Nexus between Directors’ Remuneration and Performance in Malaysia: a Supervised Machine Learning Approach

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Abstract
The primary goal of this study is to investigate the connection between executives' compensation and firms' financial performance. Information with respect to executives' compensation and financial performance of Malaysian GLCs have been assembled utilizing secondary data sources and the inspecting period has been set as 2013 to 2017. Two regression models have been used applying the collected secondary information. Here, executives' compensation has been selected as the independent variable and proxy variables ROA and ROE have been used to depict firm performance. With these factors, two relapse models have been set up. It has been observed that compensation bundle given to the executives usually result in the good performance of the companies.

Keywords: Financial Performance, GLCs, Corporate, Executives, Governance Malaysia

Introduction
Today directors have many responsibilities like making sure all stakeholders served in proper etc. (Freeman, 2010; Dekker, 2017). They are not just monitoring the management but also acting as effective stewards and guardians of the company ensuring companies laws and ethical values are maintained (Malaysia Code on Corporate Governance, 2012). Actually, the guidelines act an effective governance structure to ensure the appropriate management of risks and internal controls. There have always been arguments that directors’ remuneration should equal with the contribution put forward. Moreover, their contribution will ultimately affect the performance of the companies. According to Bebchuck and Grinstein (2005), growth in executive pay has reached such level, which cannot be explained by the changes in market capitalization and industry mix during the examined period of 2001 – 2003.
Razak has defined directors’ remuneration as a payment for the service or employment of directors on the BOD or corporation (Ab Razak, 2014). Directors can be rewarded for their jobs by the means of fee, salary, others allowances by using the company’s property, which has clearly been stated in their agreement with the firm. There is no indicator on how to determine directors’ remuneration in either in Cadbury Report (1992) or Greenbury Report (1995) but both reports propose that it should be done through remuneration committee, which will plan the remuneration package that can draw interest and retain directors of good caliber and skill.

Malaysian Code on Corporate Governance has reported not only the details about the way directors’ remuneration should be calculated or formulated but also put forward the importance of fair remuneration as a way to attract and motivate directors (Davies, 2016; Yoshikawa, 2018). In addition, the remuneration package should in line with the business strategy and long-term objectives of the company and board of remuneration committee have a look into this urging matter.

Over the past decades, the economies of certain countries like Great Britain, America, and India have been affected by scandalous committed by firms (Berger, Imbierowicz, & Rauch, 2016; Du Plessis, Hargovan, & Harris, 2018). The well-known ones are Baring Bank, Enron, WorldCom, and Satyam (Bhasin, 2015; Khetiya, 2015). Malaysia also has no exception when it comes to scandal committed by firms, which are directly or indirectly affects the economy. In Malaysia, the highlighted scandals are Perwaja Steel Sdn. Bhd., Port Klang Free Zone (M) Sdn. Bhd., Bank Bumiputra Malaysia Berhad and a few more.

Since the very inception, Government link companies (GLCs) play an important role in the development of the Malaysian economy. However, over the years the overall public perception of GLCs in Malaysia has been tainted by the poor performance of key GLC players such as Malaysia Airline System (MAS) and Proton Holdings Berhad (Lau and Tong, 2008). Performance of GLCs can be a good indicator of the overall economic condition since GLCs account for about 36% of the market capitalization of the Malaysian stock market (Mokhtar, 2005). Malaysian government can exercise its controlling stake in the GLCs through many ways and the most commonly used ways are Ministry of Finance (MOF), Bank Negara Malaysia (BNM) or Government-Linked Investment Companies (GLICs). GLCs and GLICs can be either public listed companies (Berhad) or private companies (Gomez, Padmanabhan, Kamaruddin, Bhalla, & Fisal, 2017). Not many significant studies have done specifically on the relationship between directors’ remuneration and performance of the GLCs. Hence, this study will bridge the gap by analyzing the impact of directors’ remuneration and financial performance of GLCs in Malaysia.

