

Executive Remuneration, Financial Crisis and 'Say on Pay' Rule

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Abstract

Among the alternatives to reduce agency conflict, executive remuneration has commonly been perceived as the best possible solution. Financial meltdown is commonly attributed to the large portion of remuneration rewarded to the executives. As a response, 'say on pay' rule, introduced in 2011 which provides shareholders right to vote for or against executives remuneration package. Proponents of this new rule argue that reforms will fortify the association between the shareholders and the executives of the board, will ensure that board members execute fiduciary duty placed upon them. However, the critics think this new rule will be unsuccessful in monitor directors' remuneration, and contemplate it to be backward-looking rather than forward-looking. Despite the importance of these issues, contextual analyses of executives' remuneration and company performance in the Australian context are still limited. This paper, using sample from top 200 Australian listed companies, aims to study the relationship between executive remuneration and companies' performance during the financial crisis in 2006- 2009. Methodology of this research is based on two approaches: firstly, we investigate the pay-for-performance relationship during the global financial crisis; secondly, identify cause and effects relationships through lead and lag analysis. Overall, this research concludes that Australia's reward system is quite effective and reflects market based performance, specially in respect to Earnings per Share and Dividend Yield. Therefore, the introduction of 'say on pay' rule is appropriate in Australian context.

Keywords: Global financial crisis, Executive remuneration, Say on pay, Pay-for-performance, Lead and lag analysis

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1. Introduction

Directors have a primary responsibility to protect the interests of the shareholders. However, there are many examples of companies where the directors overpay themselves. In last decade, the executive remuneration in Australia has increased around 12% per annum (Productivity Commission, 2009), yet we have experience global financial crisis which can be blamed to executives directors to some extent. Aim of the research is to examine in the effectiveness of the remuneration system in Australian context. It is important that remuneration reflects actual performance since rewarding executives with high remuneration comes at the expense of shareholders' wealth. Instead of giving back the profit on capital to shareholders, companies may reward executives with excessive remuneration in order to retain them and/or to encourage them to perform better.

The ASX Corporate Governance Council (2007) has recommended four components of remuneration packages: (i) fixed remuneration, (ii) performance-based remuneration, (iii) equity-based remuneration, and (iv) other payments. Fixed salary is the first component of the remuneration package. It is assumed that no matter how much effort an executive puts in, he/she will still receive the same level of payment in a particular financial year, regardless of performance. The second component is performance-based remuneration, usually referred to as bonuses. It should be linked to clearly specified performance targets (ASX Corporate Governance Council 2007). An executive may receive higher remuneration when company performance has improved and less when it has not. The third component is equity-based reward (i.e., shares and stock options). This type of remuneration links shareholders' wealth directly to market share price and aligns remuneration with shareholders' interests (Core, Guay & Larcker 2003). In order to obtain higher returns from share options, executives will have to work more effectively to increase share price. Most of the time, equity-based payment is also part of performance-based remuneration since it depends on how well a company performs. The final outcome should result in the net favor for shareholders. Finally, other remuneration includes superannuation, executive fees, non-cash benefit, allowances, motor vehicles, committee fees, termination payments, options, consulting fee and accrued entitlements and others.

The Productivity Commission stating that Australian corporate governance is better at constraining executive remuneration levels than its United States counterpart (Productivity Commission, 2009).

Since 2002 Australia is ranked in the top 10 in a row for various areas of corporate governance by the World Economic Forum. Governance Metrics International ranked Australia fourth out of 38 countries for corporate governance in year 2008. The Productivity Commission mentioned that the executive labour market was only responsible for approximately one-third of the increase in Australian executive pay over the past 20 years. It estimated that the remainder of the increase was due to globalisation, the increased use of incentive pay and compliant boards. Despite this, the Productivity Commission defended the level of Australian executive remuneration by stating that United States executives are paid more.

The new introduction of the 'say on pay' rule by amending the Australian Corporations Act 2011, sections 250R(2) and 250U-V re-intensified the long-standing debate on the executive remuneration among investors, academics and policy makers. According to the new rule, if a group of shareholders holding 25% or more share vote contrary to company's remuneration report at two AGM consecutively, the full board need to stand for re-election within a period of three months.

It is important to analyze the executive remuneration based on their performance in Australia during the time surrounding the GFC in order to determine whether executives are paid too much while shareholders receive reduced or no dividends when the company performs poorly (Aebi, Sabato and Schmid, 2012; Erkens, Hung, and Matos, 2012). This research makes two contributions to the standing research. Firstly, it assess the remuneration packages, i.e., salaries, bonuses, options and other remunerations of the executive directors of top 200 listed companies. Secondly, the research investigates the cause and effect relationship between executive remuneration and performance of the companies.

The next section of this paper reviews the literature and develops a conceptual framework based on previous studies. Section 3 discusses research design, data collection. Descriptive analysis, exploration of the results plus sensitivity analysis are provided in section 4. Section 5 discussed overall findings at a glance. Finally the conclusion section includes a summary and avenues for future research.

2. Former Research

Bebchuk and Fried (2004) have drawn attention to the fact that remuneration to managers can be a solution to the agency problem (Jensen & Meckling 1976; Jensen 1986) but also an agency problem itself if not designed properly. Lawler (1990) and Milkovich and Wigdor (1991) pointed out that firstly, the level of remuneration should be large enough to motivate managers; secondly, that the pay-for-performance relationship should present a clear association between executive remuneration and performance, and thirdly, that remuneration should be provided to members of management in line with their contributions to the company.

Rewarding remuneration to executives should motivate them to maximize their company's performance. One criticism of linking remuneration with share price is that companies are punishing executives for failure. If the remuneration is linked to share price, it is the market conditions that determine the share price and not the executives' contribution (Fels 2010). Problematic also is that if remuneration is linked to accounting performance measures, there is a risk that executives will manipulate the accounts for their own benefit.

