

**EXPLORING CHANGES IN MANAGEMENT COMPENSATION STRUCTURE IN
CANADA: EVIDENCE ON THE CONSEQUENCES OF SECTION 3870**

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Dedication Page

To my family and friends, I could not have done any of this without your support.

Abstract

Existing research findings are mixed on whether increased executive stock option (ESO) use is due to favorable accounting treatment enabling earnings management (EM) and opportunism, or to efforts to improve pay for performance. I investigate executive compensation changes in 215 Canadian companies for the years surrounding the amendment to Handbook Section 3870, which requires expensing of ESOs. I find that while ESO use was reduced, ESOs still dominate share-based compensation. Of the opportunism and EM antecedents examined, only political visibility is significant. The substitution rate of RSUs for ESOs is more equal post-amendment, in keeping with firms being more willing to use RSUs once ESOs had to be expensed. However, the pay for performance relationship has not improved post-amendment, even for firms who most reduced ESO use. My results overall provide little support for opportunism or EM being a key driver of increased ESO use prior to the amendment.

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List of Abbreviations

ESOs – Executive stock options

RSUs – Restricted share units

PSUs – Performance share units

SARs – Stock appreciation rights

EM – Earnings management

Introduction

In 2004 the Canadian Institute of Chartered Accountants (CICA) issued an amendment to Section 3870 of the CICA handbook. This amendment required publicly listed Canadian corporations to expense the value of executive stock options (ESOs) in the income statement for the first time. This amendment arose in response to perceived abuses of stock options, with one article (Ingram, 2002) claiming that prior to requiring expensing, critics felt as if firms were "...handing out shares like they were Monopoly money," (p. 2). In this study, I examine the impact the amendment to Section 3870 had on the use of ESOs as well as antecedents and consequences of the change in use of ESOs.

Two rationales are explored in this study to determine why ESOs became so popular in the pre-amendment to Section 3870 period. The first rationale – improved pay for performance – suggests that ESO use increased because the academic community and others recommended they could be used as a way to reduce agency costs by aligning manager and shareholder goals. Pay for performance has been studied by Hall and Liebman (1998), Jensen and Murphy (1990), Merhebi, Pattenden, Swan and Zhou (2006), and Murphy (1998), among others. Hall and Liebman (1998) found that the inclusion of stock holdings and ESOs in particular, led to stronger relationships between firm performance and executive pay. A desire to improve pay for performance is thus one possible reason for increasing use of ESOs in the pre-amendment period.

The second rationale for the increased use of ESOs was the preferential accounting treatment ESOs received in the pre-amendment period. Firms using ESOs were not required to show an expense for this type of compensation in their income statement. Therefore ESOs could be used by management teams opportunistically (i.e. to hide excessive managerial pay) or for non-opportunistic reasons (improved contracting through earnings management). There is a small stream of literature examining ESO use and preferential accounting treatment (Aboody, Barth, &

Kasznik, 2004; Brown & Lee, 2007; Carter, Lynch, & Tuna, 2007; and Choudhary, Rajgopal, & Venkatachalam, 2007).

In particular, there are four major purposes of this study. The first purpose is to determine if the response to the change in Section 3870 led to less use of ESOs, in keeping with the concern that it was the favorable accounting treatment driving the growth in use of ESOs. Second, this study investigates the types of compensation used to replace ESOs, to provide insight on what share-based compensation is used when all forms need to be expensed. Third, it examines the antecedents of the reduction in ESOs for compensation, and whether the identified factors are consistent with efficient contracting or opportunistic behavior in the use of options prior to the changes to Section 3870. Finally, this study looks at the rate of substitution between specified compensation alternatives and ESOs to see if this changed when ESOs needed to be expensed, and whether pay for performance sensitivities changed as other forms of compensation were substituted for ESOs.

My findings are as follows. There is evidence that Canadian firms reduced ESOs as a proportion of total senior management compensation by almost eight percent from the pre-amendment to Section 3870 period (2000 – 2002) to the post-amendment to Section 3870 period (2004 – 2006). This decrease in ESO usage largely occurred in the same period as the amendment to Section 3870, and appears unrelated to more general trends over time. Second, other types of stock-based compensation increased as predicted when Canadian firms restructured their compensation after the amendment to Section 3870. For example, performance share units (PSUs) increased from no firms using this type of compensation in 2000 to 14 (6.83%) firms in 2006. There were also increases in firms choosing to motivate their senior management team through restricted share units (RSUs) from around 9% of firms to 32% and share appreciation rights (SARs) - less than 5% in 2000 versus 8.29% in 2006. Bonuses as a percentage of total

compensation also increased from an average of 21% in the pre-amendment to Section 3870 period to 26% in the post-amendment to Section 3870 period.

However, the majority of firms included in this study continue to use ESOs as an executive compensation component, and ESOs are still the primary form of stock-based compensation, comprising about 16% of total compensation (RSUs, the next largest stock-based compensation component only accounts for around 6%). This implies that while there may have been a reaction to the amendment to Section 3870, ESOs continue to dominate, perhaps because of their usefulness in tying executive compensation to firm performance.

The amendment to 3870 should have led to a significant decline in ESO use for those firms who used ESOs for earnings management or because of managerial opportunism, if these were major reasons for ESO use. However, few of the factors associated with earnings management or managerial opportunism were found to be significant: there was no support for hypotheses that firms with stronger corporate governance in the pre-amendment period decreased ESO use less post-amendment than firms with weaker corporate governance, or that firms used ESOs in the pre-amendment period to achieve earnings benchmarks, or that firms closer to earnings based debt covenants decreased ESO use more. The only earnings management factor found to be significant was political visibility: firms that are more politically visible were more likely to reduce the amount of ESOs offered to senior management in the post amendment period.

One pay-for-performance factor was also considered: firms with more growth opportunities were expected to have smaller changes in ESO use associated with the amendment; as such firms should not have been affected by the change in accounting treatment. There was support for this factor being associated with smaller changes in ESO use.

I then examine two possible consequences of the change in ESO accounting treatment. The first was the rate of substitution between ESOs and RSUs. The substitution rate of RSUs for

ESOs was explored and was determined to be 16 cents of RSUs for one dollar of ESOs in the pre-amendment to Section 3870 period. This finding supports the prediction that the substitution rate between these forms of compensation is unequal and RSUs were substituted at less than a dollar for dollar basis for ESOs. It was also determined that the substitution rate between RSUs and ESOs was less unequal in the post-amendment to Section 3870 period (23 cents of RSUs for one dollar of ESOs). This higher substitution rate supports the prediction that ESOs became more costly (less preferred) for firms once the preferred accounting treatment was removed. The post-amendment substitution rate is also closer to that predicted by Hall and Murphy (2002), as expected. This finding implies that if firms can use less RSUs (compared to ESOs) to provide the same level of incentives to managers; pay for performance relationships should strengthen. The last prediction and second consequence of reduction in ESO use concerns pay for performance. The final hypothesis of this study predicted a stronger link between pay and performance after the amendment to Section 3870, if in fact the amendment reduced abuse of ESOs, and other forms of compensation were substituted that were less costly for the firm. This hypothesis was not supported, even for firms who reduce their ESO use more than the median. Taken together, the results of this study provide only modest evidence that earnings management or managerial opportunism were the dominant drivers of ESO use in Canada.

This study makes several contributions. First, previous studies have examined ESOs role in earnings management and managerial opportunism. This prior research (Aboody et al., 2004; Bodie, Kaplan, & Merton, 2003; Choudhary, et al., 2007) has suggested that the increase in ESO use was due to preferential accounting treatment. In contrast to these studies, my findings suggest that earnings management was not the dominant factor in the increase in ESO use in the pre-amendment period. My findings may be different for various reasons including the Canadian setting used (which is discussed below) and the research design and models that were used (also

discussed below). Also, the studies mentioned above examined firms that chose to voluntarily expense ESOs, whereas I study a sample of firms that include both early adopters and those who changed only when the regulation became effective. My sample is thus likely to be more representative of the population as a whole. The ongoing popularity of ESO use even after the favorable accounting treatment was removed suggests that pay for performance concerns could be a credible reason for ESO use.

This paper is an extension of Brown and Lee (2007), who explore the same issue in a U.S context. I refine their work by adding other factors that have been found to be significant or added as additional controls. This improves overall explanatory power as suggested by an increase in the adjusted R^2 , and helps me eliminate some confounds. I also examine temporal trends and pay for performance sensitivities where Brown and Lee (2007) examine abnormal compensation.

Another contribution of this study is that firms with different characteristics had the opportunity to be included because some explanatory factors such as corporate governance were hand collected. Many studies of executive compensation, including Brown and Lee (2007), use the *ExecuComp* database to provide information on the determinants of executive compensation. Use of *ExecuComp* means certain types of firms with different compensation contracts are not included in the samples, and are therefore not part of the *ExecuComp* database (Cadman, Klasa, & Matsunaga, 2007, p.1). This difference in data sources may be one cause of variation in findings between Brown and Lee (2007) and this study.

My sample also provides two more reporting years to analyze compared to Brown and Lee, which uses U.S. data. U.S. corporations were required to expense ESOs for “fiscal years beginning on or after June 15, 2005 – i.e., the first quarter of 2006 for most public companies,” (Choudhary et al., 2007, p. 7). This is important because changes in compensation contracts can

be more thoroughly examined in the Canadian setting as firms have had more time to adjust. I show that the change in ESO use has largely stabilized in the two years after the amendment to Section 3870 in 2004.

This study also contributes to the stream of literature examining pay for performance sensitivities. Just as others (Hall, & Liebman, 1998; Mehran, 1995; Merhebi et al., 2006) have found ESOs increase pay for performance, my study shows that an ESO reduction does not improve pay for performance sensitivities. A strength of this study was that I was able to study the use and effect of ESOs where the preferential accounting treatment was no longer available, which helps in disentangling pay for performance effects on their use.

This study also used a different setting than the previous U.S. based papers - Canada. This setting is interesting for numerous reasons in addition to providing two more years of data to analyze, including: differences in industry structure, dissimilar monitoring, lack of pro-forma disclosure and differences in firm size. First of all, a Canadian setting is interesting to explore because Canada did not have pro-forma (footnote) disclosure of ESOs until 2002 whereas pro-forma disclosure has been required in the US since 1995. This implies that the potential for opportunistic use of ESOs was greater than in the U.S.

Another reason Canadian data is interesting is because of the size of Canadian firms. Cadman et al. (2007) find that *ExecuComp* includes most of the large, publicly traded corporations in the U.S. and this sample omits smaller firms. Therefore “little is known regarding the compensation practices, or governance characteristics of the smaller firms that are not included in the database,” (Cadman et al., 2007, p. 1). Cadman et al. (2007) suggest that future research should include these smaller corporations to create meaningful insights into the area of executive compensation and how executive compensation is affected by corporate governance. Canadian firms are usually smaller than their American counterparts. Brown and Lee’s mean

SIZE (natural logarithm of the market value of equity) was 7.33 whereas in this sample it was around 2, so this study does provide some insight on the compensation practices of smaller firms.

Another difference in Canadian and American firms can be attributed to the difference between the structure of Canadian and U.S. firms (Zhou, 2000). For example, Canadian firms are usually smaller and more closely held than U.S. firms. This study finds that almost half of the firms in the sample were closely held (block holders owning twenty percent or more). Park, Nelson, and Huson (2001) suggest that in closely held firms, “information asymmetry between the board and firm executives is likely to decrease, as monitoring becomes more efficient,” (p. 349). This implies that corporate governance in closely held firms is stronger and will impact compensation structure. This may be one reason why there was no evidence of opportunistic earnings management – Canadian firms are more closely held and therefore there was less opportunistic use of ESOs by managers.

Finally, the industry structure is also different in Canada (Zhou, 2000, p. 214) and as a consequence, results are expected to be different because industry may impact the type of compensation contracts written. “For example, resources firms including mining, minerals and oil and gas constitute 29.5 per cent of Canadian firms,” (Zhou, 2000, p. 214) and these industries only make up 2 – 3 per cent of U.S. firms. There are approximately 20% of firms in this sample in the mining, minerals and oil and gas industry which is comparable to Zhou. This industry is included in the group of large ESO users in the pre-amendment period. The largest industry in a similar study conducted by Brown and Lee (2007) in the U.S. setting, was the aerospace and defense industry (11.1%) followed by the communication equipment industry (9.4%). The mining industry only accounts for about 9% of firms in Brown and Lee’s (2007) sample.

The remainder of the paper is organized as follows: Section Two discusses related literature and builds the hypotheses for the study. The sample selection, data sources, and

industry structure is discussed in Section Three. Hypotheses 1a and b are presented in Section Four, while H2 – 6 are addressed in Section Five. Sections Six, and Seven show results for H7a and b and H8 respectively. Finally, the conclusion is included in Section Eight.

Literature Review and Hypothesis Building

Background of Section 3870

U.S. Timeline

Since 1972, ESOs were valued based on Opinion 25 of the Accounting Principles Board (APB). According to APB 25, organizations issuing ESOs were required to show an expense equal to the difference between the market value and the exercise price on the date the option was granted. The difference between the two values is referred to as the intrinsic value. The majority of organizations would set the exercise price equal to the market value at the grant date, resulting in an expense of zero.

Although skepticism and criticism with regards to APB 25 began as early as 1982, the Financial Accounting Standards Board (FASB) did not address the issue until 1993 when it proposed Statement No. 123. This exposure draft would have required organizations to show an expense on the income statement based on the fair value of an option on the grant date. Organizations were provided with an option pricing model – the Black-Scholes method – that the FASB supported. This exposure draft was met with opposition from Congress, the SEC and other interested parties and as a result, was quickly dropped.

In 1995, the issue was discussed again and the FASB decided to require supplementary disclosure of this information in the footnotes of the financial statements (referred to as pro forma disclosure). The International Accounting Standards Board (IASB) issued a standard in February 2004 that required companies using international standards to value stock options using fair value measurements (Choudhary et al., 2007, p. 7). In response to the IASB's issuance, the U.S. amended FAS 123 and required corporations to show an expense on the income statement beginning on or after June 15, 2005.

Canadian Timeline

Prior to January 1, 2002 firms in Canada were required to disclose a note describing their stock option plans, as well as the options granted and exercised. In 2001 the Canadian Institute of Chartered Accountants (CICA) introduced the exposure draft for stock-based compensation and after receiving comments, required firms to include pro forma disclosure, (Section 3870) January 1, 2002. On October 30, 2002 David Smith, the president and CEO of the CICA spoke out about investor confidence as a result of Enron and WorldCom Scandals. Smith stated that Canada would be taking the necessary steps “to strengthen the financial reporting system, as well as our own profession’s discipline process, practice inspection system and rules of conduct,” (Smith, 2002). The Accounting Standards Oversight Council (AcSOC) decided to broach the issue of forcing Canadian companies to expense the cost of ESOs and introduced a new Exposure Draft outlining the amendment to Section 3870, to be discussed over a 90 day period beginning January 1, 2003. In September 2003, Canadian corporations were forewarned that they would have to expense options beginning January 1, 2004 (CICA Standards and Guidance Collection, 2002). Canada took the global lead and adopted the policy for fiscal years beginning on or after January 1, 2004 for public companies. Figure 1 summarizes this section and provides a timeline of the events.

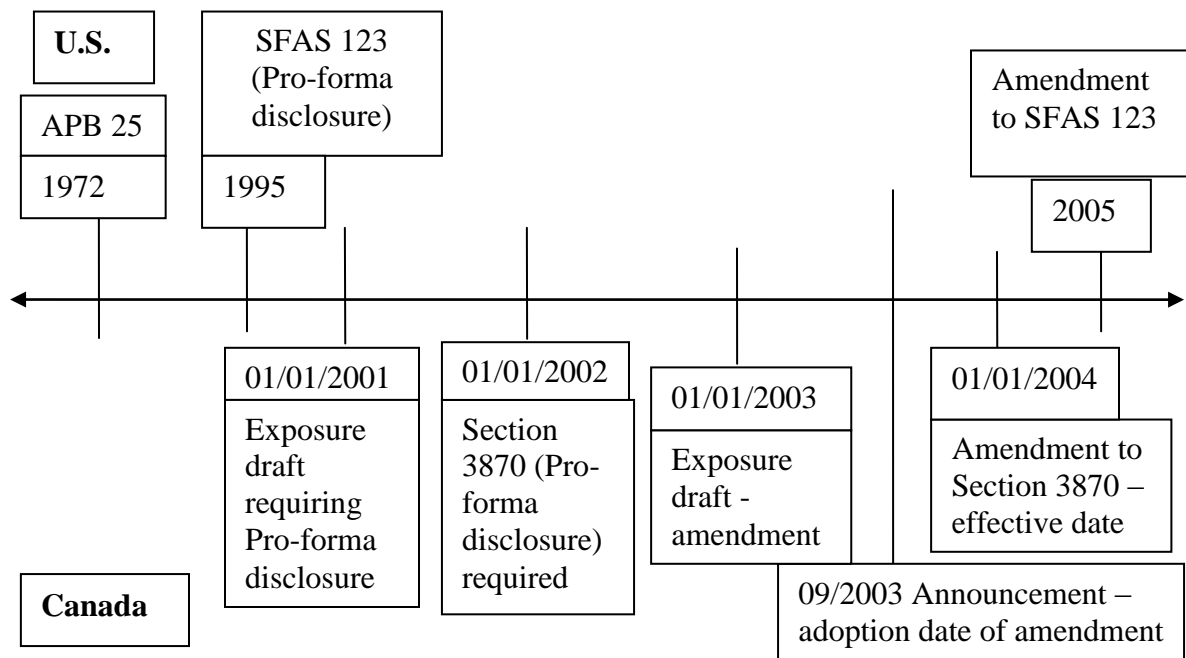


Figure 1 Timeline of Events

The Increased Use of Stock Options in Management

Compensation – Alternative Explanations

The use of ESOs in management compensation became very popular in the 1990s. Yermack (1995) found that stock option awards represented about one third of CEO compensation in the early nineties in the U.S, which was an increase from one-fifth in 1984. Boschen and Smith (1995) found that noncash rewards such as ESOs grew rapidly and increased “from 9.4% of total pay in 1970 to 45% of total pay in 1990,” (p. 590). An article written by Zhou (2000), examining Canadian corporations claims that “among the TSE 300 firms, 90 per

cent had an annual bonus plan and used stock options in compensating their executives,” (p. 217). There are various rationales provided for this increase in stock option popularity.

Stock Price

One rationale suggests the increase was due to the increase in security prices over the period, making options more lucrative for those who received them. Although this is one explanation for the increase in the use of ESOs, it is not the focus of this particular study.

Pay for Performance

The need for pay-for-performance arises from agency theory concerns about the separation of ownership from control inherent in corporations. This separation naturally gives rise to concerns on how to motivate agents/managers to exert effort and thus act in the best interests of the principals/owners, i.e. to maximize firm value.

In agency theory, agents/managers are assumed to be self-interested and to want to maximize their own utility, including minimizing effort, leading to the conclusion that “...the agent will not always act in the best interests of the principal,” (Jensen & Meckling, 1976, p. 5). Jensen and Meckling (1976) suggest that the principal can limit these agency problems by “establishing appropriate incentives for the agent and by incurring monitoring costs designed to limit aberrant activities of the agent,” (p. 5). In particular, agency theory suggests that compensation contracts should make managerial pay a function of firm performance (and hence related to shareholder returns), so that the required alignment of interests is achieved (Watts & Zimmerman, 1986).

