model for the general insurance industry in Saudi insurance companies is summarized as follows:

$$\begin{aligned}
 Y_{it} = & \alpha + \beta_1 Bsize_{it} + \beta_2 Btenur_{it} + \beta_3 NindepBsiz_{it} \\
 & + \beta_4 NdepBsiz_{it} + \beta_5 PindepBsiz_{it} \\
 & + \beta_6 NmeetBsiz_{it} + \beta_7 Auditsiz_{it} \\
 & + \beta_8 NmeetAudit_{it} + \beta_9 PindepAudit_{it} \\
 & + \beta_{10} AageBsiz_{it} + \beta_{11} PcompenBsiz_{it} \\
 & + \beta_{12} SizofComp_{it} + \beta_{13} PHealthPrem_{it} \\
 & + \beta_{14} PREinsPrem_{it}
 \end{aligned} \tag{1}$$

Where  $Y_{it}$  is the ROE, ROA and Tobin's Q. Bsize is the total number of directors on the board for firm  $i$  in year  $t$ ; Btenure is the average number of years the directors have been on the board for firm  $i$  in year  $t$ ; NindepBsize is number of independents in board directors for firm  $i$  in year  $t$ ; NdepBsize is number of dependents in board directors for firm  $i$  in year  $t$ ; PindepBsize is proportion of independents in board directors for firm  $i$  in year  $t$ ; NmeetBsize is number of meetings for board directors for firm  $i$  in year  $t$ ; Audit size is number of members in audit committee for firm  $i$  in year  $t$ ; NmeetAudit is number of meetings for audit committee for firm  $i$  in year  $t$ ; PindepAudit is proportion of independents in audit committee for firm  $i$  in year  $t$ ; AgeBsize is the average age of members of board directors for firm  $i$  in year  $t$ ; PcompenBsize is the percentage of

compensation for board directors to total assets for firm  $i$  in year  $t$ ; SizofComp is total assets of insurer divided by 1 million; PHealthPrem is the percentage of premiums written of health insurance to total premiums for firm  $i$  in year  $t$ ; PReinprem is the reinsurance ratio, or the ratio of reinsurance premiums ceded to the sum of direct premiums written for firm  $i$  in year  $t$ .

To arrive at the consistent model to data, the researchers will try to employ the linear regression model indicated in equation (1). Moreover, the transformation of the linear equation (1) to the logarithm function will take the following form:

$$Y_{it} = \alpha(\text{Bsize}_{it})^{\beta_1} (\text{Btenur}_{it})^{\beta_2} (\text{NindepBsize}_{it})^{\beta_3} (\text{NdepBsize}_{it})^{\beta_4} (\text{PindepBsize}_{it})^{\beta_5} (\text{NmeetBsize}_{it})^{\beta_6} (\text{Auditsiz}_{it})^{\beta_7} (\text{NmeetAudit}_{it})^{\beta_8} (\text{PindepAudit}_{it})^{\beta_9} (\text{AageBsize}_{it})^{\beta_{10}} (\text{PcompenBsize}_{it})^{\beta_{11}} (\text{SizofComp}_{it})^{\beta_{12}} (\text{PHealthPrem}_{it})^{\beta_{13}} (\text{PReinsPrem}_{it})^{\beta_{14}} \quad (2)$$

Transforming equation (2) to the linear equation by taking the natural logarithm for both sides, we get the following equation (3).

$$\ln(Y_{it}) = \ln \alpha + \beta_1 \ln(\text{Bsize}_{it}) + \beta_2 \ln(\text{Btenur}_{it}) + \beta_3 \ln(\text{NindepBsize}_{it}) + \beta_4 \ln(\text{NdepBsize}_{it}) + \beta_5 \ln(\text{PindepBsize}_{it}) + \beta_6 \ln(\text{NmeetBsize}_{it}) + \beta_7 \ln(\text{Auditsiz}_{it}) + \beta_8 \ln(\text{NmeetAudit}_{it}) + \beta_9 \ln(\text{PindepAudit}_{it}) + \beta_{10} \ln(\text{AageBsize}_{it}) + \beta_{11} \ln(\text{PcompenBsize}_{it}) + \beta_{12} \ln(\text{SizofComp}_{it}) + \beta_{13} \ln(\text{PHealthPrem}_{it}) + \beta_{14} \ln(\text{PReinsPrem}_{it}) \quad (3)$$

The researcher will compare the empirical results for both linear equation (1) and logarithm function (3), to arrive at the consistent model to data, as indicated in the next section (see the empirical results).