Evidence exists that even when the economy was performing poorly in the U.S, there was no decrease in the median Chief Executive Officer (CEO) remuneration in S&P 500 companies (Kirkpatrick 2009). The CEOs of large corporations such as Lehman Brothers and Bear Stearns, had been remunerated highly in the years prior to the GFC (Kaplan 2008) and yet these companies faced bankruptcy. Bebchuk, Cohen and Spamann (2010) examined the remuneration of Bear Stearns company and Lehman Brothers and discovered that the total cash bonuses rewarded to the CEOs between 2000 and 2008 amounted to approximately \$87 million and \$61 million (in US dollars) respectively. On average, the cash bonuses awarded to the CEO were about \$12.4 million and \$7.8 million respectively. Using an example from Australia, Higbee (2008) pointed out that the CEO of Challenger Financial Services Group received a 66 per cent increase in remuneration while the company experienced losses. These examples demonstrate that executive remuneration and company performance are not commensurate (Krauter, & Sousa, 2009; Lee 2009). Thus, if a company is not performing well, its executives may still receive a large "reward" (Woldring 1995). This finding has been supported by other studies including Gregg, Machin and Szymanski (1993), Firth, Lohne, Ropstad and Sjo (1996), Abdullah (2006), and Doucouliagos et al. (2007).

Total executive remuneration refers to the sum of remuneration given to every company executive including the CEO and executive directors. Jensen and Murphy (1990), Gilson and Vetsuypens (1993), Kato and Kubo (2006), Doucouliagos et al. (2007), Ozkan (2007), and Lee (2009), focus solely on CEO remuneration, although Dogan and Smyth (2002) look at the remuneration of company boards as a whole. While Doucouliagos et al. (2007) showed that the pay-to-performance association is more relevant to CEO remuneration compared to total board remuneration; this study considers total executive remuneration because they, as a group, act as agents for shareholders, not the CEO individually. It is essential therefore to measure other executives' remuneration as well.

Most of the existing studies focus on salaries, bonuses, and options. There is limited literature on other types of remuneration. However, superannuation and termination payments, which are a part of other remuneration, are also included in this current research (see for example Stapledon 2004; Stapledon 2005; Capezio, Shields & O'Donnell 2007; Windsor & Cybinski 2009). Stapledon (2005) examined the termination payments received by executives of companies listed in stock exchange for six years, from 1999 to 2004 and found that termination payments were paid excessively, the average being \$3.65 million.

2.1 Executives' Remuneration and Company's Performance

There are three ways to encourage management to act for shareholders benefit: monitoring management activities, providing incentives, and contractually bonding management (Denis 2001). Providing incentive, however, is considered as the best possible solution. Incentive to management can be classify in four categories: salary, bonus, sock options and other remuneration. This research will examine the link between these four components of remuneration and company performance.

However, an empirical study conducted by Jensen and Murphy (1990) over 12-year period, showed that CEO superannuation is significant and positively related to shareholder return at the 99 per cent significance level. Stapledon (2005) found that from 1999 to 2004, some Australian listed companies rewarded executives with large termination payments despite poor company performance.

These findings are supported by Capezio, Shields and O'Donnell (2007) who used total reward as one of the variables to investigate the sensitivity of Australian CEOs' pay-for-performance relationship in Australia between 1999 and 2005. They defined the main components of their total reward as the sum of the salary, superannuation, other benefits, cash incentives, and termination payments.

Erikson, Hanlon and Maydew (2006) found a positive association between fraud and the executives' remuneration. Kato and Kubo (2006) point out that publicly listed companies are more likely than non-listeds to respond to the interests of shareholders, and therefore they tend to link executives' remuneration to observable measures, such as shareholder return and ROA. Dogan and Smyth (2002) found a positive relationship between total board remuneration and shareholder return in Malaysia. This finding is supported by Ozkan (2007) who also found that the pay-to-performance relationship is positive and significant.

These conflicting findings are most probably due to the existence of measurement differences. A possible explanation is that external and internal factors impact on the level of company executives' remuneration. External factors include the regulation framework, economic and social scenarios, and cultural differences (Dallas 2004). Studies that have been undertaken in a range of financial markets have led to understanding that the process of governing a company differs from country to country (Bebchuk & Roe 1999). Internal factors include company size (Coles, McWilliam & Sen 2001; Doucouliagos et al. 2007) and industry performance. Jensen and Murphy (1990) raise the issue that past research did not control for these variables and that will affect findings. Consequently, with the intention of adding credibility to this research, these corporate governance variables which influence the executive's remuneration and firm performance are identified and controlled.

After controlling for the influence of macroeconomic and sector conditions from 1995 to 2004, Michaud and Gai (2009) found that the only remuneration instrument that has a significantly positive relationship with company performance is cash bonus. This is supported by Ozkan (2007) who used slightly more recent data from 1999 to 2005. Ozkan's (2007) study focused on cash-based and equity-based remuneration and found that there is no significant link between total remuneration and company performance. Nonetheless cash-based remuneration is positively and significantly linked to company performance.

He found that there is a significant positive relationship between CEO cash remuneration and company performance, but this is not the same for total remuneration, signify that the association is positive, yet not significant. Older studies (for example, Mehran 1995; Carpenter & Sanders 2002) pointed out that fixed remuneration, cash bonuses and stock options are related to company performance. Furthermore, Krauter and Sousa (2009) explored the relationship between executives' remuneration and performance of manufacturing companies in Brazil and also found that salary is related to company performance.

The Productivity Commission (2009) found a significant decline in total remuneration for CEOs in the top 100 companies listed on the ASX in 2007 and 2008, amounting to a reduction of 16 per cent over the two years. This suggests that CEO remuneration in Australian companies is more likely to be linked to company performance during the GFC because most companies experienced waning economic circumstances during this period.

2.2 Company's Performance Measures

This study uses both accounting-based performance measures and market-based performance measures in order to maximise the scope of the analysis and the relevance of the research. The reason for choosing both measures is that each measure has its advantages and disadvantages (Azim, 2012). For example, a company is permitted to change accounting methods as long as they remain consistent for the accounting period; this will actually cause inconsistency and hence incomparability across companies. Again, accounting measures ignore dividend policy because a company's economic value will decline when dividends are paid to shareholders (Carton & Hofer 2006). Last but not least, accounting measures overlook the time value of money because balance sheets and income statements are recorded using historical data. Although there are some weaknesses in accounting measures, they are fundamental in measuring how a company performs. Profit is the most basic and immediate measure that reflects the performance of the company.

