

國立台灣大學管理學院會計學研究所



碩士論文

Graduate Institute of Accounting

College of Management

National Taiwan University

Master Thesis

績效權益薪酬的衡量期間與審計公費

Performance Horizon of Performance-contingent

Equity Awards and Audit Fees

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中華民國 103 年 6 月

June, 2014

## 致謝



首先，整篇論文的完成要非常感謝許文馨老師，從論文題目的尋找到資料的蒐集與分析，以及最後內文的撰寫，老師都從旁給予許多的教導與協助，適時點醒我、修正方向，讓我的論文能夠完成並且完整。也十分感謝口試委員—杜榮瑞老師及林孝倫老師，給了我許多建議並讓我從不同的觀點做思考，真的很謝謝他們。

在為論文煩惱、忙碌、奮鬥的過程中，更是感謝身邊的家人以及朋友，爸媽們總是能適時地包容我並鼓勵我，朋友們則能夠互相分享、彼此協助，讓我在昏天暗地時仍然能夠找到出口，並且持續向前邁進。

論文的完成，不僅僅是學識上的增長，在心靈上更是一種不斷自我挑戰的過程，不僅如此，也從中學習到許多待人處事的技巧，讓我深感獲益良多。

佩璇

民國一百零三年六月

## 摘要



本文主旨在研究績效權益薪酬的衡量期間與審計公費間的關係。過去文獻指出，短期紅利計畫和管理者間的盈餘操縱具有正向關係(e.g. Healy, 1985; Gaver et al., 1995)，短期績效指標也因容易導致管理階層為了極大化自身的利益，而做出傷害公司長期發展的決策，長久以來為人所詬病(e.g., Bushman et al., 1996; Ittner et al., 1997)。近年來，權益薪酬的使用越趨廣泛，許多文獻開始探討權益薪酬帶來的動機和盈餘管理間的關係(e.g. Bergstresser and Philippon, 2006; Burns and Kedia, 2006; Armstrong, Larcker, Ormazabal, and Taylor, 2013)。然而，鮮少文獻探討權益薪酬導致盈餘管理可能是因為衡量期間長短不同所導致。因此，本研究結合審計公費和薪酬制度的相關文獻，探討是否對審計人員而言，短衡量期間的權益薪酬，會提高盈餘管理的風險，進而使公費增加。本研究結果指出，當管理階層的績效權益薪酬中，有屬於短期衡量的部分，對審計人員而言，其盈餘管理的風險較高；而長期績效指標的個數，則和審計公費成反向關係。

**關鍵字：**衡量期間、績效權益薪酬、審計品質、執行長薪酬

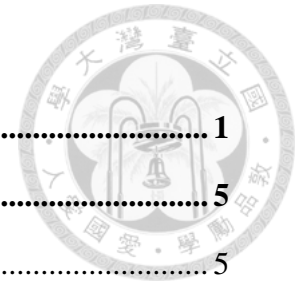


## Abstract

This study examines how performance horizon of CEO's performance-contingent equity compensation affects the risk assessment of auditors, in turn, affect audit fees. Prior literatures (e.g. Healy, 1985; Gaver et al., 1995) indicate that short-term performance-contingent awards such as bonus plans, make higher incentives of earnings management. Recent years, many studies (e.g. Bergstresser and Philippon, 2006; Burns and Kedia, 2006; Armstrong, Larcker, Ormazabal, and Taylor, 2013) find a positive relation between equity incentives and financial misreporting. However, they do not examine whether the results can depend on the performance period of equity incentives. In addition, many studies (Gul et al., 2003; Bédard and Johnstone, 2004) show that auditors charge higher audit fees from clients with lower reporting quality and a higher likelihood of financial misreporting. Therefore, I combine these two strands of literatures to examine whether performance-contingent equity awards are related to audit fees. First, I examine whether the risk of misreporting is higher if there is any performance-contingent equity award that have a short performance period, which means that the performance period is within one year, and the results support my hypothesis. I further examine the number of long-term performance measures and audit fees, and the results indicate a negative association.

**Keywords:** Performance horizon, Performance-contingent equity award, Audit fee, CEO compensation

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# 1. Introduction

In the year of 2012, the Public Company Accounting Oversight Board (PCAOB) released a call that auditors carefully evaluate and consider client executive compensation practices. In PCAOB Release No. 2012-001, the proposed standard and proposed amendments requested the auditors to obtain an understanding of a company's financial relationships and transactions with its executive officers that is sufficient to identify risks of material misstatement<sup>1</sup>.

The Release requires auditors to perform procedures to obtain an understanding of the company's financial relationships with its executive officers. It also states that the performance procedures should include but are not limited to (1) reading employment and compensation contracts and (2) reading proxy statements and other relevant company filings with the U.S. Securities and Exchange Commission (SEC) and other regulatory agencies that relate to the company's financial relationships and transactions with its executive officers<sup>2</sup>. The PCAOB believes that executive compensation can be related to risks of material misstatements.

In response to the PCAOB release, this thesis examines how auditors respond, in terms of audit fees, to the performance period in CEO performance-contingent equity compensation. I examine whether the performance periods are associated with audit fees. I build on prior studies arguing that shorter performance is likely to induce managers to be less risk averse and engage in financial misreporting. The higher likelihood of financial misreporting, in turn, is likely to affect audit risks and audit fee.

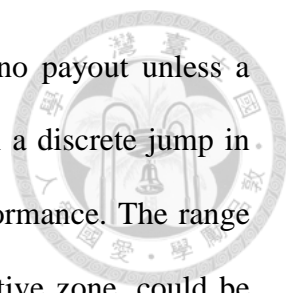
In a typical performance-contingent equity grant, the performance period specifies the length over which performance is evaluated to determine payout. A typical payout

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<sup>1</sup> PCAOB Release No. 2012-001, February 28, 2012, Page 3

<sup>2</sup> PCAOB Release No. 2012-001, February 28, 2012, Appendix 4- Additional Discussion, Page A4-41





structure of performance-contingent equity award is that there is no payout unless a minimum level of performance (hurdle, threshold) is achieved with a discrete jump in payout at the hurdle. It is usually capped at an upper level of performance. The range between the lower and upper performance thresholds, called incentive zone, could be linear, convex or concave. As a performance-contingent equity award is intended for long-term purpose, one will expect the corresponding performance period for the executives should align with the spirit of measuring their “long-term” performance and likely to be longer than the typical one year cycle of the short-term cash bonus. For instance, Institutional Shareholder Services (ISS), which advises mutual funds and other large shareholders how to vote in corporate elections, questioned Alcoa Inc., aluminum producer, on linking equity awards to just one year of performance and recommended “no” votes on Alcoa’s executive pay in 2011<sup>3</sup>.

My study is important for three reasons. First, a large literature finds a positive relation between managers’ equity incentives and financial misreporting (e.g. Burns and Kedia, 2006; Bergstresser and Phillippon, 2006; Armstrong, Larcker, Ormazabal, and Taylor, 2013)<sup>4</sup>. However, they do not examine whether the results can depend on the performance period of equity incentives.

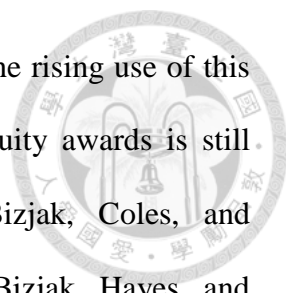
Second, performance-contingent equity grants have become a key form of long-term incentive compensation for executives in U.S. firms<sup>5</sup>. Compared to traditional time-vested equity awards, performance-contingent equity compensation bases the

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<sup>3</sup> Joann S. Lublin. Firms Feel ‘Say on Pay’ Effect. *The Wall Street Journal*. May 2, 2011.

<sup>4</sup> Burns and Kedia (2006) find that the more sensitive CEO pay is to firm performance (i.e. pay delta), the more frequent earnings restatements are. Bergstresser and Phillippon (2006) find evidence of a positive relation between the CEO’s portfolio delta and the magnitude of the firm’s discretionary accruals. Armstrong, Larcker, Ormazabal, and Taylor (2013) find that the sensitivity of wealth to changes in risk (i.e. vega) is associated with accrual manipulation and accounting restatements. In contrast, they find no evidence that the sensitivity of changes in manager’s wealth to stock price (i.e., delta) is associated with discretionary accruals.

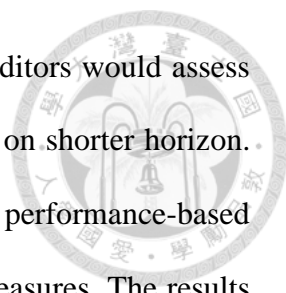
<sup>5</sup> Compensation consulting firm F.W. Cook (2008, 2011) reports that 72% of the top 250 U.S. firms granted performance-contingent equity awards in 2011, a figure that rose from 44% in 2006.



vesting of equity awards on explicit performance criteria. Despite the rising use of this compensation, the related literature on performance-contingent equity awards is still limited, with the exception to some studies (e.g., Bettis, Bizjak, Coles, and Kalpathy, 2013; De Angelis and Grinstein, 2012; Kuang, 2008; Bizjak, Hayes, and Kalpathy, 2013).

Third, existing literature on the performance-based compensation contracts largely concentrates on cash bonuses (e.g., Lambert and Larcker, 1987; Ittner et al. 1997; Core et al. 2003; Indjejikian et al. 2009). The performance horizon is often irrelevant for cash bonuses, which are typically granted on an annual basis. In addition, the proportion of cash compensation relative to equity compensation is much smaller. Within equity compensation, performance-contingent equity compensation provides more incentives for executives than time-vested equity grants (Kuang, 2008), but the former also exposes to higher risk than the latter by linking the vesting of compensation to future performance instead of just the passage of time. Thus, I examine whether the performance horizon of performance-based equity compensation may indicate the risk of misreporting.

My paper integrates two strands of the literatures, which are the literatures on how CEO's compensation contracts affect the potential of earnings management and the literatures on the influence of audit fees when auditors facing higher misreporting risk. I hand-collect detailed data of CEO compensation from proxy statements (DEF 14A) of S&P 1500 for fiscal years 2010-2011. I adopt the audit fee model developed by Simunic (1980) and examine whether the audit fee is higher if the firm has any performance-contingent equity award that has performance period shorter than 12 months. A lot of studies (e.g., Ittner et al, 1997) criticize that the over-emphasis on short-term performance measures is more likely to lead to earnings management and



harm firm's future value. The results support my expectation that auditors would assess higher risk if performance-contingent equity compensation is based on shorter horizon. For additional analysis, I also measure the performance horizon of performance-based equity compensation using the number of long-term performance measures. The results support that on average, the more number of performance measures based on long-term measures, the lower the risk of misreporting in current year.

The paper makes several contributions to the literature. First, this paper integrates the executive compensation literature with the audit fee literature. The empirical evidence linking the two strands of literatures is rare, although the two literatures are individually rich. Second, as the increasing attention has been paid to the consequences of equity compensation granted to managers, there are few literatures examine the effects of performance horizon. The results in this paper support that if there is a performance-contingent equity award with short-term performance period, the risk of earnings management in current year is higher for auditors. Finally, the paper responds to the concerns by PCAOB that compensation incentives for executive officers to meet financial targets can result in risks of material misstatement. These concerns are justified in terms of auditors' assessments of audit risks.

The remainder of the paper is organized follows. Section 2 provides a review of the related literature. Section 3 develops the hypothesis of the tests. Section 4 describes the research designs. Section 5 provides empirical results. Section 6 provides additional tests. Finally, section 7 is my conclusion.



## 2. Literature Review

### 2.1 PCAOB No. 2012-001

During the year of 2012, the PCAOB has released a proposed auditing standard, PCAOB No. 2012-001, proposing a new auditing standard for related party transactions and other amendments to auditing standards regarding significant unusual transactions. In this release, the proposed standard and proposed amendments address the following areas for auditors: (a) evaluating a company's identification of, accounting for, and disclosure of relationship and transactions between the company and its related parties<sup>6</sup>; (b) identifying and evaluating a company's accounting and disclosure of its significant unusual transactions<sup>7</sup>; and (c) obtaining an understanding of a company's financial relationships and transactions with its executive officers that is sufficient to identify risks of material misstatement.

My research focuses on the third proposal and tends to examine the effect of executive compensation on the quality of financial reporting, which effect auditor's risk assessment of a company and further react on audit fees. One main reason is that PCAOB Release 2012-001 states that:

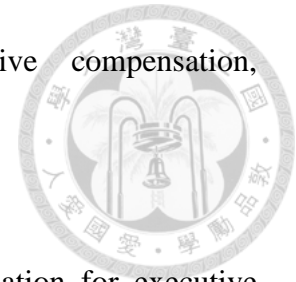
“Incentives and pressures for executive officers to meet financial targets can result in risks of material misstatement to a company's financial statements. Such incentives and pressures can be created by a company's financial relationships and

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<sup>6</sup>Transactions with related parties can pose significant risks of material misstatement due to their substance might differ materially from their form. In addition to its complicated measurement and recognition issues, in some instances, related party transactions have been used to engage in financial statement fraud and asset misappropriation. Therefore, the auditor's evaluation towards a company's related parties is important to protect the investors' interests and to prepare informative, accurate, and independent audit reports.