## 4. Empirical Results

Before conducting the regression analysis, the researchers considered the possibility of multicollinearity among independent variables. Table 4 reports the Pearson correlation between the independent variables in the sample. Then researchers conducted an empirical study for quantitative models 1 and 3 (linear and logarithm) using the SPSS package (Amer, 1989) and selected the consistent model with the data. These models conducted a regression analysis of performance (ROE, ROA, and Tobin's Q as a performance proxy) as dependent variables and corporate governance variables as the independent variables.

Table 4 reveals the correlation between Bsize, Auditsize, and pindepBsize are negative and statistically significant. This means the insurance companies that have larger board sizes have lower Auditsize committee and lower PindepBsize. As well, there are positive relations between Bsize and Btenure, NindepBsize, NdepBsize, ageBsize, NmeetBsize, and SizeofCom, and they are statistically significant. That means the larger companies should have a larger Board, larger independent members, and they should hold more meetings for the board of directors. Also, there is a correlation between SizeofCom and other variables except audit committee are positive and statistically significant. Moreover, there is a high correlation between SizeofCom and ageBsize which means the larger companies need members of directors who should hold lengthy experience on the board. Finally, PHealthPrem is positively related to PreinPrem, and that is due that all the Saudi insurance companies underwrite a high proportion of Health insurance premiums and thus have to cede part of these premiums to reinsurance companies.

Moreover, table (4) shows that there is no high correlation between independent variables except relation between IndepBsize and PindepBsize, it was 0.84, and therefore it must be ensured that there is no possibility of the problem of interference and collinearity, by conducting a test (Variance Inflation Factor VIF) and that is will be done later in Tables 5 through 9.

### 4.1. Linear Regression Results

Table 5 through Table 7 reports the regression results by the linear regression model, where ROE, ROA, and Tobin's Q as dependent variables and corporate governance variables and insurance company-specific control variables as independent variables.

For testing multicollinearity using a variance inflation factor, we found that the assumptions of these regressions are violated since all values of VIF are greater than 8, suggesting that multicollinearity is a problem (Values of VIF that exceed 10 are often regarded as indicating multicollinearity, www.researchconsultation.com). As well, the models are not devoid of the problem of collinearity. Also, the adjusted R-squares are very low, in particular, regression analysis for Return on Equity in Table 5 and regression analysis for Return on Assets in Table in Table 6.

Moreover, both the values of F and Durbin-Watson are not significant and that is due to the existence of autocorrelation between the residuals. So, we do not find significant results for some of the corporate governance proxies (ROE and ROA). So, the overall goodness of fit of the regression is not moderate using the first and second models (Table 5 and Table 6) and ROE and ROA are not applying performance