In contrast, market-based performance measures are perhaps the best performance measures (Copeland, Koller & Murrin 2000) because they include risk adjustment and also take account of anticipated future values.

Perhaps the most important aspect for stakeholders is that market-based performance measures take their interests into account (Brush, Bromiley & Hendrickx 2000) because they are used to measure the market value of a business. If the market value of the company increases, the shareholders may expect to receive a higher return. Unlike accounting-based performance measures, market-based performance measures are difficult to manipulate. In addition, they are said to reflect events immediately but accounting-based performance measures (figure 1) will only be available to shareholders after a period of time (Carton & Hofer 2006) through interim or annual reports.

Similar to accounting-based performance measures, there is a downside of using market-based performance measures for remuneration as well. Although it is difficult for management to manipulate performance measures, management can still influence the market's reaction by providing false information to the general public. Moreover, market-based performance measures are suitable only for observable companies such as listed companies (Carton & Hofer 2006). They are not as easy to use as accounting-based performance measures, whereby all the data can be collected from the financial statements. Market-based performance measures rely heavily on the organisations and databases which act as agents to collect the information for investors and researchers. As both accounting-based performance measures and market-based performance measures have their 'pros and cons', this study uses both bases to examine the pay-for-performance relationship.

Figure 1: Company Performance Measures used in this Research

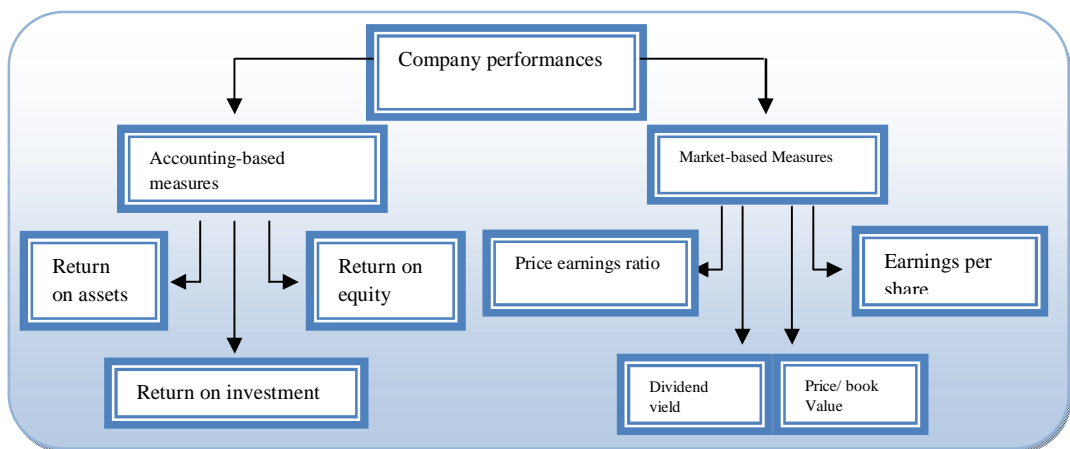


Figure 1: Company Performance Measures used in this Research

Shareholder return is used as one performance measure since shareholders' main aim is to maximise their wealth by increasing share price and dividends. Therefore this measure can actually demonstrate whether executives of a firm are acting in the best interests of their "owners". This research uses EPS to represent shareholder return, since EPS measures how much income shareholders receive per share holding.

3. Research Design

In addition, in order to test the robustness of the findings, sensitivity analysis and lead and lag analyses are conducted. Through sensitivity analysis, the relationship between executives' remuneration and company performance before and after the GFC can be understood. Lead analysis shows the response of executives' remuneration to company performance because most of the time, executives' remuneration does not reflect immediately on company performance. Lag analysis shows the pay-to-performance of the executives' remuneration based on the earlier year's performance.

Government regulations and economic conditions are controlled for by investigating the pay-for-performance relationship in a single country, Australia, and specifically during the period of the GFC. Company size is also one of the control variables, whereby the log of total assets and market capitalization are calculated to standardize the company size measure and enhance the regression model. Finance companies are excluded from the sample because of their unique accounting procedures compared to other industries. The presentation of Balance Sheet and Income Statement information in finance companies differs from the normal practice in other industries (Dogan & Smyth 2002).

Data Collection

For this research, quantitative data is collected from companies' annual reports and research databases, such as Connect4, and Aspect FinAnalysis. Connect4 is used to collect the data for executives' remuneration. The Connect 4 database provides details of each executive's salary, options and shares, bonus, and other remuneration including superannuation.

This study also uses Connect 4 to categorize companies based on market capitalisation, total revenue, number of employees, and total remuneration. Aspect FinAnalysis database, which provides a range of accounting-based and market-based measurements - are used to collect data on firm performance.

Return on Equity, Return on Asset and Return on Investment are used as accounting-based measure. Return on Equity is suitable for calculating shareholders return on their equity. Other measure, return on Investment, ROI, is argued to be a better than ROE and ROA as it involves debt and equity used to finance the company, and therefore company managers will find it difficult to manipulate (Hair et al., 2010).

Price earning ration (PER), price to book value (PBV) and earning per share (EPS) and dividend yield (DY) is used as market-based performance measure. EPS measures how much earnings a shareholder can obtain from one shareholding. Shareholder return instead of net profit is used because this measurement can check whether executives of a firm act in the interest of their owners, considering the share price movement and dividends.

4. Analysis of Results

Mean, Standard deviation, Minimum and the Maximum value of executives' salaries between 2006 and 2009 are shown in Table 1. During the GFC, the average executives' salaries lay approximately between \$3.6 million and \$3.7 million. However, the highest paid executives' salaries during that period are nearly ten times more than the average, lying between \$ 29 million and \$ 33 million. Over the four-year period, the maximum values of executives' salaries were 5 to 8 times more than the average level. Movements in mean, minimum and maximum value of executives' salaries, have the same trend throughout the four-year period. However, the maximum value of the salaries experiences a sudden decrease in 2008.

Australian executives' average total remuneration rose dramatically from 2006 to 2007. However, it seems to have fallen during the GFC and was stable until 2009. Although there was a reduction in executives' average total remuneration during the crisis, executive average salaries tended to increase rapidly from 2006 to 2009 at about 33 per cent over whole period. The average bonuses decreased significantly during the GFC. In contrast, executive options tend to fall only after the GFC.