Agency theory provided a useful framework to address concerns expressed by government and the business press that executive compensation was poorly linked to firm performance. In 1994, Fortune Magazine wrote, “many employers want to make pay more variable, rising and falling with the company's fortunes,” (Fierman, 1994). Many articles were

written (e.g. Boschen & Smith, 1995; Garen, 1994; Hall & Liebman, 1998; Haubrich, 1994; Jensen & Murphy, 1990; Mehran, 1995) among others, examining whether pay for performance led to improved firm performance. In support of agency theory, for example, Mehran (1995) finds that “the form, rather than the level, of compensation is what motivates managers to increase firm value,” (p. 164). The question then becomes what measure of firm performance should be used in pay for performance compensation contracts? Two problems arise regarding the question of using accounting-based performance measures such as net income.

First, accounting-based measures may not be sufficient to reduce agency costs, as managers have the means to manipulate accounting, including the net income number (Murphy, 1998). Second, management may provide appropriate effort, but still not achieve bonuses when accounting-based measures are used. For example, some managers may engage in positive net present value projects that are risky with longer-term payoffs, such as significant research and development. Such high risk long term projects decrease the chances of managers receiving their bonuses in the short-term. In this situation management has behaved appropriately, but still may not achieve their bonus due to not reaching their target net income number. Murphy (1998) describes accounting-based measures as “... inherently backward-looking and short-run,” (Murphy, 1998, p. 14).

As a result of these two problems, using net income as the only measure of CEO compensation is not sufficient. Holmstrom (1979) suggests that more than one performance measure is necessary to increase contracting efficiency and that measures include ones based on net income *and* share price. Holmstrom suggests that share price is acceptable as a measure of managerial effort as it is directly observable by the owner and the manager (and thus less subject to manipulation by the manager), and incorporates estimates of the future cash flows from

projects with long-term payoffs. Fama (1980) makes a similar recommendation for the use of stock-based compensation. This is one possible explanation for the increased use of ESOs.

Managerial Opportunism and Earnings Management

Other reasons for the increased use of ESOs stemmed from the preferential accounting treatment: organizations were offering their top executives ESOs because they did not have to show an expense on their income statement in either Canada or the U.S. Jeffrey Skilling (former CEO of Enron Co.), made the following statement, “You issue stock options to reduce compensation expense and therefore increase your profitability,” (Poitras, 2006, p. 1). With CEOs having this attitude, some firms had vast differences in reported net income and net income as it would have been if ESOs had been expensed. For example, “had AOL Time Warner in 2001 reported employee stock option expenses as recommended by SFAS 123, it would have shown an operating loss of about \$1.7 billion rather than the \$700 million in operating income it actually reported,” (Bodie et al., 2003, p.64). Hall and Liebman (1998) also suggest that the other explanation for the increase in stock option use was due to accounting treatment of ESOs.

These points suggest ESOs could have been used potentially for either opportunistic reasons (such as hiding excessive managerial pay) or non-opportunistic earnings management (such as improved contracting efficiency). However as Brown and Lee (2007), note “mandated expensing raised the accounting cost of ESOs to their approximate fair values, forcing firms to reconsider the costs and benefits of ESO compensation,” (p. 3). To the extent that the use of ESOs was due to preferential accounting treatment, the amendment of Section 3870 (the equivalent to FAS-123R in the U.S.) requiring firms to expense ESOs “will cause firms to switch to more cost-efficient forms of compensation to minimize compensation expenses,” (Brown & Lee, 2007, p. 3.)

Existing Research on ESO Expensing

Recently, Aboody, Barth and Kasznik, (2006), Brown and Lee, (2007), and Choudhary et al., (2007), have looked at the responses by U.S. companies to FAS 123-R (which required ESOs expensing in the U.S.). These studies provide various insights into the effect the amendment to this standard has had. For example Choudhary et al. (2007) look specifically at corporations who chose to accelerate ESOs' vesting period in response to FAS 123-R, while Aboody et al. (2006) look at firms that chose to expense ESOs early. These two studies do not provide evidence on the change in use of ESOs in response to FAS-123R. Brown and Lee (2007) attempt to identify the firm-specific factors that explain ESO reduction as well as examine how firms restructured their compensation practices in conjunction with ESO cutbacks in response to FAS-123R.

This study follows Brown and Lee's (2007) study in that it attempts to understand the effect of the change in accounting standard on ESO use. However, I am more explicitly trying to contrast the pay for performance versus earnings management/opportunism rationales for ESO use. It is also worth noting that Canadian data may provide more insight into this area of research since pro-forma disclosure did not even occur in Canada until 2002, making either opportunistic or earnings management use of ESOs more difficult to detect.

Given two possible explanations for ESO use, Canadian corporations that benefited from the preferential accounting treatment of ESOs prior to the amendment to Section 3870 are more likely to reduce the use of ESOs in compensation packages once expensing of ESOs was required. These corporations will gravitate towards more cost efficient forms of compensation. Other corporations using them primarily for pay-for-performance reasons should remain unchanged in their use. The joint effect of these two explanations should thus lead to an overall reduction in use when considering Canadian firms as a whole.

This leads to the first hypothesis (senior management refers to the top 5 executives in a firm for the remainder of the paper):

H1a: The proportion of compensation from ESOs for senior management has decreased since the amendment to Section 3870 has gone into effect.

In evaluating H1a, consideration of the relative magnitude of the change in ESO use should provide some insight into the relative importance of the competing explanations (pay-for-performance and preferential accounting treatment).

In a 2007 study Carter et al. found that “firms expensing stock options are granting fewer options and more restricted stock,” (p. 355). The Carter et al. (2007) study analyzed changes in the structure of CEO pay packages concurrent with and after the decision to expense options (Carter et al., 2007, p. 354). They contribute their findings to the role of accounting in equity compensation design – firms could no longer avoid reporting an expense for ESOs. They suggest that firms are moving towards using more restricted stock in order to provide longer-term performance incentives “and that there will likely be changes in CEO compensation now that SFAS No. 123(R) is in effect,” (Carter et al., 2007, p. 355). If fewer ESOs are used for executive compensation, the next question that arises is what compensation alternatives will be used instead?

Hall and Murphy (2002) find that “when existing compensation is adjusted, incentives are maximized through restricted stock grants rather than options,” (p. 26). This is ultimately because executives’ value restricted stock grants more highly than options, (Hall & Murphy, 2002, p. 26).

Another study completed prior to the SFAS No. 123(R) by Seethamraju and Zach (2003) looked at early adopters that chose to expense ESOs and they also looked at changes in compensation structure made by these early adopters. They found that firms that chose to expense

ESOs early made almost immediate changes to their compensation plans and 28% of these were major revisions. They define major changes in executive compensation as changes that “involve direct changes to option-based compensation and include total revisions to the entire compensation plans as well as changes in mix between, for example, options and restricted stock,” (Seethamraju & Zach, 2003, p. 37). It is therefore predicted that there will be an increase in other types of stock-based compensation similar to patterns of early adopters in the U.S. (Seethamraju & Zach, 2003) and the following is hypothesized:

H1b: The proportion of compensation from other types of stock-based compensation for senior management has increased since the amendment to Section 3870 has gone into effect.¹

Earnings Management for Opportunistic Reasons

Since managers have the ability to manipulate net income in their favor, use of performance measures in management compensation sometimes results in opportunistic earnings management by managers to boost their compensation (Healy & Wahlen, 1999), rather than exerting effort to affect the performance measure. Such behavior is opportunistic as manager’s benefit in the short term, but shareholders do not benefit in the long term as they would have if effort had been exerted instead.

Prior research has established that managers do behave opportunistically. Healy (1985) conducted an investigation of a contractual motivation for earnings management. His results show that managers manage income up or down depending on how close they are to ceilings and floors in their bonus contracts. Other studies suggesting opportunistic behavior by managers to improve compensation include Holthausen, Larker, and Sloan (1995) and Yermack (1997). Prior

to the amendment to Section 3870, there was an opportunity for CEOs to improve their firm's bottom line and thus increase their compensation through the use of ESOs.

Managers of firms that had poor corporate governance prior to the amendment to Section 3870 had more scope to be opportunistic and thus gain higher compensation through the preferential accounting for ESOs. However, Guay, Kothari, and Sloan (2003) suggest that mandatory expensing of ESOs increases the visibility of option-based compensation and highlights the cost of ESOs. This in turn makes it more difficult for CEOs in poorly governed firms to increase their compensation and manage earnings through the use of ESOs. Thus, the amendment to Section 3870 may have enabled corporate boards to better scrutinize CEO compensation packages and ESO use. Therefore, similar to Brown and Lee (2007), it is predicted that “the reduction in ESO use is greater for more poorly governed firms,” (p. 10), in the pre-amendment to Section 3870 period. This leads to the second hypothesis (stated in terms of stronger corporate governance):

H2: The proportion of compensation from ESOs for senior management for corporations with stronger corporate governance has decreased less than corporations with weaker corporate governance since the amendment to Section 3870 has gone into effect.

Earnings Management for Non-Opportunistic Reasons

Managers may choose accounting policies or estimates that affect earnings to improve contracting efficiency, as well as to respond to attention from third parties, such as government and unions, who can affect firm profitability. Changes in accounting standards may therefore have “economic consequences” as they affect the choice of standards and estimates available (Watts & Zimmerman, 1986), and thus current and future contracting costs and relationships with third parties who have an interest in the financial statements (Zeff, 1978). These economic

consequences can lead to a wealth transfer that is passed onto the shareholders in the form of a stock price increase or decrease (Watts & Zimmerman, 1986).

Previous research on the economic effects of passage of new accounting standards includes a paper by Mittelstaedt, Nichols, and Regier (1995) where they examine reductions in health care benefits associated with the passage of SFAS 106. SFAS 106 required financial statement recognition of health care costs. Another example is provided by Lev (1979), who examined how interested parties responded to a proposed standard in the U.S. that would have required oil and gas corporations to account for exploration using the successful efforts method.

There are three non-opportunistic uses of ESOs that this study explores with regards to explaining firm specific responses to the changes to Section 3870: pressure to meet or beat earnings benchmarks, debt contracting concerns, and avoidance of political costs.

Earnings Benchmarks. Scott (2006) suggests earnings management is sometimes used to meet investors' earning expectations. "Firms that report earnings greater than typically expected enjoy a significant share price increase," (Scott, 2006, p. 353). On the other hand, firms that do not meet earnings expectations experience share price decreases. Studies done by Bartov, Givoly, and Hayn (2002) and Skinner and Sloan (2002) found that the market penalizes firms that do not meet earnings targets more than it rewards firms for exceeding targets.

Before the amendment to Section 3870, the preferential accounting treatment of ESOs gave corporations a vehicle to achieve earning expectations. Therefore corporations that used ESOs extensively to achieve earnings benchmarks will be more likely to reduce ESO use more than other corporations. This leads to Hypothesis Three:

H3: The proportion of compensation from ESOs for senior management for corporations that use ESOs' favorable accounting treatment to achieve earnings benchmarks has decreased since the amendment to Section 3870 has gone into effect.

Debt Contracting Concerns. Watts and Zimmerman (1986, 1990) contend that in order to meet accounting-based debt covenants, managers will make choices that do not violate these already negotiated contracts. The costs of renegotiating these contracts can be quite high and result in higher interest rates (Beneish & Press, 1993; DeFond & Jiambalvo, 1994; Dichev & Skinner, 2002; Sweeney, 1994). Using ESOs in compensation packages allowed firms to avoid violation of debt covenants since they did not have to be expensed. Since the amendment to Section 3870, firms are more likely to violate these covenants and will want to choose compensation components that do not violate debt covenants. If earnings management was a motivating factor for ESO use, the loss of the ability to use ESOs as an earnings management device will cause firms to consider other compensation alternatives. Therefore corporations with more binding earnings based covenants prior to the amendment to Section 3870 are likely to cut back more on ESOs (Brown & Lee, 2007, p. 8). This leads to the fourth hypothesis:

H4: The proportion of compensation from ESOs for senior management for corporations that are closer to earnings based debt covenants has decreased since the amendment to Section 3870 has gone into effect.

Political Costs. “All other things being equal, the greater the political costs faced by a firm, the more likely the manager is to choose accounting procedures that defer reported earnings from current to future periods,” (Scott, 2006, p. 243). This is referred to as the political cost hypothesis. “Larger and more profitable firms are more sensitive to political pressure,” (Aboody et al., 2004, p. 132). These firms do not want to draw more attention and this in turn affects the contracts they write. Thus, corporations that want to stay out of the limelight because of high income may continue using ESOs, using the amendment to Section 3870 to decrease their net income.

However, Darrough and Li (2006) found that politically visible firms reduced ESO use more in the post Enron era because investors learned that top executives had continued to make millions of dollars by cashing in ESOs while shareholders lost the bulk of their investments (Brown & Lee, 2007, p. 16). The political environment turned hostile towards firms using ESOs. Dechow, Hutton, and Sloan (1996) also argue that managers with significant option portfolios want to reduce the visibility of excess compensation and attempt to reduce the political costs associated with reporting high compensation expense and therefore will want to reduce ESO use in the post amendment period since ESOs can no longer hide compensation expense.

This leads to two competing possibilities regarding the effects of the amendment to Section 3870: will firms use the amendment to Section 3870 and continue to use ESOs to reduce net income, or will they use ESOs less to reduce political scrutiny associated with ESO use? Because of these conflicting motivations, it is difficult to predict what politically visible firms will do. To parallel Brown and Lee (2007), the second explanation regarding ESO use decreasing as a means of reducing a firms' political scrutiny is preferred, and Hypothesis 5 is proposed:

H5: The proportion of compensation from ESOs for senior management for corporations that are more visible politically has decreased more since the amendment to Section 3870 has gone into effect.

Pay for Performance: Growth Opportunities

Having an efficient securities market means that all available information is reflected in the share price. In the late nineties, options were considered by the market to be a symbol of a firm's financial success (Seethamraju & Zach, 2003, p. 5). For example, start-up high-tech firms and firms with intensive research and development programs preferred the use of ESOs because short-term options allowed managers to benefit from stock price appreciation. The market price

captured these firms' potential growth opportunities and was a better measure of success for these firms. Chourou, Abaoub, and Saadi (2008), state that "firms experiencing high growth opportunities should offer more stock-based compensation to their CEOs" (p. 63). Executives were able to generate large compensation benefits through the use of ESOs because of the strong bull market during the nineties and the years 2003 through 2008. Hypothesis Six follows from this discussion and states:

H6: The proportion of compensation from ESOs for senior management for corporations with greater growth opportunities has decreased less since the amendment to Section 3870 has gone into effect.

The next section focuses on understanding the changes in compensation structure and the results of those changes.

Changes to Management Compensation Design Associated

With the Amendment to Section 3870

Hall and Murphy (2002) find that "options are, in fact, an unusually expensive and therefore inefficient way to convey compensation to executives," (p. 16). Firms can motivate risk-averse executives through less risky compensation alternatives and "the economic cost to the shareholders of granting options often far exceeds the value that employee-recipients place on the options," (Hall & Murphy, 2002, p. 16). Therefore, if the amendment to Section 3870 improved contracting efficiency by reducing use of ESOs, overall compensation costs should decrease subsequent to the amendment. An additional component of this study therefore examines how firms restructured compensation packages after the amendment to Section 3870.

Two major aspects of compensation alternatives have been identified that affect their use in compensation packages: financial reporting and accounting differences, and risk differences.

Financial Reporting/Accounting Implications

One prediction, similar to Brown and Lee (2007) is that firms choose among compensation alternatives based on how compensation is reported in the financial statements. Stock-based compensation plans (ESOs, SARS, PSUs and RSUs) may be settled in shares or cash, and the accounting for these plans in Canada differs depending on the method of settlement but is no better or worse from the firm's perspective.

Typically, ESOs are settled in shares. As noted earlier, prior to the amendment to Section 3870, ESOs did not need to be expensed, making their accounting treatment more attractive to firms relative to other forms of compensation. After the amendment, ESOs are valued using an option pricing model (e.g. the Black-Scholes method). The inputs to option pricing models can be difficult to estimate. For example, "three of the variables (expected volatility, expected dividend yield, and expected term of the option) ... require subjective assessment of the future," (Hagopian, 2006, p. 152) and adjustment of any of these variables can have a dramatic effect on the price of the option. This estimated expense is allocated over the vesting period. For example, most organizations use a four year vesting period and therefore this expense is recognized over a four year period. The post-amendment accounting treatment for ESOs affects income and thus owner's equity, with no adjustment for changes in value of the underlying shares at each balance sheet date.

On the other hand, stock-based compensation when settled in cash (e.g. PSUs, RSUs and SARs) is valued using the intrinsic method. This means that compensation is measured at the market value on the date of issue (number of shares granted multiplied by market value) and thus requires no estimation. This expense is allocated over the service period (the period in which the employee performs the service, which is usually the same as the vesting period) and is adjusted at

each balance sheet date to reflect the current market price of the shares. The accounting treatment for plans settled in cash affects liabilities.

The major differences between the two types of settlement are thus: the valuation method, the need for adjustments made over the vesting/service period and which accounts are affected. In a period of rising prices (which was the case over my sample period), stock-based compensation settled in shares may be preferred over stock-based compensation settled in cash because adjustments are not required and will therefore not subsequently decrease net income.

Risk

Performance based incentives are used to align shareholder and manager goals. One caveat is that these plans impose risk on the executive, who are generally assumed to be risk averse. Risk-averse executives prefer compensation contracts that are not contingent on firm performance. Risk-averse executive's value options lower than the company could sell the options on the market because the executive cannot usually sell the option or hedge against its risk. "Executives receiving options will therefore value the options below their cost to shareholders, and this differential must be weighed against the incentive benefits in determining the optimal level of stock option compensation," (Hall & Murphy, 2002, p. 5). Research suggests that other types of stock-based compensation are less risky and therefore fewer non-ESO type options need to be provided. For example, Brown and Lee (2007) find that "that a one-dollar decrease in ESOs is associated with a 35-cent increase in restricted stock," (p. 25). In addition, Hall and Murphy (2002) argue from a theoretical perspective that, "when efficient bargaining is allowed, restricted stock is relatively cheap (because executives value it more highly than options and therefore are willing to take a larger cut in cash pay)," (p. 27). Hall and Murphy (2002) determine that an executive will be indifferent between receiving \$300,000 in cash, \$375,000 in restricted stock (RSUs), and \$500,000 in options issued at fair market value (ESOs) (p. 16). This

ordering is based upon keeping the executive at the same level of expected utility, (Hall & Murphy, 2002, p. 16).

Thus, pre-amendment, the lack of cash needed for ESOs combined with their favorable accounting treatment made them preferable from the firm's perspective to RSUs, but riskier from the manager's perspective. RSUs would therefore have been less willingly substituted for ESOs by the firm despite managers' preferences, and so the substitution rate would have been more unequal than in the post-amendment period. In a market with increasing prices, ESOs may still be the preferred form of stock-based compensation; however, with the loss of accounting advantage for the firm after the 3870 amendment, firms should have a greater willingness to substitute RSUs in place of ESOs in the post-amendment period, all else equal. H7a and b therefore predict the following inequalities for replacing ESOs with RSUs in the pre- and post-amendment periods:

H7a: In the pre-amendment to Section 3870 period, the substitution rate for ESOs and RSUs is unequal, with RSU substituted at less than a dollar for dollar basis for ESOs.²

H7b: In the post-amendment to Section 3870 period, the substitution rate of RSUs to ESOs is less unequal than in the pre-amendment period, and closer to the theoretical substitution rate suggested by Hall and Murphy.