**Table 4:** Correlation Coefficient Matrix

| Variables    | Bsize | Btenure         | NindepBsize      | NdepBsize        | PindepBsize       | NmeetBsize       | Auditsiz          | NmeetAudit       | PindepAudit     | AgeBsize         | PcompenBsize     | SizofComp        | PHealthPrem       | PReinprem         |
|--------------|-------|-----------------|------------------|------------------|-------------------|------------------|-------------------|------------------|-----------------|------------------|------------------|------------------|-------------------|-------------------|
| Bsize        | 1     | 0.180*<br>0.048 | 0.298**<br>0.001 | 0.397**<br>0.000 | -0.236**<br>0.009 | 0.483**<br>0.000 | -0.313**<br>0.000 | -0.130<br>0.156  | -0.045<br>0.626 | 0.362**<br>0.000 | 0.071<br>0.473   | 0.196*<br>0.031  | 0.060<br>0.514    | 0.150<br>0.102    |
| Btenure      | 1     | 1               | 0.374**<br>0.000 | -0.007<br>0.941  | 0.266**<br>0.003  | 0.446**<br>0.000 | -0.022<br>0.814   | 0.184<br>0.044   | 0.119<br>0.192  | 0.084<br>0.359   | -0.164<br>0.072  | 0.498**<br>0.000 | 0.299**<br>0.001  | -0.114<br>0.211   |
| NindepBsize  | 1     | 1               | 1                | 0.032<br>0.728   | 0.846**<br>0.000  | 0.358**<br>0.000 | 0.030<br>0.743    | 0.338**<br>0.000 | 0.038<br>0.682  | 0.391<br>0.000   | -0.072<br>0.433  | 0.469**<br>0.000 | 0.252**<br>0.005  | 0.047<br>0.606    |
| NdepBsize    | 1     | 1               | 1                | 1                | -0.187*<br>0.040  | 0.104<br>0.258   | -0.600**<br>0.000 | -0.453<br>0.000  | 0.041<br>0.654  | -0.082<br>0.369  | 0.001<br>0.990   | -0.192*<br>0.035 | -0.063<br>0.495   | 0.185*<br>0.042   |
| PindepBsize  | 1     | 1               | 1                | 1                | 1                 | 0.054<br>0.553   | 0.231*<br>0.011   | 0.408**<br>0.000 | 0.061<br>0.510  | 0.188*<br>0.039  | -0.033<br>0.716  | 0.331**<br>0.000 | 0.173<br>0.058    | -0.037<br>0.686   |
| NmeetBsize   | 1     | 1               | 1                | 1                | 1                 | 1                | -0.293**<br>0.001 | 0.323**<br>0.000 | -0.008<br>0.927 | 0.248**<br>0.006 | -0.211*<br>0.020 | 0.589**<br>0.000 | 0.194*<br>0.033   | -0.332**<br>0.000 |
| Auditsiz     | 1     | 1               | 1                | 1                | 1                 | 1                | 1                 | 0.514**<br>0.000 | -0.112<br>0.221 | 0.003<br>0.977   | 0.279**<br>0.002 | 0.006<br>0.951   | -0.279**<br>0.002 | -0.162<br>0.076   |
| NmeetAudit   | 1     | 1               | 1                | 1                | 1                 | 1                | 1                 | 1                | -0.028<br>0.761 | 0.294**<br>0.001 | 0.121<br>0.187   | 0.547**<br>0.000 | -0.085<br>0.356   | -0.272**<br>0.003 |
| PindepAudit  | 1     | 1               | 1                | 1                | 1                 | 1                | 1                 | 1                | 1               | -0.104<br>0.258  | -0.015<br>0.866  | -0.027<br>0.769  | -0.021<br>0.778   | -0.026<br>0.778   |
| AgeBsize     | 1     | 1               | 1                | 1                | 1                 | 1                | 1                 | 1                | 1               | 1                | -0.010<br>0.909  | 0.296**<br>0.001 | 0.159<br>0.081    | 0.079<br>0.388    |
| PcompenBsize | 1     | 1               | 1                | 1                | 1                 | 1                | 1                 | 1                | 1               | 1                | 1                | -0.188*<br>0.039 | -0.164<br>0.072   | 0.175<br>0.056    |
| SizofComp    | 1     | 1               | 1                | 1                | 1                 | 1                | 1                 | 1                | 1               | 1                | 1                | 1                | 0.472**<br>0.000  | -0.150<br>0.100   |
| PHealthPrem  | 1     | 1               | 1                | 1                | 1                 | 1                | 1                 | 1                | 1               | 1                | 1                | 1                | 1                 | 0.419**<br>0.000  |
| PReinprem    | 1     | 1               | 1                | 1                | 1                 | 1                | 1                 | 1                | 1               | 1                | 1                | 1                | 1                 | 1                 |

Notes: For the definition of each of these variables, please see Table 2. \*\* Correlation is significant at the 1% level (two-tailed); \*correlation is significant at the 5% level (two-tailed).