<sup>7</sup>Similarly, significant transactions that are outside the normal business or that appear to be unusual due to their timing, size, or nature, which we called significant unusual transactions, can also create complex accounting and financial statement disclosure issues.

transactions with its executive officers (e.g., executive compensation, including perquisites, and any other arrangements).”<sup>8</sup>



“Understanding how a company has structured its compensation for executive officers can assist the auditor in understanding whether such compensation arrangements affect the assessment of the risks of material misstatement.”<sup>910</sup>

Under the definition of Exchange Act, Rule 3b-7, the executive officers include registrant’s president, any vice president of the registrant in charge of a principle business unit, division, or function (such as sales, administration or finance), any other officer who performs a policy making function. For the third proposed amendment, auditors are required to perform procedures that include but not limited to (1) reading employment and compensation contracts and (2) reading proxy statements and other relevant company filings with the U.S. Securities and Exchange Commission (SEC) and other regulatory agencies that relate to the company’s financial relationships and transactions with its executive officers.

## **2.2 Audit fees**

### **2.2.1 Audit pricing**

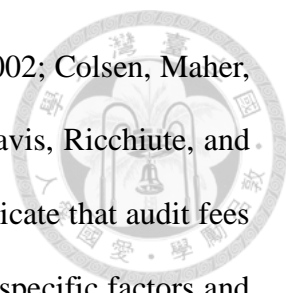
The determinants of audit fees on a competitive audit market were examined first by Simunic(1980),and later by several other researchers (e.g., Abbott, Parker, Peters,

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<sup>8</sup> PCAOB Release No. 2012-001, page 2, paragraph 4

<sup>9</sup>PCAOB Release No. 2012-001, Appendix 4, page A4-42

<sup>10</sup> According to a May 2010 academic study that examined in detail SEC accounting and auditing enforcement releases from 1997 to 2008, the chief executive officer or chief financial officer was named in 89 percent of the enforcement actions involving fraudulent financial reporting. See M. Beasley, J. Carcello, D. Hermanson, and T. Neal, “Fraudulent Financial Reporting 1998-2007 An Analysis of U.S. Public Companies.”



and Raghunanda, 2003; Carcello, Hermanson, Neal, and Riley Jr., 2002; Colsen, Maher, Broman, and Tiessen, 1988; Creswell, Francis, and Taylor, 1995; Davis, Ricchiute, and Trompeter, 1993; Hay, Knechel, and Wong, 2006). These studies indicate that audit fees are determined by the auditor's efforts during the engagement, firm-specific factors and the level of auditor's accepting audit risk. Audit risk is the risk of failing to detect and report a material accounting discrepancy.

On one hand, regulatory risk, litigation risk and reputation risk are three types of risk that determine the maximum overall audit risk an auditor is willing to accept. Regulatory risks, the risk of regulators investigating the firm and its auditor, are determined by firm-specific and non-firm-specific factors (Colsen et al., 1988). Litigation risk refers to the risk of clients and auditors being sued by interested stakeholders (Simunic and Stein, 1996), and reputation risk is the possibility of future restatements and revelations of inadequate audits or auditor impropriety impairing auditor reputation and its value to future clients (Craswell et al., 1995). If the standard auditing procedures do not allow auditors to gather sufficient appropriate audit evidence to lower the audit risk to an acceptable level, auditors would charge higher audit fees to compensate for potential future loss including increased litigation risk (Simunic and Stein, 1996).

On the other hand, the audit risk is composed of the likelihood that environmental factors result in a material error before considering the quality of internal controls (inherent risk), the likelihood that the internal controls will not prevent or detect a material error (control risk), and the likelihood that the audit procedures will fail to detect a material accounting discrepancy (detection risk), since auditors design audits to reduce audit risk below a given level.

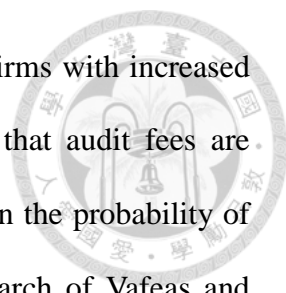
$$AR = IR \times CR \times DR$$

Therefore, if the firm's internal risk and/or control risk are higher than acceptable audit risk, the auditor can only decrease its detection risk and exert more effort, thus with higher audit fees.

To cover the extra costs incurred by exerting higher audit effort and /or allocating more professional staff, auditors charge larger fees for higher risk clients (Simunic and Stein, 1996). Auditors may also charge a risk premium fee beyond that needed to cover the extra costs incurred, to compensate for the additional risks assumed (Abbott et al., 2006). Prior literatures indicate that audit fees are larger in firms having higher inherent and /or control risk (Davis et al. 1993; O'Keefe, Simunic, and Stein, 1994; Gul and Tusi, 2001). The development of the brand name of auditors is argued to be costly, in turn, named auditors face higher reputation risk when facing audit failure, and therefore to increase audit fees (Craswell et at., 1995). It also shows a positive association between audit fees and litigation risk arising from a client's financial reporting quality (Bédard and Johnston, 2004; Abbott et al. 2006).

### **2.2.2 Audit fees and the risk of misreporting**

Prior studies have examined the association between the risk of client misreporting and audit fees. Studies indicate that auditors incorporate litigation risk by supplying higher audit effort or charging higher fees to clients with higher risk of misreporting. Simunic and Stein (1996) conclude that the U.S. evidence is generally consistent with audit firms increasing their fees when facing the litigation risk higher than usual. Gul et al. (2003) find a positive association between earnings management and audit fees. Bédard and Johnstone(2004) report that heightened earnings management risk increases planned audit effort and higher auditor billing rate. Hogan and Wilkins (2008) find that audit fees are higher for firms that disclose internal control deficiencies, suggesting that



auditors either increase their effort or charge higher premiums for firms with increased control and information risks. Kim, Park and Wier (2012) show that audit fees are inversely related to the client's reporting quality, since an increase in the probability of client misreporting increases the auditor's litigation risk. The research of Vafeas and Waegelien (2007) also suggest that billing rates are greater for audit clients with greater earnings manipulating risk and corporate governance risk.

### **2.2.3 Determinants in audit fee model**

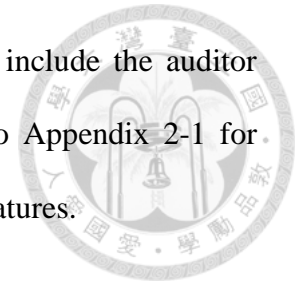
There is a substantial literature on audit pricing with Simunic (1980) among the earliest to provide theoretical and empirical evidence on the determinants of audit fees. These determinants may be broadly classified as client attributes, auditor attributes, and characteristics specific to the audit engagement (e.g. Gul, Chen, and Tsui, 2003; Hay, Knechel, and Wong, 2006; Chen, Gul, Veeraraghavan, and Zolotoy, 2013).

Much research focuses on client attributes, finding that audit fees are increasing in the client size (e.g., Simunic, 1980), risk (e.g., Stice, 1991), and complexity (e.g., Hackenbrack and Knechel, 1997). Client size is usually proxied for the natural logarithm of total assets. Firm risk often includes audit opinion, operating loss, discretionary accruals, whether the firm belongs to high litigation industry, restatement, stock return volatility, leverage ratio, return on assets, the ratio of receivables and inventory to total assets, quick ratio, and so on. Firm complexity includes the number of business segments, the number of subsidiaries, whether engage in acquisition of merger, foreign sales percentage, growth rate in sales, market-to-book ratio, and so on. (e.g. Chen et al., 2013; Gul, Chen, and Tsui, 2003; Goncharov, Riedl, and Sellhorn, 2013; Chen, Srinidhi, Tsang, and Yu, 2012; Ho and Kang, 2013)

Look into the attributes of auditors, many studies consider the auditor quality,



proxied for Big N or auditor specialization. Other characteristics include the auditor tenure, non-audit fees, and client's fiscal year-end. Please look to Appendix 2-1 for detailed description of determinants in audit fee model by prior literatures.

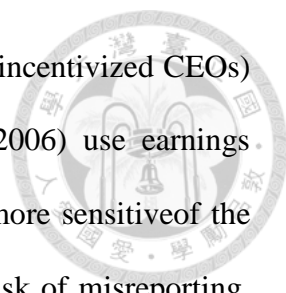


## **2.3 Performance-contingent Equity Awards**

### **2.3.1 Equity compensation and earnings management**

According to Evans, Gao, Hwang, and Wu (2014), equity awards play an important role on executives' compensation. It usually consists of restricted stocks (such as restricted stock units) or stock appreciation plans, and stock options. On average, the amount of the fair value of total equity awards is one to five times of the fixed salary and short-term cash bonus combined. In the 1960s, stock option holdings became a major component because more than 60% of the executives held options (Frydman and Saks, 2010). From 1980 to 2000, the number of stock options held by executives rose considerably. Some research (Murphy, 2002; Hall and Murphy, 2003) indicates that the explosion in option use is probably prompted by accounting rules that downplayed the cost of option compensation to the firm. At that time, most of the options are time-vested, which means that the option becomes vested after certain years, without considering performance outcomes.

Cheng and Warfield (2005) find a positive relation between managers' equity incentive, arising from stock-based compensation and stock ownership, and earnings management. However, Larcker, Richardson, and Tuna (2007) find no evidence that higher levels of equity compensation are associated with discretionary accruals. Bergstresser and Philippon (2006) proxy earnings management using discretionary accruals and measure CEOs' equity-based incentives using the sensitivity of equity-based awards to share price. The results show that companies whose overall



compensation is more sensitive to company share prices (i.e., more incentivized CEOs) have higher levels of earnings management. Burns and Kedia (2006) use earnings restatement as the measure of misreporting and also find that the more sensitive of the CEO's option portfolio to stock price (portfolio delta), the higher risk of misreporting. Armstrong, Larcker, Ormazabal, and Taylor (2013) find strong evidence that the sensitivity of wealth to changes in risk (portfoliovega) is positively associated with misreporting, but they do not find association between portfolio delta and earnings management.

### **2.3.2 Performance-contingent equity awards**

The trend towards performance-contingent awards in executive compensation has been driven by regulatory and legislative changes (FAS 123R and Dodd-Frank)<sup>11</sup> and growing influence of proxy advisors (Institutional Shareholder Services and Glass-Lewis), along with increasing concern by shareholders that traditional time-vested awards reward executives in a manner often unrelated to executive effort or abilities (Bizjak et al., 2013). For example, the changes in regulatory and legislative, such as the expensing requirement on option grants by FAS 123R of 2006, encourage the use of restricted stock awards. In addition, the requirement to clearly describe in both CD&A and in their communications with investors on how their executives' pay is linked to company performance encourages the use of performance-contingent equity awards (Evans et al., 2014).

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<sup>11</sup> FAS 123R: This Statement requires a public entity to measure the cost of employee services received in exchange for an award of equity instruments based on the grant-date fair value of the award (with limited exceptions). That cost will be recognized over the period during which an employee is required to provide service in exchange for the award—the requisite service period (usually the vesting period).

Dodd-Frank: The act purports to provide a rigorous standards and supervision to protect the economy and American consumers, investors and businesses. One of its highlight is about executive compensation and corporate governance. The act strengthens shareholder rights and gives them a say on pay and proxy access, and so on.



There are many features of performance-contingent awards:

### **A. Performance measures**

Performance-contingent awards require that one or more performance hurdles be achieved in order to earn the grant. The performance criteria for number of units vested are based on one or more accounting, stock price, and other hurdles, such as customer satisfaction (Bettis et al., 2013).

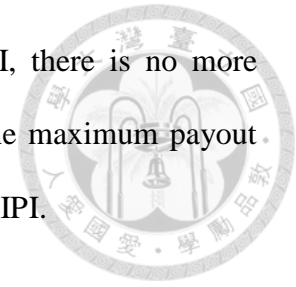
Take the 2011 compensation contract of 3M's CEO, George W. Buckley in Panel B of Figure 1, for example. The performance-contingent equity award refers to restricted stock units, the vesting condition of which is based on the performance of three measures, sales growth, ROIC, and sales growth from new product.

