CEO’S SHARE OF TOP-MANAGEMENT COMPENSATION, CHARACTERISTICS OF THE BOARD OF DIRECTORS AND FIRM-VALUE CREATION

Sébastien Deschênes, University of Moncton
Mohamed Zaher Bouaziz, University of Moncton
Tania Morris, University of Moncton
Miguel Rojas, University of Moncton
Hamadou Boubacar, University of Moncton

ABSTRACT

The study examines if certain board of directors characteristics influence the CEO’s Pay Slice (CPS), i.e. the CEO’s share of the combined compensation received by the five top-paid executives of the firm. The results show that the CPS is positively affected by the percentage of independent directors and negatively linked to director stock ownership. We also examine if CPS increases company valuation by investors, as predicted by the tournament theory. Our results upheld this view, showing that there is a positive link between CPS and company market value as predicted by the tournament theory. Although the effect is significant at a threshold of 95%, CPS only explains a small percentage of the variance in company market value.

INTRODUCTION

The media attention concerning the compensation received by Chief Executive Officers (CEOs) has increased in the past two decades due to the growing gap vis-à-vis the middle class income (Abma, 2012; Anderson et al., 2004), the financial scandals in the wake of the recent global crisis, and the “Occupy Wall Street” movement (Sharma & Huang, 2010). In terms of corporate governance, CEO compensation is ultimately the board’s responsibility. The board of directors, by determining CEO compensation, contributes to establish the company’s compensation structure, especially by setting the gap between CEO compensation and that of the other company executives. Therefore, we pose ourselves the first research question, which is formulated as follows: Can board characteristics partially explain the CEO pay slice (CPS), i.e. the CEO’s share of the combined remuneration of the five top-paid executives. The board characteristics which are studied in our article are independence, size, total director compensation, stock-based director compensation, director stock ownership, directors’ average number of tenure years on the board and the CEO’s dual position as Chairman of the Board.
Another research question is connected with the impact that a greater CPS may have on firm market-valuation. Two theoretical views have been proposed to address this question. The tournament theory, which was initially formulated by Lazear and Rosen (1981), sustains that the compensation gap between the CEO and other executives, could be a source of motivation for the latter. This enhanced motivation could create company value. The fair-wage view, on the contrary, claims that the increased competition among the members of the executive team could be detrimental to cooperation, which in turn would be harmful for the company (Pfeffer, 1995; Deusch, 1985; Levine, 1991). If a greater CPS is a source of value creation, our study will support the tournament theory, whereas a negative link between CPS and firm value will upheld the fair-wage theory.

This study makes a unique contribution to the academic literature. To the best of the authors’ knowledge, it is the first to examine if board characteristics are determinants of CPS and if the latter can be a driver of the company’s market value. The study addresses this question in the context of Canadian capital markets. Specifically, it examines the research questions using as a sample the constituent firms of the S&P/TSX 60 index, which are the largest public Canadian companies.

The results indicate that CPS is positively related to the independence of the board of directors and negatively linked to director stock ownership. The largest CPS, where the greatest proportion of the board is independent, could be explained by the larger dependence to the CEO as a link to the company. The negative relationship observed for director stock ownership could be explained by tighter controls on CEO compensation by the directors having more common interests with shareholders. Results also that PRPDG has a positive effect on company market value, which agrees with tournament theory.

The following sections will successively present the literature review and the formulation of hypotheses, the methodology and sample, and the results and the conclusion.

**II. LITERATURE REVIEW AND STATEMENT OF HYPOTHESES**

2.1. The Tournament Theory

The compensation-performance relationship has been the object of several studies that attempted to analyze the legitimacy of awarded salaries and its links with performance. The effects on firm performance of actions advanced by executives were frequently correlated with their compensation.

In particular, wage dispersion seems to have an impact on the effort made by the worker, and therefore the performance of the company. The "Tournament Theory", put forward by Lazear and Rosen (1981), refers to the idea that wage dispersion enhances worker motivation. The central idea of this theoretical approach is that the effort of a worker not only depends on the level but also the wage gap within the firm, which consequently affects organizational performance. Firms
should therefore adopt performance-based compensation systems and assign the highest reward to the most productive worker. Wage inequality is thus understood as a source of competition between workers. Therefore the relationship between pay dispersion and performance is positive.

In other words, according to the Tournament Theory, companies perform better when their wage structure is more dispersed. Wage dispersion thus stimulates the performance of a firm, by helping firms to avoid agency costs (Lee et al., 2008).