**Table 5:** Regression Analysis: Return on Equity and Governance Variables

| Model       | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig.  | 95.0% Confidence Interval for B |             | Collinearity Statistics |        |
|-------------|-----------------------------|------------|---------------------------|--------|-------|---------------------------------|-------------|-------------------------|--------|
|             | B                           | Std. Error | Beta                      |        |       | Lower Bound                     | Upper Bound | Tolerance               | VIF    |
| (Constant)  | 0.825                       | 0.768      |                           | 1.074  | 0.285 | -0.698                          | 2.349       |                         |        |
| Bsize       | -0.057                      | 0.076      | -0.280                    | -0.759 | 0.450 | -0.208                          | 0.093       | 0.064                   | 15.690 |
| Btenur      | -0.010                      | 0.035      | -0.033                    | -0.277 | 0.782 | -0.079                          | 0.059       | 0.611                   | 1.638  |
| NindepBsiz  | 0.136                       | 0.167      | 0.589                     | 0.812  | 0.419 | -0.196                          | 0.468       | 0.016                   | 60.671 |
| NdepBsiz    | 0.007                       | 0.038      | 0.025                     | 0.178  | 0.859 | -0.068                          | 0.081       | 0.444                   | 2.252  |
| PindepBsiz  | -0.921                      | 1.390      | -0.462                    | -0.662 | 0.509 | -3.677                          | 1.835       | 0.018                   | 55.981 |
| NmeetBsiz   | -0.039                      | 0.023      | -0.317                    | -1.666 | 0.099 | -0.085                          | 0.007       | 0.240                   | 4.172  |
| AuditSiz    | -0.030                      | 0.039      | -0.128                    | -0.766 | 0.446 | -0.107                          | 0.048       | 0.312                   | 3.203  |
| NmeetAudit  | 0.020                       | 0.019      | 0.192                     | 1.005  | 0.317 | -0.019                          | 0.058       | 0.237                   | 4.216  |
| PindepAudit | -0.088                      | 0.488      | -0.018                    | -0.180 | 0.857 | -1.055                          | 0.879       | 0.920                   | 1.087  |
| AageBsiz    | -0.003                      | 0.005      | -0.076                    | -0.649 | 0.518 | -0.012                          | 0.006       | 0.636                   | 1.571  |
| PcompenBsiz | 0.037                       | 8.885      | 0.000                     | 0.004  | 0.997 | -17.579                         | 17.653      | 0.775                   | 1.290  |
| SizofComp   | 1.366E-005                  | 0.000      | 0.122                     | 0.670  | 0.505 | 0.000                           | 0.000       | 0.262                   | 3.820  |
| PHealthPrem | 0.052                       | 0.242      | 0.036                     | 0.216  | 0.829 | -0.427                          | 0.531       | 0.318                   | 3.140  |
| PREinsPrem  | -0.226                      | 0.255      | -0.128                    | -0.886 | 0.378 | -0.730                          | 0.279       | 0.414                   | 2.418  |

<sup>a</sup>Dependent Variable: ROE. R Square = 0.08, Adjusted R Square = -0.042, F = 0.655, sig F = 0.813, Durbin-Watson = 1.978.

**Table 6:** Regression Analysis: Return on Assets and Governance Variables

| Model        | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig.  | 95.0% Confidence Interval for B |             | Collinearity Statistics |        |
|--------------|-----------------------------|------------|---------------------------|--------|-------|---------------------------------|-------------|-------------------------|--------|
|              | B                           | Std. Error | Beta                      |        |       | Lower Bound                     | Upper Bound | Tolerance               | VIF    |
| 1 (Constant) | 0.068                       | 0.128      |                           | 0.529  | 0.598 | -0.186                          | 0.322       |                         |        |
| Bsize        | -0.008                      | 0.013      | -0.221                    | -0.604 | 0.547 | -0.033                          | 0.017       | 0.064                   | 15.690 |
| Btenur       | -0.002                      | 0.006      | -0.033                    | -0.282 | 0.778 | -0.013                          | 0.010       | 0.611                   | 1.638  |
| NindepBsiz   | 0.008                       | 0.028      | 0.196                     | 0.273  | 0.785 | -0.048                          | 0.063       | 0.016                   | 60.671 |
| NdepBsiz     | 0.002                       | 0.006      | 0.042                     | 0.305  | 0.761 | -0.011                          | 0.014       | 0.444                   | 2.252  |
| PindepBsiz   | -0.047                      | 0.232      | -0.139                    | -0.201 | 0.841 | -0.506                          | 0.413       | 0.018                   | 55.981 |
| NmeetBsiz    | -0.005                      | 0.004      | -0.223                    | -1.184 | 0.239 | -0.012                          | 0.003       | 0.240                   | 4.172  |
| AuditSiz     | -0.008                      | 0.007      | -0.198                    | -1.201 | 0.232 | -0.021                          | 0.005       | 0.312                   | 3.203  |
| NmeetAudit   | 0.002                       | 0.003      | 0.121                     | 0.637  | 0.525 | -0.004                          | 0.009       | 0.237                   | 4.216  |
| PindepAudit  | 0.045                       | 0.081      | 0.053                     | 0.551  | 0.583 | -0.116                          | 0.206       | 0.920                   | 1.087  |
| AageBsiz     | 0.001                       | 0.001      | 0.078                     | 0.672  | 0.503 | -0.001                          | 0.002       | 0.636                   | 1.571  |
| PcompenBsiz  | 1.068                       | 1.482      | 0.076                     | 0.721  | 0.473 | -1.869                          | 4.006       | 0.775                   | 1.290  |
| SizofComp    | 3.552E-006                  | 0.000      | 0.188                     | 1.044  | 0.299 | 0.000                           | 0.000       | 0.262                   | 3.820  |
| PHealthPrem  | 0.012                       | 0.040      | 0.050                     | 0.305  | 0.761 | -0.068                          | 0.092       | 0.318                   | 3.140  |
| PREinsPrem   | -0.038                      | 0.042      | -0.129                    | -0.898 | 0.371 | -0.122                          | 0.046       | 0.414                   | 2.418  |