### **B. Thresholds**

The performance measure underlying performance-contingent grant consists of a threshold and a ceiling to limit the maximum grants. The target level is set between the threshold and ceiling. Failure to meet the performance conditions result in the forfeiture of the awards (Bettis, et al., 2013). To get a higher pay, executives will increase their effort to meet the predetermined performance target. Therefore, in contrast to traditional time-based vesting, performance-contingent provisions can accelerate or trigger vesting of equity compensation.

Figure 1 (or Appendix 3-1) shows the example of 3M's payout structure. For the performance measure "sale growth", the threshold criterion is -1.0% of the IPI (Industrial Production Index) and threshold payout is 20%. This means that if the sales growth does not exceed -1.0% of IPI, there is no payout in this performance criterion; however meeting -1.0% of IPI can earn 20% of payouts. Also, the target criterion is 0.5%, and target payout is 100%. Once CEO meets the target of its sales growth (0.5% of IPI), he/she can get 100% payout in this criterion. The max criterion is 2% and the

max payout is 200%. Since sales growth is capped at 2% of IPI, there is no more increase in payouts when the sales growth is above 2% of IPI. The maximum payout percentage is 200% of the pay when the sales growth reaches 2% of IPI.



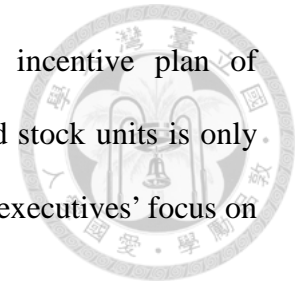
### **C. Long/short horizon**

While the original motivation of performance-contingent equity awards is to improve incentives for executives to align their interests with shareholders (e.g. Bettis et al. 2010; Kuang and Qin, 2009) and increase the firm value, the characteristics of these awards also potentially provide incentives to manipulate earnings in order to trigger the payout.

From a long-term perspective, Frydman and Saks (2010) indicate that from 1960s, the use of long-term incentive payments have a noticeable impact on managers' compensation gradually, such as the growing share of stock options and restricted stocks in compensation contract. At the same time, the other structural shift in the design of executive compensation is that time-vested conditions are replaced by performance-contingent conditions due to the rising complaints by corporate governance about a weak link between improvements in the economic performance of a firm and the compensation of managers (Gerakos, Goodman, Ittner, and Larcker, 2005).

I then look into the long-term incentive plan of 3M and Cameron's CEOs. I extract the information from proxy statement as shown in Appendix 3-3, each measures are recorded into three rows for different evaluation years. The columns of vest low and vest high represent the start and the end of the evaluation period from the grant month. The second column of Panel B in Figure 1 also summarize the period for the performance-based equity. The whole performance horizon of the restricted stock units in 3M last three years ( $35 - (-1) = 36$  months), which is longer than a typical one fiscal

year of short-term incentive plan. However, in the long-term incentive plan of Cameron's proxy statement, the performance period of its restricted stock units is only one year, which seems to contradict the pay's purpose of promoting executives' focus on long-term performance.

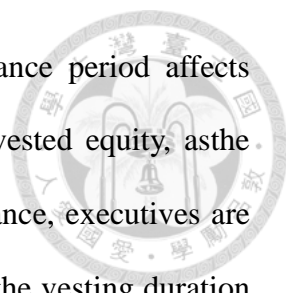


### **2.3.3 Empirical research on performance-contingent equity awards**

Kuang (2008) investigates the effects of performance-contingent stock options on the propensity of managers to engage in earnings management by using the largest 244 non-financial firms in the UK between 1997 and 2004. The evidence shows that managers engage more in earnings management when they hold larger proportion of their compensation in performance-contingent stock options.

Using USA data, Bizjak et al. (2013) examine the association between earnings management as measured with discretionary accruals and abnormal production costs and the likelihood whether a performance period of the performance-contingent equity awards expires in the year. They think that if the performance condition provides an incentive to manage earnings in order to trigger payout of the awards or increase the payout in the incentive zone, these incentives may be strongest in the year when the performance period expires. The results suggest that in the year that a performance-contingent equity award expires, the level of earnings management is significantly higher than in non-expiration years.

In addition, Gao et al. (2013) find that about one-fifth of S&P 500 industrial firms between 2006 and 2008 have chosen one-year period for their performance-based restricted share grants. The practice seems to contradict with the long-term incentive criteria. Evans et al., (2014) further examine the factors that affect choice of performance horizon in performance-contingent equity awards. Compared to the



vesting-duration (horizon) of time-vested equity awards, performance period affects executive actions more directly and powerfully. For performance-vested equity, as the amount of equity awards is directly linked to the reported performance, executives are accountable to their appraisal; however, for the time-vested equity, the vesting duration only affects the timing of equity grants. Based on a stylized sorting model, they relate the choice of performance periods with executive characteristics and find evidence that firms set short performance periods for inexperienced CEOs, but use long performance periods when measurement cost is high.

In the research of De Angelis et al. (2012), they collect information from proxy statement on the performance measures used in the performance-based awards of the CEO compensation contract in fiscal year 2007. They shed light on identifying the different types of performance measures, their relative weights, and their horizon in CEO performance-contingent award. The results show that firms with complex activities and large growth opportunities tend to tie a larger fraction of the award to market-based measures rather than accounting-based measures. In addition, larger firms tend to use long-term performance horizon. CEOs with long tenure tend to receive a larger fraction of performance-contingent awards tied to accounting-based measures.

By using hand-collected data from proxy statements on all stock and option grants to top executives over the period 1998 to 2012, Bettis et al. (2013) find evidence that performance-contingent awards have significant implications for managerial incentives to advance shareholder interests and take risk.

## **2.4 Short-term Measures and Earnings Management**

A typical short-term incentive grant, such as bonus plan, has a performance period

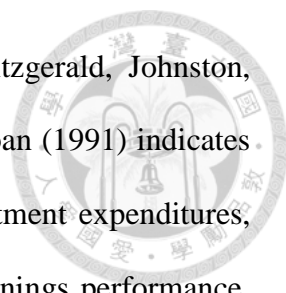
no longer than one fiscal year. A short-term award requires managers to deliver desired performance targets in a short time. Although a short-term award can make the firm reach desired performance in short time, it also potentially provide incentives to manipulate earnings in order to meet the performance targets and trigger the payout (Bizjak et al., 2013).

Literatures related to the compensation and earnings management can be traced to Healy (1985). His evidences show that under a typical performance-contingent short-term award, the executives use accruals to shift earnings over time in order to increase the payout from the short-term bonus awards. Gaver, Gaver, and Austin (1995) further separate out discretionary from nondiscretionary accruals and the results still support that executives will manage earnings in order to trigger the payout. They consider the results to be more consistent with income smoothing hypothesis<sup>12</sup> and believe that the results do not appear to be attributable to the incentive effects of long-term performance plans. In the paper of Holthausen, Larcker, and Sloan (1995), they conclude that senior-level executives manipulate accounting earnings to maximize their compensation, but only in certain regions of the contract. Guidry, Leone, and Rock (1999) extend previous investigations and test whether managers make discretionary accrual decisions to maximize their short-term awards by using business unit-level data. The results are consistent with Healy (1985). To sum up, performance-contingent short-term awards motivate executives to shift earnings from period to period, and sometimes take a “big bath” in earnings so that they can do better next period.

In addition, as the growing concern on agency problems, the traditional short-term incentives have been criticized to cause dysfunctional manager decisions, which harm

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<sup>12</sup> As we discuss below, I interpret their results as being consistent with managers manipulating earnings in a manner that increases the payout associated with a performance-contingent award.



firm's future value, in order to maximize their own benefits (Fitzgerald, Johnston, Brignall, Silvesto, and Voss,1991). The research of Dechow and Sloan (1991) indicates that CEOs in their final years of the firm will spend less on investment expenditures, which may harm the firm's future value, to improve short-term earnings performance. Bushman, Indjejikian, and Smith (1996) indicate that short-term bonus plans are often blamed for managerial myopia, such as encouraging a preoccupation with current operations and short-term results. They further referred that stock-price based plans are sometimes criticized for providing incentives to myopically manipulate short-term stock prices. Ittner, Larcker, and Rajan (1997) also indicate that an over-emphasis on short-term accounting returns will discourage firm's long-term investments.

As the problems proved by prior literatures, there is a structural shift from short-term incentives to long-term incentives in response to the negative effects of short-term measures. Equity awards play a significant role on executives' long-term incentive design. Average dollar amount of total equity awards can be one to five times of the fixed salary and short-term cash bonus (Evans, Gao, Hwang, and Wu, 2014). The usage of long-term incentive plans takes the firm's future performance into account, which can mitigate the incentives to make decisions that harm firm's long-term value for executives (Fitzgerald et al. 1991). However, Gao et al. (2013) indicate that about one fifth of S&P 500 industrial firms between 2006 and 2008 have chosen one-year period for their performance-contingent equity award, which seems to contradict the pay's purpose of promoting executives' focus on long-term performance. In 2011, ISS even recommended a "no" vote on Alcoa's executive pay due to Alcoa link equity awards to just one year of performance.



## 2.5 Example of Compensation Contracts

Executive compensation consists of cash compensation and equity compensation. Cash compensation includes (a) the base salary, (b) the annual cash incentive awards (cash short, the cash awards will be granted in 12 months), and (c) the long-term cash incentive awards (cash long, the cash awards that will be granted after 12 months, or performance units paid in cash). Base salary is the fixed component of CEO's compensation and usually constitutes a small percentage of total direct compensation.

Equity compensation includes (a) restricted stock units, performance units paid in stock, (b) stock option, (c) stock appreciation rights and (d) a "pretend" stock that a company promises to pay cash or stock at some future date, in an amount that equal to the market value (Phantom stock).

Figure 1 shows the compensation components of 3M's CEO, George W. Buckley in 2011 (from proxy statement). Note that equity awards (8.5 million) take about 65% of his total direct compensation<sup>13</sup>. Further, it is stated in 3M's proxy statement that both cash awards and the restricted stocks are performance-contingent awards, which means that only if the predetermined performance targets are achieved, there is no payout of the awards. On the contrary, the option is time-vested.

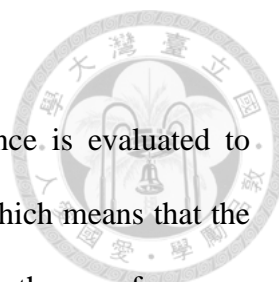
Panel B specifies the provision of performance-contingent equity award, restricted stocks (RSU).

### A. Performance measure

The RSUs are based on three performance measures, sales growth, ROIC, and sales growth from new products. Each measure weighs 40%, 40%, and 20%, separately.

$$\begin{aligned} & \text{The number of restricted stock units} \\ & = 0.4 \times \text{sales growth} + 0.4 \times \text{ROIC} + 0.2 \times \text{sales growth from new products} \end{aligned}$$

<sup>13</sup>Total direct compensation excludes perquisite, pension, and so on.



## **B. Performance period**

Performance period specifies the length over which performance is evaluated to determine payout. For 3M's CEO, the RSU is a three year award, which means that the award is based on the performance in three years. Attainment of these three performance criteria is measured separately for each calendar year. The year weight of each year is 50%, 30%, and 20% during 2011 to 2013. The actual weight of sales growth in 2011, for example, is:  $50\% \times 40\% = 20\%$ .

## **C. Target Value**

Each firm will set a target value of performance measures as a standard. Assume that the CEO can reach the targets in all performance criteria, he can get 100% of the awards. For example, the target sales growth is 0.5% of IPI, 21% of return on invested capital, and 33% of the vitality index in sales growth from new products. The target number of the restricted stock units is 50,590 shares, if the CEO can reach 100% of the award, it means that he can get 50,590 shares of stock.

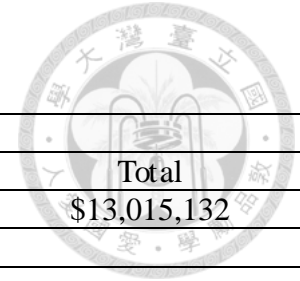
## **D. Payout structure**

The payout structure of RSU can be divided into threshold, target, and max, along with the payout percentages. Take the measure of sales growth in Panel B of Figure 1 for example, if the growth value is 2% of the IPI in the year of 2011, CEO can get 200% in this performance criterion. The computation is as follow:

$$50,590 \times 50\% (\text{year weight}) \times 40\% (\text{measure weight}) \times 200\% = 20,236 \text{ (shares)}$$

It means that in the performance of sales growth in 2011, the CEO can get 20,236 shares of restricted stocks. While the total amount of restricted stock units are calculated based on each years' performance by reference to in each performance criteria, the stocks will not be granted until the end of 2013.