Empirical examinations of this theory show mixed results. Hibbs and Locking (2000), working on a sample of Swedish firms between 1964 and 1993, confirm the hypothesis of a higher productivity of a firm in the presence of a dispersed wage structure. Lee et al. (2008) also found results supporting the tournament theory using a sample of U.S. firms for the years 1992-2003. Their results indicate that the financial performance of firms is positively associated with the dispersion of earnings within the management team and that this relationship would be even stronger in firms where agency costs associated with executive discretionary power may be higher. According to Sharma and Huang (2010) this relationship only prevails in firms whose CEO receives the highest compensation among the members of the management team.

Other studies tend to infirm the tournament theory. Winter-Ebmer and Zweimüller (1999) analyzed the impact of wage dispersion on the performance of Austrian companies during the period 1975-1991. They find that wage structure that is too dispersed weakens the performance of a firm by creating problems with perceptions of lack of fairness and diminished cohesion among workers. The results of Bebchuk et al. (2011) support the fair-wage theory by establishing that the value of firms (measured by industry-adjusted Tobin's Q) is negatively related to the CEO pay slice (CPS). Their results also show that an increased CPS is associated with lower accounting profitability, the granting of options to the CEO on favorable terms, greater disconnection between CEO retention and the performance of the firm, and negative stock market reactions when information on compensation of the management teams in circulars arrives is made public. These results support the fair-wage theory.

2.2. The fair-Wage Theory

According to Hicks (1963), a prerequisite for organizational efficiency is to ensure that there are no intense feelings of unfairness among employees operating within a team. This would likely reduce their effectiveness. In this sense, some authors (Pfeffer, 1995; Deusch, 1985; Levine, 1991) argue that a large wage gap would lead to divisions within the same team. Indeed, for some employees, the spirit of competition can lead them to develop a desire to harm their rivals, while for others, these wage differentials can lead to a strong sense of dissatisfaction that will encourage them to divest from their work (Cowherd & Levine, 1992). In both cases, this will have the effect of reducing the performance of the company, especially for businesses where teamwork is essential.
We argue that the previous discussion allows us to apply the theory of "fair wages" to the context of executive compensation. This view calls for a salary proportionate to the effort and low wage differentials between employees operating within a team. According to the approach, employees of the company will emphasize team spirit and will set common goals.


Our research intends to provide an answer to two interrelated questions. Firstly, we asked ourselves if board characteristics are related to the decision on the CEO’s share of total top-management compensation. Boards receive important powers from shareholders who appoint them. In fact, Fama and Jensen (1983) argued that they constitute the main mechanism of internal corporate governance. Thus, boards can hire and fire company top officials (including the CEO) and also they set the level and other aspects of compensation (Farrell & Whidbee, 2000; Yermack, 2004). We therefore reason that traits of the boards connected in previous literature as potential value drivers could have an impact in the determination of CEO’s share in total top-management compensation. Those traits are connected with: board independence, its size, total compensation of directors, percentage of option-based remuneration of directors, firm ownership of directors, directors’ tenure and the dual role of the CEO as a president of the board. Those aspects are the object of hypotheses 1 to 7. Secondly, does a larger CPS create firm value? In other words, we examine if the available data support the “tournament theory” or the “fair wage” views. This is the last of our hypotheses. The setting of our hypotheses is the object of next section of the study.

2.3. Research Hypotheses

Agency theory states that the role of the board is to ensure that decisions made by the leaders are in the interests of shareholders. One of the most important decisions that falls within the scope of the board is to set the compensation of the CEO. Thus, on the basis of this theory and according to authors like Dalton et al. (1998), Westphal and Zajac (1994), the effectiveness of the disciplinary function exercised by the board of directors is likely to be enhanced if the directors who compose it are deemed independent. Arguably, a high proportion of independent directors on the board, strengthens the power of the latter. According to Core et al. (1999), independent directors evaluate the performance of managers and determine their compensation. In the same vein, Mehran (1995) finds that companies that have a significant number of independent directors
prefer a stock-based compensation so that executive salaries are more aligned with their performance.