Moreover, in Malaysia, there is less number of studies regarding this topic and it is evident from the literature review that the studies are contradicting in nature. Hence, there is a need for a comprehensive study looking into this matter. Thus, the main objective of the study is to explore the relationship between directors’ remuneration and financial performance of government-linked companies (GLC) in Malaysia. However, the specific objectives of the study are: (i) to examine the relationship between directors’ remuneration and return on assets (ROA) and (ii) to examine the relationship between directors’ remuneration and return on equity (ROE).
**Literature Review**

From the previous studies, it is evident that two theories have been given utmost importance to discuss the relationship between directors’ remuneration and firm performance. The theories are the agency theory and organization theory. According to Ismail et al. (2014), the agency is defined as the relationship between two parties, where one of the parties will act as a principal and the other as an agent (Ismail, Yabai & Hahn, 2014). An agent is obliged to represent the principal for the transaction with the third party. Most of the researchers have found that in an agency relationship there is always an inevitable conflict between managers’ interest and stakeholders’ interest. An agency relationship allows managers to indulge in opportunistic behaviors that serve their own interest and not necessarily those of owners (Amess & Drake, 2003; Gomez et al., 2017).

In an agency problem, the important factor is monitoring. Monitoring from the part of shareholders will affect the decision making of the management. Organizational theorists have addressed some of the limitations of agency theory by examining executive remuneration as a political process, and thus they have adopted a descriptive approach to the issue. These scholars have focused particularly on CEO power and board in attempting to open the “black-box” of what affects the executive remuneration decisions (Finkelstein, 1992; Zajac and Westphal, 1996; Elhagrasey et al., 1998 and 1999; Mousa, Chowdhury, & Gallagher, 2017). One of the arguments presented is that CEOs are in a unique position to determine their own compensation, based on their ability to influence board behavior. Previous studies suggest a number of factors that potentially relate to CEO power. These factors include CEO tenure, CEO ownership, board size, firm size, and board ownership (Elhagrasey et al., 1998 and 1999; Bhasin, 2015).

Corporate governance is nothing new to business communities and government in the world but it is taking new momentum in the millennium as it has been being stressed more in practice and in academic research. Discussing corporate governance, the Cadbury Report (1992) and the Greenbury Report (1995) are the main sources for references because these reports are the fundamentals of corporate governance policy in countries around the world. MCCG (2018), defines corporate governance as follows:

“Corporate Governance is the process and structure used to direct and manage the business affairs of the company towards enhancing business prosperity and corporate accountability with the ultimate objective of realizing long-term shareholder value, whilst taking into account the interest of other stakeholders.” According to Ismail et al. (2014), corporate governance could be seen as a vital contributing factor to a firm’s performance and value but in fact, it is yet to be defined. In addition, past researcher shows different results on the effect of corporate governance on firm performance, which can be positive, negatively, or no significant relation at all (Ismail, Yabai & Hahn, 2014).

There is a lack of consistency regarding the impact of firm performance on executive remuneration. According to Ben, Cliff Osoro & Julius, (2013), there is a negative relationship between directors’ remuneration with ROE among Kenyan listed companies. In Sweden, it has found that there is a negative and insignificant relationship between pay and performance among the 30 largest companies (Usman, 2010). Orden and Garmendia have examined the relationship between ownership structure and corporate performance in Spanish companies. They have concluded that companies under control of government showed negative impact and have worse performance (as measured by ROA and ROE) than other ownership structures (ownership structure has been analyzed in terms of concentration of control and the type of investor exerting control (Orden & Garmendia, 2005).
Similarly Brick, Palmon & Wald, (2006), have found that there is a negative relationship between excess director compensation and firm performance in companies in USA. Weak link between executive remuneration and firm performance have been found in the UK and Canada (Conyon & Schwalbach, 2000; Zhou, 2000; Al-Najjar, 2017). No evidence of a relationship between board composition and financial performance has been found in the meta-analysis of 131 American companies (Dalton, Daily, Johnson & Ellstrand, 1999; Hill, 2018; Du Plessis et al., 2018).

In Indonesia, the positive relationship between directors and commissioners’ remuneration and company performance has been found performance using a sample of 100 listed companies throughout the period 2008-2009 (Oviantari, 2011). It has been found there is a positive relationship between corporate governance and firm performance. With a handsome remuneration package for Directors, agency costs can be reduced and firm performance can be improved (Lee, Lev & Yeo, 2007). Ozkan (2007) has reported that performance has a positive but insignificant impact on directors’ pay. It is argued that larger firms may employ qualified and well-paid managers. In addition, director ownership may lead to greater managerial discretion and hence potentially play an important role in determining directors’ pay (Ozkan, 2007).