Figure 1 Example of 3M's CEO compensation in year 2011



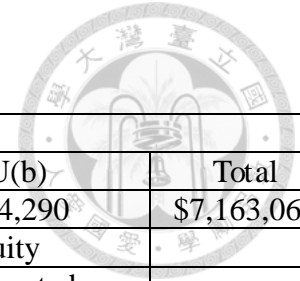
<b>Panel A: The components of CEO(George W. Buckley)'s total direct compensation</b>												
Base Salary			Cash Short			RSU			Option			Total
\$1,720,000			\$2,795,000			\$4,250,066			\$4,250,066			\$13,015,132
Cash compensation			Cash compensation			Equity compensation			Equity compensation			
Fixed			Performance-contingent			Performance-contingent			Time-vested			
<b>Panel B: The details of restricted stock units (Based on the target number of shares, 50,590 shares, the grant date fair value is \$4,250,066)</b>												
Performance measure	Period	Measure weight	Year weight <sup>14</sup>	Measure weight/ per year <sup>15</sup>	Target value	Payout structure						
						Threshold criterion	Target criterion	Max criterion	Threshold payout %	Target payout %	Max Payout %	
Sales growth	3 years	40%	Year 2011: 50%	20%	0.5% growth of IPI <sup>16</sup>	-1% growth of IPI	0.5% growth of IPI	2% growth of IPI	20%	100%	200%	
			Year 2012: 30%	12%								
			Year 2013: 20%	8%								
ROIC	3 years	40%	Year 2011: 50%	20%	21%	19%	21%	23%	20%	100%	200%	
			Year 2012: 30%	12%								
			Year 2013: 20%	8%								
Sales growth (from new products)	3 years	20%	Year 2011: 50%	10%	33% of New Product Vitality Index	28% of new product vitality index	33% of new product vitality index	38% of new product vitality index	20%	100%	200%	
			Year 2012: 30%	6%								
			Year 2013: 20%	4%								

<sup>14</sup> During the three-year measurement period, each year is weighted 50%, 30%, and 20%, separately.

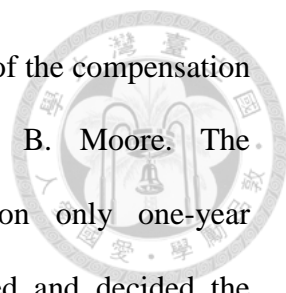
<sup>15</sup> The weight of each measure in each year is calculated by (Measure weight)\*(Year weight).

<sup>16</sup> Industrial production index

**Figure 2 Example of Cameron International Corporation’s CEO compensation in year 2011**



<b>Panel A: The components of CEO(Jack B. Moore)’s total direct compensation</b>											
Base Salary		Cash Short		RSU(a)		Option		RSU(b)		Total	
\$1,045,808		\$1,045,808		\$1,559,998		\$2,497,164		\$1,014,290		\$7,163,068	
Cash compensation		Cash compensation		Equity compensation		Equity compensation		Equity			
Fixed		Performance-contingent		Performance-contingent		Time-vested		Time-vested			
<b>Panel B: The details of restricted stocks (a)</b>											
<b>(Based on the target number of shares, 30,751 shares,the grant date fair value is\$1,559,998)</b>											
Performance measure	Period	Measure weight	Year weight	Measure weight/ per year	Target value	Payout structure					
						Threshold criterion	Target criterion	Max criterion	Threshold payout %	Target payout %	Max Payout %
ROIC	1 year	100%	Year 2011: 100%	100%	16%	12.8%	16%	20%	50%	100%	200%



Panel B of Figure 2 is the performance-contingent equity award of the compensation contract of Cameron International Corporation's CEO, Jack B. Moore. The performance-contingent equity award, RSU(a) is contingent on only one-year performance period. This means that the whole award is evaluated and decided the amount of the award granted to the CEO in the current year.

Note that for 3M, in the Panel B of the column of measure weight per year, the sum weight of the performance for RSU evaluated in the year 2011 is 50% [sales growth(40%\*50%)+ROIC(40%\*50%)+sales growth for new product (20%\*50%)]. However, the performance-contingent equity award of Cameron is all based on the performance of the current year.<sup>17</sup>

Prior literatures (e.g. Healy, 1985) indicated that short-term awards are related to higher risk of misreporting. The paper of Evans et al. (2014) also indicate that a short performance period requires managers to deliver desired performance target on timely basis. Short performance period thus exerts greater pressure on managers to deliver performance in the short-run. Therefore, if other variables are controlled, I expect that auditors will view Cameron with higher risk of misreporting and respond with higher audit fees.

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<sup>17</sup>To see more details of the compensation contracts, the original proxy of long-term incentive plans is presented in Appendix 3.



### 3.Developments of Hypotheses

Recently there has been a structural shift that time-vested option has been replaced by performance-contingent equity in CEO compensation due to the rising complaints about a weak link between improvements in the economic performance of a firm and the compensation of managers (Gerakos et al., 2005). While, compared to traditional time-vested awards, setting performance targets may align CEOs' benefits with shareholder wealth, it also provide CEOs with incentives to use their discretion over accounting procedures and to manage earnings (e.g., Bizjak et al., 2013).

I argue that audit fees will be higher if the firm has performance-contingent equity compensation over short performance period than that over long performance period. This is based on 3 reasons. First, while setting performance measures can provide a stronger link between a firm's performance and managers' compensation, it may provide managers with incentives to use their discretion over accounting procedures and manage earnings (Camara and Henderson, 2005; Kuang and Suijs, 2006). In particular, when the performance period is short-term, the adverse incentives become more pronounced.

Second, according to Healy (1985), when compensation is based on short-term horizon, CEOs use accruals to shift earnings over time to increase payout from their short-term bonus awards, which based on the level of achievements of performance measures. Gaver et al. (1995) and Holthausen et al. (1995) also find evidences that executives will manipulate earnings to maximize their short-term bonus awards. Prior literatures (e.g. Dechow and Sloan, 1991; Kalplan and Norton, 1992; Bushman et al. 1996; Ittner et al. 1997) also criticize the use of short-term performance-contingent awards, such as bonus plan, for inducing executives chasing for short-term benefits

instead of firm's long-term value. Thus, I expect a short performance period for performance-contingent equity compensation will have higher misreporting risk than a long-term horizon.

Third, in the literature on audit fees, there are ample evidences showing that when auditors facing higher level of inherent risk, more efforts and higher audit fees will be required to reduce detection risk to achieve a given level of audit risk (Davis et al. 1993; O'Keefe et al. 1994; Gul and Tusi, 2001). For example, Bédard and Johnstone (2004) report that heightened earnings management risk increases planned audit effort and higher auditor billing rate. Kim et al. (2012) show that audit fees are inversely related to the client's reporting quality, since an increase in the probability of client misreporting increases the auditor's litigation risk. Therefore, there is a positive association between audit fees and the level of misreporting risk.

Based on the above reasons, I argue that if a performance-contingent grant is based on a short horizon, it will provide a stronger incentive of earnings management for CEO. For auditors, when assessing the firm's risk, the risk of misreporting is higher for a short horizon compared to the equity compensation contingent on a long horizon. I form the hypothesis as follows:

*Hypothesis 1: Audit fee is positively associated with performance-contingent equity awards based on a short horizon than a long horizon.*



## 4. Data and Research Designs

### 4.1 Sample

I obtain the main data for this study from several sources. I obtain the audit fee data from the Audit Analytics database, compensation data from ExecuComp, accounting data from Compustat. I also hand-collected detailed data of U.S. CEO compensations from proxy statements (DEF 14A) on the various aspects of stock, option, and cash awards of fiscal years 2010 and 2011. In this thesis, I focus only on performance-contingent equity awards that have absolute performance goals attached to them in order to simplify the study.

### 4.2 Research Designs

I adopt the audit fee model developed by Simunic (1980) and follow prior literatures (e.g. Chen et al., 2013) in selecting control variables.

$$\begin{aligned} LAFEE = & \beta_0 + \beta_1 ST + \gamma_1 SIZE + \gamma_2 SEG + \gamma_3 FOREIGN + \gamma_4 GROWTH + \gamma_5 LEV \\ & + \gamma_6 ROA + \gamma_7 VAROA + \gamma_8 LOSS + \gamma_9 INVREC + \gamma_{10} CURRENT \\ & + \gamma_{11} QUICK + \gamma_{12} DA + \gamma_{13} RET + \gamma_{14} MA + \gamma_{15} ZSCORE + \gamma_{16} BIG4 + \varepsilon \end{aligned} \quad (1)$$

Where *LAFEE* is the natural logarithm of audit fees. *ST* is an indicator variable equals to 1 if there is any performance-contingent equity award that has performance period shorter than 12 months, and 0 otherwise. The detailed definitions of control variables are shown in Appendix 1.

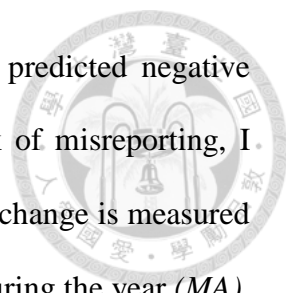
Followed by Bizjak et al (2013), *ST* is an indicator variable of interest. It takes the value one if the company has any of the performance-contingent equity award with short performance period, which means the period within 12 months, and zero



otherwise. In Panel B of Figure 1 and Figure 2, the performance period is three year for 3M, and one year for Cameron. Therefore, the value equals to zero for 3M, but one for Cameron.

The dependent variable is *LAFEE*, the natural logarithm of audit fees. Consistent with prior research, I express the dependent variable in log form to mitigate the effects of nonlinear relation (Hay et al., 2006). As prior literatures indicated, a short-term performance-contingent award may induce executives to manage earnings in order to maximize their own benefits. I expect that there is a positive relation between audit fee and ST because from the view point of auditor, the risk of misreporting should be higher if there is an award that has longer performance period.

Prior literatures indicate that the audit fees vary with client characteristics, including client size, audit complexity, client risk and audit characteristics. Regarding client size, I use the natural logarithm of total assets (*SIZE*). As audit effort is expected to increase in the scale of the client, the predicted sign is positive. To capture audit complexity, I include the number of segments (*SEG*), the percentage of foreign sales relative to total sales (*FOREIGN*), and investment opportunity measured by the market-to-book ratio (*GROWTH*). As audit effort is expected to be higher due to more complex or international operation, I expect the coefficients of *SEG*, *FOREIGN* and *GROWTH* to be positive. Next, I include control variables to capture firm risk, including leverage ratio measured by long-term debt divided by total assets (*LEV*). As more leveraged firms face greater financing constraints, the predicted sign is positive. Return on assets (*ROA*), the variance of ROA (*VAROA*), and a distress indicator variable capturing negative net income (*LOSS*), are predicted negative and positive signs respectively. Receivable and inventory intensity measured by receivables and inventory ratio (*INVREC*), as these may be subject to higher risks of error, the predicted sign is



positive. Current ratio (*CURRENT*) and quick ratio (*QUICK*) are predicted negative signs. As more discretionary accruals (*DA*) indicates a higher risk of misreporting, I expect a positive sign. *RET* is the firm's stock return. Organizational change is measured by an indicator variable equals one if there is a merger by the firm during the year (*MA*). The Altman *Z*-score (*Z SCORE*) is a measure of the probability of bankruptcy, the lower value indicates the greater probability of financial distress. I expect that *MA* and *Z SCORE* to be positively and negatively related to audit fees, respectively.

Another group of control variables include audit characteristics. I include Big N (*BIG4*) to capture the quality or reputational effects of larger audit firms.

Prior studies (Carcello et al., 2002; Abbott et al., 2003) find that companies with stronger corporate governance pay higher audit fees, since better-governed firms care more about financial reporting quality and thus are willing to purchase more audit services. I also control for firms' corporate governance characteristics and ownership structure as follow. CEO dual chair (*DUALITY*) is an indicator variable equals one if CEO also serves as the chairman of the board. *CEOOWN* is CEO ownership, which means the proportion of firm's outstanding shares held by CEO. *BOARDSIZE* is the natural logarithm of the number of board size. *IND* is the proportion of independence directors on the board. *AUDEXPERT* is the proportion of financial expertise in audit committee.