Improvements in Pay for Performance Associated

with the Changes in Compensation Design

The desire to include compensation based on share price to better align manager and shareholder interests was one reason (previously mentioned) for the increase in the use of ESOs in executive compensation. In support of the theory on this issue, Hall and Liebman (1998) find a strong relationship between CEO compensation and firm performance. Their research suggests that this strong relationship is due in particular to ESOs and stock-based compensation, (p. 653).

Hall and Liebman's (1998) study supports the use of ESOs to align owner and manager goals. Their results imply that compensation contracts need to include stock and ESOs to increase pay-for-performance sensitivities and "the relationship between pay and performance is almost entirely driven by changes in the value of stock and stock options," (Hall & Liebman, 1998, p. 685). ESOs were viewed as an effective component in compensation contracts relative to cash because, "the incentive effects of salary and bonus changes are 53 times smaller than those from stock and stock option revaluations," (Hall & Liebman, 1998, p. 682). In this study, I consider the incentive effects of other forms of stock-based compensation and whether these other types of stock-based compensation provide similar pay-for-performance incentives as ESOs.

Although ESO use has apparently created a stronger pay for performance link, senior management compensation has been said to be abnormally high as a result. Brown and Lee (2007) find that "...ESO use is associated with abnormally high executive compensation," (p. 30). As previously mentioned, the excessive use of ESOs may be due to the preferential accounting treatment prior to the amendment to Section 3870. The amendment should force companies to reconsider their compensation packages and as a result, reduce ESO use for senior management. It is predicted above that this decrease is off-set by an increase in other types of stock-based compensation, but as noted earlier, the substitution of other stock-based compensation should be less than a dollar per dollar reduction in ESOs.

Therefore, reducing ESO use while simultaneously increasing other types of stock-based compensation, but at a less than dollar for dollar substitution rate, should result in an overall decrease in total compensation (controlling for economic determinants). If the same level of motivation is provided by other forms of stock-based compensation to senior management teams, then the final hypothesis is:

H8: The pay-performance sensitivity for total compensation for senior management has improved since the amendment to Section 3870.

Method and Results

Sample Selection

The sample for this study was determined by the Financial Post ranking of the top 500 largest Canadian Corporations by revenue (FP 500, 2008). This list also included an additional 300 Canadian corporations for a total of 800. Starting at the top of the Financial Post ranking, each firm was looked up on SEDAR - the System for Electronic Document Analysis and Retrieval - (Sedar, n.d.) to ensure that the firm had both financial statement and proxy data available for the sample period. Initially, the first 200 publicly listed corporations that had data available on SEDAR for at least two years from the pre-Section 3870 period (2000 – 2002) and at least two years from the post-Section 3870 period (2004 – 2006) and used Canadian Generally Accepted Accounting Principles, (GAAP) were included in the sample.³ After these 200 firms were collected, it was decided that an additional eleven firms be collected in case the banks and financial institutions were deemed to have too much influence on the data.⁴ This resulted in a total of 211 firms that had data for the sample period. An additional 31 firms were then eliminated as they did not use ESOs at all during the sample period, and an additional 5 firms were eliminated because market returns data was not available for them. Therefore 175 firms are used in Model 1 (see Table 1).

Table 1

Model 1 Sample Selection and Criteria

<i>Description</i>	<i>Size</i>
Initial sample	200
Additional firms collected	11
Firms not using ESOs as part of compensation for 2000-2006	31
Firms missing market return data	5
Firms included in the sample using ESOs	175

Data Sources

As previously mentioned the governance and compensation data for this study was hand collected. Below is a description of the data sources used to find all relevant information.

Compensation and Governance Data

The data for senior management compensation⁵ (previously defined as the top 5 executives) and governance variables were hand collected from the proxy statements filed on SEDAR. SEDAR is the system in Canada used for electronically filing securities related information and is now mandatory for most reporting issuers in Canada, (Sedar, n.d.). All senior management compensation components are reported in dollars in the proxy statements except ESOs, which are valued using the Black-Scholes-Merton valuation method (see Appendix A for the formula). Any data disclosed in US dollars was converted to Canadian dollars at an average exchange rate for that firms' fiscal year (Bank of Canada, 2008). Senior management compensation data for fiscal years between January 2000 and December 2006 were collected.

Financial Statement Data

Financial statement data that was required for this study was collected from FPIInfomart.ca (FPIInfomart, 2008). FPIInfomart.ca is Canada's largest provider of financial and corporate data. All data collected from FPIInfomart are disclosed in Canadian dollars. Any financial statement data that was not available on FPIInfomart.ca was hand collected directly from that firm's financial statements on SEDAR. Finally if the data was not available on either of the above, Research Insight was used.

Return Data

Market returns information was collected using the Canadian Financial Markets Research Center (CFMRC) Summary Information Database or Research Insight if the data was not available from CFMRC.

Industry Structure of Sample

The number of firms per year in the sample by industry category is provided in Table 2. In this study, year is defined as the year covering the final month of the fiscal year chosen by the firm. For example a fiscal year from May 2000 to April 2001 is treated as an observation for the year 2001. Most firms in the sample had a fiscal year end of December 31.

Since the Exposure Draft was released on January 1, 2003, firms were aware of the impending change of Section 3870 and had the ability to begin changing their compensation plans before the amendment to Section 3870 was actually passed. As a result, it was difficult to classify the year 2003 as pre or post-Section 3870, and therefore the year 2003 was excluded from the data employed in all models, and in Table Two.

The North American Industry Classification System (NAICS) was used at the two-digit level to define the industry categories. Overall, there were 20 NAICS industries, with 1,250 firm year observations. The largest two industries are mining, quarrying and oil and gas extraction (20.08%) and primary metal manufacturing (14.24%). Finance and insurance (12.24%) and wood product manufacturing (9.60%) make up the next largest industries in the sample. This is comparable to Zhou's Canadian sample (2000) industry structure where his two largest industries were resources (29.5%) followed by financial industries (21.5%). It is clear when comparing to Brown and Lee (2007, p. 44) - whose largest industry is Aerospace and Defense (11.1%) and second largest industry is Communications Equipment (9.4%) – that the Canadian business landscape is quite different.

Table 2

Sample Size by NAICS Industry and Year

<i>Industry</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>Number of observations</i>	<i>% of firms in each industry</i>
Agriculture, forestry, fishing and hunting	6	6	6	6	6	6	36	2.88%
Mining, quarrying and oil and gas extraction	42	42	42	42	42	41	251	20.08%
Utilities	4	5	5	5	5	5	29	2.32%
Construction	5	5	5	5	5	5	30	2.40%
Manufacturing	10	10	10	10	10	10	60	4.80%
Wood product manufacturing	20	20	20	20	20	20	120	9.60%
Primary metal manufacturing	28	30	30	30	30	30	178	14.24%
Wholesale trade	5	5	5	5	5	5	30	2.40%
Retail trade	10	10	10	10	10	10	60	4.80%
Sporting goods, hobby, book and music stores	4	4	4	4	4	4	24	1.92%
Transportation and warehousing	7	7	7	7	7	7	42	3.36%
Information	16	16	16	16	16	15	95	7.60%
Finance and Insurance	26	25	25	26	26	25	153	12.24%
Real estate and rental leasing	8	8	8	8	8	8	48	3.84%
Professional, scientific and technical services	3	3	3	3	3	3	18	1.44%
Management of companies and enterprises	2	2	2	2	2	2	12	0.96%
Administrative and support and waste management	7	7	7	7	7	7	42	3.36%
Arts and entertainment and recreation	1	1	1	1	1	1	6	0.48%
Accommodation and food services	1	1	1	1	1	0	5	0.40%

<i>Industry</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>Number of observations</i>	<i>% of firms in each industry</i>
Other Services	2	2	2	2	2	1	11	0.88%
Total N per year⁶	207	209	209	210	210	205	1,250	100.00%

ESO usage by Industry

Columns Two and Three in Table 3 present the mean and median values respectively of ESOs as a proportion of total compensation (ESO%) by industry. Arts and entertainment and recreation appear to have the highest ESO% with a mean (median) of 32.06% (33.95%). The information industry has the second highest ESO% of 28.00% (25.11%). Wholesale trade has an ESO% of 25.98% (18.71%) followed closely by mining, quarrying and oil and gas extraction with a mean (median) of 25.93% (22.59%). Firms in the utilities industry have the least ESO% at 6.29% (4.56%). There is an apparent right skewness of the underlying distribution of ESO use for many industries in Table 3 which accounts for the difference between the mean and median.

Columns Four and Five show the mean ESO% in the pre-amendment to Section 3870 and in the post-amendment to Section 3870 periods respectively. The information industry was the largest user of ESOs in the pre-amendment to Section 3870 period (34.38%) followed by the mining, quarrying and oil and gas extraction sector (30.60%). The arts and entertainment and recreation sector continued to increase their ESO use in the post-amendment to Section 3870 period (35.07%) and the second largest users of ESOs in the post-amendment period was the wholesale trade industry (24.45%). It appears that all but four industries reduced ESO use. The accommodation and food services industry moved away from any ESO use and the firm with the next largest change in ESO use was the professional, scientific and technical services industry.

Table 3

ESO% Mean per industry, pooled, Pre- and Post-Section 3870

<i>(1)</i> <i>Industry (N)</i>	<i>(2)</i> <i>Aggregate</i> <i>Mean</i> <i>Industry</i> <i>ESO%</i>	<i>(3)</i> <i>Aggregate</i> <i>Median</i> <i>Industry</i> <i>ESO%</i>	<i>(4)</i> <i>Mean</i> <i>Industry</i> <i>ESO% Pre-</i> <i>Section 3870</i>	<i>(5)</i> <i>Mean</i> <i>Industry</i> <i>ESO% Post-</i> <i>Section 3870</i>	<i>(6)</i> <i>%</i> <i>Change</i> <i>(Pre and</i> <i>Post)</i>
Agriculture, forestry, fishing and hunting (36)	19.61%	5.14%	26.07%	13.14%	-49.60%
Mining, quarrying and oil and gas extraction (251)	25.93%	22.59%	30.60%	21.21%	-30.69%
Utilities (29)	6.29%	4.56%	6.09%	6.47%	6.24%
Construction (30)	9.90%	0.00%	11.60%	8.20%	-29.31%
Manufacturing (60)	13.53%	2.95%	17.24%	9.82%	-43.04%
Wood product manufacturing (120)	24.24%	22.54%	28.63%	19.85%	-30.67%
Primary metal manufacturing (178)	16.98%	9.38%	21.94%	12.13%	-44.71%
Wholesale trade (30)	25.98%	18.71%	27.50%	24.45%	-11.09%
Retail trade (60)	11.74%	0.00%	11.65%	11.83%	1.55%
Sporting goods, hobby, book and music stores (24)	10.48%	1.78%	12.40%	8.56%	-30.97%
Transportation and warehousing (42)	19.58%	15.35%	17.06%	22.10%	29.54%
Information (95)	28.00%	25.11%	34.38%	21.48%	-37.52%
Finance and Insurance (153)	14.42%	9.21%	19.02%	9.88%	-48.05%
Real estate and rental leasing (48)	17.02%	1.17%	22.51%	11.54%	-48.73%
Professional, scientific and technical services (48)	11.59%	2.99%	19.25%	3.93%	-79.58%
Management of companies and enterprises (12)	22.25%	0.00%	23.16%	21.34%	-7.86%
Administrative and support and waste management (42)	20.74%	15.01%	26.76%	14.72%	-44.99%

(1) <i>Industry (N)</i>	(2) <i>Aggregate Mean Industry ESO%</i>	(3) <i>Aggregate Median Industry ESO%</i>	(4) <i>Mean Industry ESO% Pre- Section 3870</i>	(5) <i>Mean Industry ESO% Post- Section 3870</i>	(6) <i>% Change (Pre and Post)</i>
Arts and entertainment and recreation (6)	32.06%	33.95%	29.05%	35.07%	20.72%
Accommodation and food services (5)	10.45%	0.00%	17.42%	0.00%	-100.00%
Other Services (11)	19.71%	14.78%	21.13%	18.00%	-14.81%
Aggregate Average	19.59%	13.12%	23.67%	15.50%	-34.52%

Hypothesis 1a

A comparison-of-means test for each of the various forms of senior management compensation was conducted first. Senior management compensation usually consists of salary, bonus, other annual (Misc.) compensation, ESOs (including SARs), other stock-based compensation (PSUs, RSUs), long term incentive plans and all other annual compensation. These items are included in total compensation and the definitions for these components defined by the Ontario Securities Commission in Form 51-102F6 Statement of Executive Compensation (Ontario Securities Commission, 2008) can be found in Table 4.

A key part of the research design requires assigning compensation to the pre and post 3870 amendment periods. A proxy statement issued in the calendar year following the firm's year-end discussed information pertaining to that fiscal year, and was labeled as compensation for that fiscal year. For example, a proxy statement issued in April 2004 would have described compensation for the fiscal year-end December 31, 2003 (although it may have been paid in early 2004) and was labeled as compensation for the year 2003.

Table 4

Executive Compensation Components – Total Compensation

<i>Type</i>	<i>Description</i>
Salary	Any cash or non-cash base salary. For non-cash compensation, disclose the fair market value of the compensation at the time the compensation is earned.
Bonus	Any cash or non-cash bonus.
Other annual (Misc.) compensation	Perquisites and other personal benefits, securities or property unless the aggregate amount of such compensation is less than \$50,000 and 10 per cent of the total of the annual salary and bonus for the financial year. A perquisite is the cost or value of a personal benefit provided to the senior manager that is not available to all employees. Examples: car allowance, car lease, cars, corporate aircraft, club membership, financial assistance to provide education to children of the executive, financial counseling, parking and tax return preparation; The above-market portion of all interest, dividends or other amounts paid concerning securities, options, SARs, loans, deferred compensation or other obligations issued; Earnings on LTIP compensation or dividend equivalents paid during the financial year or payable during that period but deferred at the election of the executive; Amounts reimbursed during the financial year for the payment of taxes; The difference between the price paid by an executive for a security of your company or its subsidiaries that was purchased from the company or its subsidiaries and the fair market value of the security at the time of purchase; The imputed interest benefits from loans provided to, or debts incurred on behalf of, the executive by the company and its subsidiaries as computed in accordance with the Income Tax Act (Canada); and The amounts of loan or interest obligations of the executive to the company, its subsidiaries or third parties that were serviced or settled by the company or its subsidiaries without the substitution of an obligation to repay the amount to the company or subsidiaries in its place.
Securities under options granted / SARs granted	<p>ESOs (valued using the Black-Scholes method – see Appendix A)</p> <p>Options include all options, share purchase warrants and rights granted by a company or its subsidiaries as compensation for employment services or office.</p> <p>Stock appreciation rights (SARs)</p> <p>Means a right, granted by a company or any of its subsidiaries as compensation for employment services or office to receive cash or an issue or transfer of securities based wholly or in part on changes in the trading price of publicly traded securities.</p>
Shares or Units subject to Resale Restrictions (RSUs)	The dollar value of any shares or units that are subject to restrictions on resale (calculated by multiplying the closing market price of your company's freely trading shares on the date of grant by the number of stock or stock units awarded).

<i>Type</i>	<i>Description</i>
Performance Share Units (PSUs)	The dollar value of any shares or units that are subject to performance restrictions as determined by the individual firm (calculated as the number of options or shares to which all employees receiving the award will be entitled by the exercise price)
Long-term incentive plan	A plan providing compensation intended to motivate performance over a period greater than one financial year. LTIPs do not include option or SAR plans or plans for compensation through shares or units that are subject to restrictions or resale. Awards of shares or units that are subject to restrictions on resale that are subject to performance-based conditions prior to vesting may be disclosed as LTIP under the table instead of under shares or units subject to resale restrictions.
Pension	All compensation relating to defined benefit or defined contribution plans. These include service costs and other compensatory items such as plan changes and earnings that are different from the estimated earnings for defined benefit plans above-market earnings for defined contribution plans
All other compensation	The amount paid, payable or accrued to an executive for the resignation, retirement or other termination of the executive's employment with the company, or a change in control of the company or one of its subsidiaries; the dollar value of the above-market portion of all interest, dividends or other amounts earned during the financial year, or calculated with respect to that period; the dollar amounts earned on LTIP compensation during the financial year, or calculated with respect to that period and dividend equivalents earned during that period except amounts recorded in other annual compensation column; annual contributions or other allocations by the company or its subsidiaries to vested and unvested defined contribution plans or employee savings plans; the dollar value of any insurance premium paid by, or on behalf of the company during the financial year with respect to term life insurance; and any form of a contribution to assist the executive's purchase of shares, unless the contribution was available to all security holders or to all salaried employees of the company.

Hypothesis H1a predicts a cutback in ESO use after the amendment to Section 3870, and a simple test of means is used to determine if the hypothesis is supported. Table 5 provides means and medians of the top five managers' total compensation and each of its components as a proportion of total compensation pre-and post-Section 3870, to help place the change in ESOs in context.

The mean and median total compensation for senior management significantly increased from the pre-Section 3870 period to the post-Section 3870 period ($p < 0.0001$). The mean

(median) salary as a percent of total compensation decreased significantly ($p < 0.0001$) from 44.10% (41.54%) to 37.20% (35.78%). The mean (median) bonus as a percent of total compensation increased significantly ($p < 0.0001$) from 21.14% (18.68%) to 26.02% (24.03%). These results are consistent with Brown and Lee (2007, p. 20) who found a decrease in mean salary from 31% to 29% and an increase in mean bonus from 16% to 20%. Similar to Brown and Lee (2007) was the increase in mean RSUs (1.47% to 5.56%) and mean increase in LTIP (1.96% to 3.21%). Brown and Lee (2007) found mean increases in RSUs (6.39% to 13.56%) and mean LTIP (2.33% to 4.27%). Canadian firms seem to rely more on bonuses than the use of share-based compensation.

Table 5

Comparison of Means and medians of total executive compensation and its components pre-amendment and post-amendment to Section 3870

(1)	(2) <i>Pre-Section 3870 (2000-2002)</i>			(3) <i>Post-Section 3870 (2004-2006)</i>			(4) <i>Aggregate Sample (excluding 2003) (2000-2006)</i>			(5) <i>Two-Sample paired t-test (2 vs. 3)</i>
	Mean	Median	Std. Dev	Mean	Median	Std. Dev	Mean	Median	Std. Dev	(Wilcoxon two-sample test)
Total compensation to top five executives (millions of dollars)	6.533	3.359	9.164	8.090	5.379	8.304	7.312	4.371	8.775	<0.0001 (<0.0001)
Salary %	44.10%	41.54%	23.00%	37.20%	35.78%	18.94%	40.65%	38.10%	21.34%	<0.0001 (<0.0001)
Bonus %	21.14%	18.68%	17.27%	26.02%	24.03%	16.96%	23.58%	21.80%	17.28%	<0.0001 (<0.0001)
Misc comp. %	2.45%	0.19%	4.79%	2.59%	0.56%	4.89%	2.52%	0.35%	4.84%	0.30 (0.21)
ESO %	23.67%	18.59%	24.50%	15.50%	10.05%	18.26%	19.59%	13.12%	21.98%	<0.0001 (<0.0001)
SAR %	0.57%	0.00%	3.99%	1.41%	0.00%	6.87%	0.99%	0.00%	5.63%	0.0059 (0.02)
RSU %	1.47%	0.00%	5.87%	5.56%	0.00%	12.03%	3.52%	0.00%	9.68%	<0.0001 (<0.0001)
PSU %	0.02%	0.00%	0.59%	1.10%	0.00%	5.41%	0.56%	0.00%	3.89%	0.0004 (<0.0001)
LTIP %	1.96%	0.00%	7.61%	3.21%	0.00%	9.37%	2.58%	0.00%	8.55%	<0.0001 (0.00)
Pension %	0.02%	0.00%	0.28%	0.84%	0.00%	0.59%	0.05%	0.00%	0.46%	0.00475 (0.00)
All other comp %	3.93%	0.37%	8.51%	5.83%	1.30%	10.69%	4.89%	0.83%	9.70%	0.01 (<0.0001)

Also consistent with Brown and Lee (2007), was the significant decrease ($p < 0.0001$) in ESO use. The mean (median) value of ESOs as a percent of total compensation declined from 23.67% (18.59%) to 15.5% (10.05%). These findings support H1a which predicted a decrease in ESO use since the implementation of Section 3870. Brown and Lee (2007, p. 20) found the mean (median) ESO use declined from 38% (37%) to 27% (24%). Compared to Brown and Lee's

(2007) U.S. sample, overall this Canadian sample used options less and also decreased the use of ESOs less than their U.S. counterparts.