The standard deviations for bonuses during that period of time are higher than the mean. The maximum values for 2006 and 2008 are much higher than the mean. Although the maximum values for 2007 and 2009 are lower than their respective previous years, they are still 5 to 9 times more than the mean. When comparing the pattern, the maximum value in 2007 decreased significantly but the mean moved in the opposite direction.

There is a drastic decline in the minimum value of options from 2007 to 2008. This is most probably due to the awareness of the GFC and loss of confidence in the stock market. Although the maximum value of executives' options is significantly higher than the sample average, it drops dramatically by nearly 50 per cent of its value in 2007.

Table 1: Descriptive Statistics of Executive Remuneration and Company Performance for 2006 – 2009

	2006 (Pre GFC) Sample: 152 Comp				2009 (Post GFC) Sample: 170 Comp			
	Mean	Standard Deviation	Minimum	Maximum	Mean	Standard Deviation	Minimum	Maximum
Compensation								
Salaries (A\$)	3.12M	2.35M	50K	18.09M	1.15M	3.60M	66K	35.73M
Bonuses (A\$)	2.51M	8.19M	0	98.24M	1.11M	3.10M	0	19.12M
Options (A\$)	0.94M	1.70M	0	11.73M	0.94M	1.84M	(2151)K	12.85M
Other Rem (A\$)	3.11M	4.74M	(160)K	29.71M	1.46M	8.38M	(7208)K	78.47M
Accounting performance								
ROE	0.09	0.13	(0.50)	0.90	0.05	0.12	(1.19)	0.46
ROA	0.04	0.06	(0.21)	0.38	0.03	0.04	(0.20)	0.14
ROI	(0.17)	2.87	(33.33)	1.57	0.08	0.18	(0.82)	1.64
Market performance								
PER	154.50	1316.69	(25.36)	16153.85	85.71	372.24	(3.78)	4525.86
P/BV	4.13	3.81	0.00	18.77	2.48	2.44	(0.29)	15.99
EPS	61.47	93.51	(153.30)	710.60	35.15	153.87	(876.80)	804.70
DY	0.04	0.02	0.00	0.12	0.41	0.04	0.00	0.26

	2007 (GFC period); Sample: 177 Comp				2008 (GFC period) Sample: 177 Comp			
	Mean	Standard Deviation	Minimum	Maximum	Mean	Standard Deviation	Minimum	Maximum
Compensation								
Salaries (A\$)	3.59M	3.55M	55K	33.46M	3.73M	3.07M	60K	28.69M
Bonuses (A\$)	3.07M	9.33M	0	16.30M	2.76M	6.58M	0	78.87M
Options (A\$)	1.16M	2.01M	0	16.30	1.26M	2.00M	(2909)K	9.84M
Other Rem (A\$)	4.54M	8.52M	(278)K	\$ 57.01M	4.05M	7.55M	(1458)K	81.65M
Accounting performance								
ROE	0.17	0.30	(1.20)	2.43	0.16	0.22	(0.66)	1.62
ROA	0.08	0.18	(0.87)	1.80	0.08	0.10	(0.19)	0.82
ROI	0.95	4.15	(9.51)	43.41	0.93	3.92	(4.01)	40.18
Market performance								
PER	10.39	84.28	(935.29)	43.41	11.16	64.07	(319.01)	594.78
P/BV	5.02	7.56	(7.49)	53.63	3.03	4.03	(20.35)	20.29
EPS	73.47	111.46	(65.80)	716.40	64.21	129.66	(155.30)	928.30
DY	0.03	0.02	0.00	0.09	0.05	0.05	0.00	0.44

The average value of executives' other remuneration falls within a range of \$3.1 million and \$4.6 million from 2006 to 2009. The mean of other remuneration increases significantly from 2006 to 2007, decreases in 2008 and rises again in 2009. The minimum value of other remuneration tends to drop steadily. The maximum value and minimum value of other remuneration actually decreases in 2009 but the average value increases. This indicates that most of the sample companies increase the amount of other remuneration to executives. Another highlight is that the minimum value from 2006 to 2009 turned out to be negative, which is most probably due to the increased superannuation liability.

4.1 Executives' Remuneration and Company Performance During the GFC

Table 2 shows the correlation between executives' remuneration and company performance. Company performance is divided into accounting-based performance measures and market-based performance measures.

Table 2: Correlation between Executives' Compensation Components and Accounting-Based Company Performances Measures during 2007 and 2008

	Salaries	Bonuses	Options	Other compensation	Total executive compensations
Accounting based measures					
Year 2007					
ROE	.089	.057	-.038	.093	.081
ROA	.050	-.029	-.147	.003	-.022
ROI	-.074	-.018	-.098	-.018	-.045
Year 2008					
ROE	.083	.055	-.063	-.009	.036
ROA	.007	-.066	-.161	-.104	-.099
ROI	-.111	-.089	-.066	-.025	-.087
GFC (Averaging 2007 and 2008)					
ROE	.110	.066	-.065	.098	.085
ROA	.039	-.053	-.190*	-.018	-.053
ROI	-.107	-.063	-.117	-.018	-.073
Market based measures					
Year 2007					
PER	.133	.038	.026	.063	.070
Price-BV Ratio	-.137	-.063	.228**	-.066	-.061
EPS	.315**	.435**	.172*	.564**	.552**
DY	.306**	.126	-.009	.068	.139
Year 2008					
PER	.009	-.006	-.075	-.004	-.016
Price-BV Ratio	-.142	-.023	.043	-.075	-.059
EPS	.138	.449**	.131	.294**	.413**
DY	.273**	.134	.002	.121	.175*
GFC (Averaging 2007 and 2008)					
PER	.108	.026	-.032	.050	.048
Price to BV	-.162*	-.064	.124	-.109	-.090
EPS	.258**	.500**	.169*	.549**	.555**
DY	.297**	.137	-.014	.105	.165*

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

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

Table 2 presents the correlation between four components (salaries, bonuses, options and other remunerations) of executives' remuneration and three accounting-based company performance measures (ROE, ROA and ROI) for the years 2007 and 2008.