Further, I substitute the natural logarithm of the number of performance measures of the performance-contingent equity awards that have performance periods in future years ( $\text{Log}(\text{Num\_LT})$ ) for the *ST* indicator variable to find evidence on the influence of audit fees. When it comes to the year that the performance targets are evaluated, it also provides an incentive, as strong as short-term measures, to manage earnings in order to trigger payout of the award or increasing the payout in the incentive zone, which may

influence auditors' risk assessing towards a company (Bizjak et al., 2013). When there are more number of long-term performance measures, it represents that the CEO compensation of the firm based more performance measures overlong horizon. In addition, the centralization on a certain performance measure is much easier for CEO to manipulate financial reports for achieving the performance target. On the contrary, it is more difficult to manage earnings to reach those targets if the performance-contingent equity award is based on different measures. Therefore, I expect the number of the long-term performance measures in CEO's performance-contingent equity awards has negative association with audit fees.

$$\begin{aligned}
 \text{LAFEE} = & \beta_0 + \beta_1 \text{Log}(\text{Num\_LT}) + \gamma_1 \text{SIZE} + \gamma_2 \text{SEG} + \gamma_3 \text{FOREIGN} + \gamma_4 \text{GROWTH} \\
 & + \gamma_5 \text{LEV} + \gamma_6 \text{ROA} + \gamma_7 \text{VAROA} + \gamma_8 \text{LOSS} + \gamma_9 \text{INVREC} + \gamma_{10} \text{CURRENT} \\
 & + \gamma_{11} \text{QUICK} + \gamma_{12} \text{DA} + \gamma_{13} \text{RET} + \gamma_{14} \text{MA} + \gamma_{15} \text{ZSCORE} + \gamma_{16} \text{BIG4} + \varepsilon
 \end{aligned}
 \tag{2}$$

In the Appendix 3-3, for instance, each of three measures are separated into three rows for different years. The column of vest high represents the end of the performance period from the grant date. There are 3 measures (rows), which have the value of vest high smaller than 12, will be evaluated in current year. Therefore, the value of this variable is log(6) because only 6 measures left are over long performance horizon.



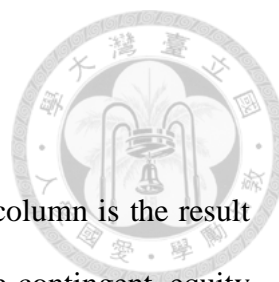
## 5. Research Results

### 5.1 Descriptive Statistics

Table 1 presents the descriptive statistics of the variables and shows that the mean and median log audit fees are 15.079 and 15.046. Regarding the experimental variables, the mean of short-term incentive is 0.556, which means that there are 55.6% of firms have short-term performance periods in their performance-contingent equity awards on average. The average sum of the number of long-term measures is 6.7.

Furthermore, the average size of sample firms is 8.626. The average percentage of foreign sales is 91.2%, and the mean market-to-book is 3.116. As for firm risk, the average leverage ratio and ROA are 23.3% and 13.6%, respectively. The mean variance of ROA is 0.088, and 13.3% of sample firms have a negative net income. The mean inventory and receivable ratio is 19.4%, the mean current ratio is 2, and the mean quick ratio is 170.4%. The average discretionary accruals are 0.091, the average firm's market return is 13.2%, and 83.2% sample firms have acquisition during the firm year and the average Z-score is 0.5%. 98.4% of sample firms are audited by Big 4 auditors. As for firms' corporate governance characteristics and ownership structure, the mean percentage of CEO also serves the chairman of the board is 32.5%, the mean CEO ownership is 1%, the average of the log of the number of board members is 17.061, the average proportion of independence directors on the board is 66.7%, and the mean proportion of financial expertise in audit committee is 29.1%.

Table 2 reports the correlation metrics calculated by Spearman method at the lower portion of the table and by Pearson method at the upper portion. It shows that audit fee is positively and negatively correlated with  $ST$  and  $N\_LT$ , as the expectations.

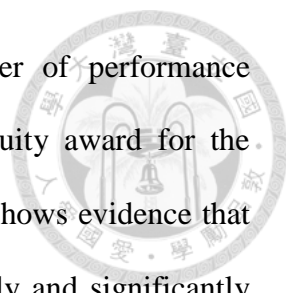


## 5.2 Results for Hypotheses

Table 3 presents empirical results of my hypothesis. The first column is the result of the univariate analysis of the association between performance-contingent equity awards and audit fees. It shows that if there is a performance-contingent equity awards with the performance period within 12 months in CEO compensation, it has significant positive effect on audit fees as my expectation.

Then, I proceed with the multivariate analysis by adding control variables of the audit fee model as shown in the second column. Performance-contingent equity awards is also significantly (at 10% level,  $p < 0.1$ ) and positively associated with audit fees, which aligns with my expectation that performance-contingent equity awards with the performance period within 12 months can increase the firm's risk of misreporting and increase the audit fees. The results for control variables are generally consistent with my expectations. Audit fees are increasing in size, ratio of inventory and receivables to total assets, the board size, and the proportion of independent directors on the board. Audit fees are significantly and negatively related with audit fees, which imply that firms with more leverage may engage in less earnings managements for auditors. Audit fees are decreasing in Z-score, which means that the firm facing greater financial distress has higher audit fees.

Prior studies (Carcello et al., 2002; Abbott et al., 2003) indicate that a stronger corporate governance often pays higher audit fees for their financial reporting quality. Therefore, I add variables to control for firm's corporate governance. The result shown in column (3) still supports my hypothesis after controlling corporate governance. The results show that the size of board and the proportion of independence directors on the board are significantly and positively related with audit fees.



In Table 4, I substitute the natural logarithm of the number of performance measures evaluated in future years of performance-contingent equity award for the performance-contingent equity award indicator variable. The result shows evidence that the number of performance measures over long horizon is negatively and significantly related to audit fees (at 5% level,  $p\text{-value} < 0.05$ ), which is align with my expectation. The results prove that at least, compared with the award based only on one performance measure, more performance measures can lower the risk of misreporting for auditors. As for control variables, audit fees are significantly increasing in firm size, firm's market-to-book ratio, ratio of inventory and receivables to total assets.

Considering the influence of corporate governance in column (3), the number of performance measures evaluated in future years is still negatively and significantly associated with audit fees (at 5% level,  $p\text{-value} < 0.05$ ), supporting that more performance measures can lower CEO's earnings management incentives for auditors. The board size, the proportion of independent directors on the board, and the proportion of financial expertise in audit committee are significantly and positively associated with audit fees (at 5% level,  $p\text{-value} < 0.05$ ).



## 6. Additional Tests

To further test my hypothesis, I consider the sum of performance measures' weight (*SumWeight\_LT*) as shown below:

$$LAFEE = \beta_0 + \beta_1 \text{SumWeight\_LT} + \gamma \text{Controls} + \varepsilon \quad (3)$$

When considering the sum weight of those performance measures that evaluated in future years, the proportion of performance period in future years of a certain performance-equity award is considered. The variable represents the proportion of CEO's performance-contingent equity awards deciding on future years' performance.

To illustrate, look the column of vest high and vest low in Appendix 3-3, which stand for the start and the end of the performance period from the grant date. If the value of vest high is larger than 12, it represents that the measure of this row has long-term performance period. Therefore, for 3M, there are 50% (=20%+20%+10%) of performance measures are based on future performance. In contrast, for Cameron in the Panel B, none of its performance measure is based on long-term performance, and the value here is 0%.

A negative relation is expected because the more importance on future performance evaluation, the less incentive to manage earnings in current year, in turn, the risk of misreporting is lower for auditors.

The results about the relation between audit fees and the sum weight of performance measures with longer performance periods of performance-contingent equity awards are presented in Table 5. After considering the total weight, the results remain significantly negative associated with audit fees at 10% and 5% level under two set of control variables. Supporting that for auditors, if there are more proportion of performance-contingent equity awards based on future performance, the risk of

misreporting in current year is lower.

The control variables generally align with my expectations. The firm size and the ratio of inventory and receivables have a significantly increasing relation with audit fees. When considering the influence of corporate governance in the second column, the size of board and the proportion of independent directors on the board are significantly and positively related with audit fees (at 1% level,  $p\text{-value} < 0.01$ ).

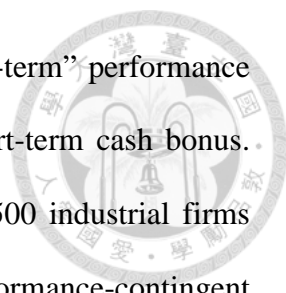
## 7. Conclusion

While the literatures are abundant in both two strands analyzing the relationships between the design of CEO compensation contract and earnings management, and the effect of firm's risk of misreporting on audit fees, there is little research directly examines the association between executive compensation and audit fees.

The main purpose of my study is to examine how auditors respond, in terms of audit fees, to risk-taking incentives induced by the performance periods of CEOs' performance-contingent equity compensation. I build on prior studies arguing that shorter performance is likely to induce managers to be less risk averse and engage in financial misreporting. The higher likelihood of financial misreporting, in turn, is likely to affect audit risks and audit fee.

To deal with the increasing concerns on time-based awards that cannot reward executive officers by their efforts and abilities, the use of performance-contingent awards has appeared since early 1990s and becomes greater share of the compensation contracts. It is believed to make the link stronger between CEO compensation and manager's performance. As a performance-contingent equity award is intended for long-term purpose, one will expect the corresponding performance period for the





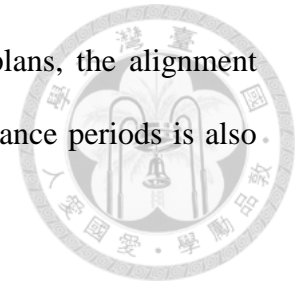
executives should be align with the spirit of measuring their “long-term” performance and likely to be longer than the typical one year cycle of the short-term cash bonus. However, Gao et al. (2013) indicate that about one-fifth of S&P 500 industrial firms between 2006 and 2008 have chosen one-year period for their performance-contingent restricted share grants. The fact contradicts our general recognition of long-term performance and concerned many investors as well.

Therefore,, I focus on performance-contingent equity awards and examine the effect of performance horizon of performance-contingent awards on auditor’s risk assessments as reflected in audit fees. Prior literatures show ample evidence that short-term incentive plans will provide managers incentives to manage earnings, which can help trigger the payout or increase the payout in the incentive zone. I expect that if there is a performance-contingent equity award that is contingent on a short horizon, auditors will perceive a higher misreporting risk of the firm than if equity award is based on a long horizon.

The results show that audit fee is positively related to those firms with performance-contingent equity award that has performance periods shorter than 12 months. The results support that if the firm has any performance-contingent equity award with short performance period, the risk of misreporting is higher for auditors. I further test how the number of performance measures of the longer performance period equity awards affects audit fees. The result shows that the number of long-term performance measures is negatively related with audit fees, supporting that for auditors, different performance measures can effectively lower down the risk of earnings management.

The results in this paper show evidences that the performance horizon will affect the assessment of audit risks for auditors. Due to the growing importance of the usage

of performance-contingent equity awards in long-term incentive plans, the alignment between the performance-contingent equity awards and the performance periods is also important to auditors.





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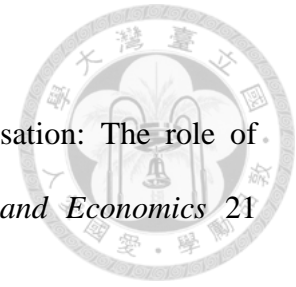
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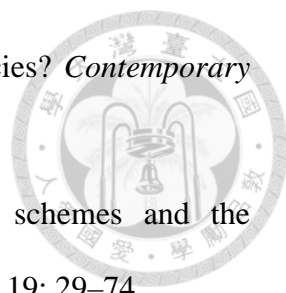
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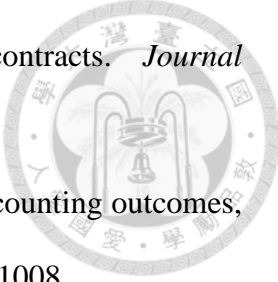
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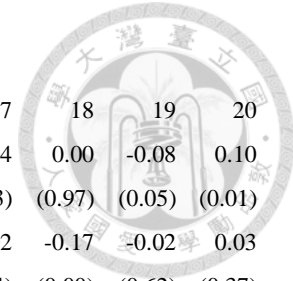
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**TABLE 1**  
**Descriptive Statistics**

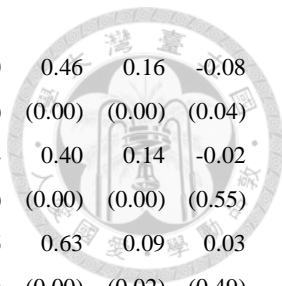
<i>Full Sample (N=2,847)</i>					
	Mean	Std	Q1	Median	Q3
LAF	15.079	0.921	14.418	15.046	15.636
ST	0.556	0.497	0.000	0.000	1.000
N_LT	6.681	14.146	0.000	0.000	9.500
SIZE	8.626	1.392	7.614	8.470	9.637
LEV	0.233	0.161	0.111	0.226	0.338
GROWTH	3.116	2.708	1.629	2.372	3.726
ROA	0.136	2.937	0.027	0.058	0.108
RET	0.132	0.487	-0.148	0.099	0.336
LOSS	0.133	0.339	0.000	0.000	0.000
VAROA	0.088	0.108	0.028	0.056	0.107
INVREC	0.194	0.136	0.085	0.164	0.268
CURRENT	2.025	1.380	1.168	1.653	2.450
QUICK	1.704	1.281	0.944	1.327	2.019
SEG	0.012	0.029	0.001	0.004	0.012
FOREIGN	0.912	0.283	1.000	1.000	1.000
MA	0.832	0.374	1.000	1.000	1.000
ZSCORE	0.005	0.013	0.002	0.006	0.011
DA	0.091	0.104	0.029	0.059	0.112
BIG4	0.986	0.116	1.000	1.000	1.000
DUALITY	0.325	0.468	0.000	0.000	1.000
CEOOWN	0.010	0.039	0.001	0.002	0.004
BOARDSIZE	17.061	4.775	14.000	17.000	20.000
IND	0.667	0.108	0.600	0.679	0.750
AUDEXPERT	0.291	0.345	0.000	0.200	0.500

This table presents the mean, standard deviation (Std), 25-percentile (Q1), median, and 75-percentile (Q3) of each variable.