<sup>a</sup>Dependent Variable: ROA. R Square = 0.098, Adjusted R Square = -0.021, F = 0.823, sig F = 0.642, Durbin-Watson = 1.917.

**Table 7:** Regression Analysis: Tobin's Q and Governance Variables

| Model       | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig.  | 95.0% Confidence Interval for B |             | Collinearity Statistics |        |
|-------------|-----------------------------|------------|---------------------------|--------|-------|---------------------------------|-------------|-------------------------|--------|
|             | B                           | Std. Error | Beta                      |        |       | Lower Bound                     | Upper Bound | Tolerance               | VIF    |
| (Constant)  | -3.347                      | 1.400      |                           | -2.391 | 0.019 | -6.122                          | -0.572      |                         |        |
| Bsize       | 0.266                       | 0.138      | 0.406                     | 1.932  | 0.056 | -0.007                          | 0.540       | 0.064                   | 15.690 |
| Btenur      | 0.232                       | 0.063      | 0.249                     | 3.661  | 0.000 | 0.107                           | 0.358       | 0.611                   | 1.638  |
| NindepBsiz  | -0.260                      | 0.305      | -0.353                    | -0.854 | 0.395 | -0.865                          | 0.344       | 0.016                   | 60.671 |
| NdepBsiz    | -0.023                      | 0.069      | -0.026                    | -0.331 | 0.742 | -0.159                          | 0.113       | 0.444                   | 2.252  |
| PindepBsiz  | 3.078                       | 2.532      | 0.483                     | 1.215  | 0.227 | -1.943                          | 8.098       | 0.018                   | 55.981 |
| NmeetBsiz   | -0.016                      | 0.042      | -0.041                    | -0.374 | 0.709 | -0.099                          | 0.068       | 0.240                   | 4.172  |
| AuditSiz    | 0.126                       | 0.071      | 0.169                     | 1.774  | 0.079 | -0.015                          | 0.267       | 0.312                   | 3.203  |
| NmeetAudit  | -0.036                      | 0.035      | -0.110                    | -1.014 | 0.313 | -0.106                          | 0.034       | 0.237                   | 4.216  |
| PindepAudit | -1.291                      | 0.889      | -0.080                    | -1.453 | 0.149 | -3.053                          | 0.471       | 0.920                   | 1.087  |
| AageBsiz    | 0.012                       | 0.008      | 0.091                     | 1.374  | 0.172 | -0.005                          | 0.028       | 0.636                   | 1.571  |
| PcompenBsiz | 191.664                     | 16.184     | 0.714                     | 11.843 | 0.000 | 159.578                         | 223.750     | 0.775                   | 1.290  |
| SizofComp   | 0.000                       | 0.000      | -0.422                    | -4.070 | 0.000 | 0.000                           | 0.000       | 0.262                   | 3.820  |
| PHealthPrem | 2.131                       | 0.440      | 0.456                     | 4.80   | 0.000 | 1.259                           | 3.003       | 0.318                   | 3.140  |
| PREinsPrem  | -0.848                      | 0.464      | -0.151                    | -1.829 | 0.070 | -1.767                          | 0.071       | 0.414                   | 2.418  |

<sup>a</sup>Dependent Variable: Tobin's Q. R Square = 0.701, Adjusted R Square = 0.662, F = 17.792, sig F = 0.000, Durbin-Watson = 1.957.