However, if non-independent (insider) directors are numerous within the board, there will be little control over CEO compensation, which shall be higher, especially when the CEO also holds the position of Chairman of the Board of Directors (Core et al., 1999). Non-independent directors have little interest in opposing the leader by challenging the level of compensation, even if it seems excessive (Malette et al., 1995; Bebchuk & Fried, 2006). Because the CEO commands the highest authority of the firm, non-independent directors are aware of his power, and could be afraid of being punished if they act against the interests of the CEO, contrary to independent directors. In Canada, St-Onge et al. (2001) conclude that the proportion of insider directors on the board positively influences both short-term compensation and total compensation of company CEO’s.

H1 CPS is negatively linked to the proportion of independent directors within the board.

Several researchers, such as Li (1994), and Upneja and Ozdemir (2012) argue that the size of the board is an important indicator of its ability to control the compensation of the management team. In fact, the larger the board of directors, the more complicated a critical decision will be (for instance, setting the CEO’s salary). A higher number of directors makes more difficult to build a consensus among themselves concerning the remuneration of the CEO. This argument is supported by Core et al. (1999) who mention that larger boards reduce the level of control and that one can observe a higher CEO compensation in such companies. The results of Ozkan (2007) point in the same direction, by showing a higher CEO compensation for firms with a greater number of directors on their board. Nonetheless, Yermack (1996) finds that executive pay is higher in firms with a board of directors composed of a small number of directors. Our hypothesis is formulated on the premise that good governance diminishes with the size of boards and therefore the share of the pay of the management team going to the CEO is increasing with the size of boards.

H2 CPS is positively related to the size of the board of directors.

Several arguments have been put forward by researchers concerning the issue of total director-compensation. A first line of reasoning claims that directors seeking to maximize their wealth must attempt to convey to the market that they perform their duties diligently (Weisbach, 1988). Thus, they can increase their chances of being invited to sit in other boards or in boards of more prestigious (Fama & Jensen, 1983). Thus, directors have an interest in controlling CEO compensation to avoid excesses, because this can be perceived as a signal of good governance. Another argument, going along the same lines, associates the quality of the directors with their remuneration level. The higher pay would attract better directors that would help to contain CEO compensation. If these arguments are right, CPS should be lower.
Contrary to previous arguments, some empirical studies show that CEOs may hold an influence over the board of directors (Byrd, Cooperman & Wolfe, 2010), instead of being controlled by it. In this case, the directors might be complacent with the CEO to increase their chances of re-election or occupy better positions on the board. According to Bebchuck et al. (2010), CEOs who dominate their boards appropriate a larger share of total compensation received by the management team.

Our hypothesis will be based on the argument that well-paid directors engage in better quality work and are more likely to worry about their reputation in the market for corporate directors. Therefore, they attempt to limit CEO compensation, which in turn reduces CPS.

**H3 CPS is negatively related to director compensation.**

The survey of Magnan et al. (2010) on the remuneration of directors suggests that stock-based compensation encourages the board to enhance control activities, resulting in value creation. Along the same lines, Perry (1998) establishes a link between stock-based compensation of directors and the likelihood that the CEO of a poorly performing firm be replaced. It is then possible to hypothesize that boards on which a greater ratio of their compensation is stock-based may be more effective at limiting CEO compensation. In such a situation, the ratio of CEO share of total remuneration perceived by top management should have a negative relationship with the ratio of stock-based remuneration of directors.

**H4 CPS is negatively related to directors’ stock-based compensation.**

The agency theory asserts that higher ratios of equity ownership by managers ensure a better alignment of their interests with those of shareholders, because this limits some agency costs, including those related to the determination of executive compensation. More specifically, if the directors hold a significant stake in the company, the risk of improper compensation policy to the detriment of shareholders would be held in check. These predictions were verified by Ozkan (2007), who found that CEO compensation is lower when directors have a higher stake in the company, corroborating the findings of Lambert et al. (1993) and Core et al. (1999). Furthermore, Broye and Moulin (2010) argued that a CEO who is a block-holder will accept that a high ratio of his remuneration be flexible and therefore, dependent on the performance of the firm. Mendez et al. (2011) find that the volume of stock held by the firm-insider directors negatively affects executive compensation. This result could be interpreted as evidence of alignment with shareholders’ interests. Therefore, equity ownership of directors increases the likelihood of a better control of CEO pay and in turn, of a lower CPS.
H5 CPS is negatively linked to director stock ownership.