**TABLE 2 Correlation Matrix**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1_laudit_fee	1.00	0.13	-0.10	-0.06	0.78	0.12	0.03	-0.03	0.00	-0.07	-0.08	0.15	-0.22	-0.23	-0.07	0.11	-0.04	0.00	-0.08	0.10
		(0.00)	(0.01)	(0.11)	(0.00)	(0.00)	(0.39)	(0.46)	(1.00)	(0.09)	(0.05)	(0.00)	(0.00)	(0.00)	(0.09)	(0.01)	(0.33)	(0.97)	(0.05)	(0.01)
2_St	0.14	1.00	-0.24	-0.20	-0.01	-0.10	0.09	0.12	-0.03	0.03	0.02	0.27	0.16	0.13	0.12	0.01	-0.02	-0.17	-0.02	0.03
	(0.00)		(0.00)	(0.00)	(0.71)	(0.01)	(0.02)	(0.00)	(0.46)	(0.46)	(0.62)	(0.00)	(0.00)	(0.00)	(0.00)	(0.84)	(0.64)	(0.00)	(0.62)	(0.37)
3_lnt	-0.07	-0.28	1.00	0.68	-0.02	0.02	-0.01	-0.06	0.03	-0.08	0.01	-0.12	-0.06	-0.02	-0.09	0.00	0.04	-0.08	0.01	0.07
	(0.07)	(0.00)		(0.00)	(0.57)	(0.61)	(0.75)	(0.10)	(0.43)	(0.05)	(0.87)	(0.00)	(0.12)	(0.62)	(0.01)	(0.91)	(0.35)	(0.04)	(0.87)	(0.06)
4_lslt_weig	-0.04	-0.22	0.74	1.00	-0.08	-0.10	0.07	0.05	0.01	-0.04	0.03	0.05	0.05	0.06	0.05	0.00	0.06	0.08	0.03	0.03
	(0.28)	(0.00)	(0.00)		(0.05)	(0.01)	(0.09)	(0.18)	(0.77)	(0.26)	(0.40)	(0.24)	(0.16)	(0.15)	(0.19)	(0.97)	(0.15)	(0.03)	(0.40)	(0.48)
5_size	0.79	-0.01	0.02	-0.02	1.00	0.34	-0.11	-0.11	0.01	-0.15	-0.17	-0.22	-0.44	-0.42	-0.20	0.18	0.00	-0.16	-0.17	0.12
	(0.00)	(0.74)	(0.64)	(0.58)		(0.00)	(0.00)	(0.01)	(0.77)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.99)	(0.00)	(0.00)	(0.00)
6_lev	0.10	-0.08	0.03	-0.07	0.27	1.00	-0.17	-0.35	-0.05	-0.01	-0.22	-0.24	-0.51	-0.52	-0.40	0.03	-0.09	-0.47	-0.22	0.00
	(0.01)	(0.04)	(0.44)	(0.07)	(0.00)		(0.00)	(0.00)	(0.20)	(0.70)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.45)	(0.03)	(0.00)	(0.00)	(0.97)
GROWTH	0.05	0.04	-0.02	0.04	-0.04	0.07	1.00	0.54	0.29	-0.16	0.05	0.22	0.15	0.16	0.53	0.06	-0.03	0.44	0.05	0.02
	(0.18)	(0.30)	(0.58)	(0.30)	(0.30)	(0.06)		(0.00)	(0.00)	(0.00)	(0.18)	(0.00)	(0.00)	(0.00)	(0.00)	(0.14)	(0.52)	(0.00)	(0.19)	(0.64)
ROA	-0.01	0.09	-0.08	0.02	0.00	-0.23	0.23	1.00	0.08	-0.48	0.00	0.26	0.27	0.26	0.83	0.20	0.04	0.74	0.00	0.01
	(0.88)	(0.02)	(0.04)	(0.63)	(0.90)	(0.00)	(0.00)		(0.04)	(0.00)	(0.92)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.33)	(0.00)	(0.92)	(0.86)
RET	-0.03	-0.02	-0.01	-0.01	-0.03	-0.07	0.19	0.12	1.00	-0.08	0.16	0.00	0.07	0.05	0.03	-0.02	0.05	0.05	0.16	-0.02
	(0.39)	(0.56)	(0.76)	(0.80)	(0.48)	(0.07)	(0.00)	(0.00)		(0.05)	(0.00)	(0.91)	(0.09)	(0.20)	(0.38)	(0.66)	(0.22)	(0.22)	(0.00)	(0.59)
LOSS	-0.06	0.03	-0.07	-0.07	-0.14	-0.03	-0.08	-0.58	-0.05	1.00	0.16	0.00	0.14	0.13	-0.04	-0.43	0.01	-0.31	0.16	0.03
	(0.08)	(0.46)	(0.08)	(0.08)	(0.00)	(0.48)	(0.05)	(0.00)	(0.18)		(0.00)	(0.99)	(0.00)	(0.00)	(0.25)	(0.00)	(0.84)	(0.00)	(0.00)	(0.42)
VAROA	-0.05	-0.00	0.00	0.05	-0.11	-0.11	0.01	-0.04	0.21	0.18	1.00	0.21	0.16	0.14	0.09	-0.08	0.01	0.05	1.00	0.02
	(0.18)	(0.93)	(0.95)	(0.21)	(0.00)	(0.01)	(0.81)	(0.34)	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)	(0.02)	(0.05)	(0.88)	(0.20)	(0.00)	(0.66)
INVREC	0.14	0.24	-0.12	0.02	-0.19	-0.21	0.09	0.14	0.01	-0.01	0.16	1.00	0.40	0.19	0.28	-0.04	0.05	0.44	0.21	-0.13
	(0.00)	(0.00)	(0.00)	(0.64)	(0.00)	(0.00)	(0.02)	(0.00)	(0.80)	(0.88)	(0.00)		(0.00)	(0.00)	(0.00)	(0.36)	(0.20)	(0.00)	(0.00)	(0.00)



CURRENT	-0.26	0.07	-0.05	0.03	-0.40	-0.42	0.03	0.11	0.06	0.12	0.08	0.15	1.00	0.92	0.36	-0.11	0.00	0.46	0.16	-0.08
	(0.00)	(0.07)	(0.23)	(0.42)	(0.00)	(0.00)	(0.38)	(0.01)	(0.11)	(0.00)	(0.05)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.95)	(0.00)	(0.00)	(0.04)
QUICK	-0.27	0.03	-0.02	0.03	-0.38	-0.40	0.06	0.09	0.06	0.10	0.04	-0.02	0.96	1.00	0.35	-0.11	-0.04	0.40	0.14	-0.02
	(0.00)	(0.42)	(0.67)	(0.44)	(0.00)	(0.00)	(0.11)	(0.02)	(0.13)	(0.01)	(0.27)	(0.63)	(0.00)	(0.00)	(0.00)	(0.00)	(0.32)	(0.00)	(0.00)	(0.55)
SEG	-0.09	0.10	-0.16	-0.07	-0.13	-0.29	0.24	0.38	0.07	0.08	0.06	0.11	0.27	0.26	1.00	-0.05	0.06	0.63	0.09	0.03
	(0.02)	(0.01)	(0.00)	(0.06)	(0.00)	(0.00)	(0.00)	(0.00)	(0.07)	(0.03)	(0.11)	(0.01)	(0.00)	(0.00)	(0.19)	(0.13)	(0.00)	(0.02)	(0.49)	
FOREIGN	0.11	-0.01	0.00	0.00	0.17	0.04	0.04	0.30	-0.02	-0.43	-0.09	-0.03	-0.12	-0.11	-0.11	1.00	0.04	0.10	-0.08	-0.03
	(0.00)	(0.84)	(0.98)	(0.93)	(0.00)	(0.33)	(0.26)	(0.00)	(0.55)	(0.00)	(0.03)	(0.41)	(0.00)	(0.00)	(0.01)	(0.29)	(0.01)	(0.05)	(0.48)	
MA	-0.05	0.02	0.06	0.06	-0.01	-0.13	0.02	0.04	0.05	0.01	0.00	0.08	0.02	0.01	0.06	0.04	1.00	0.08	0.01	0.07
	(0.21)	(0.64)	(0.13)	(0.10)	(0.72)	(0.00)	(0.56)	(0.25)	(0.21)	(0.84)	(1.00)	(0.05)	(0.59)	(0.75)	(0.11)	(0.29)	(0.03)	(0.88)	(0.07)	
Z SCORE	0.02	0.11	-0.06	0.02	-0.06	-0.42	0.14	0.55	-0.02	-0.33	0.00	0.31	0.20	0.13	0.29	0.11	0.05	1.00	0.05	-0.04
	(0.59)	(0.00)	(0.14)	(0.58)	(0.11)	(0.00)	(0.00)	(0.00)	(0.65)	(0.00)	(0.98)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.23)	(0.20)	(0.30)	
DA	-0.05	-0.00	0.01	0.05	-0.11	-0.11	0.01	-0.04	0.21	0.18	1.00	0.16	0.08	0.05	0.07	-0.09	0.00	0.00	1.00	0.02
	(0.19)	(0.95)	(0.85)	(0.17)	(0.00)	(0.01)	(0.77)	(0.36)	(0.00)	(0.00)	(0.00)	(0.00)	(0.04)	(0.23)	(0.09)	(0.02)	(0.95)	(0.99)	(0.66)	
BIG4	0.08	-0.03	0.06	0.03	0.12	0.00	0.03	0.01	-0.01	0.03	0.01	-0.13	-0.03	0.01	0.04	-0.03	0.07	-0.03	0.01	1.00
	(0.03)	(0.37)	(0.12)	(0.41)	(0.00)	(0.94)	(0.44)	(0.73)	(0.83)	(0.42)	(0.86)	(0.00)	(0.47)	(0.74)	(0.26)	(0.48)	(0.07)	(0.47)	(0.86)	

This table presents the correlations between the main variables used in the models. Correlation coefficients calculated by Spearman method are provided at the lower portion of the table while Correlation coefficients calculated by Pearson method are provided at the upper portion of the table. Two-tailed p-values are in parentheses. Variable definitions are presented in Appendix A.