The positive relationship between firm performance and directors’ pay has been found in the firms operating in Japan, UK, and Germany (Kato & Kubo, 2006; Conyon & Schwalbach, 2000). According to Randoy and Nielsen, there exists a positive and significant correlation between accounting performance and CEO compensation (Randoy & Nielsen, 2002). Kaplan has found that there is a positive relationship between remuneration and performance and closely tied with executive remuneration (Bushman and Smith 2001). Other studies such as by Fernandes (2008) and Firth et al. (1995) do not find any link between pay and performance for Portuguese and Norwegian firms respectively (Fernandes, 2008; Firth, Lohne, Ropstad & Sjo, 1995). No evidence has been found in the Australian banking sector regarding the sensitiveness of director remuneration towards firms’ performance (Doucouliagos, Haman & Askary, 2007).

In the Malaysian context, Ismail et al. (2014) have found that there exists a relationship between CEO pay and firm performance among listed firms (Ismail, Yabai & Hahn, 2014). Another study by Jaafar et al., (2012) has found out that the relationship is significantly positive among family firms (Jaafar, Wahab & James, 2012). On the other hand, Nahar (2006) has proposed that directors’ remuneration is not associated with the firm’s profitability as measured by ROA among distressed companies in Malaysia (Nahar Abdullah, 2006). Dogan and Smyth (2001) have studied the board compensation of companies listed on the Malaysian stock exchange over the period 1989-2000 and concluded that the relationship between board remuneration and firm performance is ambiguous in nature (Dogan & Smyth, 2002).

Remuneration plays an important in influencing the overall activities of the managers and firm performance. Many studies have been conducted exploring the topic of remuneration contract. In both the UK, and US remuneration contracts for senior management contain a variety of components. Jensen and Murphy (1990) have suggested that stock option, equity ownership, performance-related-pay and performance-related dismissals can be included as part of remuneration packages in order to provide financial incentives for value maximizing behavior (Jensen & Murphy, 1990).

Fixed payments, short-term incentives, long-term incentives, entry benefits, exit benefits, and non-pecuniary benefits should all be included in an ideal mix of Directors’ remuneration to reflect fair payment policy (Kerin, 2003; Hooghiemstra, Kuang, & Qin,
2017). Remuneration needs to be handsome in order to retain and maintain the quality of the board since it is the board having the capability to ensure long-term success. The board of directors is awarded better remuneration when the firm feels satisfied with the abilities such as skills, knowledge, and experience. Accepting remuneration as a contract puts responsibility towards the board to work harder with great strategies and planning. As a result, the business is operated smoothly and this, in turn, ensures high performance. Linking directors’ remuneration to corporate performance should be seen as fair to the shareholders since directors work hard to improve corporate performance.

Methodology
This study is based on the total 96 GLCs either public listed in Bursa Malaysia or private companies. There are 33 listed GLCs in Malaysia as of February 2013 (retrieved from www.pcg.com.my) and another 63 are companies where the government have more than 50% of paid-up capital (retrieved from AG Report 2013 Third Series). Due to the certain limitation of information for analysis, for example, the director's remuneration not been published in annual report due to secrecy. The total sample size has been shortening to 15 GLCs. While collecting the sample, some criteria have been followed. The first criterion is whether chosen firms which have their full period annual reports available or not and the reports contained information about directors’ remuneration or not. The second criterion is that the firms must be GLCs. The sample period is from 2013 until 2017 (5 years) which has been retrieved either from Bursa Malaysia portal or firms official portal.

In Malaysia, BOD consists of non-independent (CEO or Managing Executive Director), non-independent executive directors, independent non-executive directors and institutional investor. According to Dong and Ozkan (2007), there is a relationship between the company performance and CEO pay. For the purpose of this study, Directors’ remuneration only measures in term of cash such as salaries, fees, bonus and other direct compensation. In this study, profitability ratios, which consist of Return on Equity (ROE) and Return on Asset (ROA) are being used to measure the financial performance of the companies. ROE is the ratio of net income over shareholders’ equity. The higher value of ROE is the higher the efficiency of companies in generating income on the new investment. ROE has been previously been used as a proxy for firm performance by Boyd (1994).

While ROA is the ratio of net income over total assets, ROA will show that the number of cents earned on each Ringgit Malaysia (RM) of assets. The higher the value or ROA, it means that the higher the profitability of the business. Cornett et al. (2007) said ROA is the best measure of current performance whereas ROE is better measures of executives’ ability.

Data Analysis and Interpretation
Collected data has been analyzed using r and supervised machine learning approach for regression analysis has been utilized here. The data analysis is interpreted giving three specific portions namely - descriptive statistics, correlation analysis, and regression analysis.