Corporate governance could be enhanced by the average number of years of directors’ tenure. An experienced board would have a better understanding of the company and thus, it could exercise better governance (Anderson et al., 2004). In addition, newly-appointed directors may be less critical of the work of CEOs, especially if they are partly indebted to them for their appointment (Westphal & Zajac, 1995) and (Bebchuk et al., 2002). The empirical results do not support the view of longer director tenures enhancing monitoring. Instead, those results support the hypothesis of a degradation of the independence of directors as their tenure increases. Anderson et al. (2004) found that the cost of the debt increased by 2.5 basis points when the tenure of directors went from seven to eight years. Byrd et al. (2010) reported a positive relationship between CEO compensation and the average number of tenure years of directors, when CEOs had been in office during six years or more. This means that the CEOs would acquire a certain influence on the board as their own tenure increases, which is compounded by the fact that board’s incumbents usually retain their position. Therefore, according to this view CEOs receive higher compensation in companies in which the directors have been serving on the board for a longer period. The consequence of this higher compensation is that the CPS should be higher in the presence of an experienced board of directors.

H6 CPS is positively related to the average number of years of directors’ tenure.

Duality means that the same person occupies the position of CEO and chairman of the board of directors during a timeframe. The chairman of the board of directors has the task of conducting meetings and setting the agendas. He is also an influential figure in matters concerning the enrollment, motivation, evaluation and compensation of the CEO, and in the nomination of directors (Patton & Baker, 1987). Given the extent of the authority reserved to the chairman, the duality can impair the functioning of the board.

The agency theory, particularly Jensen and Meckling (1976) and Jensen (1993), suggests the separation of the functions of the chairman of the board and the chief executive officer (CEO) in order to heighten the effectiveness of the board. Indeed, agency theory considers the presence of the CEO-chairman duality in a company as a hindrance to the effectiveness of the monitoring capacity of the board.

According to Sarkar et al. (2009) duality results in jeopardizing the proper functioning of the board, because it renders the directors dependent of the CEO, thus creating a faulty control system, encouraging opportunism of the latter. Tuggle et al. (2008) concluded that the sharing of power between the CEO and the board is a factor that can determine the ability of the CEO to carry out his functions. The study by Forker (1992) supports the view of the lack of effectiveness of the board when the same person holds both positions. The author finds that there is a lower quality of
voluntary disclosure of information about stock options when the CEO is also chairman of the board.

In agreement with this statement, the theory of managerial hegemony (Malette, Middlemist Hopkins, 1995; Vance, 1983; cited by St-Onge et al., 2001) argues that CEOs exerting greater influence over the board tend to receive higher pay (Hill & Phan, 1991; Core et al., 1999), which is not sensitive to the company performance (Ryan & Wiggins, 2004), and a larger CPS (Bebchuk et al., 2010). The results of Lee et al. (2008), supporting the tournament theory, show a positive relationship between the CPS and the firm performance. However, according to the same authors this relationship is weaker when the CEO also chairs the board.

We hypothesize that a CEO exercising influence over its board by means of a dual position as chairman benefit from a larger CPS.

H7 CPS is positively related to the appointment of the same person as CEO and chairman of the board.

The model with our seven first hypotheses includes six control variables. The Total Assets variable was introduced to account for the size of the company, which is likely to indicate the number of hierarchical levels and the number of vice-president positions. Companies with several hierarchical levels would be more likely to give larger compensation to the CEO, the ultimate winner of all tournaments (Siegel & Hambrick, 2005). In companies where there are several vice-presidents, the wage gap between them and the CEO would be higher (Bebchuk et al., 2001). Studies on CPS generally incorporate a variable that takes into account the size of the company. For example Sharma and Huang (2010) used the log of total assets, Siegel and Hambrick (2005) the number of employees, Bebchuk et al. (2011) and Lee et al. (2008) used sales.

The model dealing with our first seven hypotheses also takes into account a dummy variable, intended to isolate the effect of family ownership of firms, because family-controlled firms face different situations in terms of agency conflicts between managers and shareholders (Sharma & Huang, 2010). According to Li et al. (2011) the incentives related to the tournament theory would be less important in this type of companies. The model also includes three dummy variables to highlight the effect of sectors on CPS. Thus, we isolate materials, energy and financial sectors, which together represent more than 75% of the Canadian market capitalization. In addition, as Sharma and Huang (2010) and Bebchuk et al. (2011) suggest, a variable to take into account the leverage ratio is included in the model.