**Table 8:** ANOVA for Tobin's Q

| Model      | Sum of Squares | df  | Mean Square | F      | Sig.               |
|------------|----------------|-----|-------------|--------|--------------------|
| Regression | 88.153         | 14  | 6.297       | 17.792 | 0.000 <sup>b</sup> |
| Residual   | 37.514         | 106 | 0.354       |        |                    |
| Total      | 125.667        | 120 |             |        |                    |

<sup>a</sup>Dependent Variable: Tobin's Q.

measures as dependent variables due to some insurance companies realize losses as already mentioned (see: negative values for both ROE and ROA). Consequently, Tobin's Q is to be considered a good measure to represent the performance of insurers because it measures the real value of an insurance company in the TADAWUL market.

#### 4.2. Logarithm Regression Results

In Table 9 multicollinearity test using the VIF test had been conducted (Values less than 8) and the regression are

not violated because there is no autocorrelation between residuals.

In conclusion, the logarithm regression Model (using LTobin's Q) is a significant model because the adjusted R-squares equals 0.796, and F is significant. Consequently, the overall goodness of fit of the regression is high. Moreover, the logarithm model had treated the homoscedasticity problem, where the Proportion of Sum of Squares for residual (SSE) in the table (10) had reduced to 18.2 % but before it was 29.9 % in Table 8. Hence, the logarithm regression model using LTobin's Q indicated in Table (9), is the more

**Table 9:** Regression Analysis: LTobin’s Q and Governance Variables

| Model |               | Unstandardized Coefficients |            | Standardized Coefficients | t       | Sig.  | 95.0% Confidence Interval for B |             | Collinearity Statistics |       |
|-------|---------------|-----------------------------|------------|---------------------------|---------|-------|---------------------------------|-------------|-------------------------|-------|
|       |               | B                           | Std. Error | Beta                      |         |       | Lower Bound                     | Upper Bound | Tolerance               | VIF   |
| 1     | (Constant)    | -1.431                      | 1.180      |                           | -1.213  | 0.228 | -3.769                          | 0.908       |                         |       |
|       | lnBsize       | 0.829                       | 0.289      | 0.186                     | 2.865   | 0.005 | 0.256                           | 1.403       | 0.405                   | 2.467 |
|       | lnBtenur      | 1.015                       | 0.194      | 0.259                     | 5.241   | 0.000 | 0.631                           | 1.399       | 0.699                   | 1.430 |
|       | lnNdepBsiz    | -0.070                      | 0.173      | -0.026                    | -0.402  | 0.688 | -0.413                          | 0.273       | 0.394                   | 2.538 |
|       | lnPindepBsiz  | 0.674                       | 0.143      | 0.245                     | 4.726   | 0.000 | 0.391                           | 0.957       | 0.631                   | 1.584 |
|       | lnNmeetBsiz   | 0.014                       | 0.140      | 0.007                     | 0.098   | 0.922 | -0.263                          | 0.291       | 0.299                   | 3.344 |
|       | lnAuditSiz    | 0.477                       | 0.224      | 0.164                     | 2.129   | 0.036 | 0.033                           | 0.921       | 0.285                   | 3.507 |
|       | lnNmeetAudit  | 0.737                       | 0.175      | 0.367                     | 4.217   | 0.000 | 0.391                           | 1.084       | 0.224                   | 4.462 |
|       | lnPindepAudit | -0.123                      | 0.210      | -0.025                    | -0.584  | 0.561 | -0.539                          | 0.294       | 0.922                   | 1.085 |
|       | lnAageBsiz    | 0.539                       | 0.297      | 0.094                     | 1.815   | 0.072 | -0.050                          | 1.127       | 0.628                   | 1.592 |
|       | lnPcompenBsiz | -0.052                      | 0.041      | -0.071                    | -1.248  | 0.215 | -0.134                          | 0.030       | 0.532                   | 1.880 |
|       | lnSizofComp   | -0.798                      | 0.068      | -0.894                    | -11.700 | 0.000 | -0.934                          | -0.663      | 0.291                   | 3.435 |
|       | lnPHealthPrem | 0.257                       | 0.029      | 0.982                     | 8.839   | 0.000 | 0.200                           | 0.315       | 0.138                   | 7.251 |
|       | lnPReinsPrem  | -0.098                      | 0.028      | -0.375                    | -3.564  | 0.001 | -0.153                          | -0.044      | 0.154                   | 6.514 |