The results show no significant relationship between executives' remuneration components and accounting based performance measures in 2007 and 2008. However, the correlation matrix for average figures during the GFC shows a significant but low and negative correlation (-0.19) between *options* and ROA ($p = 0.021 < 0.05$). This indicates that executives receiving higher options were associated with companies with a decline in ROA during the GFC.

The correlation between four components of executives' remuneration and four market-based company performance measures shows no significant relationship between executives' remuneration components and PER in 2007 and 2008. A similar outcome is observed for average figures during the GFC. Similarly, none of the remuneration components is significantly correlated with Price to BV in 2007 and 2008. The exception is options which in 2007 had a significant positive correlation with Price to BV ($r = 0.228, p = 0.005$). However, average figures during the GFC show a significant correlation between salaries and Price to BV ($r = -0.16, p = 0.05$). This suggests that executives receiving higher salaries were associated with companies with a decline in Price-BV ratio during the GFC.

A significant positive correlation is observed between executives' remuneration components and EPS. The results indicate that executives' salaries are significantly and positively related to EPS in 2007 ($p=0.000$) and in the GFC period ($p=0.002$) but not significantly in 2008 ($p = 0.095$). Similarly, with lower correlation values, options are significantly and positively related to EPS in 2007 ($p=0.037$) and in the GFC period ($p=0.040$) but not significantly related in 2008 ($p=0.112$). Remarkably, with moderate correlation values, both bonuses and other remuneration are significantly related to EPS in 2007, 2008 and GFC with $p=0.000$ in each of these cases. The findings imply that changes in EPS during the GFC were similarly related to changes in executives' remuneration, especially to changes in bonuses and other remuneration.

We find significant positive correlation between salaries only and the dividend yields of the companies in 2007 ($p=0.000$), 2008 ($p=0.000$) and GFC ($p=0.000$). All other three components (bonuses, options and other remunerations) show insignificant correlation with the dividend yield of the companies during 2007 and 2008.

4.2 Ordinary Least Square (OLS) Multiple Regression

Analyzing the significance of correlation values of most market based measures (specially EPS and DY) may lead to the chance of establishing a spurious relation. In this regard, we used Ordinary Least Square (OLS) multiple regression models to test the relationship between executives' remuneration and firm performance and to verify the strength of that relationship between the dependent and independent variables. Hence, the dependent variable is each performance measure and the independent variables are the same four components of executives' remuneration. Considering that there are many other independent variables that affect company performance that are not included in this study, we do not develop a linear model; however, we test the strength and significance of the model.

We used a backward regression model where all the independent variables are included in the model for each dependent variable. Then one by one insignificant independent variables with the highest p-values are excluded from the following model:

$$PM = \beta_0 + \beta_1 \times S + \beta_2 \times B + \beta_3 \times O + \beta_4 \times OR + CV$$

Where: *PM* = Performance Measure,

S = Salaries,

B = Bonuses,

O = Options,

OR = Other remuneration = (Total executives' remuneration – *S* – *B* – *O*)

CV = Control Variables (control for Size and Leverage)

β_i = Respective coefficient.

For three accounting-based and four market-based performance measures used in this study, we tested the significance of seven models during the GFC. Average figures for 2007 and 2008 are used as the proxy for the GFC period in the models.

Accounting-Based Firm's Performance Measures

In testing the association of the remuneration components on ROA during the GFC, we commenced testing the models by using ROE_{GFC} as the dependent variable. In table 3, model-1 includes all four independent variables.

Then systematically each insignificant independent variable with the highest p-value ($p > 0.05$) is eliminated. The results show that none of the models is significant ($p > 0.05$) in explaining the relationship between executives' remuneration components and ROE during the GFC.

Table 3: Models Summary of Dependent Variable ROE_{GFC}

Model		Unstandardized coefficients		Standardized coefficients	T	Sig	ANOVA Sig	Adj R ²
		B	Std. Error	Beta				
1	(Constant)	.130	.030		4.341	.000	.340	.004
	Salaries GFC	1.248E-008	.000	.150	1.288	.200		
	Bonuses GFC	1.887E-009	.000	.079	.702	.484		
	Options GFC	-1.752E-008	.000	-.152	-1.598	.112		
	Other Rem GFC	-2.069E-010	.000	-.006	-.043	.966		
2	(Constant)	.130	.029		4.421	.000	.209	.011
	Salaries GFC	1.223E-008	.000	.147	1.613	.109		
	Bonuses GFC	1.817E-009	.000	.076	.847	.398		
	Options GFC	-1.744E-008	.000	-.151	-1.621	.107		
3	(Constant)	.128	.029		4.377	.000	.148	.013
	Salaries GFC	1.342E-008	.000	.161	1.805	.073		
	Options GFC	-1.496E-008	.000	-.129	-1.447	.150		
4	(Constant)	.125	.029		4.264	.000	.185	.005
	Salaries GFC	9.104E-009	.000	.110	1.331	.185		
5	(Constant)	.158	.016		9.659	.000		.000

Using ROA_{GFC} as the dependent variable, the models become significant at $p < 0.05$ after eliminating *bonuses* from model-1 (Table 4) for having the highest p value ($=0.722$). Due to having insignificant independent variables ($p > 0.05$) in each model, systematically *other remuneration* ($p=0.529$) and *salaries* ($p=0.122$) have been reduced from model-2 and model-3 respectively. Thus, the only significant remuneration component, *options*, remains in model-4 (in Table 4), which is statistically significant ($p=0.021$) but explains only 2.9 per cent (adjusted R-square = 0.029) of the change in ROA.

The coefficient of *options* is also very low and negative, indicating association of lower ROA and increased options during the GFC. Lower adjusted R^2 for the model can be justified by not including other control variables which directly affect the performance measures.