A compensation structure that markedly differentiates CEO compensation with respect to the other members of the management team should motivate executives to excel, in order to display a performance that could make them reach the top of the hierarchical pyramid and with it, receive all the benefits associated with such a position. This competition, if it is works well, would create value for firms. Instead, fair-wage theory argues that a large gap between CEO compensation and that of other executives reduces cooperation. The subordinate members of the management team
compete to win the tournament, which can lead to the CEO position. This opportunistic behavior would be likely to limit the creation of value at the company level. Hypothesis 8 proposes that CPS is a source of value creation.

The results of the study by Lee et al. (2008) support the tournament theory, on the basis of data ranging from 1992 to 2003. They report that firm performance, measured by Tobin's Q and the stock market return are positively associated with the disparity among the remuneration of members of the management team. According to the same authors, this relationship is more pronounced in companies likely to have higher agency costs and those with higher ratios of independent directors. Sherman and Huang (2010) concluded that in companies where the salary structure ensures that this is not the CEO who receives the higher pay, there is no value creation associated with compensation gaps. However, in companies where the CEO receives the highest compensation, the wage gap vis-à-vis the subordinates would lead to value creation.

The results of Bebchuk et al. (2011) do not support the tournament theory and confirm fair-wage theory. Indeed, with data from 1993 to 2004, they found a negative relationship between CPS and the value of the business as measured by the industry-adjusted Tobin's Q. According to the same authors, CPS would be associated with lower accounting profitability, lower stock market returns at the announcement of an acquisition, allocations of call options to the CEO at times that are more favorable for him, and less frequent dismissal of CEOs in poorly performing firms. Taken together, these findings support the existence of agency costs associated with a relatively high CEO compensation, thus contradicting the tournament theory.

H8 There is a positive relationship between market value and CPS.

Hypothesis 8 is formulated on the basis of the tournament theory. Assuming that the hypothesis is rejected by a negative and significant coefficient, this result will support fair-wage theory.

III. MODEL, METHODOLOGY AND SAMPLE

3.1. Boards characteristics

The first model seeks to determine whether certain characteristics of the board of directors may explain CPS. Total assets, leverage, industry, and the dummy for family ownership variables are used as control variables. The variables associated to the research hypotheses are then added to the model.

\[
CPS_{i,t} = \beta_0 + \beta_1 Assets_{i,t} + \beta_2 LEV_{i,t} + \beta_3 SEC\text{M}_{i,t} + \beta_4 SEC\text{E}_{i,t} + \beta_5 SEC\text{I}_{i,t} + \beta_6 FAM_{i,t} + \varepsilon_{i,t}
\]

(1)
\[
CPS_{i,t} = \beta_0 + \beta_1 Assets_{i,t} + \beta_2 LEV_{i,t} + \beta_3 SECM_{i,t} + \beta_4 SECE_{i,t} + \beta_5 SECIF_{i,t} + \beta_6 FAM_{i,t} \\
+ \beta_7 IND_{i,t} + \beta_8 SIZE_{i,t} + \beta_9 REMA_{i,t} + \beta_{10} REMAA_{i,t} + \beta_{11} OWN_{i,t} + \beta_{12} TEN_{i,t} \\
+ \beta_{13} DUA_{i,t} + \varepsilon_{i,t} \\
\]

Where:

- CPS\(_{i,t}\): CEO compensation divided by the compensation of five top-paid executives of firm \(i\) six months after year-end \(t\);
- Assets\(_{i,t}\): Total assets of firm \(i\) at year-end \(t\);
- LEV\(_{i,t}\): Total liabilities divided by total assets of firm \(i\) at year-end \(t\);
- SECM\(_{i,t}\): Dummy variable set to one if firm \(i\) is in the mining and metals sector at year-end \(t\), and set to zero otherwise;
- SECE\(_{i,t}\): Dummy variable set to one if firm \(i\) is in the energy at year-end \(t\) and set to zero otherwise;
- SECF\(_{i,t}\): Dummy variable set to one if firm \(i\) is in the financial sector at year-end \(t\) and set to zero otherwise;
- FAM\(_{i,t}\): Dummy variable set to one if firm \(i\) is controlled by a family at year-end \(t\); and set to zero otherwise;
- IND\(_{i,t}\): The percentage of independent directors serving in the board during fiscal period \(t\) for company \(i\);
- SIZE\(_{i,t}\): The number of directors serving on the board during fiscal period \(t\) for company \(i\);
- REMA\(_{i,t}\): Total director compensation during fiscal period \(t\) for company \(i\);
- REMAA\(_{i,t}\): Directors’ stock-based compensation as a percentage of their total remuneration during fiscal year \(t\) and firm \(i\);
- OWN\(_{i,t}\): The percentage of common shares outstanding held by directors in fiscal period \(t\) for company \(i\);
- TEN\(_{i,t}\): The directors’ average number of years of tenure on the board in fiscal period \(t\) for company \(i\);
- DUA\(_{i,t}\): Dummy variable set to one if different individuals serve as chairman of the board and CEO in fiscal period \(t\) for company \(i\), and set to zero otherwise.
- \(\varepsilon_{i,t}\): Error term.