<sup>a</sup>Dependent Variable: Ln Tobins “Q”. R Square = 0.818, Adjusted R Square = 0.796, F = 36.980, sig F = 0.000, Durbin-Watson = 1.795.

**Table 10:** ANOVA for LTobin’s Q

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.               |
|-------|------------|----------------|-----|-------------|--------|--------------------|
| 1     | Regression | 73.561         | 13  | 5.659       | 36.980 | 0.000 <sup>b</sup> |
|       | Residual   | 16.373         | 107 | 0.153       |        |                    |
|       | Total      | 89.934         | 120 |             |        |                    |

<sup>a</sup>Dependent Variable: LnTobin’s Q.

consistent model with the data, which is expressed by the following equation:

$$\ln(Y_{it}) = -\ln 1.431 + 0.829 \ln(\text{Bsize}_{it}) + 1.015 \ln(\text{Btenur}_{it}) - 0.070 \ln(\text{NdepBsiz}_{it}) + 0.0674 \ln(\text{PindepBsiz}_{it}) + 0.014 \ln(\text{NmeetBsiz}_{it}) + 0.477 \ln(\text{Auditsiz}_{it}) + 0.737 \ln(\text{NmeetAudit}_{it}) - 0.123 \ln(\text{PindepAudit}_{it}) + 0.539 \ln(\text{AageBsiz}_{it}) - 0.052 \ln(\text{PcompenBsiz}_{it}) - 0.798 \ln(\text{SizofComp}_{it}) + 0.257 \ln(\text{PHealthPrem}_{it}) - 0.098 \ln(\text{PReinsPrem}_{it})$$

Where  $Y_{it}$  is LTobin’s Q for any Saudi insurer in a year  $t$ .

### 4.3. Hypotheses Test Using Logarithm Regression Model

In Table 9, the relationship between board size and insurers’ Tobin’s Q performance is a significant positive, which implies that insurance companies with large boards achieve better performance and that is consistent with Hardwick et al. (2004) and Huang et al. (2008) and Dalton et al. (1999), Dwivedi and Jain (2005), Abidin et al. (2009), and Belkhir (2009). So, the first null hypothesis H1 is rejected.

Consistent with Olson (2000), Golden and Zajac (2001), and Dulewicz and Herbert (2004), we find a significant positive relationship between a board’s tenure and Tobin’s Q, suggesting that longer board tenure increase the performance of a firm. So, the second hypothesis H2 is also rejected.

Furthermore, the proportion of independent directors on the board and the insurers' performance are both positive and significant. This is due to the independent directors on the board being able to work freely and without being influenced or controlled by important shareholders or management. This is consistent with Beasley (1996) and Pathan et al. (2007). So, the third hypothesis H3 rejected. But, there is no relation between the board meeting frequency and insurers' performance. That is consistent with Rebeiz and Salameh (2006), who argued that the frequency of a board meeting is less important to its quality. Specifically, a large number of meetings in a year suggests that the board is inappropriately playing an operating role instead of an oversight role. We accept the fourth hypothesis H4. The committee size is positively correlated with more extensive monitoring, suggesting that increasing committee size increases a firm's performance. So, the effectiveness of an audit committee increases with overloaded agendas and activities on compliance, and that is consistent with Klein (2002) and the requirements of SAMA. Hence, we reject the fifth hypothesis H5.

The audit committee meeting frequency is also positively correlated with insurers' performance, suggesting that increasing meeting frequency increases a firm's performance. That is consistent with Kalbers and Fogarty (1993), and Abbott et al. (2003), who pointed out an audit committee that meets frequently can improve the financial accounting processes and lead to better performance. So, we reject the sixth hypothesis H6.