Table 6 below shows the changes over time surrounding the amendment to Section 3870. This analysis was conducted to determine if the change in senior management compensation was associated in time with the amendment rather than being part of general time trends. Table 6 shows that the greatest change in mean and median ESO use occurs in the year the exposure draft for the amendment to Section 3870 was introduced and adopted - 2003. Table 6 also shows that there was another weakly significant mean reduction in the use of ESOs (while the change was not significant for the median) after the passage of the amendment in 2004, although the change is much smaller than the reaction to the Exposure Draft.

Table 6
Change in ESO% per year

<i>Year</i>	<i>Median ESO% Year_{t-1} - Year_t</i>	<i>Wilcoxon Two- sample test statistic</i>	<i>Mean ESO% Year_{t-1} - Year_t</i>	<i>t-Statistic from a Two-sample paired t-test</i>
2000 – 2001	0.16 – 0.18	42868.50	0.23 – 0.23	-0.03
2001 – 2002	0.18 – 0.20	43248.50	0.23 – 0.24	-0.54
2002 – 2003	0.20 – 0.12	46921.50***	0.24 – 0.18	3.36****
2003 – 2004	0.12 – 0.10	45050.50	0.18 – 0.17	0.86
2004 – 2005	0.10 – 0.12	44666.50	0.17 – 0.16	1.15*
2005 – 2006	0.12 – 0.09	42031.00	0.16 – 0.15	0.53
2006 – 2007	0.09 – 0.09	37764.00	0.15 – 0.14	0.59

*p < .10, two-tailed. **p < .05, two-tailed. ***p < .01, two-tailed. ****p < .001, two-tailed.

Hypothesis 1b

As shown in Table 5 above, there is support for H1b, which predicts an increase in the use of other types of stock based compensation after the amendment to Section 3870. SARs as a percentage of total compensation increased, with its mean (median) value going from 0.57% (0.00%) in the pre-amendment to Section 3870 period to 1.41% (0.00) in the post-amendment to

Section 3870 period ($p = 0.00$). RSUs as a percentage of total compensation also increased significantly ($p < 0.0001$) with its mean (median) value increasing from 1.47% (0.00%) in the pre-amendment to Section 3870 period to 5.56% (0.00%) in the post-amendment to Section 3870 period. Finally, PSUs as a percentage of total compensation increased ($p = 0.0002$) with its mean (median) value increasing from 0.024% (0.00%) in the pre-amendment to Section 3870 period to 0.592% (0.00%) in the post-amendment to Section 3870 period. One unexpected finding was the significant increase in bonus-based compensation. This finding suggests that some ESOs may have been replaced with bonuses rather than non-ESO stock-based compensation.

Table 7 shows the percentages of firms that use the various forms of stock-based compensation to help understand the findings in Table 6. Sixty-one percent of firms continue to use ESOs in 2006, down from 66% in 2002. The percentage of firms using SARs has increased overall from 2000 to 2006 (4.83%) although they decreased to just two percent in 2002, but rose to 8.29% in 2006. RSUs also had a steady increase over the years with just over 32% of firms using this type of stock-based compensation in 2006. Finally PSUs went from zero firms using PSUs in 2000 to almost 7% of firms in 2006. On a univariate level, it is clear that the use of alternative types of stock-based compensation has increased both as a mean and in the proportion of firms using alternative forms, while the use of ESOs has decreased. However, more than 60% of the sample firms are still using ESOs to reward their top executives, and it is still the dominant form of share based compensation. In summary, these findings suggest that some firms were using ESOs for earnings management purposes. However the dominant use of ESOs both as a proportion of compensation (15.50%) and in terms of the number of firms using ESOs (61.00%) after the amendment to Section 3870 suggests that pay for performance considerations may be more important in determining ESO use. Hypotheses Two through Six explore the relative

importance of the factors associated with the two possible reasons for ESO use and are discussed next.

Table 7

Percentage of firms using the various forms of stock-based compensation

	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>
ESOs	65.70%	68.90%	69.86%	60.48%	61.43%	61.00%
SARs	4.83%	6.22%	1.91%	8.10%	5.71%	8.29%
RSUs	8.70%	7.66%	11.00%	18.57%	24.76%	32.20%
PSUs	0.00%	0.00%	0.48%	2.38%	4.29%	6.83%

Hypotheses Two – Six

Models and Variables⁷

Model 1 has been closely modeled after Brown and Lee (2007) to test hypotheses H2 to H6 - the determinants of ESO cutbacks at a multivariate level. Any variables that have not been included in Model 1 that were included in Brown and Lee's version are due to lack of availability of the required data in Canadian financial statements. For example, IMPACT is “measured as the pro forma ESO expense disclosed in the SFAS 123 footnote scaled by the market value of equity at the end of the fiscal year...” (Brown & Lee, 2007, p. 15). In Canada pro forma disclosure of ESO expense was only required for the years 2002 and 2003, and so is not available over the entire sample period. Model 1 is presented below:

$$\begin{aligned}
 (1) \quad CHG_ESO\% = & \beta_0 + \beta_1 Governance\ Variables_{pre} + \beta_2 EPS_INC_{pre} + \beta_3 EPS_POS_{pre} \\
 & + \beta_4 LEVERAGE_{pre} + \beta_5 INT_COV_{pre} + \beta_6 ISSUE_DEBT_{pre} + \beta_7 \ln_SIZE_{pre} \\
 & + \beta_8 TOP5\%_{pre} + \beta_9 BM_{pre} + \beta_{10} CUM_RET_{pre} + \beta_{11} CHG_SALES + \beta_{12} CHG_ROA \\
 & + \beta_{13} CHG_CASH_CONSTR + \beta_{14} CHG_NOL + \beta_{15} CHG_DIVCON \\
 & + \sum Industry\ Dummies + \varepsilon
 \end{aligned}$$

Table 8 summarizes Model 1 and provides sign predictions, descriptions, calculations, database sources, and the study from which the variable is derived, in addition to their role in each hypothesis.

Table 8

Table of Variables for Model 1

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Hypothesis</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
D.V.	CHG_ESO%	-	H2 – H6	ESO use is defined as the proportion of the total compensation to senior management (top 5 executives) paid in options (ESO%). ESO changes are measured as the difference in the ESO% between the post-amendment to Section 3870 period (2004 – 2006) and the pre-Amendment period (2000 – 2002).	Black – Scholes value of ESOs / total compensation (Avg. Post-amendment minus Avg. Pre-amendment)	Proxy and F/S	Brown and Lee, 2007
Corporate Governance	CEOCHAIR	-	H2	an indicator variable equal to one if the board chair is the firm’s CEO and zero otherwise for 2001	1 or 0	Proxy	Brown and Lee, 2007; Core, Holthausen and Larker, 1999
	BOARDSIZE	-	H2	total number of board directors for 2001 divided by 100		Proxy	Brown and Lee, 2007; Core et al., 1999
	INSIDEDIR	-	H2	percent of total directors classified as “non-independent” for 2001	# of Non independent directors / total directors	Proxy	Brown and Lee, 2007; Core et al., 1999

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Hypothesis</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
	BUSYDIR	-	H2	Number of “independent” directors who serve on three or more other boards, scaled by the number of outside directors for 2001	# independent directors sitting on 3 or more boards / total outside directors	Proxy	Brown and Lee, 2007; Core et al., 1999
	CEOHOLDING	+	H2	percent of outstanding shares owned by the CEO (including shares owned by spouses) for 2001	o/s shares owned by CEO / shares o/s	Proxy	Brown and Lee, 2007; Core et al., 1999
	NONCEOOWN	-	H2	indicator variable set equal to zero if at least one non-independent board member other than the CEO owns 5% or more of the outstanding shares and one otherwise for 2001	1 or 0 # o/s shares owned by non-independent director / total shares o/s	Proxy	Brown and Lee, 2007; Core et al., 1999
	OUTDIROWN	+	H2	percent of outstanding shares owned by independent directors divided by the number of independent directors for 2001	Total shares owned by independent directors / # independent directors	Proxy	Brown and Lee, 2007; Core et al., 1999
	OUTOWN	-	H2	indicator variable equal to zero if the firm has an external block holder who owns at least 5% of the outstanding shares, and one otherwise for 2001	1 or 0	Proxy	Brown and Lee, 2007; Core et al., 1999
	B_MEETINGS	+	H2	number of board meetings held over the year 2001 divided by 100	# of board meetings / 100	Proxy	Brown and Lee, 2007

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Hypothesis</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
Earnings Benchmarks	CS20	-	H2	CS20 is an indicator variable that is equal to zero if the firm is closely held (owns 20% or more) and one otherwise for 2001	1 or 0	Proxy	Park et al., 2001
	EPS_INC	-	H3	the proportion of years that the firm's EPS was equal to or greater than the prior year in the pre period (2000-2002)	$EPS_t \geq EPS_{t-1}$	FPIInfomart and/or F/S	Carter et al., 2007
	EPS_POS	-	H3	the proportion of years in the pre-amendment period (2000-2002) that the firm reported positive EPS	$EPS > 0$	FPIInfomart and/or F/S	
Debt Covenants	LEVERAGE	-	H4	the ratio of long-term debt to equity averaged over the pre period	Long term debt / total equity (pre-period average)	FPIInfomart and/or F/S	Scott, 2006
	INT_COV	-	H4	earnings before interest and taxes divided by total interest (as defined and calculated by FPIInfomart) averaged over the pre period (/100)	$EBIT / \text{total interest (pre-period average)} / 100$	FPIInfomart and/or F/S	Scott, 2006
Political Costs	ISSUE_DEBT	-	H4	Indicator variable equal to 1 if the firm issued debt in the pre-period and 0 if they did not issue debt in the pre-period	1 or 0	Research Insight (RI)	Carter et al., 2007
	ln_SIZE	-	H5	the natural logarithm of the market value of equity averaged over the pre-period (/100)	$\text{Log of Market value of equity (pre-period average)} / 100$	CFMRC/ TSE/ RI	Brown and Lee, 2007

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Hypothesis</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
Growth Opportunities	TOP5%	-	H5	number of options granted to the top five executives as a percent of total options granted to all employees averaged over the pre-period	Total options granted to senior mgt. / total options granted (pre-period average)	Proxy and F/S	Brown and Lee, 2007
	BM	-		The end of year book value of equity divided by the end of year market value of equity averaged in the pre-period	Year-end book value of equity / year-end market value of equity(average pre-period)	FPIInfomart and/or F/S CFMRC and RI	Brown and Lee, 2007
Economic Determinants	CUM_RET	+	H6	Annualized rates of return reflecting monthly price appreciation plus reinvestment of monthly dividends and the compounding effect of dividends paid on reinvested dividends. The 3 Year Indexed Total Return concept is a monthly indexed value that reflects the percentage change of the value 36 months previous	Stock return	Research Insight (RI)	Brown and Lee, 2007
	CHG_InSALES	+		The average logarithm of sales in the post-period subtract the average logarithm of sales in the pre-period	Logarithm of Sales (average post-period – average pre-period)	FPIInfomart and/or F/S	Brown and Lee, 2007

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Hypothesis</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
	CHG_ROA	+		The average post-period accounting return on assets minus the average pre-period accounting return on assets (as defined and calculated by FPIInfomart)/(10)	EBIT / total assets(average post-period – average pre-period)/10	FPIInfomart and/or F/S	Core et al., 1999
	CHG_S/TA	+		The average post-period sales figure scaled by total assets less the average pre-period sales figure scaled by total assets	Sales / Total assets (average post-period – average pre-period)	FPIInfomart and/or F/S	
	CHG_CASH_CONSTR	-		The post-period average of [Cash flow from operations - (Common and preferred dividends + cash flow used in investing) / total assets] minus the pre-period average.	[Cash flow from operations - (Common and preferred dividends + cash flow used in investing) / total assets] (average post-period – average pre-period)	FPIInfomart and/or F/S	Carter et al., 2007
	CHG_NOL	-		The post-period average tax loss carry-forward minus the pre-period average tax loss carry-forward	Average tax loss carry-forward (average post-period – average pre-period)	RI	Brown and Lee, 2007
	CHG_DIVCON	-		The post-period average (retained earnings + cash dividend) _t / cash dividend _{t-1} minus the pre-period average (retained earnings + cash dividend) _t / cash dividend _{t-1}	(R/E + Cash dividends) _t / Cash dividends _{t-1} (average post-period – average pre-period)	RI	Brown and Lee, 2007
	Industry Dummies			NAICS code	19 industry dummies	FPIInfomart	Brown and Lee, 2007

Dependent Variable. ESO use is defined as the proportion of the total compensation (defined in Table 4) to senior management (top 5 executives) paid in options (ESO%). ESO% includes only those stock options that were settled in shares. ESOs settled in cash were not included in this model and are treated as SARs since the accounting treatment for SARs and ESOs differs.⁸ CHG_ESO% is measured as ESO% averaged over the post-Amendment period (2004 – 2006) less ESO% averaged over the pre-amendment period to Section 3870 (2000 – 2002). A larger negative value for CHG_ESO% indicates a greater reduction in ESO use.

Corporate Governance. The proxies for corporate governance weakness, referred to in Model 1 as Governance Variables, are adapted from Core et al. (1999) as used in Brown and Lee (2007). These proxies are used to test H2 which predicts a relationship between weak corporate governance and a larger decrease in ESO use. The following proxies are used:

- (1) CEOCHAIR, an indicator variable equal to one if the board chair is the firm's CEO and zero otherwise. Core et al. (1999) found that CEO compensation was higher when the CEO is the chair of the board (p. 372). The predicted sign for this coefficient is negative;
- (2) BOARDSIZE, total number of board directors divided by 100. Core et al. (1999) found that CEO compensation was higher when the board of directors was larger (p. 372). The predicted sign for this coefficient is therefore negative;
- (3) INSIDEDIR, percent of total directors employed by the company. Although there are conflicting viewpoints on whether a greater number of inside directors leads to stronger corporate governance, Core et al. (1999, p. 372), found when there are more inside directors (also referred to throughout the paper as non-independent) versus outside directors (independent), CEO compensation is higher (Core et al., 1999, p. 372). Therefore the predicted sign for this coefficient is negative;

- (4) BUSYDIR, number of outside directors who serve on three or more other boards, scaled by the number of outside directors. Core et al. (1999) also found that CEO compensation was higher when “outside directors serve on more than three other boards,” (p. 372). The predicted sign for BUSYDIR is negative;
- (5) CEOHOLDING, percent of outstanding shares owned by the CEO. Core et al. (1999) found that “CEO compensation is a decreasing function of the CEO’s ownership stake,” (p. 372). The predicted sign for this coefficient is positive;
- (6) NONCEOOWN, indicator variable set equal to zero if at least one inside (non-independent) board member other than the CEO owns 10% or more of the outstanding shares and one otherwise. Core et al. (1999) found that a non-independent board member holding 10% of the outstanding shares is linked with lower CEO compensation (p. 372). The predicted sign for NONCEOOWN is negative;
- (7) OUTDIROWN, percent of outstanding shares owned by outside directors divided by the number of outside directors. CEO compensation is lower when there is an independent block holder who owns at least 5%⁹, (Core et al., 1999, p. 404). The predicted sign for OUTDIROWN is positive; and
- (8) OUTOWN, indicator variable equal to zero if the firm has an external block holder who owns at least 10% of the outstanding shares, and one otherwise. Core et al. (1999) found that CEO compensation was a decreasing function when there was an external block holder holding at least 10% (p. 372). The predicted sign for this coefficient is negative.

Similar to Brown and Lee (2007), data for the year 2001 is used for the governance variables (although data was collected for all relevant sample years 2000 through to 2006). Data

for the year 2001 was used because 2001 is the middle year in the pre-amendment period, and corporate governance practices do not change drastically over the pre-amendment period.

Like Brown and Lee, I create a summary variable to capture overall governance weakness in an attempt to develop a more stable governance measure and ease interpretation. Initial attempts to do this were based on the use of principal components analysis (PCA). However, the resulting factors were difficult to interpret, so instead a governance index was created. To do this, values for each of the governance variables for each observation were classified as indicating either weak or strong corporate governance. For continuous variables, values were compared to the median value to determine if the value was weak or strong, and otherwise viewed as strong or weak as discussed previously. Values indicating strong corporate governance were coded as 0 and values indicating weak corporate governance were coded as 1, and then all the 1's and 0's were summed to create the corporate governance index WEAKGOV. Table 9 shows this process in more detail (see sensitivity analysis section below for discussion on the items B_MEETINGS and CS20 shown in the table).

Table 9

Governance Index Summary

<i>Variable</i>	<i>Strong</i>	<i>Weak</i>	<i>Comments</i>
CEOCHAIR	0	1	The CEO is more effective when separate from the Board Chair
BOARDSIZE	Coded 0 when \leq median (9)	Coded 1 when $>$ median (9)	Smaller boards are more effective
INSIDEDIR	Coded 0 when \leq median (0.25)	Coded 1 when $>$ median (0.25)	Having more inside directors is less effective
BUSYDIR	Coded 0 when \leq median (0.4)	Coded 1 when $>$ median (0.4)	Directors that sit on less than 3 boards are more effective
CEOHOLD	Coded 0 when \geq (0.05)	Coded 1 when $<$ (0.05)	More effective when the CEO holds more shares
NONCEOOWN	0	1	More effective non-independent directors hold more shares
OUTDIROWN	Coded 0 when \geq median (0.0003)	Coded 1 when $<$ median (0.0003)	More effective when this is larger
OUTOWN	0	1	More effective when there is an external block holder
B_MEETINGS	Coded 0 when \leq median (7)	Coded 1 when $>$ median (7)	More effective when there are less meetings
CS20	0	1	More effective when there is a shareholder holding 20% or more of outstanding shares

Earnings Benchmarks. The next two variables are included to test H3. H3 hypothesizes that firms that were using ESOs' favorable accounting treatment to achieve earnings benchmarks will show greater reduction in ESO use. Burgstahler and Dichev (1997) find that managers try to maintain a pattern of increasing earnings (p. 100). They also state that “there is much anecdotal evidence of incentives to maintain positive earnings,” (Burgstahler & Dichev, 1997, p. 100).

Therefore, for purposes of this study the two earnings benchmark proxies are increasing earnings, and positive earnings. “EPS_INC is measured as the proportion of years in the pre-amendment period when the firm's earnings per share (EPS) were equal to or greater than the prior year, (Carter et al., 2007, p. 333). The predicted sign for this measure is negative. EPS_POS is measured as the proportion of years in the pre-amendment period that the firm reported positive EPS. The predicted sign for this coefficient is also negative.