### 3.2. Larger CPS and firm value creation

The second model examines if a larger CPS may be linked to higher firm market values. The control variables are those of Ohlson’s (1995) model, i.e. total book value of the equity and net earnings. The variables associated to the hypothesis are then added to the equation.

\[
MV_{i,t} = \beta_0 + \beta_1 BV_{i,t} + \beta_2 EAR_{i,t} + \varepsilon_{i,t} \\
\]

(3)

\[
MV_{i,t} = \beta_0 + \beta_1 BV_{i,t} + \beta_2 EAR_{i,t} + \beta_3 CPS_{i,t} + \varepsilon_{i,t} \\
\]

(4)

Where:

- \(MV_{i,t}\): Market value of firm \(i\) six months after year-end \(t\);
- \(BV_{i,t}\): Total book value of equity of firm \(i\) at year-end \(t\);
EARN\textsubscript{i} \_t: Earnings of firm i at year-end t:
CPS\textsubscript{i} \_t: CEO compensation divided by compensation of the five top-paid executives in firm i six months after year-end t.

3.3. The sample

The sample comprises the constituent companies of the S & P/TSX 60 index as of July 1st, 2011. This index includes the largest public Canadian companies. The period under study covers the six fiscal years from 2005 to 2010. The maximum number of observations is thus 360. Of these, 59 observations were withdrawn due to missing data.

Share prices were obtained from the Thomson Reuters database. Total assets, earnings and the number of common shares outstanding were compiled from financial statements available on the SEDAR website. Total director compensation, the ratio of directors’ stock-based compensation, the percentage of independent directors, the number of directors on the board, the percentage of shares owned by directors, the number of years of directors’ tenure and the dual role of CEO and chairman were compiled from the information circulars.

IV. EMPIRICAL RESULTS AND DISCUSSION

4.1. Descriptive Analysis

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<th>Maximum</th>
<th>Mean</th>
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</table>
CEOs receive an average of 41.37% of the top-management compensation, with the standard deviation being 14.82%. The minimum value for this variable is 8.74% and the maximum is 91.8%. The value of total assets of a company ranges from 842 million to 726 billion, with average total assets of $68 billion and a standard deviation of $137 billion. Leverage varies from 0.1254 to 0.9617 with an average of 0.58202 and a standard deviation of 0.2268. Firm-market values range from a minimum of 773 million to a maximum of $79 billion with an average value of $18 billion and a standard deviation of $16 billion. The average book value is $9 billion with a standard deviation of $8 billion. The book value ranges from 618 million to 42 billion. Earnings ranges from a $4.5 billion loss to a profit of $7.2 billion, with an average of $1.2 billion.

Boards have on average 82% of independent directors, and 12 directors. The average board compensation is 2.2 million and 50.77% of the compensation is based on shares. That equity-based compensation varies from 0% to 95.19% of total remuneration, with a standard deviation of 26.08%. The average proportion of shares held by directors is 4.01%. Tenure of a director on the board is on average 6.9 years.