Table 4: Models Summary of Dependent Variable ROA_{GFC}

Model		Unstandardized coefficients		Standardized coefficients	T	Sig	ANOVA Sig	Adj R ²
		B	Std. Error	Beta				
1	(Constant)	.070	.013		5.204	.000	.085	.029
	Salaries GFC	7.205E-009	.000	.190	1.650	.101		
	Bonuses GFC	4.326E-010	.000	.040	.357	.722		
	Options GFC	-1.342E-008	.000	-.255	-2.717	.007		
	Other Rem GFC	-1.553E-009	.000	-.095	-.718	.474		
2	(Constant)	.070	.013		5.240	.000	.044	.035
	Salaries GFC	6.810E-009	.000	.179	1.617	.108		
	Options GFC	-1.286E-008	.000	-.244	-2.755	.007		
	Other Rem GFC	-1.091E-009	.000	-.067	-.631	.529		
3	(Constant)	.072	.013		5.438	.000	.021	.039
	Salaries GFC	5.205E-009	.000	.137	1.554	.122		
	Options GFC	-1.292E-008	.000	-.245	-2.775	.006		
4	(Constant)	.087	.009		9.561	.000	.021	.029
	Options GFC	-1.002E-008	.000	-.190	-2.338	.021		

We then used the third accounting-based performance measure, ROI_{GFC} , as the dependent variable. Systematically each independent variable is eliminated from the model. Again, similar to the case of ROE_{GFC} , *ANOVA Sig* values shows that none of the models is significant ($p > 0.05$) in explaining the relationship between executives' remuneration components and ROI during the GFC period.

Overall the analysis on the association of executives' remuneration with accounting-based firms' performance measures shows that only *options* was significantly related to ROA during the GFC, where the correlation was very small and negative.

Market-Based Firm's Performance Measures

Considering the highest p-value of each independent variable, systematically independent variables are removed to produce a model with PER as the dependent variable without insignificant independent variables. None of the models is significant (since $p > 0.05$) and the models explain less than 1% of the changes in PER due to changes in executives' remuneration components. This indicates that the PER is not significantly associated with executive remuneration during the GFC period.

On the contrary, we find all models are significant ($p < 0.05$) in explaining the relationship between P-BV and executives' remuneration components. Although we find the first model significant ($p=0.023$), we refine the model to eliminate independent variables which are not significant within the model. Considering p-values (>0.05), *other remuneration* ($p=0.605$) and *bonuses* ($p=0.355$) are eliminated from model-2 and model-3 respectively. We find a significant model with two independent variables – *salaries* with a negative coefficient and *options* with a positive coefficient. This implies that a decrease in salaries and increase in options during the GFC period is associated with higher P-BV for Australia's top 200 companies.

In testing the impact of executives' remuneration components on EPS during the GFC period, we again find all models are significant ($p=0.000$). However, after eliminating *options* ($p=0.988$) and then *salaries* ($p=0.173$), we find *bonuses* and *other remuneration* in the final significant ($p=0.000$) model, which explains 33.4 per cent (adj. R-square = 0.334) of the relationship. Having a positive coefficient in both cases indicates that the EPS was positively associated with an increase in *bonuses* and *other remuneration* during the GFC period.

Finally, we find a significant ($p=0.000$) relationship between dividend yield (DY) and the components of executive remuneration (Table 5). While *salaries* and *bonuses* have positive coefficients, *options* and *other remunerations* have negative and relatively lower coefficients.

Therefore, it is not the change in total board remuneration, but the change in each component of the total executive remuneration that needs to be analysed to predict the expected change in dividend yield.

Table 5: Models Summary of Dependent Variable DY_{GFC}

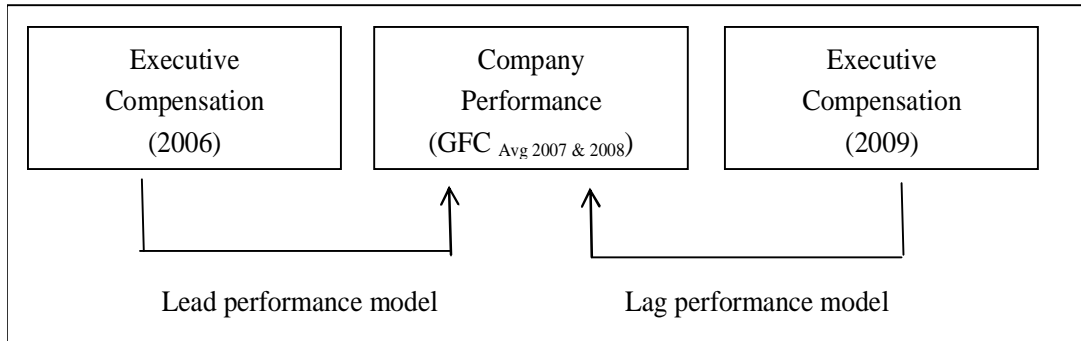
Model		Unstandardized coefficients		Standardized coefficients	T	Sig	ANOVA Sig	Adj R ²
		B	Std. Error	Beta				
1	(Constant)	.025	.004		5.879	.000	.000	.135
	Salaries GFC	6.610E-009	.000	.519	4.783	.000		
	Bonuses GFC	9.776E-010	.000	.266	2.550	.012		
	Options GFC	-4.030E-009	.000	-.228	-	.011		
	Other Rem GFC	-1.815E-009	.000	-.331	2.577	.009		
					-			
					2.651			

Analysing the components of executive remuneration and company performance measures during the GFC indicates that market-based performance measures, except PER, are significantly related to the components of remuneration. While increasing executives' *salaries* leads to declining profit to book-value, it improves dividend yield. On the contrary, increasing *options* improves profit to book-value but reduces dividend yield. *Bonuses* affect both EPS and DY positively. However, increasing *other remuneration* generates higher EPS but lower DY. Such mixed impacts make it difficult to predict the expected change in performance measures only by studying the change in total board remuneration.

4.3 Sensitivity Analysis

In this section we examine the cause and effect relationship between executive remuneration and company performance. The effectiveness of rewarding with remuneration is not always reflected immediately in company's performance. Therefore, lag analysis is used to examine the present year's performance with the prior year's (T-1) remuneration, while a lead model examines current year's performance with the subsequent years' (T+1) remuneration.

Figure 2: Lag and Lead Relationship between Executive Compensation and Company Performance



4.3.1 Lead Analysis

This section discusses the correlation between executives' remuneration (2006) and lead company performance ($GFC_{Avg2007\&2008}$) by assessing the relationship between executives' remuneration during the current year and company performance during the following year (Figure 3). This lead analysis has been done to identify the relationship between executives' remuneration in 2006 and company performance during the GFC.