Debt Covenants. LEVERAGE, INT_COV and ISSUE_DEBT was used to measure debt contracting concerns. These variables are included to test H4 which is concerned with determining an association between debt covenants and decreased use of ESOs. LEVERAGE is measured as the ratio of long-term debt to equity averaged over 2000-2002. “Higher leverage has been associated with income-increasing accounting choices in many studies,” (Scott, 1991, p. 68). INT_COV is defined as earnings before interest and taxes divided by total interest (divided by 100) averaged over the pre-amendment period. LEVERAGE and INT_COV are used to proxy for debt contracting costs because as Scott (1991) states, the most common covenants are leverage and interest coverage,” (p.68). ISSUE_DEBT is an indicator variable that equals one if the firm issued debt in the pre-period and zero if they did not issue debt in the pre-period (Carter et al., 2007, p. 334). The predicted signs for LEVERAGE, INT_COV and ISSUE_DEBT are negative.

Political Visibility. Politically visible firms are predicted to decrease ESOs more and therefore will have a larger reaction to the amendment to Section 3870. To proxy for political pressures to cut back on option-based compensation, ln_SIZE and TOP5% are included in Model 1. ln_SIZE is measured as the natural logarithm of the market value of equity (Brown & Lee, 2007) averaged over the pre-amendment period divided by 100. CFMRC was used to get the

market value data and where the information was not available, Research Insight was used. The predicted coefficient is negative.

Since compensation for the top five executives has been made available to investors, they can monitor the number of options granted to the top executives and compare that to the total options granted. Since 2002 when pro-forma disclosure was introduced, investors can also determine what the top executives are earning specifically in ESOs. TOP5% is the number of options granted to the top five executives as a percent of total options granted to all employees (Brown & Lee, 2007) averaged over the pre-period. The predicted coefficient is also negative for this proxy.

Growth Opportunities. BM is the book value of equity divided by the market value of equity and is included in Model 1 to proxy for growth opportunities (Brown & Lee, 2007; Carter et al., 2007) averaged over the pre-amendment to Section 3870 period. This proxy is included because firms with greater growth opportunities are more likely to reward their senior management by offering them ESOs in lieu of other types of compensation alternatives because share price better captures firm investments that will not pay off until later years. Market to book *should* be used, but using the book value as the denominator results in divisor problems when book value is very small or close to zero. The predicted sign for this coefficient is negative.

Other Economic Determinants. Similar to Brown and Lee (2007) and Carter et al. (2007) standard economic determinants of compensation are included in Model 1 as controls and include: CUM_RET, CHG_ln_SALES, CHG_ROA, CHG_CASH_CNSTR, CHG_NOL and CHG_DIVCON. These variables are all measured as their average 2004 - 2006 values minus their average 2000 - 2002 values for Model 1.

Stock Market. Brown and Lee (2007) found that firms with lower cumulative returns in the pre-period had greater ESO cutbacks, “implying that poorer stock price performance results

in lower ESO value and thus a larger decrease in ESO%,” (p. 21). CUM_RET is measured as the three year annual rate of return (including price appreciation and dividend reinvestment and payments) divided by 100. This variable was collected from Research Insight (Standard and Poors, 1996). The predicted sign for this variable is positive.

CHG_In_SALES. As size increases, it becomes harder to monitor top management. These larger corporations are more likely to offer ESOs to align shareholder and manager goals.

In_SALES is included to proxy for size and is measured as the natural logarithm of sales (Brown & Lee, 2007; Core & Guay, 1999). This coefficient is predicted to be positive.

CHG_ROA. It is assumed that executive compensation is positively correlated with firm performance which is proxied as the accounting return on assets. CHG_ROA is computed as the ratio of earnings before interest and taxes to the average of beginning- and end-of-year total assets, (Core et al., 1999, p. 379), divided by 10 and the predicted sign is positive.

CHG_CASH_CONSTR. The formula for cash constraints has been re-arranged (to ease in interpretation) from Carter et al., (2007, p. 337) and Core and Guay (1999), and is included in Model 1 because firms facing liquidity problems pre-amendment were more likely to use options in lieu of cash compensation to conserve cash. The formula used in this study is defined as [Cash flow from operations – (common and preferred dividends + cash flow used in investing) / total assets]. A negative number indicates a cash shortfall. The predicted co-efficient for this measure is negative.

CHG_NOL. Following Brown and Lee (2007), CHG_NOL is also included in Model 1. Brown and Lee (2007) state that, “substituting ESOs for other forms of compensation is costlier for firms with higher marginal tax rates,” (p.17) in the pre-amendment period since ESOs did not require an initial cash outlay. Firms were able to use options to conserve cash. In order to proxy for this, CHG_NOL has been included in Model 1 and is calculated as the average post-

amendment to Section 3870 tax loss carry-forward minus the average pre-amendment to Section 3870 tax loss carry-forward divided by 100. CHG_NOL is included in Model 1 “to proxy for firms’ marginal tax rates,” (Brown & Lee, 2007, p. 17). The predicted sign for CHG_NOL is negative.

CHG_DIVCON. Finally CHG_DIVCON is included because payment of dividends and repurchase of shares are dependent upon retained earnings and the decision and ability to pay for these affects how many ESOs can be granted in a year. Prior studies (Core & Guay, 1999; Dechow et al., 1996), “suggest that ESO use is positively related to the extent to which a lack of retained earnings constrains the firm’s ability to pay dividends and repurchase shares,” (Brown & Lee, 2007, p. 18). As previously mentioned, ESOs were attractive in the pre-amendment to Section 3870 period because firms that may have been constrained with respect to earnings would have granted more ESOs as no expense was required on the income statement. Due to non-availability of data with regards to stock repurchases (data was not provided on Research Insight or other available data sources), the variable DIVCON has been slightly modified from the previously identified studies, but still included in Model 1. CHG_DIVCON is calculated as the average post-amendment to Section 3870 $[(\text{retained earnings} + \text{cash dividends})_t / \text{cash dividends}_{t-1}]$ less the average pre-amendment to Section 3870 $[(\text{retained earnings} + \text{cash dividends})_t / \text{cash dividends}_{t-1}]$. The predicted sign for the coefficient CHG_DIVCON is negative.

Industry Indicators. Similar to Carter et al. (2007) and Oyer and Schaefer (2005), an industry variable dummy variable is included to capture labor market conditions and control for attraction and retention reasons that may affect compensation design. It has been noted that industry indicators control for other differences when it comes to pay practices across industries (Carter et al., 2007, p.340). The North American Industry Classification System (NAICS) was used and codes were at the two-digit level.

Finally all variables have been winsorized at 1% and 99%. As previously stated, Table 8 provides a summary of the variables used in Model 1.

Univariate and Multivariate Analysis

Table 10 displays the descriptive statistics for the determinants of ESO cutbacks. The mean (median) CHG_ESO% was a decrease of 9.3% (6.7%). Compared to Brown and Lee (2007) this decrease is smaller than the firms in their sample which had a mean (median) decrease CHG_ESO% of 11.49% (10.3%). The difference for CHG_ESO% between this sample and Brown and Lee's (2007) is similar to the finding in Table 5 where the Canadian sample shows a smaller decrease in ESO use than their U.S. counterparts.

Table 10

Descriptive statistics on ESO Change and the determinants of ESO change

<i>Variable</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Dev.</i>
CHG_ESO%	-0.09	-0.07	0.19
CEOCHAIR	0.37	0.00	0.49
BOARDSIZE	0.10	0.09	0.03
INSIDEDIR	0.28	0.25	0.15
BUSYDIR	0.42	0.40	0.26
CEOHOLDING	0.06	0.00	0.12
NONCEOOWN	0.83	1.00	0.37
OUTDIROWN	0.01	0.00	0.02
OUTOWN	0.29	0.00	0.46
B_MEETINGS	0.09	0.09	0.04
CS20	0.55	1.00	0.50
WEAKGOV	5.09	5.00	1.77
EPS_INC	0.56	0.67	0.27
EPS_POS	0.79	1.00	0.32
LEVERAGE	0.56	0.58	0.21
INT_COV	0.13	0.04	0.31
ISSUE_DEBT	0.79	1.00	0.41
ln_SIZE	0.20	0.20	0.04
TOP5%	0.31	0.27	0.20
CUM_RET	0.65	0.39	2.23
BM	0.37	0.07	3.70
CHG_lnSALES	0.35	0.21	0.77
CHG_ROA	0.34	0.10	1.05
CHG_CASH_CONSTR	0.04	0.03	0.09
CHG_NOL	0.70	0.00	2.88
CHG_DIVCON	0.25	0.00	21.38

Around 37 percent of firms in the sample had a separate CEO and chairman of the board and the average board size was 10 members. The average number of directors employed by the company is 28%. Brown and Lee (2007) found the average board size was 9 and that on average 28% of directors were employed by the company. A substantive difference between the Canadian setting and Brown and Lee's findings was the difference between busy directors. There were forty-two percent of board members sitting on three or more boards in this Canadian sample compared to just 12% in Brown and Lee's (2007) sample. The average CEO holds six percent of

the firm's outstanding shares. The average interest coverage ratio in the pre-amendment period is 13. This indicates that firms were able to cover their interest expenses. The mean book to market value of equity rate was 37% and on average 31% of all ESO grants were made to the top five executives in the pre-amendment period.

Table 11 below presents Spearman correlations between variables used to estimate Model 1. To keep things simple, Table 11 does not show the individual governance variables – it only shows the index variable WEAKGOV. However, it should be noted that CHG_ESO% is highly correlated with B_SIZE ($p = 0.01$), BUSYDIR ($p = 0.03$), CEOHOLDING ($p = 0.002$) and OUTDIROWN ($p = 0.06$) all in the predicted direction (see Table 8 for these predictions). The change in ESOs is highly correlated ($p < 0.0001$) with firm size and with the proportion of stock options offered to the top five executives. The negative sign on the coefficients are consistent with H5 which indicates that firms that are more politically visible cut back more on ESO use after the amendment to Section 3870 was implemented. Other significant correlations are between change ESOs and the following economic determinants: CUM_RET, SALES and DIV_CON. Correlations between the change in ESOs and EPS_INC, EPS_POS and CHG_ROA were not in the expected direction and not significant except for EPS_INC which was significant; all other sign predictions hold (although not significant).

Table 11

Correlation Matrix for Model 1 Variables (N = 175)

	<i>Chg</i> <i>ESO</i>	<i>WEAK</i> <i>GOV</i>	<i>EPS</i> <i>INC</i>	<i>EPS</i> <i>POS</i>	<i>LEV</i>	<i>INT</i> <i>COV</i>	<i>ISS</i> <i>DEBT</i>	<i>ln_</i> <i>SIZE</i>	<i>TOP</i> <i>5%</i>	<i>CUM</i> <i>RET</i>	<i>BM</i>	<i>SALES</i>	<i>ROA</i>	<i>CSH</i> <i>CNSTR</i>	<i>NOL</i>	<i>DIV</i> <i>CON</i>
CHG	1.00															
ESO																
WEAK	-	1.00														
GOV	0.12															
EPS	0.16	-0.07	1.00													
INC																
EPS	0.04	-0.08	0.27	1.00												
POS																
LEV	-0.01	-0.18	0.14	0.09	1.00											
INT	-0.05	-0.08	0.14	0.55	-0.18	1.00										
COV																
ISSUE	-0.05	-0.11	0.02	0.13	0.20	0.14	1.00									
DEBT																
ln_	-0.32	-0.53	0.10	0.40	0.05	0.28	0.08	1.00								
SIZE																
TOP5%	-0.15	0.08	-0.03	-0.13	-0.06	-0.08	-0.05	-0.13	1.00							
CUM	0.15	-0.13	0.34	0.34	-0.05	0.20	0.09	0.16	0.09	1.00	1.00					
RET	0.11	-0.00	-0.24	-0.17	0.06	-0.18	0.17	-0.32	0.09	-0.23						
BM																
SALES	0.13	0.02	0.11	-0.05	-0.36	-0.05	-0.08	-0.10	0.00	0.26	-0.2	1.00				
ROA	-0.06	-0.01	-0.20	-0.48	-0.09	-0.30	-0.05	-0.18	0.05	-0.13	0.01	0.28	1.00			
CSH	-0.06	0.11	0.04	-0.19	-0.12	-0.22	0.01	-0.07	-0.01	-0.16	-0.12	0.05	0.31	1.00		
CNSTR																
NOL	-0.7	-0.10	0.02	-0.06	0.03	-0.06	-0.6	0.01	0.10	-0.15	-0.00	-0.10	-0.18	-0.07	1.00	
DIV	-0.16	0.04	-0.07	0.03	-0.13	0.06	0.06	0.02	-0.01	0.11	-0.05	0.15	0.13	0.03	-0.05	1.00
CON																

Note. All variables are as defined in Table 8. Spearman correlation coefficients are presented.

Bold text indicates significance at the 0.10 level (two-tailed) or better.

OLS Results

Table 12 displays the results for the OLS regression for Model 1.¹⁰

Column Three displays the results when all governance items are included individually in Model 1. Column Four shows the results for Model 1 when the governance index variable (WEAKGOV), is used instead of the individual governance variables. Columns Five and Six show the results for Model 1 omitting any observations with a student residual greater than two for the two versions of the governance items respectively.

Consistent with H2, firms that had a larger number of busy directors (BUSYDIR) pre-amendment reduced ESO use more, suggesting that boards with a larger number of directors sitting on three or more boards are less effective at monitoring ($p = 0.10$). This was the only individual governance variable that showed significance, however the majority of the signs on the governance variables are in the predicted direction. The governance index is not significant, as shown in Column Four. Thus, overall there is no support for H2.

There was no support for H3 which predicted a greater ESO decrease for firms using ESOs' favorable accounting treatment to achieve earnings benchmarks. It appears that firms with an increase in EPS in the pre-amendment to Section 3870 period were less likely to cut back on ESO use. There was also no support for H4 since there was no evidence that firms closer to earnings based debt covenants decreased ESO use more.

Consistent with Brown and Lee (2007) and Darrough and Li (2006), the coefficients for TOP5% and \ln_SIZE are negative and significant ($p = 0.002$ and $p = 0.04$ respectively). This suggests that firms that are more politically visible were motivated more to reduce ESO use after the amendment to Section 3870 because of the negative public attitude towards ESO use, supporting H5. Finally, Column Three suggests that there is no support for H6 which predicts a smaller decrease in ESO use for firms with greater growth opportunities. The coefficient on BM is positive (opposite of the prediction) under this scenario, although it is only weakly significant ($p = 0.1$). Once the outliers are removed, BM is no longer significant, so I conclude that H6 is not supported.

There were six outliers in Model 1 when all governance variables were included individually. When the index variable WEAKGOV was used there were nine firms that qualified as outliers. Similar to Column Three, Column Five displays the results when all governance items are included individually and Column Six shows the index variable when governance items are

combined into one variable (WEAKGOV), after removal of the observations with student residuals greater than two. It is worth noting that when outliers were removed from Model 1, (refer to Column 5) the sign direction changed for the coefficients for OUTDIROWN and LEVERAGE. As previously mentioned, there have been conflicting viewpoints with regards to governance variables which could explain the sign change for OUTDIROWN. The coefficients for Model 1 including the governance index and no outliers did not show much change (Table 12, Column 6).

In order to further test H6 which predicted a smaller decrease in ESOs for firms that had greater growth opportunities, Model 1 was re-run with only firms having a BM ratio less than the median (0.07) included. The results are shown in Table 12, Column Seven. Although only weakly significant, under this version of Model 1 it appears that there is some support for H6 in that firms with greater growth opportunities reduced ESO use less than other firms in the post-amendment period.

Table 12

*Determinants of Firms' Decisions to Reduce the Use of ESOs after
the Amendment to Section 3870*

(1) <i>Variable</i>	(2) <i>Predicted Sign</i>	(3) <i>Model 1 (MI) Coefficient (t-value)</i>	(4) <i>MI Index Coefficient (t-value)</i>	(5) <i>MI No Outliers (N.O.) Coefficient (t-value)</i>	(6) <i>MI Index (N.O.) Coefficient (t-value)</i>	(7) <i>MI (BM < 0.07) Coefficient (t-value)</i>
Intercept	?	0.15 (0.82)	0.17 (0.92)	0.13 (0.71)	0.16 (0.87)	1.08** (2.15)
CEOCHAIR (H2)	-	-0.01 (-0.19)		-0.01 (-0.22)		
BOARDSIZE (H2)	-	-0.26 (-0.42)		-0.47 (-0.75)		
INSIDEDIR (H2)	-	0.01 (0.04)		0.01 (0.10)		
BUSYDIR (H2)	-	-0.10* (-1.60)		-0.10* (-1.50)		

(1) <i>Variable</i>	(2) <i>Predicted Sign</i>	(3) <i>Model 1 (MI) Coefficient (t-value)</i>	(4) <i>MI Index Coefficient (t-value)</i>	(5) <i>MI No Outliers (N.O.) Coefficient (t-value)</i>	(6) <i>MI Index (N.O.) Coefficient (t-value)</i>	(7) <i>MI (BM < 0.07) Coefficient (t-value)</i>
CEOHOLDING (H2)	+	0.08 (0.51)		0.07 (0.40)		
NONCEOOWN (H2)	-	-0.04 (-0.78)		-0.04 (-0.86)		
OUTDIROWN (H2)	+	0.15 (0.16)		-0.01 (-0.00)		
OUTOWN (H2)	-	0.04 (0.92)		0.02 (0.70)		
WEAKGOV (H2)	-		-0.01 (-0.70)		-0.00 (-0.21)	-0.01 (-0.65)
EPS_INC (H3)	-	0.09* (1.49)	0.10** (1.71)	0.08* (1.29)	0.09* (1.38)	0.11 (0.86)
EPS_POS (H3)	-	0.04 (0.56)	0.02 (0.30)	0.05 (0.73)	0.03 (0.41)	0.07 (0.54)
LEVERAGE (H4)	-	-0.02 (-0.15)	-0.06 (-0.60)	0.02 (0.16)	-0.02 (-0.23)	-0.05 (-0.32)
INT_COV (H4)	-	0.01 (0.27)	0.01 (0.27)	0.02 (0.34)	0.02 (0.29)	0.03 (0.46)
ISSUE_DEBT (H4)	-	0.02 (0.43)	0.01 (0.27)	0.02 (0.45)	0.02 (0.42)	-0.00 (-0.04)
ln_SIZE (H5)	-	-1.11*** (-2.18)	-1.30**** (-2.71)	-1.00*** (-1.95)	-1.27**** (-2.65)	-5.30*** (-2.54)
TOP5% (H5)	-	-0.26**** (-3.26)	-0.25**** (-3.16)	-0.28**** (-3.54)	-0.26**** (-3.15)	-0.30** (-2.15)
CUM_RET	+	0.00 (0.21)	0.00 (0.38)	0.00 (0.11)	0.00 (0.23)	0.00 (0.51)
BM (H6)	-	0.01* (1.32)	0.00 (1.15)	0.00 (1.23)	0.00 (1.05)	-0.53* (-1.60)
CHG_lnSALES	+	-0.01 (-0.33)	-0.01 (-0.62)	-0.01 (-0.23)	-0.01 (-0.48)	-0.04 (-1.07)
CHG_ROA	+	-0.01 (-0.32)	-0.01 (-0.39)	-0.01 (-0.39)	-0.02 (-0.78)	-0.02 (-0.41)
CHG_CASH_CNSTR	-	0.08 (0.44)	0.09 (0.46)	0.11 (0.54)	0.10 (0.51)	0.23 (0.69)
CHG_NOL	-	-0.00 (-0.64)	-0.00 (-0.79)	-0.00 (-0.52)	-0.00 (-0.74)	0.00 (0.17)
CHG_DIVCON	-	-0.00** (-1.84)	-0.00* (-1.56)	-0.00*** (-2.57)	-0.00*** (-2.24)	-0.00 (-0.75)
Industry Dummies		Yes	Yes	Yes	Yes	Yes
N		175	175	169	166	83
Adj. R ²		0.05	0.06	0.08	0.07	0.11

*p < .10, two-tailed. **p < .05, two-tailed. ***p < .01, two-tailed. ****p < .001, two-tailed.