4.2. CPS hypotheses regarding the board of directors characteristics

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Equation 1</th>
<th>Equation 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>t</td>
</tr>
<tr>
<td>Constant</td>
<td>0.385</td>
<td>10.450***</td>
</tr>
<tr>
<td>Assets</td>
<td>-1.16E-13</td>
<td>-1.033</td>
</tr>
<tr>
<td>LEV</td>
<td>0.020</td>
<td>0.321</td>
</tr>
<tr>
<td>SECM</td>
<td>0.087</td>
<td>3.28***</td>
</tr>
<tr>
<td>SECE</td>
<td>0.040</td>
<td>1.713†</td>
</tr>
<tr>
<td>SECIF</td>
<td>0.037</td>
<td>0.834</td>
</tr>
<tr>
<td>FAM</td>
<td>-0.034</td>
<td>-1.357</td>
</tr>
<tr>
<td>IND</td>
<td>0.177</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.006</td>
<td>-1.196</td>
</tr>
<tr>
<td>REMA</td>
<td>-2.57E-9</td>
<td>-0.739</td>
</tr>
<tr>
<td>REMAA</td>
<td>-0.028</td>
<td>-0.824</td>
</tr>
<tr>
<td>OWN</td>
<td>-0.003</td>
<td>-3.349***</td>
</tr>
<tr>
<td>TEN</td>
<td>-0.004</td>
<td>-1.036</td>
</tr>
<tr>
<td>INDPDGVP</td>
<td>0.041</td>
<td>1.450</td>
</tr>
<tr>
<td>N</td>
<td>301</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.060</td>
<td>0.188</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.041</td>
<td>0.110**</td>
</tr>
<tr>
<td>Increase in Adjusted R²</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: *p < 0.05, †p < 0.10, ***p < 0.001
The regression including the control variables, but not those associated to the research hypotheses (equation 1) is significant at a threshold of 99%. However, it only explains 4.1% of the dependent variable variability. The control variables associated with the dummies for mining and energy sectors are positive and significant at the respective thresholds of 99% and 90%. This indicates that for these sectors, CPS is significantly higher.

Adding to the regression the variables associated to our hypotheses (equation 2) increases the adjusted \( R^2 \) from 4.1% to 15.1%. This increase is significant at a 99% level of confidence. The ensemble of board characteristics is thus very important in explaining CPS.

More specifically, the variable associated with the research hypothesis concerning the percentage of independent directors is positive and significant at a 90% of confidence. This means that there is a positive relationship between the percentage of independent directors and the CEO pay slice. This result contradicts the hypothesized ability of independent-dominated boards to control CEO compensation (Core et al., 1999). The result rather suggests that boards with a higher proportion of independent directors would favor a compensation structure based on the tournament theory. Their status as independent directors could encourage them to do so, given the difficulty for them to measure the performance of leaders. The wage gap between the CEO and the other members of the management team serves as a source of motivation for everyone to give the best of himself. It may also be that the CEO is in a dominant position on the board when he is the only intermediary between the board and the company.

The estimated coefficient for the variable associated with director stock ownership is negative and significant at 99%. That is to say that the larger is a director’s stake on of the company, the less likely he will be to grant a high CPS. This relationship can be explained by better control of CEO compensation by directors whose interests are better aligned with those of shareholders, due to the significant interest held by them collectively in the company (Ozkan, 2007; Core et al., 1999; Lambert et al. 1995). The lower CEO compensation would then ensure that the CPS would also be lower.

### 4.3. Hypothesis on the effect of CPS on firm value

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Equation 3</th>
<th>Equation 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Constant⁴</td>
<td>3.644 M</td>
<td>-73 M</td>
</tr>
<tr>
<td>BV</td>
<td>1.142</td>
<td>1,145</td>
</tr>
<tr>
<td>EAR</td>
<td>3.897</td>
<td>3,910</td>
</tr>
<tr>
<td>CPS⁵</td>
<td>8 896M</td>
<td>2,397***</td>
</tr>
<tr>
<td>N</td>
<td>301</td>
<td>301</td>
</tr>
<tr>
<td>R²</td>
<td>0.650</td>
<td>0.657</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.648</td>
<td>0.653</td>
</tr>
<tr>
<td>Increase in adjusted R²</td>
<td>0.005**</td>
<td></td>
</tr>
</tbody>
</table>
The estimation of the coefficients for equation 3 is presented in Table 3. Results show that 64.8% of the market value of the company is explained by the book value of equity and net earnings. This regression is significant at 99%. The two control variables in the model of Ohlson (1995), book value of equity and earnings, are as expected, positive and significant at 99%.

The contribution of the CPS variable, added in Equation 4 increases the adjusted $R^2$ to 65.3%. This increment of 0.005 in the adjusted $R^2$ of is significant at 95%. The coefficient associated to the CPS is is positive and significant at 95%, giving support to the tournament theory, claiming that CPS is a driver of firm-value. We have to take this result with a grain of salt, though. Firstly, our sample included only one company in the technology sector. It has been argued (Siegel & Hambrick, 2005) that successful operation of firms in the technology sector requires more cooperation. This makes those firms less likely to establish a compensation structure derived from the tournament theory. Secondly, our sample includes the largest public Canadian companies. Siegel and Hambrick (2005) have argued as well that large firms tend to create compensation structures based on the tournament theory, because they are more suitable to control for the agency costs arising from the high number of hierarchical levels. Finally, it is also important to mention that although the estimated coefficient for CPS is significant and positive, the introduction of this variable in the regression leads to a limited increment in the $R^2$.