Accounting-Based Company Performance

In identifying the effect of pre-GFC executives' remuneration on accounting-based company performance measures like ROE, ROA and ROI during the GFC, this study finds no significant model to explain the changes in ROE_{GFC} due to the changes in executives' remuneration components of pre-GFC remuneration. This is similar to our findings on the relationship between executives' remuneration and company performances during the GFC.

Similar to our findings during the GFC, the lead analysis shows that ROA_{GFC} is also significantly related ($p=0.040$) to *options* of 2006 with a negative coefficient. The model also shows that *salaries* have a positive coefficient ($p=0.009$). Furthermore, ROI_{GFC} is not significantly related to any of the components of executives' remunerations of 2006. This finding is also very similar to our findings during the GFC.

The findings in the lead analysis support previous findings that during the GFC accounting-based performance measures like ROE and ROI are not significantly related to executive remuneration components and only ROA are significantly related to *options* with negative a coefficient.

Market-Based Company Performances

In analysing the relationship between executives' remuneration components during 2006 and market-based performance measures during the GFC, we find no significant model to explain the relationship between PER_{GFC} and executives' remuneration. This finding is also very similar to the findings during the GFC.

This lead analysis also shows that the *salaries* component during 2006 is significantly related to the $P-BV_{GFC}$ with negative coefficient. This result is similar to the finding with respect to the salaries component during the GFC. However, the *options* component during 2006 has been eliminated since it does not being significantly affect $P-BV_{GFC}$, though *options*_{GFC} is significant.

While *bonuses* and *other remunerations* were significant predictors of EPS_{GFC} during the GFC, the lead analysis shows that *salaries* and *bonuses* during 2006 were positively related to changes in EPS_{GFC} .

Though all four components of executives' remunerations were significantly related to the changes in DY , we find only *salaries* and *options* during 2006 explain the changes in DY_{GFC} significantly with positive and negative coefficients respectively.

4.3.2 Lag Analysis

This section reports on the relationship between company performance ($GFC_{Avg2007\&2008}$) and subsequent year executives' remunerations (2009). The objective of this analysis is to examine whether executives are rewarded based on previous year company performance.

Accounting-Based Company Performances

The results indicate that none of ROE_{GFC} , ROA_{GFC} or ROI_{GFC} is significantly related to any of the components of executives' remuneration in 2009. This means that executives' remuneration changes in 2009 cannot be justified by the accounting-based performance achieved during the GFC. Overall, executives' remuneration is not sensitive to previous accounting-based performance measures.

Market-Based Company Performances

Similar to accounting-based performance measures, this study finds that PER_{GFC} is not significantly related to any of the lagged components of executives' remuneration in 2009, meaning that executives' remuneration changes in 2009 cannot be justified by the PER achieved during the GFC. In addition, the findings show that $P-BV_{GFC}$ is significant ($p=.145$) and negatively related to only executives' *salaries* in 2009, meaning that executives with increased salaries in 2009 are associated with decreased price to book value during the GFC and vice-versa.

In respect of the other two market-based performance measures analysed in this study, the results indicate that the *bonuses* and *other remuneration* of executives in 2009 are significantly ($p=.000$ and $p=.016$) and positively related to EPS_{GFC} in a significant ($p=0.049$) model that explains 24 per cent of the relationship. Whereas, executives' *salaries* and *options* in 2009 are significantly ($p=.000$ and $p=.047$) related to DY_{GFC} and explain 8.3 per cent of the relationship. Hence, *salaries* have a positive coefficient, while *options* have a negative coefficient.

5. Overall Findings at a Glance

Table 6 summarizes the overall findings of this study with respect to the significant relationships observed in the OLS regression models. Two accounting-based performance measures, ROE and ROI, are not significantly related to any type of executives' remuneration paid either during the GFC or in pre or post GFC years. The other accounting-based performance measure, ROA, is only significantly and negatively related to executives' *options* during the GFC. In lead analysis, ROA_{GFC} is also negatively related to the executives' *options* paid in the previous year 2006 but positively related to executives' *salaries* paid in the last year.

ROA is not significantly related to any type of remuneration paid to the executives in the subsequent year 2009.

Table 6: at a Glance - Significant Components of executives' Compensations and Company Performance during the GFC

	Accounting-based performance measures			Market-based performance measures			
	ROE	ROA	ROI	PER	P-BV	EPS	DY
GFC Models	None	(Options)	None	None	(Salaries) Options	Bonuses Other Rem	Salaries Bonuses (Options) (Other Rem)
Lead Models	None	Salaries 06 (Options 06)	None	None	(Salaries 06)	Salaries 06 Bonuses 06	Salaries 06 (Options 06)
Lag Models	None	None	None	None	Salaries 09	Bonuses 09 Oth Rem 09	Salaries 09 Options 09

* Components in brackets have negative coefficients.

Market-based performance measures, excluding PER, are more sensitive to executives' remuneration than accounting-based performance measures. While salary increase during the GFC or in the previous year is expected to reduce $P-BV_{GFC}$, this study also finds that higher P-BV during the GFC is associated with higher salaries to executives in the subsequent year. Executives' options during the GFC are also positively related to $P-BV_{GFC}$. This study finds a significant positive relationship between EPS_{GFC} and *bonuses* and *other remuneration* to executives paid during the GFC or in the next year. In addition, *salaries* and *bonuses* to executives are positively associated with the EPS of the companies. However, DY_{GFC} is expected to increase in response to higher *salaries* and lower *options* during the GFC and in the previous year. Additionally, increasing *bonuses* and decreasing *other remuneration* during the GFC are expected to be associated with higher DY_{GFC} . The results show that higher DY_{GFC} is associated with increased executives' *salaries* and *options* in the next year.

The results from this research are found to be mixed. Carton and Hofer (2006) examined 1045 articles from 1996 to 2001 and found that most studies used only one or two performance variables, while for this research, seven performance variables are measured. This shows that remuneration is not sensitive to every performance measure and it is difficult to predict which variable is the right one to investigate. This is one of the reasons for having ambiguous results.