Descriptive Statistics
In order to study the relationship between directors’ remuneration and financial performance, regression analysis has been performed. Based on the table there is 75
observation which comprises 15 GLCs that performed data for 5 years. Table 1.1 shows the results of descriptive statistics.

### Table 1.1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable</td>
<td>ROA</td>
<td>75</td>
<td>-0.0524</td>
<td>0.1624</td>
<td>0.031997</td>
<td>0.0362449</td>
<td>1.150</td>
</tr>
<tr>
<td></td>
<td>ROE</td>
<td>75</td>
<td>-0.1136</td>
<td>0.3831</td>
<td>0.094246</td>
<td>0.083066</td>
<td>0.775</td>
</tr>
<tr>
<td>Independent Variables</td>
<td>DR</td>
<td>75</td>
<td>750000.0</td>
<td>1223900.0</td>
<td>3776869.879</td>
<td>3160277.9763</td>
<td>1.448</td>
</tr>
<tr>
<td>Valid (N) (listwise)</td>
<td></td>
<td>75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Following graphs are the histograms of the variables –

**Figure 1: Directors Remuneration**

![Histogram of Directors Remuneration](image-url)
From the above table, the mean value for ROA is 0.031997. The mean value of ROA indicates that the firms in the sample are not utilizing their resources well. The standard deviation is 0.0362449 suggesting the data is distributed far away from the mean value. The skewness and kurtosis for ROA are 1.150 and 1.939 respectively. It indicates that most value is concentrated on the left of the mean, with extreme values to the right and the values are wider spread around the mean.
While the mean value for ROE is 0.094246, this value suggests that most firms experience good performance in profitability. The standard deviation is recorded at 0.083066 and it indicates that the distribution of data is minimally dispersed and tends to concentrate near to the mean value. The skewness and kurtosis for ROE are 0.775 and 2.306 respectively. It indicates that most value is concentrated on the left of the mean, with extreme values to the right and the values are wider spread around the mean.

The mean value for DR is 3776869.879 (Directors’ Remuneration). This large dispersion of data explains why the standard deviation is so high at 3160277.9763. It is worth mentionable that here DR has been used as the exact figure values in order to see the actual impact of their payments on the performance of the firms. The skewness and kurtosis for DR are 1.448 and 0.962 respectively. It indicates that most value is concentrated on the left of the mean, with extreme values to the right and the values are wider spread around the mean.

**Correlation Analysis**

Correlation measures the strength and direction of the linear relationship between the two variables. The correlation coefficient can range from -1 to +1, with -1 indicating a perfect negative correlation, +1 indicating a perfect positive correlation, and 0 indicating no correlation at all. (A variable correlated with it will always have a correlation coefficient of 1). This correlation is also known as “Pearson’s Correlation.” This correlation used to check the relationship among ROA, ROE (dependent variables) and directors’ remuneration (independent variables are-

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>DR</th>
<th>ROA</th>
<th>ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directors’ Remuneration (DR)</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return on Asset (ROA)</td>
<td>0.218</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Return on Equity (ROE)</td>
<td>0.051</td>
<td>0.488</td>
<td>1.000</td>
</tr>
</tbody>
</table>

From the table, the highest positive correlation for this group is 0.488, which is between ROA and ROE. The second highest positive correlation exists between DR and ROA and it is reported at 0.218. The last positive correlation value is 0.051, which is between DR and ROE. It shows that the relationship between DR and ROA a weak positive relationship. All the variables have a perfect positive correlation with itself.

**Correlogram**

Correlogram is a graph of the correlation matrix. It is used to highlight the most correlated variables in a data table. In the following figure 2, correlation coefficients are colored according to the value.
Regression Analysis
This study consists of two models. In the first model, ROA is the dependent variable and ROE is the dependent variable in the second model. ROA and ROE being the dependent variables and performing the regression analysis, the following results have been obtained.

Table 1.3 Regression Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.218</td>
<td>0.048</td>
<td>0.035</td>
<td>0.0356132</td>
</tr>
<tr>
<td>2</td>
<td>0.051</td>
<td>0.003</td>
<td>-0.011</td>
<td>0.0835228</td>
</tr>
</tbody>
</table>

In every regression output, there are three important things namely R, R square and Standard error of the estimate. R is the multiple correlation coefficient that tells us how strongly the multiple independent variables are related to the dependent variable.