Sensitivity Analysis

The number of board meetings held over the year divided by 100 – B_MEETINGS, (Choudhary et al., 2007) – was also collected. A greater number of meetings may suggest a more effective and active board. However it may also indicate a reactionary response on the part of the board to poor performance or bad outcomes (Choudhary et al., 2007). In Canada, the number of board meetings was not always disclosed for years in the pre-amendment to Section 3870 period. Therefore if the number of board meetings (B_MEETINGS) was not available for the year 2001, an average of board meetings was calculated given all years disclosed by the firm and used instead. The predicted sign for this variable is positive.

In addition to B_MEETINGS, CS20 is included to proxy for closely held firms. CS20 is an indicator variable that equals zero if the firm is closely held, and one if the firm is not closely held, (Park et al., 2001, p.352). Consistent with Park et al. (2001), closely held firms are defined as one with a controlling shareholder who owns 20 percent or more of the voting shares of the firm. To be consistent with Core et al. (1999) it is predicted that the change in ESOs will be less when a firm is considered closely held. The predicted coefficient for CS20 is negative. Also, because there were conflicting prior research findings on the likely effects of the variable INSIDEDIR, it was coded in the opposite direction for the index variable WEAKGOV, and Model 1 was re-run.

To avoid a mechanical relationship (meaning when one increases the other automatically increases and vice versa) between CHG_ROA and CHG_ESO%, a variable CHG_S/TA has been included. The mechanical relationship is induced because total compensation is included as an expense and affects EBIT which is the numerator in the formula for CHG_ROA. By using sales instead of EBIT, the expense for ESOs is not included in the variable CHG_S/TA.

CHG_S/TA is the average sales scaled by total assets in the post period minus the average sales scaled by total assets in the pre period. The predicted sign for this coefficient is also positive.

Table 13 shows the results of running Model 1 with these changes as discussed. In particular, WEAKEGOV has been modified to include B_MEETINGS and CS0, CHG_S/TA has been included, and INSIDEDIR coded in the opposite direction. Running Model 1 with the additional variables does not increase the adjusted R^2 and does not increase the explanatory power of Model 1 as shown in Table 13, Columns 3 and 4 (outliers removed). As noted above there were also conflicting viewpoints with the variable INSIDEDIR. Model 1 was re-run with this variable coded in the opposite direction and included in the index variable WEAKEGOV. This change did not increase the significance of this variable as shown in Table 13, Columns 5 and 6 (outliers removed). Finally, WEAKEGOV was modified to include CS20 and B_MEETINGS and the results of running Model 1 with this inclusion is shown in Columns 7 and 8 (outliers removed) of Table 13. These changes were made to determine if the index variable WEAKEGOV would increase in significance. Similar to Seethamraju and Zach (2003), there was no evidence that weaker corporate governance affected firms' change in ESO use.

Table 13

*Determinants of Firms' Decisions to Reduce the Use of ESOs after the Amendment to Section**3870 – Supplementary Analysis*

(1) Variables	(2) Predicted Sign	(3) MI (additional variables) Coefficient (t-value)	(4) MI (A.V. N.O.) Coefficient (t-value)	(5) MI Index INSIDEDIR Coefficient (t-value)	(6) MI Index INSIDEDIR (N.O.) Coefficient (t-value)	(7) MI Index (all gov. vars.) Coefficient (t-value)	(8) MI Index (all gov. vars. N.O.) Coefficient (t-value)
Intercept	?	0.11 (0.61)	0.10 (0.51)	0.15 (0.82)	0.16 (0.86)	0.19 (1.01)	0.17 (0.91)
CEOCHAIR (H2)	-	-0.00 (-0.10)	-0.01 (-0.18)				
BOARDSIZE (H2)	-	-0.21 (-0.32)	-0.48 (-0.74)				
INSIDEDIR (H2)	-	0.05 (0.36)	0.03 (0.21)				
CEOHOLDING (H2)	+	0.06 (0.40)	0.07 (0.40)				
NONCEOOWN (H2)	-	-0.03 (-0.74)	-0.04 (-0.87)				
OUTDIROWN (H2)	+	0.24 (0.24)	0.31 (0.31)				
OUTOWN (H2)	-	0.05 (1.04)	0.03 (0.72)				
B_MEETINGS (H2)	+	0.36 (0.78)	0.45 (0.96)				
CS20	-	-0.02 (-0.58)	-0.02 (-0.47)				
WEAKGOV	-			-0.01 (-0.70)	-0.00 (-0.25)	-0.01 (-0.70)	-0.01 (-1.01)
EPS_INC (H3)	-	0.09* (1.50)	0.08 (1.23)	0.10* (1.58)	0.09* (1.41)	0.11** (1.74)	0.10** (1.66)
EPS_POS (H3)	-	0.05 (0.69)	0.07 (0.99)	0.02 (0.27)	0.02 (0.25)	0.02 (0.28)	0.02 (0.25)
LEVERAGE (H4)	-	-0.02 (-0.21)	-0.00 (-0.03)	-0.04 (-0.42)	-0.04 (-0.41)	-0.06 (-0.63)	-0.05 (-0.49)
INT_COV (H4)	-	0.01 (0.14)	0.01 (0.20)	0.01 (0.24)	0.02 (0.37)	0.01 (0.24)	0.01 (0.23)
ISSUE_DEBT (H4)	-	0.01 (0.25)	0.02 (0.38)	0.01 (0.29)	0.00 (0.09)	0.01 (0.32)	0.01 (0.35)
ln_SIZE (H5)	-	-1.14*** (-2.20)	-1.00** (-1.90)	-1.26*** (-2.69)	-1.27*** (-2.57)	-1.35*** (-2.83)	-1.31*** (-2.80)
TOP5% (H5)	-	-0.26**** (-3.19)	-0.28**** (-3.44)	-0.25*** (-3.22)	-0.24*** (-3.04)	-0.24**** (-3.14)	-0.25**** (-3.18)
CUM_RET	+	0.00 (0.35)	0.00 (0.18)	0.00 (0.49)	0.00 (0.38)	0.00 (0.37)	0.00 (0.45)
BM (H6)	-	0.01* (1.29)	0.01 (1.25)	0.00 (1.11)	0.00 (1.08)	0.00 (1.13)	0.00 (1.11)
CHG_lnSALES	+	-0.01 (-0.44)	-0.01 (-0.33)	-0.01 (-0.64)	-0.01 (-0.62)	-0.01 (-0.63)	-0.02 (-0.64)

(1) <i>Variables</i>	(2) <i>Predicted Sign</i>	(3) <i>MI (additional variables)</i> <i>Coefficient (t-value)</i>	(4) <i>MI (A.V. N.O.)</i> <i>Coefficient (t-value)</i>	(5) <i>MI Index INSIDEDIR</i> <i>Coefficient (t-value)</i>	(6) <i>MI Index INSIDEDIR (N.O.)</i> <i>Coefficient (t-value)</i>	(7) <i>MI Index (all gov. vars.)</i> <i>Coefficient (t-value)</i>	(8) <i>MI Index (all gov. vars. N.O.)</i> <i>Coefficient (t-value)</i>
CHG_ROA	+	-0.01 (-0.35)	-0.01 (-0.37)	-0.01 (-0.46)	-0.01 (-0.62)	-0.01 (-0.42)	-0.01 (-0.47)
CHG_S/TA	+	0.02 (0.30)	0.03 (0.47)				
CHG_CASH_CNSTR	-	0.07 (0.36)	0.04 (0.21)	0.10 (0.55)	0.11 (0.58)	0.09 (0.46)	0.10 (0.51)
CHG_NOL	-	-0.00 (-0.79)	-0.00 (-0.85)	-0.00 (-0.78)	-0.00 (-0.82)	-0.00 (-0.76)	-0.00 (0.73)
CHG_DIVCON	-	-0.00** (-1.85)	-0.00*** (-2.72)	-0.00* (-1.51)	-0.00* (-1.59)	-0.00* (-1.57)	-0.00* (-1.54)
Industry Dummies		YES	YES	YES	YES	YES	YES
N		175	169	175	169	175	175
Adj. R ²		0.03	0.06	0.07	0.05	0.06	0.06

*p < .10, two-tailed. **p < .05, two-tailed. ***p < .01, two-tailed. ****p < .001, two-tailed.

Summary

To summarize the results of Model 1, with regards to corporate governance (H2), the number of busy directors (directors sitting on three or more boards) affected the amount of ESOs that were offered to senior management. Although an index was created to capture overall governance weakness, this variable (WEAKGOV) was not found to be significant under any variations of Model 1, and thus H2 was not supported. It also appears that firms did not use the favorable accounting treatment of ESOs in the pre-amendment to Section 3870 period to achieve earnings benchmarks (H3). Contrary to H3, firms with a steady EPS increase in the pre-period used ESOs more in the post-amendment to Section 3870 period. Model 1 results provided no evidence to support the prediction that Canadian firms used ESOs to ensure they did not violate earnings based debt covenants (H4). There was support for H5 which predicted firms that were more visible politically would decrease ESO use more. Finally, it appears that firms with more growth opportunities did experience a smaller decrease in ESO use post-amendment to Section 3870 (H6). Overall these findings are different than Brown and Lee (2007) who found support for

their corporate governance; earnings based debt covenants and earnings benchmarks hypotheses. My findings indicate that firms that were more visible politically reduced ESO use more which is consistent with non-opportunistic earnings management.

Hypotheses 7 a-b

Model and Variables

The next sets of tests examine how firms restructured senior management compensation after the amendment to Section 3870. RSUs are the focus of these tests. BONUS was added as a dependent variable on a post hoc basis since there was a significant unexpected increase in the use of bonuses post-amendment, as shown in Table 5. Similar to Brown and Lee (2007), the proportional change in RSUs given a decrease in ESOs (p.23) is examined. I also examine whether this proportional change became less unequal after the amendment to Section 3870. Models 2a and b are estimated using seemingly unrelated regressions (SUR) because the error terms are likely to be correlated.

$$(2a) \quad \Delta (COMP_ALT) = \delta_0 + \delta_1 \Delta ESO + \delta_2 3870 + [\delta_3 \Delta ESO * 3870] \\ + \delta_4 \sum \Delta Economic Determinants + \sum Industry Dummies + \varepsilon$$

Table 14 provides a summary of variables for Model 2a including sign predictions, descriptions and calculations and is presented below.

Table 14

Table of Variables for Model 2a

Category	Proxy	Sign	Hypothesis	Description	Calculation	Source	Citation
D.V.	COMP_ALT (RSUs or BONUS)	?	H7a and b	One of the non-ESO compensation vehicles (RSUs or BONUS) scaled by total compensation for year t minus one of the non-ESO compensation vehicles (RSUs or BONUS) scaled by total compensation for year $t-1$.	$(Comp_alt_t - comp_alt_{t-1}) / (total\ comp_t - total\ comp_{t-1})$	Proxy and F/S	Brown and Lee, 2007
	ΔESO	-	H7a and b	Change in the grant-date Black-Scholes value between years t and $t-1$, scaled by the change in total compensation between years t and $t-1$	$(ESO_t - ESO_{t-1}) / (total\ comp_t - total\ comp_{t-1})$	Proxy and F/S	Brown and Lee, 2007
	3870	+	H7a and b	Indicator variable equal to one if the observation is from 2004 - 2006 and zero if the observation is from 2000 - 2002	1 or 0	F/S	Brown and Lee, 2007
Economic Determinants	ln_SALES	?		Logarithm of sales at the end of year t minus the logarithm of sales for the year end $t-1$	$(\text{Logarithm of Sales})_t - (\text{Logarithm of Sales})_{t-1}$	FPInfomart and/or F/S	Brown and Lee, 2007
	BM	?		Year-end book value of equity divided by the year-end market value of equity for year t minus book value of equity divided by market value of equity for year $t-1$	$(\text{Year-end B.V equity} / \text{year-end market value of equity})_t - (\text{B.V equity} / \text{market value of equity})_{t-1}$	FPInfomart and/or F/S and/or CFMRC	Brown and Lee, 2007

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Hypothesis</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
	CASH_CONSTR	?		[Cash flow from operations - (common and preferred dividends + cash flow used in investing) / total assets] for year t minus [Cash flow from operations - (common and preferred dividends + cash flow used in investing) / total assets] for year t-1	[Cash flow from operations - (common and preferred dividends + cash flow used in investing) / total assets] _t - [Cash flow from operations - (common and preferred dividends + cash flow used in investing) / total assets] _{t-1}	FPIInfomart and/or F/S	Carter et al., 2007
	NOL	?		The tax loss carry-forward for year t minus the tax loss carry-forward for year t-1	Tax loss carry-forward _t - tax loss carry-forward _{t-1}	RI	Brown and Lee, 2007
	DIVCON	?		[(Retained earnings + cash dividend) _t / cash dividend _{t-1}] _t minus [(retained earnings + cash dividend) _t / cash dividend _{t-1}] _{t-1}	[(R/E + Cash dividends) _t / Cash dividends _{t-1}] _t - [(R/E + Cash dividends) _t / Cash dividends _{t-1}] _{t-1}	RI	Brown and Lee, 2007
	Industry Dummies	?		NAICS code	20 Industry Dummies	FPIInfomart	Brown and Lee, 2007

Model 2a is estimated for the two compensation alternatives using all available observations from 2000-2006. The year 2003 continues to be excluded for the reasons previously stated. The dependent variable, Δ (COMP_ALT), in Model 2a is the change in one of the non-ESO compensation vehicles (RSUs or bonuses) for year t less year $t-1$, scaled by the change in

total compensation between year t and $t-1$.¹¹ The dependent variable captures the proportion of additional total compensation that is made up of an alternative compensation component.

Δ ESO is the change in the fair value of ESOs awarded to the top five executives for year t less $t-1$, scaled by the change in their total compensation between year t and $t-1$. The predicted sign of this coefficient is negative and less than one if ESOs and other forms of compensation substitute for each other in the pre-amendment period (Brown & Lee, 2007), and if less of the compensation alternative is needed to offset the loss of a given amount of ESOs.

3870 is an indicator variable set equal to one if the observation is from the post-amendment to Section 3870 period (2004-2006) and zero for the period prior to the amendment to Section 3870 (2000-2002). The prediction for this coefficient is positive, as the use of compensation alternatives is expected to expand in the post-amendment to Section 3870 period as the alternatives are used to provide increases in compensation, even holding the change in ESOs constant at zero.

δ_1 and $(\delta_1 + \delta_3)$ indicate the average substitution rate for the compensation alternative in question relative to a loss of option-based compensation in the pre- and post Section 3870 amendment periods, respectively (Brown & Lee, 2007). δ_1 provides the substitution rate in the pre-amendment to Section 3870 period and $(\delta_1 + \delta_3)$ provides the substitution rate in the post-amendment period. The coefficient on the interaction term Δ ESO * 3870, “indicates the differential dollar change in non-ESO compensation predicted by a dollar change in ESOs from the pre- to the post,” (Brown & Lee, 2007, p. 27) amendment to Section 3870 period. If δ_3 is negative, it indicates that the substitution rate increased for the compensation alternative in question relative to a loss in ESOs (in dollars) in the post-amendment to Section 3870 period (Brown & Lee, 2007). If δ_3 is negative, then the first part of H7b - which predicts a substitution

rate between RSUs and ESOs that is less unequal than in the pre-amendment period - is supported.

The economic determinants included in Model 2a are \ln_SALES , BM , $CASH_CONSTR$, NOL and $DIVCON$ (see Table 14 for definitions). These variables were determined as the change between year t and $t-1$ for this model to reduce error and maintain consistency across Model 2a. The industry variables included in Model 2a are defined as above for Model 1 (Table 8).

Extension to Model 2a - Incorporation of Additional Factors

After reviewing Carter et al. (2007) it became apparent that there are other factors that explain how firms determine executive compensation components. For example, Carter et al. include proxies for equity constraints, risk aversion, dividend yield, and volatility in addition to standard economic determinants. All of these additional variables were significant in the model Carter et al. (2007) used to explain total CEO compensation. Therefore Model 2a has been modified and re-run to include these additional factors. Model 2b better explains the determinants of senior management compensation and this is clear when comparing the adjusted R^2 across the models (see Table 17 below). Presented below is Model 2b:

$$\begin{aligned}
 (2b) \quad \Delta COMP_ALT = & \delta_0 + \delta_1 \Delta ESO + \delta_2 3870 + [\delta_3 \Delta ESO * 3870] \\
 & + \delta_4 \sum \Delta Economic \ Determinants + \delta_5 \Delta DIV_YLD + \delta_6 \Delta EQ_CONSTR \\
 & + \delta_7 \Delta TENURE + \delta_8 \Delta \ln_TOTASSETS + \delta_9 \Delta WEAKGOV + \delta_{10} \Delta RET \\
 & + \delta_{11} \Delta ROA + \delta_{12} \Delta COMP_ALT + \delta_{13} \Delta MISC_COMP + \delta_{14} \Delta SARS \\
 & + \delta_{15} \Delta ALL_OTHER + \delta_{16} \Delta PENSION + \delta_{17} \Delta PSUS + \delta_{18} \Delta SALARY \\
 & + \sum Industry \ Dummies + \varepsilon
 \end{aligned}$$

All variables that are identical to Model 2a are as previously defined in Table 14. All variables are calculated as changes for year t less year $t-1$. The rationales for the new variables and their definitions are as follows. A summary of the new variables for Model 2b is provided in Table 15.