**TABLE 3**

**The relation between short-term performance period and audit fees**

	(1) LAF	(2)LAF	(3)LAF
Intercept	14.302 (16.45) <sup>***</sup>	9.150 (56.26) <sup>***</sup>	8.751 (54.22) <sup>***</sup>
ST (indicator<12 months)	0.344 (3.51) <sup>***</sup>	0.124 (2.48) <sup>*</sup>	0.116 (2.30) <sup>*</sup>
SIZE		0.616 (58.59) <sup>***</sup>	0.563 (43.80) <sup>***</sup>
LEV		-0.425 (-4.51) <sup>***</sup>	-0.425 (-4.65) <sup>***</sup>
GROWTH		0.004 (0.77)	0.009 (1.70)
ROA		-0.454 (-2.49) <sup>*</sup>	-0.342 (-1.93)
RET		-0.002 (-0.07)	-0.003 (-0.09)
LOSS		0.018 (0.34)	0.017 (0.32)
VAROA		0.486 (1.42)	0.378 (1.01)
INVREC		1.324 (6.61) <sup>***</sup>	1.263 (6.88) <sup>***</sup>
CURRENT		-0.033 (-0.59)	0.013 (0.24)
QUICK		-0.013 (-0.21)	-0.049 (-0.86)
SEG		-1.402 (-2.70) <sup>**</sup>	-1.415 (-2.73) <sup>**</sup>
FOREIGN		-0.029 (-0.70)	-0.036 (-0.86)
MA		-0.011 (-0.41)	-0.025 (-0.88)
Z SCORE		-6.415 (-6.52) <sup>***</sup>	-6.392 (-6.44) <sup>***</sup>
DA		-0.530 (-1.28)	-0.344 (-0.78)
BIG4		-0.115 (-1.13)	-0.077 (-0.85)
DUALITY			-0.069 (-2.49) <sup>*</sup>
CEOOWN			0.690 (1.46)
BOARDSIZE			0.025 (6.99) <sup>***</sup>
IND			0.392 (3.55) <sup>***</sup>
AUDEXPRT			0.094 (1.93)
Industry fixed effects	Included	Included	Included
Year fixed effects	Included	Included	Included
N	1976	1550	1507
Adjusted R <sup>2</sup>	0.114	0.771	0.785

This table presents the regression results for the relation between CEO performance period and audit fees.\*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively. Variable definitions and sources are presented in Appendix A

**TABLE4**  
**The relation between long-term performance measure and audit fees (number of**  
**LT measures)**

	(1)	(2)
Intercept	8.818 (32.22) <sup>***</sup>	8.562 (29.76) <sup>***</sup>
Log(Num_LT)	-0.032 (-1.91) <sup>**</sup>	-0.060 (-2.99) <sup>**</sup>
SIZE	0.653 (43.39) <sup>***</sup>	0.564 (29.32) <sup>***</sup>
LEV	-0.344 (-2.43) <sup>*</sup>	-0.447 (-3.02) <sup>**</sup>
GROWTH	0.014 (2.38) <sup>*</sup>	0.021 (3.54) <sup>***</sup>
ROA	-0.589 (-1.46)	-0.500 (-1.40)
RET	-0.014 (-0.31)	-0.005 (-0.10)
LOSS	0.111 (1.14)	0.124 (1.40)
VAROA	-1.558 (-0.86)	0.220 (0.30)
INVREC	1.535 (5.51) <sup>***</sup>	1.495 (5.54) <sup>***</sup>
CURRENT	0.023 (0.28)	0.059 (0.67)
QUICK	-0.055 (-0.61)	-0.094 (-1.01)
SEG	-3.756 (-2.30) <sup>*</sup>	-3.307 (-2.31) <sup>*</sup>
FOREIGN	0.025 (0.31)	0.046 (0.60)
MA	-0.011 (-0.26)	-0.035 (-0.80)
Z SCORE	-3.353 (-1.34)	-4.868 (-2.06) <sup>*</sup>
DA	1.637 (0.88)	-0.083 (-0.10)
BIG4	-0.050 (-0.30)	0.044 (0.33)
DUALITY		-0.081 (-2.06) <sup>*</sup>
CEOOWN		0.563 (0.53)
BOARDSIZE		0.029 (5.09) <sup>***</sup>
IND		0.702 (3.78) <sup>***</sup>
AUDEXPERT		0.239 (3.07) <sup>**</sup>
Industry fixed effects	Included	Included
Year fixed effects	Included	Included
N	1507	1507
Adjusted R <sup>2</sup>	0.812	0.837

This table presents the regression results for the relation between CEO long-term measures and audit fees. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively. Variable definitions and sources are presented in Appendix A

**TABLE 5**  
**The relation between long-term performance measure and Audit Fees (sum of weighted LT measures)**

	(1)	(2)
Intercept	9.284 (40.14) <sup>***</sup>	8.896 (36.67) <sup>***</sup>
Log(SW_LT)	-0.045 (-2.35) <sup>*</sup>	-0.055 (-2.69) <sup>**</sup>
SIZE	0.648 (42.89) <sup>***</sup>	0.566 (29.15) <sup>***</sup>
LEV	-0.302 (-2.07) <sup>*</sup>	-0.403 (-2.67) <sup>**</sup>
GROWTH	0.013 (2.26) <sup>*</sup>	0.019 (3.30) <sup>**</sup>
ROA	-0.748 (-1.78)	-0.691 (-1.90)
RET	-0.010 (-0.19)	-0.021 (-0.46)
LOSS	0.069 (0.70)	0.102 (1.13)
VAROA	-1.825 (-0.94)	0.394 (0.53)
INVREC	1.426 (5.17) <sup>***</sup>	1.416 (5.28) <sup>***</sup>
CURRENT	0.051 (0.61)	0.101 (1.15)
QUICK	-0.077 (-0.84)	-0.127 (-1.36)
SEG	-4.398 (-2.69) <sup>**</sup>	-3.830 (-2.79) <sup>**</sup>
FOREIGN	0.032 (0.41)	0.055 (0.72)
MA	0.003 (0.06)	-0.022 (-0.50)
Z SCORE	-1.983 (-0.76)	-3.452 (-1.44)
DA	1.986 (1.00)	-0.288 (-0.35)
BIG4	-0.048 (-0.29)	0.026 (0.19)
DUALITY		-0.075 (-1.88)
CEOOWN		0.005 (0.00)
BOARDSIZE		0.028 (4.96) <sup>***</sup>
IND		0.690 (3.74) <sup>***</sup>
AUDEXPRT		0.166 (2.16) <sup>*</sup>
Industry fixed effects	Included	Included
Year fixed effects	Included	Included
N	1507	1507
Adjusted R <sup>2</sup>	0.813	0.839

This table presents the regression results for the relation between CEO long-term measures and audit fees. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively. Variable definitions and sources are presented in Appendix A

## Appendix 1: Variable Definition



Variable	Definition
<b><i>Dependent variable</i></b>	
<b><i>LAFEE</i></b>	= the natural logarithm of client's total audit fees
<b><i>Control variables</i></b>	
<b><i>SIZE</i></b>	= firm size, the natural logarithm of the firm's total assets
<b><i>SEG</i></b>	= the number of business segments
<b><i>FOREIGN</i></b>	= the percentage of foreign sales relative to total sales
<b><i>GROWTH</i></b>	= market-to-book ratio, defined as the firm's market value of equity divided by book value of its equity
<b><i>LEV</i></b>	= the leverage ratio, defined as firm's total debt divided by total assets
<b><i>ROA</i></b>	= return on assets, defined as income before extraordinary items divided by the previous year's total assets
<b><i>VAROA</i></b>	= the variance of ROA
<b><i>LOSS</i></b>	= an indicator variable equal to 1 if the firm's net income before extraordinary items is negative, and 0 otherwise
<b><i>INVREC</i></b>	= the sum of the firm's receivables and inventory divided by its total assets
<b><i>CURRENT</i></b>	= current ratio, defined as current assets divided by total assets
<b><i>QUICK</i></b>	= quick ratio, defined as current assets minus inventory divided by current liabilities
<b><i>DA</i></b>	= discretionary accruals, are computed through the cross-sectional modified Jones model
<b><i>RET</i></b>	= the firm's market returns
<b><i>MA</i></b>	= organization change, an indicator variable equals to 1 if there is a merger by the firm during the year, and 0 otherwise
<b><i>ZSCORE</i></b>	= Altman Z-score, a measure of the probability of bankruptcy, with a lower value indicating greater financial distress
<b><i>BIG4</i></b>	= an indicator variable equal to 1 if the firm is audited by one of the Big 4 auditors, and 0 otherwise
<b><i>DUALITY</i></b>	= an indicator variable equal to 1 if CEO also serves as the chairman of the board, and 0 otherwise
<b><i>CEOOWN</i></b>	= CEO ownership
<b><i>BOARDSIZE</i></b>	= the natural logarithm of the number of board members
<b><i>IND</i></b>	= the proportion of independence directors on the board
<b><i>AUDEXPERT</i></b>	= the proportion of financial expertise in audit committee

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*Experimental variables*

- ST* = an indicator variable equal 1 if there is any performance-contingent equity award that has performance period shorter than 12 months, and 0 otherwise
- L(Num\_LT)* = the natural logarithm of the number of performance measures of longer performance period equity award
- L(SumWeight\_LT)* = the natural logarithm of the total weight of performance measures of longer performance period equity award
- 







## Appendix 2-1: Literatures on Audit Fees

Literature	Experimental variable	Control variable	Finding
Chen, Gul, Veeraraghavan, and Zolotoy (2013)	Log volatility sensitivity (volatility sensitivity is defined as the dollar change in CEO's option holdings in response to 0.01 unit change in stock return volatility)	<ol style="list-style-type: none"> <li>1. <b>Auditor quality:</b> Big 4, and auditor industry specialization</li> <li>2. <b>Audit client characteristics:</b> log auditor tenure, log non-audit fee, and fiscal year-end</li> <li>3. <b>Audit complexity:</b> size (log total assets), market-to-book ratio, leverage, ROA, tangibility ratio, percentage of foreign sales, log number of segments, and receivable and inventory ratio</li> <li>4. <b>Audit risk:</b> audit opinion, operating loss, high litigation industry, restatement dummy, and absolute discretionary accruals</li> </ol>	Evidence suggests that auditors charge higher audit fees from firms with high CEO risk-taking incentives.
Gul, Chen, and Tsui (2003)	Absolute value of discretionary accruals (modified Jones model)	<ol style="list-style-type: none"> <li>1. <b>Client size:</b> log of total assets</li> <li>2. <b>Audit complexity:</b> the current ratio, the ratio of inventory to total assets, whether year-end is December 31, log of the number of subsidiaries, and percentage of subsidiaries incorporated overseas</li> <li>3. <b>Audit risk:</b> the ratio of long-term debt to total assets, quick ratio, audit qualified opinion, loss, and return on assets</li> <li>4. <b>Audit quality:</b> Big 6</li> </ol>	Evidence shows that there is a positive association between discretionary accruals and audit fees.
Goncharov, Riedl, and Sellhorn (2013)	An indicator variable equal to 1 if the firm is domiciled in a country that required property assets to be reported at depreciated cost under pre-IFRS domestic standards; An indicator variable equal to 1 for the years after mandatory IFRS	<ol style="list-style-type: none"> <li>1. <b>Audit client characteristics:</b> <ol style="list-style-type: none"> <li>a. <b>Size:</b> log of total assets</li> <li>b. <b>Audit complexity:</b> percentage of international assets and the number of operating segments.</li> <li>c. <b>Firm risk:</b> ROA, negative net income, percentage of receivables, leverage ratio, negative book value of equity, a qualified audit opinion, and standard deviation of monthly stock return.</li> </ol> </li> <li>2. <b>Audit characteristics:</b> BigN, year end</li> </ol>	The results suggest that fair values can lead to lower monitoring costs; however, any reductions in audit fees will vary with salient characteristics of the fair value reporting.

	adoption		
Chen, Srinidhi, Tsang, and Yu (2012)	Corporate social responsibility indicator	<ol style="list-style-type: none"> <li>1. <b>Auditor quality:</b> Big4</li> <li>2. <b>Auditor tenure</b></li> <li>3. <b>Audit complexity:</b> firm size, whether engaged in acquisition or merger, new debt or equity issuance, market-to-book ratio, growth rate in sales, foreign sales percentage, log of the number of business segments, whether has pension plans, log of the number of firm's age, whether has a financial restatement</li> <li>4. <b>Audit risk:</b> leverage ratio, return on assets, stock return volatility, a loss, special items, the ratio of receivables and inventory to total assets, discretionary accruals, and real activity manipulation</li> <li>5. <b>Engagement attributes:</b> fiscal year end on December 31, the number of days between fiscal year-end and earnings announcement date, and whether receives a going-concern opinion</li> </ol>	Evidence suggests that auditors charge lower fees and reduce the propensity to issue going concern qualifications to client firms with superior CSR performance.
Ho and Kang (2013)	An indicator equals to 1 if the firm is classified as family firm	<ol style="list-style-type: none"> <li>1. <b>Firm size:</b> natural log of total assets</li> <li>2. <b>Firm complexity:</b> assets turnover ratio, current assets, square root of the number of subsidiaries, and percentage of foreign sales</li> <li>3. <b>Firm risk:</b> long term debt ratio, quick ratio, ROA, and loss</li> <li>4. <b>Firms' corporate governance characteristics and ownership structure:</b> board independence, CEO dual chair, audit committee characteristics (financial expertise, meeting frequency, size, and independence), institutional ownership, CEO ownership, and outside director ownership</li> <li>5. <b>Audit-client relationship:</b> auditor tenure, ratio of non-audit fees, and the presence of modified audit opinion</li> </ol>	Results show that family firms, on average, incur lower audit fees than non-family firms, which is driven by family firms' lower demand for external auditing services and auditors' perceived lower audit risk for family firms.