The value of R ranges from zero to one exhibiting the strength of the relationship between dependent and independent variables. The proportion of variance in the dependent variable predictable by the predictor variables is shown the value of R square. R square tells about the coefficient of determination. As more predictors are added to the model equation, they will explain more variance just by chance “Adjusted R-squared” since it adjusts the R square dependent on the number of variables used in the equation. Here, there is less importance of adjusted R square since the number of variables is fixed here.

The standard error of the estimate, also called the root mean square error, is the standard deviation of the error term and is the square root of the Mean Square Residual (or Error).

In the above regression output, ROA is the dependent variable and DR is the independent variable. Here, the value of R represents the simple correlation and it is 0.218 which indicates a moderate degree of positive correlation and finally the value of R2 indicates how much of the total variation in the dependent variable, ROA can be explained by the independent variable DR. In this case, 0.048 or 4.8% of the variation independent variable is explained by the independent variable.
In the above regression output, ROE is the dependent variable and DR is the independent variable. Here, the value of R represents the simple correlation and it is 0.051 which indicates a moderate degree of correlation and finally the value of R2 indicates how much of the total variation in the dependent variable, ROE can be explained by the independent variable DR.

In this case, 0.003 or 0.3% of the variation in the dependent variable is explained by the independent variable, which is small. It indicates there can be many other factors, which can influence firm performance such as independent directors, board size and independent audit committee in corporate governance point of view.

### Table 1.4: ANOVA Average for All Variables

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>0.005</td>
<td>1</td>
<td>0.005</td>
<td>3.648</td>
<td>0.060</td>
</tr>
<tr>
<td>Residual</td>
<td>0.093</td>
<td>73</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.097</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Regression</td>
<td>0.001</td>
<td>1</td>
<td>0.001</td>
<td>0.194</td>
<td>0.661</td>
</tr>
<tr>
<td>Residual</td>
<td>0.509</td>
<td>73</td>
<td>0.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.511</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ANOVA table is an important part of explaining the regression output. Analysis of variance (ANOVA) consists of calculations providing information about levels of variability within a regression model and form a basis for tests of significance. F Test is used to test whether a relationship exists between the dependent and independent variable or not.

Following is a table showing the summary result of multiple regression equation for both models –

### Table 1.5 Regression Summary

<table>
<thead>
<tr>
<th>Equation</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA = 0.23 + 2.502E-9DR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE = 0.89 + 1.352E-9DR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Following are two figures showing the regression plots this study-
Based on the regression results, a positive and significant relationship exists between directors’ remuneration and ROA as well as ROE. It is suggested that DR is connected with performance as indicated by its statistically significant coefficients with ROA and ROE. (ROA: $\beta = 0.218$, $p = 0.060$; ROE: $\beta = 0.051$, $p = 0.661$). This means that having well-paid directors’ remuneration influences the different measures of financial performance of ROA and ROE.

**Implications and Conclusion**

This study contributes to the existing literature as empirical evidence for further research. Since public nowadays is becoming more concerned, well educated about business activities and the environment surrounding it, GLCs must perform well in all aspect and give back to the government and government will spending it to the citizen at last. The study has not only proves the previous findings but also reinforce the theories of previous
research. Alternatively, the data of the study, which do not support the prior research, may provide opportunities for other researchers to investigate on other potential factors that can add value to the related field of study.

Corporate governance has become the topic of many discussions over the years. Directors act as the trustee of shareholders in the company and they should try to maximize the wealth of the shareholders. In Malaysia, companies are broadly divided into 2 types namely GLCs and Non-GLCs. Since director’s act as trustee in the companies, so how the payment of directors’ influences the financial performance of the companies has been the topic of discussion for many studies. The significant positive relationship has been found between directors’ remuneration and firms’ financial performance as measured by ROA and ROE. This study is unique from previous studies in the sense that some of the previous studies have varying results for ROA and ROE. However, in this study, it is found that significant positive change in ROA and ROE have been associated with the directors’ remuneration.

Limitations and Direction for Future Research
Every research paper has some limitations and this study is also not exceptional. The most viable limitation of this study is that it has only included aspects of corporate governance relating to Malaysia. However, future researchers may improve the results of the study by adding more countries and the number of variables into the study like BOD size, the structure of firms, board diversity etc. More firms need to be considered in order to lead to more findings that are robust on the issue. Furthermore, it could be good to include companies in more than one country in order to remove the systematic risk of investigating only one particular economy. This is so since the general performance of a country’s economy might affect companies operating within it and hence, influence the results largely. Studies can be done on social cause oriented GLCs as well in order to learn more about their performance.

References