Table 15

Table of Variables for Model 2b

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
Dividend yield	DIV_YLD	?	Dividends per share / price per share at the end of the year t minus dividends per share / price per share at the end of the year $t-1$ (as defined and provided by FPIInfomart when available)	$(\text{Dividends per share} / \text{Price per share})_t - (\text{Dividends per share} / \text{Price per share})_{t-1}$	FPIInfomart F/S and CFMR / TSE	Carter et al., 2007
Equity constraints	EQ_CONSTR	?	The ratio of issued to authorized shares for year t minus the ratio of issued to authorized shares for year $t-1$. (A ratio approaching 1 means more equity constraints.)	$(\text{Issued shares} / \text{authorized shares})_t - (\text{Issued shares} / \text{authorized shares})_{t-1}$	FPIInfomart and/or F/S	Carter et al., 2007
Risk Aversion	TENURE	?	Number of years the CEO has held that position		Proxy	Carter et al., 2007
	ln_TOTASSETS	?	The natural logarithm of total assets for year t minus the natural logarithm of total assets for year $t-1$.	$(\text{Log of total assets})_t - (\text{Log of total assets})_{t-1}$	FPIInfomart and/or F/S	Carter et al., 2007
Corporate Governance	WEAKGOV	?	Governance index as defined in Table 9	See Table 9	Proxy	
	RET	?	Annual rates of return reflecting monthly price appreciation, plus reinvestment of monthly dividends and the compounding effect of dividends paid on reinvested dividends. Based on a percentage change of the value over 12 months	Annual rate of return	RI	Brown and Lee, 2007

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
	ROA		Net income divided by total assets for year t minus net income divided by total assets for year t-1	$ROA_t - ROA_{t-1}$	F/S	Carter et al., 2007
	COMP_ALT (Opposite variable of the D.V.)	?	One of the non-ESO compensation vehicles (RSUs or BONUS) for year t minus one of the non-ESO compensation vehicles (RSUs or BONUS) for year t-1 scaled by total compensation for year t minus total compensation for year t-1.	$(Comp_alt_t - comp_alt_{t-1}) / (total\ comp_t - total\ comp_{t-1})$	Proxy and F/S	Brown and Lee, 2007
	MISC_COMP	?	Miscellaneous compensation for year t minus miscellaneous compensation for year t-1 scaled by total compensation for year t minus total compensation for year t-1.	$(MISC_COMP_t - MISC_COMP_{t-1}) / (total\ comp_t - total\ comp_{t-1})$	Proxy and F/S	Brown and Lee, 2007
	SARs	?	SARs for year t minus SARs for year t-1 scaled by total compensation for year t minus total compensation for year t-1.	$(SARs_t - SARs_{t-1}) / (total\ comp_t - total\ comp_{t-1})$	Proxy and F/S	Brown and Lee, 2007
	SALARY	?	Salary for year t minus Salary for year t-1 scaled by total compensation for year t minus total compensation for year t-1.	$(SALARY_t - SALARY_{t-1}) / (total\ comp_t - total\ comp_{t-1})$	Proxy and F/S	Brown and Lee, 2007
	ALL_OTHER	?	All other compensation for year t minus all other compensation for year t-1 scaled by total compensation for year t minus total compensation for year t-1.	$(ALL_OTHER_t - ALL_OTHER_{t-1}) / (total\ comp_t - total\ comp_{t-1})$	Proxy and F/S	Brown and Lee, 2007
	PENSION	?	Pension for year t minus pension for year t-1 scaled by total compensation for year t minus total compensation for year t-1.	$(PENSION_t - PENSION_{t-1}) / (total\ comp_t - total\ comp_{t-1})$	Proxy and F/S	Brown and Lee, 2007

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
	PSUs	?	PSUs for year t minus PSUs for year t-1 scaled by total compensation for year t minus total compensation for year t-1.	$(PSUs_t - PSUs_{t-1}) / (\text{total comp}_t - \text{total comp}_{t-1})$	Proxy and F/S	Brown and Lee, 2007
	Industry Dummies	?	NAICS code	20 Industry Dummies	FPInfomart	Brown and Lee, 2007

ESOs typically do not accrue dividends to the option holder and this makes options less attractive to senior management (Carter et al., 2007, p. 339). However, restricted stock typically is dividend protected and therefore more valuable to the executive in firms that pay dividends regularly, (Carter et al., 2007, p. 339). $\Delta\text{DIV_YLD}$ is included to control for this and is measured as dividends per share divided by price per share at the end of the year.

EQ_CONSTR and TENURE are included to control for the choice of equity versus non-equity compensation. EQ_CONSTR is included to control for “firms that are close to their constraint on issuing equity,” (Carter et al., 2007, p. 339). These firms may be more likely to offer cash compensation. EQ_CONSTR was measured as the ratio of issued to authorized shares. If EQ_CONSTR is close to one, the firm has more constraints. “Individuals in the same position longer likely feel more stable and secure and therefore are likely to be less risk-averse,” (Carter et al., 2007, p.339). Risk-averse executives may prefer the certainty of fixed compensation compared to performance-based compensation and therefore TENURE is measured as the number of years the CEO has held that position and is included to control for CEO risk aversion.

$\ln_TOTASSETS$ is the logarithm of total assets and RET is the annualized rate of return reflecting monthly price appreciation plus reinvestment of monthly dividends and the compounding effect of dividends paid on reinvested dividends as provided by and collected from Research Insight. RET is similar to CUM_RET (defined in Table 8) but is the percentage change

relative to the value 12 months previously (not 36). ROA is net income divided by total assets. These are additional standard economic determinants as identified by Carter et al. (2007) which were found to be significant when determining levels of RSUs as a component of executive compensation.

The board of directors directly influences and determines the composition of executive compensation and therefore measures of their governance characteristics should be included in Model 2b. The governance index (WEAKGOV) is used as the proxy for these characteristics, and is as defined in Model 1 (Table 9).

The calculation for $\Delta\text{COMP_ALT}$ varies depending on the dependent variable – for example, if the dependent variable is BONUS then $\Delta\text{COMP_ALT}$ is RSU scaled by total compensation for year t less RSU scaled by total compensation for year $t-1$. This is included to control for changes in the other forms of compensation that may occur concurrently with the change in ESOs, and that might also affect the change in the compensation alternative of interest. Similarly, all other components of total compensation (MISCCOMP, SARS, ALLOTHER, PENSION and PSUS)¹² are also included in Model 2b and are as defined in Table 4.

Understanding the relationship between changes in ESOs and RSUs is facilitated by holding the other compensation components constant. The industry variables included in Model 2b are also defined as in Table 4. Table 17 Columns Five and Six has the results for Model 2b which like Model 2a was estimated using seemingly unrelated regression.

Descriptive Statistics and Multivariate Analysis

Table 16 displays the descriptive statistics for Models 2a and b. The underlying distribution for bonus is skewed to the right. The medians for RSUs, SARs, PSUs MISC_COMP, ALL_OTHER_COMP and PENSION are likely zero because they were not commonly used - many firm year observations did not have these as compensation components.

Table 16

Descriptive Statistics on Compensation Alternatives and Variables Included in Model 2

<i>Variable</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Dev.</i>
RSU	0.09	0.00	1.49
BONUS	0.74	0.18	19.21
ESO	0.03	0.07	4.88
lnSales	0.08	0.04	0.25
BM	-0.03	-0.02	0.40
CASH_CONSTR	0.01	0.00	0.15
NOL	0.54	0.00	2.98
DIVCON	0.69	0.00	18.24
3870	0.61	1.00	0.49
DIVYLD	0.01	0.00	1.24
ROA	0.35	0.00	7.61
SALARY	0.32	0.04	9.95
SARs	0.14	0.00	2.63
PSUs	0.01	0.00	0.33
MISC_COMP	-0.78	0.00	25.80
ALL_OTHER_COMP	0.28	0.00	9.69
PENSION	0.00	0.00	0.12
WEAKGOV	0.51	0.50	0.17
TENURE	0.08	0.05	0.08
EQ_CNSTR	0.07	0.00	0.55
ln_ASSETS	0.15	0.08	0.29
RET	0.13	0.13	0.56

Table 17 shows the results from Model 2a. There were 1,049 firm year observations for the SUR. This is different than the 1,250 observations as stated in Table 2 because this is a changes model and 201 firm year observations were therefore lost. Column Three shows results for the dependent variable RSUs while Column Four shows the results for the dependent variable BONUS.

Table 17

*Substitution between ESOs and non-ESO Compensation Alternatives for the Pre-Amendment to
Section 3870 (2000-2002) and the Post-Amendment to
Section 3870 (2004-2006) Periods*

Model Dependent Variables (1)	Predicted Coefficient (2)	Dependent Variable	Dependent Variable	Dependent Variable	Dependent Variable
		Model 2a Δ RSU (3) Coefficient (t-value)	Model 2a Δ BONUS (4) Coefficient (t-value)	Model 2b Δ RSU (5) Coefficient (t-value)	Model 2b Δ BONUS (6) Coefficient (t-value)
Intercept	?	-0.02 (-0.11)	2.76 (0.61)	0.18 (0.79)	0.16 (0.17)
Δ ESO	-	0.00 (-0.15)	-3.93**** (-27.27)	-0.16**** (-8.16)	-0.74**** (-15.66)
3870	+	0.10 (1.09)	-1.74** (-1.94)	0.17** (1.90)	0.43** (1.77)
Δ ESO * 3870	-	-0.06*** (-2.87)	4.14**** (21.79)	-0.07**** (-3.19)	0.02 (0.31)
ln_Sales	?	-0.08 (-0.52)	-1.41 (-0.88)	-0.05 (-0.26)	-0.03 (-0.06)
BM	?	0.11 (0.99)	-0.22 (-0.20)	-0.11 (-0.95)	-0.77††† (-2.49)
CASH_CNSTR	?	0.04 (0.14)	5.83†† (2.06)	0.13 (0.40)	0.68 (0.79)
NOL	?	-0.01 (-0.73)	-0.02 (-0.11)	-0.01 (-0.59)	0.00 (0.04)
DIVCON	?	-0.00 (-1.20)	-0.01 (-0.33)	-0.00 (-0.77)	-0.00 (-0.64)
DIV_YLD	?			-0.01 (-0.34)	-0.02 (-0.25)
EQ_CONSTR	?			-0.03 (-0.41)	-0.09 (-0.44)
TENURE	?			-0.03 (-0.06)	0.52 (0.33)
ln_TOTASSETS	?			0.07 (0.39)	0.82† (1.65)
WEAKGOV	?			0.14 (0.20)	0.14 (0.52)
RET	?			-0.04 (-0.46)	-0.03 (-0.11)
ROA	?			-0.01 (-1.35)	-0.04†† (-2.15)
COMP_ALT	?			-0.22†††† (-19.59)	-1.56†††† (-19.59)
ALLOTHER	?			-0.15†††† (-15.51)	-0.62†††† (-33.50)
PENSION	?			0.02 (0.06)	-0.03 (-0.03)

Model Dependent Variables	Predicted Coefficient	Dependent Variable	Dependent Variable	Dependent Variable	Dependent Variable
		Model 2a Δ RSU (3) Coefficient (t-value)	Model 2a Δ BONUS (4) Coefficient (t-value)	Model 2b Δ RSU (5) Coefficient (t-value)	Model 2b Δ BONUS (6) Coefficient (t-value)
(1)	(2)				
PSUS	?			-0.67†††† (-4.73)	1.11††† (2.88)
SALARY	?			-0.07†††† (-6.48)	-0.41†††† (-14.90)
Industry Dummies		YES	YES	YES	YES
Degrees of Freedom		1049	1049	965	965
System Weighted R-Square		0.28	0.28	0.95	0.95

*p < .10, two-tailed. **p < .05, two-tailed. ***p < .01, two-tailed. ****p < .001, two-tailed.

†p < .10, one-tailed. ††p < .05, one-tailed. †††p < .01, one-tailed. ††††p < .001 one-tailed.

RSUs. The coefficient on Δ ESO is zero and not significant. This indicates that RSUs did not substitute for ESOs in the pre-amendment period. As predicted, the interaction between Δ ESO and 3870 has a significantly negative coefficient for this model which supports the first part of H7b – the substitution rate of RSUs to ESOs is less unequal relative to the pre-amendment period. More specifically, the incremental substitution rate is 6 cents of RSUs for one dollar of ESOs. The sum of $\delta_1 + \delta_3$ is -0.06 and significantly different than zero ($F = 21.12, p < 0.0001$). The post-amendment substitution rate of 0.06 is also closer to that found in Hall and Murphy (2002) of \$0.75 RSUs per \$1.00 ESOs (\$375,000 in RSUs for \$500,000 ESOs).

Post hoc Analysis. Since the increase in use of bonuses was unexpected they were included as a dependent variable after the initial univariate analysis finding. The coefficient on Δ ESO is significantly negative when BONUS is the dependent variable suggesting that bonuses did substitute for ESOs in the pre-amendment to Section 3870 period. The interaction between 3870 and Δ ESO has a significantly positive coefficient. The average substitution rate for bonuses

per dollar of ESOs in the post-amendment to Section 3870 period was 21 cents (-3.93 + 4.14). Once again, the sum of $\delta_1 + \delta_3$ is significantly (weakly) different than zero ($F = 3.00, p < 0.0832$).

Model 2b RSUs. Column Five Table 17 has the results for RSUs and as predicted, the coefficient on Δ ESO is significantly negative suggesting that RSUs do substitute for ESOs in the pre-amendment to Section 3870 period (16 cents of RSUs per one dollar of ESOs). Under this version of the model, the sign for 3870 is also as predicted and significant. The interaction between 3870 and Δ ESO has a significantly negative coefficient of -0.07 which supports H7b predicting a less unequal substitution rate between RSUs and ESOs in the post-amendment to Section 3870 period. The substitution rate for RSUs and ESOs in the post amendment period was 23 cents ($F = 236.22, p < 0.0001$) which is closer to the substitution rate suggested by Hall and Murphy (2002), 75 cents of RSUs per one dollar of ESOs, supporting the second half of H7b.

Model 2b - Bonus. The coefficient on Δ ESO for the pre-amendment to Section 3870 period is significantly negative, which suggests that bonuses substituted for ESOs in the pre-amendment to Section 3870 period. The substitution rate for bonuses and ESOs in the post-amendment to Section 3870 period is 72 cents of bonuses per dollar of ESOs ($F = 345.46, p < 0.0001$). This finding is closer to Hall and Murphy's (2002) prediction for substitution rates between cash compensation and bonuses (\$300,000 in cash for \$500,000 in ESOs or 60 cents of cash compensation for one dollar of ESOs) for the post-amendment to Section 3870 period.

Supplemental Analysis. A supplemental test was completed based on Barth and Kallapur (1996) where the compensation components were not scaled by total compensation. Instead, the reciprocal of the change in total compensation was added to the regression as an independent variable. Model 2b was then run with the new variable included. While not tabulated, the coefficients for Δ ESO in the pre-amendment to Section 3870 period are significantly positive for both RSU (0.06, $p < 0.001$) and BONUS (0.07, $p < 0.001$) suggesting that both increased or

decreased with ESOs in the pre-amendment to Section 3870 period. These findings do not support H7a. Substitution rates for bonuses were two cents per dollar of ESOs based on Model 2b and six cents of RSUs for one dollar of ESOs. In summary, substitution rates are not as close under this version of Model 2b to Hall and Murphy's (2002) prediction; however, the results suggest there is support for H7b in that the substitution rate of ESOs for RSUs did become less unequal post-amendment to section 3870.

Summary

The results reveal that firms substitute RSUs for ESOs in the pre- and post-amendment to Section 3870 periods on an unequal basis, although as predicted in the post-amendment to Section 3870 this substitution is less unequal. These findings confirm Hypothesis 7a and part of H7b. Canadian firms substitute 23 cents of RSUs for one dollar of ESOs in the post-amendment to Section 3870 period. This substitution rate of 23 cents of RSUs per dollar of ESOs is closer to Hall and Murphy's (2002) prediction of 75 cents of RSUs for one dollar of ESOs than the pre-amendment rate of 16-cents of RSUs per one dollar of ESOs.

Hypothesis 8

Model and Variables

Finally, the relationship between senior management pay and company stock-price performance was investigated. The model presented below is derived from a model used in Craighead, Magnan, and Thorne (2004). They state that "...prior theoretical and empirical findings suggest that ROE and RET jointly provide boards of directors with complementary information about a firm's performance that is relevant for executive compensation determination," (Craighead et al., 2004, p. 380). The following model was used to determine if the pay-performance relationship has improved since the amendment to Section 3870:

$$(3a) \quad \ln_TC_{jt} = \beta_0 + \beta_1 ROE_{jt} + \beta_2 RET_{jt} + \beta_3 3870_{jt} + [\beta_4 3870_{jt} * ROE_{jt}] \\ + [\beta_5 3870_{jt} * RET_{jt}] + \varepsilon$$

Table 18 summarizes Model 3a providing sign predictions, descriptions and calculations and is presented below.

Table 18

Table of Variables for Model 3a

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Hypothesis</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
D.V.	ln_TC		H8	Natural logarithm of total compensation	Natural log of total compensation	Proxy	Carter et al., 2007; Craighead et al., 2004
	ROE	+	H8	Accounting return on equity (as calculated and provided by FPInfomart when available)	[Net income before discontinued operations – preferred dividends] / [average beginning-and-end-of-year common shareholders' equity]	FPInfomart and/or F/S	Craighead et al., 2004
	RET	+	H8	Annual rates of return reflecting monthly price appreciation, plus reinvestment of monthly dividends and the compounding effect of dividends paid on reinvested dividends. Based on a percentage change of the value over 12 months	Annual rate of return	RI	Craighead et al., 2004
	3870	?	H8	Indicator variable set equal to one if the observation is from the post-section 3870 period and zero if the observation is from the pre-section 3870 period	1 or 0	F/S	Brown and Lee, 2007; Craighead et al., 2004

The dependent variable (\ln_TC) is the natural logarithm of total compensation for senior management of firm j in fiscal year t . ROE is the accounting return on equity of firm j in fiscal year t as calculated and collected from FPIInfomart and defined in Table 18. RET is the stock market return of firm j in fiscal year t collected from Research Insight and as defined above in the variable discussion for Model 2b.

3870 is an indicator variable set equal to one if the observation is from the post amendment to Section 3870 period (2004-2006) and zero if the observation is from the pre-amendment to Section 3870 period (2000-2002). The interaction between 3870 and ROE and RET is included in Model 3a to test H8, i.e. if the relationship between total compensation and shareholder wealth has improved since the amendment to Section 3870.

Extension to Model 3a

Additional variables were added to Model 3a to control for other determinants of executive compensation. Model 3a did not include these variables because it was of interest to initially isolate the relationship between total compensation and performance and follow a more basic model for pay-for-performance. Similar to Model 2b, Model 3b has been modified to include other items that have been determined to affect how total compensation is derived. These additional variables were included in Model 3b because it was determined that they also affect total compensation (i.e. executive compensation is not solely based upon firm performance) (Brown & Lee, 2007; Carter et al., 2007).

Model 3b is shown below and includes the following economic determinants:

$$\begin{aligned}
 (3b) \quad \ln_TC_{jt} = & \beta_0 + \beta_1 ROE_{jt-1} + \beta_2 RET_{jt-1} + \beta_3 3870_{jt} + [\beta_4 3870_{jt} * ROE_{jt-1}] \\
 & + [\beta_5 3870_{jt} * RET_{jt-1}] + \beta_6 WEAAGOV_{jt} + \beta_7 \ln_REVENUES_{jt} + \beta_8 DEBT_EQUITY_{jt} \\
 & + \beta_9 BM_{jt} + \beta_{10} CASH_CONSTR_{jt} + \beta_{11} NOL_{jt} + \beta_{12} DIVCON_{jt} + \sum \text{Industry Dummies} \\
 & + \varepsilon
 \end{aligned}$$

Table 19 summarizes the definitions for the variables used in Model 3b. All variables that are the same as those used in Model 3a are defined in Table 18 above.

Table 19

Table of Variables for Model 3b

<i>Category</i>	<i>Proxy</i>	<i>Sign</i>	<i>Description</i>	<i>Calculation</i>	<i>Source</i>	<i>Citation</i>
Corporate Governance	WEAKGOV	?	Governance index as defined in Table 9	See Table 9	Proxy	
	CS20	?	CS20 is an indicator variable that is equal to one if the firm is closely held (owns 20% or more) and zero otherwise	1 or 0	Proxy	Park et al., 2001
	ln_REVENUES	?	The natural logarithm of revenues	Logarithm of revenues	FPInfomart and/or F/S	Brown and Lee, 2007
	DEBT_EQUITY	?	The ratio of debt to shareholders' equity	Debt / Equity	FPInfomart and/or F/S	Craighead et al., 2004
	BM	?	the year-end book value of equity divided by the year-end market value of equity	Year-end B.V equity / year-end market value of equity	FPInfomart and/or F/S and/or CFMRC	Brown and Lee, 2007
	CASH_CONSTR	?	[Cash flow from operations -(common and preferred dividends + cash flow used in investing / total assets]	[Cash flow from operations -(common and preferred dividends + cash flow used in investing)/ total assets]	FPInfomart and/or F/S	Carter et al., 2007
	NOL	?	The tax loss carry-forward for year t	Tax loss carry-forward _t	RI	Brown and Lee, 2007
	DIVCON	?	[(Retained earnings + cash dividend) _t / cash dividend _{t-1}] _t	[(R/E + Cash dividends) _t / Cash dividends _{t-1}] _t	RI	Brown and Lee, 2007
	Industry Dummies	?	NAICS code	20 Industry dummies	FPInfomart	Brown and Lee, 2007

ROE and RET are defined as in Model 3a and the variables 3870, Governance Variables, BM, CASHCONSTR, NOL, and DIVCON are all defined in Table 19 for firm *j* in fiscal year *t*. ln_REVENUES is defined as the natural logarithm of revenues for firm *j* in fiscal year *t*. DEBT_EQUITY is defined as the ratio of debt to shareholders equity for firm *j* in fiscal year *t*.