Appendix 2-2: Literatures on performance-contingent equity awards and misreporting

Literature	Measure of misreporting	Interest variable	Finding
Kuang (2008)	Abnormal accruals	Performance-contingent stock options	Positive relation
	Book-tax difference		
	Deferred tax expense		
Bizjak, Hayes, and Kalpathy (2013)	Discretionary accruals	Performance-contingent equity awards	Negative relation
	Abnormal production costs		Positive relation

Appendix 2-3: Literatures on short-term incentives and earnings management

Literature	Topic	Finding	Misreporting
Healy (1985)	Total accruals and short-term annual bonus awards	Total accruals are more negative when earnings are above the upper bound or below the lower bound.	V
Gaver, Gaver, and Austin (1995)	Discretionary accruals and short-term cash bonus awards	There are negative discretionary accruals when earnings are above the upper bound.	V
		There are positive discretionary accruals when earnings are below the lower bound.	
Holthausen, Larcker, and Sloan (1995)	Discretionary accruals and short-term bonus awards	Discretionary accruals are more negative when earnings are above the upper bound of the bonus contract, compared to when the earnings are in the incentive zone.	V
	Real investment activities and the structure of bonus awards	Firms do not manipulate real earnings in order to influence the payout from bonus awards.	
Guidry, Leone, and Rock (1999)	Discretionary accruals and short-term bonus awards	Managers make discretionary accrual decisions to maximize their short-term bonuses.	V

### Appendix 3: Original Text of the proxy statement

#### 3-1Case 1-3M (66740)



### EXECUTIVE COMPENSATION COMPENSATION DISCUSSION AND ANALYSIS

#### Long-term Incentive – 2011 Annual Grants

After considering the most recent long-term incentive compensation data from companies in the Benchmarking Groups and after taking into account its evaluation of their individual performance during 2010, the Committee approved (and in the case of Mr. Buckley, the independent members of the Board of Directors ratified) the following grant values of the Named Executive Officers' annual long-term incentive compensation awards for 2011. For ease of comparison, the following table also shows the grant values of the Named Executive Officers' 2010 annual long-term incentive compensation awards and the percentage change between the two amounts.

Name	Grant Value of 2010 Annual Awards	Grant Value of 2011 Annual Awards	% Change
George W. Buckley	\$8,000,000	\$8,500,000	6.25%
David W. Meline	\$924,720	\$1,174,096	26.97%
Patrick D. Campbell	\$2,192,000	\$2,329,000	6.25%
Inge G. Thulin	\$1,578,000	\$2,330,293	47.67%
Joaquin Delgado	\$1,528,945	\$1,571,000	2.75%
Frederick J. Palensky	\$1,329,886	\$1,327,000	-0.22%

Mr. Meline and Mr. Thulin received significantly larger percentage increases in the grant values of their 2011 awards due to their promotions to new positions and the adjustment of their grant values to bring their grant levels in line with the grant values provided to their peers at companies in the Benchmarking Groups. The increase in the grant value of the awards provided to Mr. Buckley was due primarily to a similar increase in the grant values provided to chief executive officers at companies in the Benchmarking Groups.

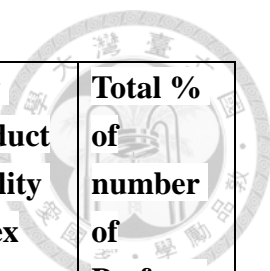
Consistent with market practices at companies in the Benchmarking Groups, during 2011 the Committee chose to deliver one-half of the target grant value of the annual long-term incentive compensation awards provided to 3M's Named Executive Officers in the form of stock options (before adjustment for individual performance)

and the remaining one-half in the form of performance shares. The performance criteria selected by the Committee for the performance shares awarded during 2011 were designed to focus management attention on three key factors that create long-term stockholder value: Organic Sales Growth, Return on Invested Capital, and sales from new products as measured by the New Product Vitality Index.

The number of shares of 3M common stock that could be delivered for each performance share awarded in 2011 is linked to the Company's performance as measured by the criteria of Organic Sales Growth, Return on Invested Capital, and the New Product Vitality Index. Approximately 40 percent of this number will be determined by Organic Sales Growth, another 40 percent will be determined by Return on Invested Capital, and the remaining 20 percent will be determined by the New Product Vitality Index. With these weightings, 60 percent of each individual's long-term incentive opportunity attributable to these awards is tied to the Company's long-term sales growth objective, a key contributor to long-term stockholder value. Attainment of these three independent performance criteria is measured separately for each calendar year during the three-year measurement period, with each year weighted as follows (2011 — 50 percent; 2012 — 30 percent; and 2013 — 20 percent). However, the formulas by which the Company's performance is measured do not change over the three-year performance period.

The number of shares of 3M common stock that could actually be delivered at the end of the three-year performance period ending on December 31, 2013, may be anywhere from 0 percent to 200 percent of each performance share granted, depending on the performance of the Company during such performance period. However, an executive may forfeit all or a portion of such shares if he or she does not remain employed by the Company throughout the three-year performance period.

The Committee approved the following formulas for determining the number of shares of 3M common stock actually delivered for each performance share awarded, with the total number of shares actually delivered being the sum of the number of shares earned as a result of the Company's achievement of each of the three performance objectives. The formulas for two of the three performance criteria, Return on Invested Capital and the New Product Vitality Index, were adjusted to require higher levels of performance than those established for the performance shares awarded in 2010, consistent with the Company's objectives to deliver improved financial returns and innovation performance over time. The formula for the Organic Growth metric was not changed from the formula applied with respect to the performance shares awarded in 2010, due to the ongoing complexity and uncertainty in the global economy as the year began.



<b>Organic Sales Growth Exceeding IPI</b>	<b>% of number of Performance Shares</b>	<b>Return on Invested Capital</b>	<b>% of number of Performance Shares</b>	<b>New Product Vitality Index</b>	<b>New Product Vitality Index</b>	<b>Total % of number of Performance Shares</b>
Below -1.0%	0%	Below 19%	0%	Below 28%	0%	0%
-1.0%	8%	19.0%	8%	28.0%	4%	20%
0.5%	40%	21.0%	40%	33.0%	20%	100%
2.0% or higher	80%	23.0% or higher	80%	38.0% or higher	40%	200%

### 3-2 Case 2- Cameron International Corporation (941548)

## EXECUTIVE COMPENSATION COMPENSATION DISCUSSION AND ANALYSIS



### Long-term Incentives

Our executive compensation program is weighted to long-term equity awards rather than annual cash compensation. The Compensation Committee's intent is to align compensation of executives and other key management employees with the interests of our long-term stockholders by providing incentives tied to the long-term success of the Company and increases in share price and stockholder value.

Our long-term incentive program is administered under our stockholder approved 2005 Equity Incentive Plan which was amended with stockholder approval as recently as 2010. The Committee, after discussions with the Committee's independent compensation consultant, determines the target long-term incentive grant value for the aggregate long-term incentives to be granted to the executive officers as a group and individually. The Committee makes its determinations giving consideration to:

- the grant practices of our peer group companies, which are contained in the independent compensation consultant's annual Report on Executive Compensation,
- industry grant practices in general,
- the value to be transferred in comparison to amounts granted by peer companies and industry surveys, and
- the "burn rate" or percentage of outstanding shares that would be used.

For 2011, the Committee targeted 50% of the long-term incentive target grant value in stock options, 30% in PRSUs, and 20% in RSUs. For 2012 the Committee changed the mix of long-term incentives to 40% stock options, 40% PRSUs, and 20% RSUs. The Committee re-balanced the mix in order to place a greater emphasis on the 3-year objectives of the PRSUs. Individuals may be granted more or less than the target amounts for their positions, based on individual performance, past grant history, employment retention considerations, internal equity, and the Committee's evaluation of future promotability.

### Stock Options

Awards of stock options are intended to make a portion of executive officers' total direct compensation contingent on long-term stock price

appreciation. In November 2011, each executive officer, including the NEOs, received an award of stock options. The number of options for each individual award was determined by applying 40% of the long-term incentive grant value targeted for that individual and dividing it by the value of a Company stock option.

The exercise price for all our stock option awards, including those for 2011 and for 2012, is equal to the closing share price on their date of grant.

The Committee has historically approved annual awards of stock options to be made effective the first business day following its Fall meeting, which is scheduled at least one year in advance. The Committee formally adopted this method of selecting the grant date for the annual awards in 2007. The Committee prefers this "mechanical" approach to selecting the grant date, rather than a "discretionary" approach, as it avoids having to make arbitrary judgments regarding timing of awards. To the extent newly hired or promoted executives receive an initial award of stock options, such options are priced at the closing price on a date no earlier than their actual start or promotion date.

Stock options vest over a three-year period, with one-third of the options vesting per year, beginning on the first anniversary of the grant. Stock options have a ten-year term, beginning with those awarded in 2012. For treatment of vesting upon certain termination events such as retirement or death within the three-year vesting period, see the discussion following the Grants of Plan-Based Awards table on page 49.

### ***Restricted Stock Units***

Awards of RSUs are intended to encourage and promote retention. The number of RSUs for any individual award was determined by taking 20% of the long-term incentive grant value targeted for that individual and dividing it by the closing price of the Company's stock on the date of grant. The RSU awards for 2012 will vest over a three-year period, with one-third vesting per year, beginning on the first anniversary of the grant. In order that certain deduction limits under Section 162(m) of the Internal Revenue Code of 1986 not apply (see "Tax Implications of Executive Compensation")

### ***Performance Awards***

Grants of PRSUs can be earned only by performance against established goals and vest three years from grant date. These awards are intended to serve two purposes: (1) encourage and reward performance and (2) assist in retention of key employees. Both the performance and continued employment



requirements must be satisfied in order for the executive to earn the payout of the award. The performance goals are established by the Committee no later than its first meeting of the year.

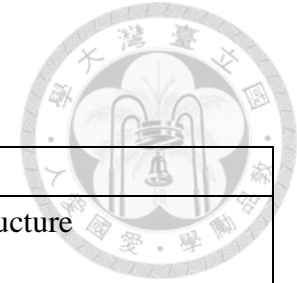
For 2011, the target value of these awards was 30%, and for 2012 it is 40% of each officer's target long-term incentive grant value. The target number of PRSUs subject to any individual award was determined by dividing the value of the award targeted for that individual by the closing price of the Company's stock at year-end 2011.

*The number and value of PRSUs granted for 2011 and 2012 that can actually be earned is determined by performance against the goals established by the Committee and can range from 0 to 200% of the target value.*

*The 2011 PRSUs have ROIC as the performance goal.* Performance against the ROIC Target goal is determined by averaging the performance of the Company against the ROIC goal set by the Committee for each of the three years of their respective performance periods. *The ROIC goal for 2011 was 16%.* Performance against the 2011 ROIC goal was 101% of target. This will be averaged with the 2012 and 2013 performance to determine the actual number of shares earned under the 2011 PRSUs.

Performance — Payout Ratio between Minimum and Target Performance	2.5%	For each 1% of additional ROIC performance between minimum and target 2.5% of additional payout is earned
Performance — Payout Ratio between Maximum and Target Performance	4.0%	For each 1% of additional ROIC performance between target and maximum 4.0% of additional payout is earned
Maximum	200%	<u>200% payout is earned when ROIC achievement is 20.0% or greater</u>
Target	100%	<u>100% payout is earned when ROIC achievement is 16.0%</u>
Minimum	50%	<u>50% payout is earned when ROIC achievement is 12.8%</u>
No Payout	0%	0% payout is earned when ROIC achievement is less than 12.8%

**3-3: Summary of performance-contingent equity award of two examples**



<b>Summary of 3M's performance-contingent equity in 2011</b>														
CIK	Award Type	Target Value/ Grant Date FV	Number of Performance Measures	Performance Measures	Metric Target Value	Percent Vest	Vest Low	Vest High	Payout Structure					
									Thre- shold	Target	Max	Thres %	Target %	Max %
66740	RSU	4,250,066	3	Sales growth	0.5%	20%	-1	11	-1%	0.5%	2%	20%	100%	200%
66740	RSU	4,250,066	3	Sales growth	0.5%	12%	11	23	-1%	0.5%	2%	20%	100%	200%
66740	RSU	4,250,066	3	Sales growth	0.5%	8%	23	35	-1%	0.5%	2%	20%	100%	200%
66740	RSU	4,250,066	3	ROIC	21%	20%	-1	11	19%	21%	23%	20%	100%	200%
66740	RSU	4,250,066	3	ROIC	21%	12%	11	23	19%	21%	23%	20%	100%	200%
66740	RSU	4,250,066	3	ROIC	21%	8%	23	35	19%	21%	23%	20%	100%	200%
66740	RSU	4,250,066	3	Sales growth (from new product)	33%	10%	-1	11	28%	33%	38%	20%	100%	200%
66740	RSU	4,250,066	3	Sales growth (from new product)	33%	6%	11	23	28%	33%	38%	20%	100%	200%
66740	RSU	4,250,066	3	Sales growth (from new product)	33%	4%	23	35	28%	33%	38%	20%	100%	200%
<b>Summary of Cameron International Corporation's performance-contingent equity in 2011</b>														
941548	RSU	1,559,998	1	ROIC	16%	100%	0	12	12.8%	16%	20%	50%	100%	200%