Audit committee independence is negatively and is not significantly correlated with insurers' performance, indicating that its sovereignty does not enable firms to obtain better performance. That is not consistent with Weir et al. (2002), Erickson et al. (2003), and Chan and Li (2008). However, this result is consistent with Klein (1998), who found the percentage of outsiders on the audit committee is unrelated to the performance of the firm. Consequently, we accept the seventh hypothesis H7. As well, there is no relation between the age of board directors and insurers' performance, which is consistent with Larcker et al. (2007), who did not find evidence of an association between average director age and performance. That is true because increasing the average age of the directors on the board would be harmful to the performance of a firm because the senior directors may respond to their duties slower than younger directors because of health problems or higher age. So, we accept the eighth hypothesis, H8.

Compensations of board directors are not significant and are negatively related to insurers' performance and that means higher board compensations could not induce directors to do their duty more efficiently, to keep their positions. That is consistent with Core et al. (1999), who

stated that firms compensating their directors more would have higher agency costs and, thus, exhibit poor performance. This hypothesis is consistent with Saudi insurers, which give more compensations for board members, despite many companies realizing more losses. Thus, we accept the ninth hypothesis H9.

Finally, three important variables affect the performance of insurers. The first two is the size of the company and the proportion of reinsurance premiums. They are significant but are negatively related to insurers' performance. Thus, we reject both the tenth hypothesis H10, and the twelfth hypothesis H12.

But, the proportion of health insurance premiums is statistically significant and positively correlated with insurers' performance. That is due to all Saudi insurers is depending on health insurance by a large proportion which amounts to 68.5 % of total premiums in the last five years. Thus, we reject the eleventh hypothesis H11.

## 5. Conclusion and Recommendations

To the knowledge of the researchers, this study is the first study to investigate the effects of corporate governance variables on Saudi insurers' performance. This paper aims to examine the relationship between the various corporate governance variables and the implementation of insurers in Saudi Arabia. We had used a sample of 11 companies from 2010 to 2020 and represented 45.8 % of Saudi Firms. To examine our hypotheses, we first measured the variables and suggested two models (linear and logarithmic models).

This paper adds to the literature in two aspects. First, it is the first of its kind to investigate the impact of corporate governance on the performance of Saudi insurers. Second, we investigate the impact of a more complete set of board/audit committee characteristics and insurance company-specific control variables on the insurer's performance.

The empirical results reveal that board size, board tenure, and proportion of independent directors in the board of directors are positively correlated with insurers' performance. As well, longer board tenure increases the performance of a firm. Also, independent directors on the board can work freely and are not subject to control or influence from major shareholders or management.

But there was no relation between the board meeting frequency and insurers' performance and that is consistent with Rebeiz and Salameh (2006). For audit committee characteristics, the results show that an audit committee size and audit committee meeting frequency are positively related to performance, and that is consistent with Klein (2002) and requirements of SAMA. However, audit committee independence is negatively and is not significantly correlated with insurers' performance.

Also, the empirical results concluded the average age of board directors and insurers' performance is not related, and that is consistent with Larcker et al. (2007). That is true because increasing the average age of the directors on the board would be harmful to the performance of a firm.

As well, the empirical results revealed that compensations of board directors are not significant and are negatively related to insurers' performance and that means higher board compensations could not induce directors to do their duty more efficiently. This is true in the Saudi insurance market because Saudi insurers gave more compensations for board members in spite of many insurers having realized more losses.

Moreover, the empirical results proved that the other three variables might affect insurers' performance. Two variables are significantly but are negatively related to insurers' performance (size of the insurance company and proportion of reinsurance premiums). The third is the proportion of health insurance premiums is statistically significant and positively correlated with insurers' performance.

The researchers see the empirical results can encourage other researchers to do more studies to examine further the links between any other aspects of corporate governance characteristics and the performance of the Saudi insurers.

Also, the findings could have further implications for regulators in SAMA to set up corporate governance requirements. Our results illustrated those independent directors, the characteristics of the audit committee, and compensations of board directors do have a statistically significant impact on the performance of insurers. Our overall results have important implications because most of the suggested corporate governance variables do have a statistically significant impact on the performance of insurers.

In summary, our findings provide new insights into the relationships between corporate governance variables and insurers' performance in the Saudi insurance market. Finally, the researchers hope that the empirical results encourage more studies that investigate other variables for the performance of insurers and explore the crucial determinants of insurers' performance.

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