In general, salaries, bonuses, options and other remuneration have no significant relationship with accounting-based company performance using the base year regression analysis. However, there is a significant relationship between salaries and market-based performance measures. In theory, salaries are still believed to be an independent remuneration component because they are fixed and will not be affected by how well or otherwise companies perform. Similarly, most of the components of other remuneration, such as superannuation, allowances, termination payments and so on, are also independent of company performance. However, in practice, salaries and other remuneration will still be affected slightly by company performance. Perhaps there is no target for executives to achieve in order to increase their salaries or other remuneration but if performance is poor, they may still face the risk of having their salaries and other remuneration reduced as a minor form of punishment (see for example Brett 2010) or even being sacked by the company. This research found that the only performance variable which is significant and positively related to other remuneration is EPS. This result is supported by Stapledon (2004) who concluded that superannuation has only a very tenuous relationship with company performance

From the descriptive analysis, the mean for dividend yield actually increased from \$0.03 to \$0.05 in 2008. This shows that salaries and dividend yield are moving towards the same direction during, pre and post the GFC. There are two explanations for this situation. First, the dividends declared are based on different performance hurdles apart from net income, such as future growth. Second, the GFC made it difficult for companies to raise funds from debt and it was risky to do so in any case. Therefore, companies that declared higher dividends tried to stop their existing shareholders from selling their shares. Although in both theory and practice this is illegal it is undeniable that some executives used this strategy to protect their companies.

During the GFC, bonuses are significantly and positively related to EPS and DY. This is because large Australian companies, such as BHP Billiton, Woolworths, CSL, St. George Bank, Leighton Holdings and Harvey Norman linked their remuneration plan to EPS and total shareholder return (TSR), which involve dividend and changes in share price (Curry 2003; Productivity Commission 2009; Brett 2010). Executives are required to increase the company's EPS and meet certain targets in TSR in order to have their bonuses and other remuneration increased. Since executives' remuneration is linked to EPS during the crisis, there is a possibility that executives will buy back shares to increase EPS. It was found that during the GFC, there is a significant negative relationship between salaries and P-BV and a significant positive relationship between options and P-BV and DY.

Generally company performance cannot reflect the effectiveness of the given remuneration immediately during a year; lead analysis has been carried out to better understanding the pay-for-performance relationship. Sensitivity analysis results show mixed results. With a marginal difference, the relationship of lead models appears to be the same as lag models, whereby salaries, bonuses, options and other remunerations are not related with ROE, ROI and PER. Salary had a significant positive relation with ROA, EPS and DY in the lead models but a significant negative relation with P-BV.

It is essential to comprehend the relationship between GFC periods. This is because some companies such as Telstra still link their executives' share options to ROI (Telstra Corporation Limited 2008). As a comparison between the results from regression analysis and lead analysis, the current measures show a more powerful relationship between remuneration and performance than lagged performance measures. Although options and bonuses are believed to be performance-based remuneration, this research found that options are not as sensitive as bonuses to company performance because generally there are no performance hurdles for options (Stapledon 2004).

Overall, the results show that executives' remuneration is more sensitive to market-based measures than accounting-based measures, particularly EPS during the crisis. According to the R^2 , the EPS explained 34.7 per cent of its relationship with salaries, bonuses and options.

The correlations between executives' salaries, bonuses, options and other remuneration and company performance during the financial crisis fall between 10.7 per cent and 53.4 per cent with a significance level of 95% and 99%. In general, sensitivity analysis, lead and lag analysis also indicate that executives' remuneration is more sensitive to EPS before, during and after the global financial crisis.

Therefore, the findings of this research are consistent with the research of the Productivity Commission (2009) and provide justifications for implementing the 'say on pay rule in Australia. There is a positive and significant relationship between Australian executives' remuneration and market performance during the GFC while controlling the external factors that will influence this relationship. This provides evidence that shareholders closely monitor the performance of the executive and market price reflects accordingly.

6. Conclusion

The first objective of this paper was to examine the extent of the association between executives' remuneration and company performance during the GFC. The research finds that executives' remuneration (salaries, bonuses, options and other remunerations) tend to be more sensitive to market-based performance measures as compared to accounting-based performance measures during the GFC. Specifically, these remuneration variables are more significant and positively linked to EPS and DY.

It is difficult for a company's performance to reflect an executives' remuneration immediately. Even if executives' remuneration changed in the current year, it may not be able to be reflected immediately in a company's performance. It requires time for the management team to make changes to the management systems and processes that will influence executives' remuneration and company performance. This research finds that the results from the regression analysis and lag and lead analysis were similar, in that the sensitivity between executives' remuneration and market-based performance measures, especially EPS, are higher than the accounting-based performance measures.

This research shows that executives of Australian companies have at least attempted to align their interests to their shareholders' interests by linking their remuneration to market-based performance measures during the GFC.

If monitoring and perfect contracting work inefficiently, providing remuneration to executives seems to be the best solution to reduce the agency problem in Australia when it is set against appropriate hurdle targets. Since most companies such as BHP Billiton, Woolworths, Harvey Norman and others linked their remuneration to EPS, this demonstrates that Australia's reward system is quite effective because executives' remunerations are based on performance during the GFC. The findings of this research suggest that companies may use market-based performance measures, especially EPS as their performance hurdle for executives' remuneration. Accounting-based performance measures may not be suitable to determine executives' remuneration as it can be manipulated by management. Therefore, the introduction of 'say on pay' rule is appropriate in Australian context (which is currently reflected through the market performance) as the shareholder will have right to vote for or against of the remuneration of the executive directors.

For future research, other remunerations measures, such as share or termination payments can be examined individually to determine further pay-for-performance relationships. Other performance measures such as company size, EVA, IRR, Tobin's Q, and Total Shareholder Return (TSR) can be used. It is possible that these variables will result in different pay-for-performance relationships (see for example Firth et al. 1996; Yermack 1996; Lehn & Makhija 1997; Stapledon 2004; Windsor & Cybinski 2009). In addition, control variables that include executives' age, gender and race can be introduced to enhance the explanatory power of the results. Some prior research, such as Stathopoulos, Espenlaub and Walker (2004), and Kulich et al. (2008) found that such variables do affect the relationship between executives' remuneration and company performance. Finally, different analysis tools such as structural equation modelling can be used to test the pay-for-performance relationship because different outcomes may emerge.

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