Descriptive Statistics and Multivariate Analysis

Table 20 below shows the descriptive statistics for the variables in Model 3a and b. The underlying distributions for DEBT_EQUITY and NOL appear to be slightly skewed to the right.

Table 20

Descriptive Statistics on Pay-for-Performance Variables

<i>Variable</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Dev.</i>
ln_TC	15.31	15.29	1.00
ROE	0.91	1.15	2.11
RET	0.11	0.12	0.56
WEAKGOV	4.14	4.00	1.37
CS20	0.43	0.00	0.50
ln_REVENUES	13.76	13.60	1.71
DEBT_EQUITY	2.63	1.31	4.11
BM	0.08	0.06	0.16
CASH_CONSTR	-0.03	-0.00	0.13
NOL	1.21	0.00	4.55
DIVCON	0.16	0.03	0.26

Table 21 shows the results for Model 3a. Data for the year 2003 has been excluded for the reasons previously stated, resulting in 1246 firm year observations, with the results for these observations shown in Column Three. Column Four shows the regression results with firms having student residuals greater than two also removed (which resulted in 71 firm year observations being excluded).

The industry variables included in Model 3b are also defined as in Table 8. Of the original 1246 firm year observations, 37 observations had to be excluded because of missing data. Table 21 Column 5 below shows the results for Model 3b. Column 6 shows the regression results after excluding 65 observations as outliers (i.e. the regression diagnostics showed them as having student residuals greater than two).

Table 21

Pay for Performance Sensitivities of Total Compensation

(1) Variables	(2) Predicted Coefficients	(3) Model 3a Coefficient (t-value)	(4) Model 3a (N.O.) Coefficient (t-value)	(5) Model 3b Coefficient (t-value)	(6) Model 3b (N.O.) Coefficient (t-value)	(7) Model 3b Median split MEDESO Coefficient (t-value)
Intercept	?	15.01**** (381.26)	14.96**** (405.84)	13.03**** (33.57)	12.59**** (36.49)	12.90**** (32.52)
ROE	+	0.13**** (7.59)	0.13**** (8.44)	0.05**** (3.14)	0.03** (1.97)	0.02 (1.13)
RET	+	-0.11** (-1.67)	-0.18*** (-2.93)	0.04 (0.82)	-0.01 (-0.14)	0.09 (1.15)
3870	?	0.51**** (8.41)	0.55**** (10.08)	0.22**** (4.67)	0.23**** (5.50)	0.20**** (3.21)
3870*ROE	+	-0.10**** (-3.93)	-0.11**** (-4.63)	-0.03 (-1.23)	-0.02 (-0.99)	0.00 (0.14)
3870*RET	+	0.07 (0.73)	0.15** (1.71)	-0.03 (-0.36)	0.00 (0.02)	-0.05 (-0.43)
ROE*MEDESO	-					0.04** (1.63)
RET*MEDESO	-					-0.10 (-0.91)
3870*ROE*MEDESO	+					-0.06* (-1.34)
3870*RET*MEDESO	+					0.00 (0.02)
MEDESO	?					0.01 (0.12)
WEAKGOV	?			0.10†††† (5.60)	0.08†††† (5.35)	0.09†††† (5.38)
CS20	?			-0.11††† (-2.46)	-0.10††† (-2.55)	-0.13††† (-2.68)
REVENUES	?			0.26†††† (16.23)	0.30†††† (19.56)	0.27†††† (16.39)
DEBT/EQUITY	?			0.03†††† (3.86)	0.03†††† (4.33)	0.02†††† (3.56)
BM	?			-0.71†††† (-5.64)	-1.10†††† (-7.00)	-0.74†††† (-5.73)
CASHCONSTR	?			-0.12 (-0.68)	-0.02 (-0.10)	-0.17 (-0.94)
NOL	?			0.02†††† (4.89)	0.00†††† (5.00)	0.02†††† (4.74)
DIVCON	?			-0.23††† (-2.64)	-0.00††† (-3.64)	-0.21††† (-2.45)
Industry				YES	YES	YES
N		1246	1175	1209	1144	1212
Adjusted R ²		0.09	0.13	0.47	0.57	0.48

*p < .10, two-tailed. **p < .05, two-tailed. ***p < .01, two-tailed. ****p < .001, two-tailed.

†p < .10, one-tailed. ††p < .05, one-tailed. †††p < .01, one-tailed. ††††p < .001 one-tailed.

Model 3a. There is a significantly positive relationship between ROE and total compensation, indicating that compensation is at least in part determined by return on equity in the pre-amendment period. The significantly negative interaction term 3870*ROE indicates that the relationship between total compensation and return on equity is less sensitive than in the pre-amendment to Section 3870 period. The sum of β_1 and β_4 was positive 0.03 (0.13 + -0.10) and was not found to be significantly different than zero ($F = 1.43, p < 0.23$).

There is a significantly negative coefficient on the variable RET. When outliers are removed the interaction term 3870*RET is significant (see Column 4). However the sum of β_2 and β_5 was -0.03 (-0.18 + 0.15) which was also not found to be significantly different than zero ($F = 0.13, p < 0.72$).

Both ROE and RET are performance measures and are combined for further analysis with a focus on the post-amendment period. The coefficients on the interaction terms suggest no improvement in pay for performance after the amendment to 3870, and thus the prediction in H8 of an increase in the pay-for-performance relationship is not supported. In particular, the sum of β_4 and β_5 was -0.03 (-0.10 + 0.07) which was not found to be significantly different than zero ($F = 0.23, p < 0.63$). Overall this indicates that there was not a significant relationship between performance and executive pay in the post-amendment to Section 3870 period.

Model 3b. Model 3b (see Table 21 Columns 5 and 6) results show a positive relationship between ROE and total compensation in the pre-amendment period, but show a non significant relationship between ROE and total compensation in the post-amendment period. From Column 5, the sum of β_1 and β_4 is 0.02 (0.05 + -0.03) which is not significantly different than zero ($F = 1.29, p < 0.26$). The evidence suggests that there was a positive pay for performance relationship in the pre-amendment period but this relationship has not improved or worsened in the post-amendment to Section 3870 period. Model 3b also shows a non significant relationship between

total compensation and RET in the pre- and post-amendment periods which is slightly different from Model 3a.

The coefficients for ROE and RET were combined for further analysis to determine if there was an improvement in pay for performance in the post-amendment period. The sum of β_4 and β_5 was -0.02 (-0.02 + 0.00) which was not found to be significantly different than zero ($F = 0.07$, $p < 0.79$) indicating that there was not a significant relationship between pay and performance in the post-amendment period.

Supplemental Analysis. An additional supplemental post hoc analysis was conducted to examine if the firms that had larger decreases in ESOs had larger increases in pay for performance sensitivities. In order to do this, firms were classified as having a large or small ESO reduction surrounding the amendment to Section 3870 based on their change in ESOs between the years 2004 and 2002. This was done by calculating ESOs scaled by total compensation for 2004 minus ESOs scaled by total compensation for 2002¹³. The median (-1.20%) was used to split the firms into two groups. Firms that had greater decreases than the median were coded as one; whereas firms with smaller decreases than the median were coded as zero (for example a firm with a reduction of 4% is said to have a greater decrease than the median). Interactions between ROE and MEDES0 and RET and MEDES0 were included in the model to determine pay for performance sensitivities in the pre-amendment to Section 3870 period for these firms. These coefficients are predicted to be negative because firms that had greater reductions in ESOs because they were using them for earnings management or opportunistic reasons would theoretically have had worse pay for performance relationships in the pre-amendment period, compared to firms that experienced smaller reductions in ESOs because they were using them for pay for performance reasons. Interactions between ROE, MEDES0 and 3870 and RET, MEDES0 and 3870 were included to proxy for firms with large decreases in ESOs in the post

amendment to Section 3870 period and the coefficients for these variables are predicted to be positive based on Hypothesis 8.

Results are shown in Table 21, Column 7. These results indicate that there is a significantly positive relationship between ROE and total compensation in the pre-amendment to Section 3870 period (ROE*MEDESO) for firms who subsequently had greater reductions of ESOs. The relationship between RET and total compensation in the pre-amendment period (RET*MEDESO) for firms with greater reductions of ESOs is negative although not significant. Combining these coefficients to determine if there was a relationship between the return measures and total compensation ($\beta_1 + \beta_2 + \beta_6 + \beta_7$) resulted in a value of 0.05 (0.02 + 0.09 + 0.04 + -0.10). This was not found to be significantly different than zero ($F = 0.63, p < 0.43$) and indicates that there is not a significant relationship between executive pay and firm performance.

In contrast, there is a significantly negative relationship between ROE and total compensation in the post-amendment period for these firms (3870*ROE*MEDESO). There was no apparent relationship between RET and total compensation in the post-amendment period for firms with larger ESO reductions. However, the sum of $\beta_4, \beta_5, \beta_8,$ and β_9 was -0.11 (0.00 + -0.05 + -0.06 + 0.00) which is not significantly different than zero ($F = 0.91, p < 0.34$). This contrast test implies that firms who reduced ESO use more than the median did not improve pay for performance sensitivities in the post-amendment to Section 3870 relative to the pre-amendment period, contrary to the assumptions underlying H8. In sum, these findings indicate that firms' pay for performance relationships did not change post-amendment to Section 3870¹⁴.

Summary

Hypothesis 8 predicts an increase in pay for performance sensitivities after the amendment to Section 3870. It appears that pay for performance sensitivities have neither improved nor worsened post-amendment to Section 3870.

Conclusions

The amendment to Section 3870 required Canadian firms to begin expensing the value of ESOs in their financial statements, which had previously not been done. This study examined changes in the use of ESOs as a component of executive compensation associated with the amendment to Section 3870. The related change in use of other compensation components was explored as well as what firm factors were associated with changes in ESO use. This study also looked at the change in the rate of substitution between ESOs and restricted stock options and bonuses, and the changes in the pay for performance relationship, subsequent to the amendment.

There were two competing rationales used to explain the increase in ESO use in the pre-amendment to section 3870 period. The pay for performance rationale suggests that firms increased ESO use because ESOs were used as a means to align shareholder and manager goals. Preferential accounting treatment leading to managerial opportunism and earnings management was the second rationale identified. A summary of my results are presented below linking my findings to the aforementioned rationales.

First, it was found that there was a statistically significant decrease in ESO use after the amendment to Section 3870 was passed. ESO use as a percentage of total compensation went from a mean of 23.67% in the pre-amendment to Section 3870 period to 15.50% in the post-amendment to Section 3870 period. This finding suggests that some firms were using ESOs for earnings management or opportunistic purposes. This study also looked at increases in other types of stock based compensation around the amendment to Section 3870. There was an increase in the use of RSUs (from 8.7% of firms in 2000 to 32.2% in 2006), PSUs (from zero firms in 2000 to almost 7% in 2006), and SARs (from almost 5% in 2000 to 8.3% in 2006) for Canadian firms. However, it is important to note that ESOs are still the dominant choice for stock-based compensation, accounting for almost 16% of total compensation in the post-amendment period.

In addition to this, 61% of firms are still using ESOs in their executive compensation packages suggesting that pay for performance factors may be more important than opportunism or earnings management when designing executive compensation contracts.

Second, it was found that firms that are more politically visible reduced ESO use more than firms that are less publicly visible. However, no support for other factors associated with managerial opportunism or earnings management was found, such as weak corporate governance, earnings benchmarks, or debt covenants. These findings suggest that firms that would have been expected to engage in earnings management or managerial opportunism did not significantly decrease ESO use when the favorable accounting treatment that would enable such behaviors ended. These findings are quite different from Brown and Lee (2007) who found support for their hypotheses relating to earnings management. It appears that ESO use was more closely tied to earnings management in the U.S.

Similar to Brown and Lee (2007), this study found that the substitution rate between RSUs and ESOs was not dollar for dollar. Using an extended model of Brown and Lee's 2007, the substitution rate in the pre-amendment to Section 3870 period was determined to be 16 cents of RSUs for one dollar of ESOs. This finding supports H7a which predicts an unequal substitution rate between RSUs and ESOs with RSUs being substituted on a less than dollar-for-dollar basis. Using the same extended model it was also discovered that RSUs substituted for ESOs in the post-amendment to Section 3870 period at a rate of 23 cents of RSUs for one dollar of ESOs. This substitution rate was less unequal than in the pre-amendment to Section 3870 period, and is closer to Hall and Murphy's (2002) theoretical substitution rate, supporting H7b. These results suggest that RSUs did become more preferred by firms once the favorable accounting treatment for ESOs was removed.

The pay-for-performance relationship was also examined in this study and it was found that the reduction in ESO use did not on average strengthen this relationship. Moreover, firms that reduced ESO use more did not have an improvement in pay for performance. It may be that other types of stock-based compensation used in place of ESOs do not have the same motivational effect of ESOs.

This paper extends Brown and Lee's 2007 study by refining their models, considering temporal trends, examining pay for performance sensitivities and by using a different setting. Models were replicated and then refined to help understand the effects of the different setting versus the effects of the model extensions. The refinements increased adjusted R^2 and improved the overall explanatory power. This study used a Canadian setting which is interesting because there was no pro forma disclosure in Canada until 2002, firms in Canada are on average smaller than U.S. firms and the industry structure in Canada is different.

There were several limitations in this study. First of all, due to data availability, there were some data that could not be collected that were used in Brown and Lee (2007), specifically ACC_VEST measuring accelerated vesting, and IMPACT measuring the magnitude of ESO expense. Second, some variables that were included in this study may not have sufficiently captured the underlying theoretical construct. Some examples of these are the proxies used for the hypotheses relating to debt covenants and earnings benchmarks. In addition to these variables, there has been discussion over the proxy for firm size. This variable was measured the same way as Brown and Lee (2007) and Carter et al. (2007), and there are no obvious reasons why this is not an equally good measure for the Canadian setting. Although political visibility was a significant factor contributing to ESO decrease, the proxies used for political visibility could alternatively be based on the number of news articles for sample firms as an alternative proxy.

Another limitation of this study was the attempt at creating an index variable (WEAKGOV) for corporate governance. This index was intended to aid in interpretation; however this index was not significant. One possible explanation is that some proxies used for corporate governance may not have captured the intended behavior. Another reason that the index might not have worked is because not all governance variables identified in Core and Guay (1999) were available in Canada. There were also competing findings on the prediction of some of the various governance proxies (i.e. INSIDEDIR).

The strong stock market was identified early on as a possible contributor for the increase in ESOs prior to the amendment to Section 3870. While this rationale was not explored further, the strong stock market could have contributed to the increased use in ESOs in the pre-amendment period and continued use in the post-amendment period. This creates an opportunity for future research.

Future research could also extend this study past the year 2006 as well as increase the size of the sample, as the number of firm year observations (1246) was smaller than Brown and Lee's (2007). Less statistical power may be one reason why I did not get significance for some of my variables. Finally, it would be interesting to examine non-ESO stock-based compensation, more specifically RSUs, and the resulting pay for performance sensitivities as use of such share-based compensation alternatives increases.

The pattern of results suggests that opportunism and earnings management may have affected ESO use, given the response to the 3870 amendment. However, the traditional factors associated with opportunism and earnings management were not significant in my setting. In addition, the ongoing popularity of ESOs both as a percent of management compensation and the frequency of firms still using ESOs even after the amendment suggest that opportunism and earnings management were not the major determinants of ESO use. Further work is needed to

fully understand whether pay for performance is a major factor in ESO use, and the role of other factors such as increasing stock prices.

Notes

¹ Cross-sectional differences related to factors affecting how firms restructure compensation was not explored due to sample size constraints.

² There are not enough firms in the sample that choose to motivate their employees with PSUs (29 firm year observations) and SARs (73 firm year observations) therefore these types of stock-based compensation cannot be fully investigated with the existing sample. Originally there were hypotheses to include all types of non-ESO stock-based compensation (RSUs, SARs and PSUs), but after the data was collected it was determined there were not enough observations to proceed with hypothesis testing.

³ One firm switched to U.S. GAAP in the pre-amendment to Section 3870 period and 21 firms switched in the post-amendment to Section 3870 period. They were still included in the sample. 35 firms were cross-listed meaning they disclose in U.S. and Canadian GAAP. Firms that cross-listed disclosed the pro-forma ESO expense the same time the U.S. required it.

⁴ This turned out *not* to be the case and all banks and financial institutions have been included in all models as they were early adopters of Section 3870 and make up a large portion of the Canadian market on a market valuation basis.

⁵ Compensation data is disclosed in the proxy statement following that firm's year end. For example if a firm's year end is December 2005, the compensation data for that firm is usually disclosed by April 2006. Compensation data in the proxy circular for April 2006 is for the year 2005 and was allocated to the year 2005 for all models. Compensation for the year 2005 would most likely reflect performance for that year (i.e. 2005).

⁶ These numbers differ from the 175 firms used in Model 1 because some firms used non-ESO stock based compensation. These firms also fit the original inclusion criteria of (1) being on the FP 500 list and (2) having information available for two years in the pre-amendment and two years in the post-amendment to Section 3870 periods.

⁷ A number of variables have been scaled to get all variables to a similar order of magnitude to reduce floating point errors in computing the statistics.

⁸ This treatment of ESOs settled in cash was consistent throughout the paper.

⁹ In Canada outside ownership is disclosed at 10% (this relates to the ability to calculate NONCEOOWN and OUTOWN) and therefore these definitions differ slightly from Core et al.'s (1999). There was enough data disclosed in the proxies to calculate OUTDIROWN given Core et al.'s (1999) definition.

¹⁰ A number of tests were conducted to ensure the underlying assumptions for an OLS regression were met. Diagnostic tests do not suggest that heteroscedasticity (as determined by White's, 1980), autocorrelation (as determined by the Durbin-Watson test), multicollinearity (variance inflation factors) were significant issues.

¹¹ For example, the formula for RSUs for the year 2001 looked as follows: $(RSUs_{2001} - RSUs_{2000}) / (Total\ Compensation_{2001} - Total\ Compensation_{2000})$.

¹² LTIP% was left out of Model 2b to reduce the chance of collinearity.

¹³ $(ESO/TC)_{2004} - (ESO/TC)_{2002}$

¹⁴ Supplemental analysis was done on Model 3a and 3b by year to determine temporal trends. Model 3a and 3b were run with and without outliers. Coefficients were very similar for ROE and RET for pre and post years compared to the values in Table 21, therefore no changes in results were found.

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Appendices

Appendix A: Measuring and Valuing Total Stock

Option Holdings

The value of stock options is measured using the Black-Scholes formula as modified by Merton (1973) and applied in the Hall and Liebman study, (1998). The value of options is:

$$(3) V_{options} = N[Pe^{-dT}\Phi(Z) - Ee^{-rT}\Phi(Z - \sigma\sqrt{T})],$$

Where

$$(4) Z = \ln(P/E) + T(r - d + \sigma^2/2) / \sigma\sqrt{T},$$

N = number of shares

P = price of underlying stock

E = exercise price of the option

T = time to expiration

r = risk-free interest rate (bond rate)

d = expected dividend rate

σ = expected standard deviation of stock return

Φ = cumulative probability function for normal distribution.