V. CONCLUSION

CEO compensation modalities, including it “excessive” nature in the view of many ordinary citizens hit the news with great frequency. Many empirical studies have examined the issue and some have discussed it in terms of effectiveness of the board of directors (Lee et al., 2007). What distinguishes the present study is that it relies on the tournament and the fair-wage approaches to understand the importance of CPS. Tournament theory, which can be traced back to Lazear and Rosen (1981), argues that the gap in compensation is a source of motivation, and ultimately, of market value, thus favoring higher levels of CPS. Contrary to it, the fair-wage theory sustains that lower wage differentials enhance collaboration within the managerial team (Pfeffer, 1995; Deusch, 1985; Levine, 1991).

Our article examined in the context of large public Canadian companies, if the characteristics of the board, such as independence, size, remuneration of directors, stock-based compensation of directors, director firm-ownership, the average number of tenure years of directors and the dual role of the CEO, influenced the choice of a compensation structure for the top management more akin to the tournament theory or the fair-wage theory. It appears that boards with a larger percentage of independent directors favor a salary-structure predicted by the tournament theory, whereas those with high director stock ownership appear willing to contain CPS, thus conforming to the explanations of fair-wage theory. The results also indicate that CPS is associated with a higher market valuation, after considering the control variables of the model.
by Ohlson (1996). That is to say, our results give credence to the predictions of the tournament theory, because CPS shows a positive association with the market value of the company.

We acknowledge that research in the Canadian context ensures that the companies in mining and metals, energy and financial sectors are overrepresented. This was partly addressed by means of the inclusion of three dummy variables used to isolate the effect of each of these sectors. It appears that the CPS is higher in the mining and metals industry. This study opens the door to a new area of research which can see the responsibility of boards not only in terms of supervision, evaluation and remuneration of the CEO, but also in terms of its effective and fair nature compared to the entire management team.

ENDNOTES

1 Variables Assets, REMA, MV, BV and EARN are stated expressed in millions of Canadian dollars.

2 CPS = CEO compensation divided by compensation of 5 top-paid executives of firm i six months after year-end t; total assets of firm i at year-end t; LEVi,t = total assets divided by total liabilities of firm i at year-end t; SECMi,t = dummy variable set to one if the firm i is in the mining and metals sector at year-end t, and set to zero otherwise; SECEi,t = dummy variable set to one if firm i is in the energy sector at year-end t, and set to zero otherwise; total assets divided by total liabilities of firm i at year-end t; SECIFi,t = dummy variable set to one if firm i is in the financial industry at year-end t, and set to zero otherwise; FAMI,t = dummy variable set to one if firm i is controlled by a family at year-end t, and set to zero otherwise; IND i,t = The percentage of independent directors in fiscal period t for company; SIZE i,t = the number of directors on the board during fiscal period t for company i; REMA i,t = total director compensation; REMAA i,t = Ratio of director compensation that is stock-based; OWN i,t = The percentage of common shares outstanding held by directors in fiscal period t for company i; TEN i,t = The directors’ average number of years of tenure on the board in fiscal period t for company i.

3 Assetsi,t = total assets of firm i at year-end t; EARi,t = earnings of firm i at year-end t; IND i,t = The percentage of independent directors in fiscal period t for company i; SIZE i,t = The number of directors on the board during fiscal period t for company i; REMA i,t = Total director compensation; REMAA i,t = Percentage of directors’ compensation that is stock-based; OWN i,t = The percentage of common shares outstanding held by directors in fiscal period t for company i; TEN i,t = The directors’ average-number years of tenure on the board in fiscal period t for company i.

4 Coefficients associated to the constant and the CPS variable are stated in millions of Canadian dollars.

5 BV i,t = Market value of firm i six months after year-end t; EARi,t = earnings of firm i at year-end t; CPS i,t = CEO compensation divided by the combined compensation of 5 top-paid executives of firm i six months after year-end t.
REFERENCES


