

Value creation and appropriation at the top

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ABSTRACT

The purpose of this study is to explore the rent creation and appropriation at the top of a firm. Based on the rent creation and appropriation perspectives, this study examines the effects of the chief executive officer's (CEO's) managerial capabilities, including intellectual capital and social capital, on firm performance and CEO total compensation. Grounded by the social embeddedness aspect, this study argues that the top management team's (TMT's) social capital magnifies CEO's managerial capabilities with regard to rent creation but constrains those related to rent appropriation. In other words, this study expects that TMT's social capital strengthens the positive relationship between CEO managerial capabilities and firm performance, while it weakens the positive relationship between those of the CEO and CEO's total compensation. The results show that TMT's social capital is as a moderator in the CEO's rent-creation process. However, the results did not find that TMT's social capital can hamper the CEO's rent-appropriation ability.

Keywords: Managerial Value Creation, Managerial Value Appropriation, Top Management Team's Social Capital, Firm Performance, CEO Total Compensation

INTRODUCTION

Investigating why some firms outperform others is a fundamental question in the field of strategic management (Rumelt, Schendel, & Teece, 1991). Thus, drawing from the resource-based view of the firm (Barney, 1991; Wernerfelt, 1984), abundant studies tried to answer this question (see Newbert, 2007 for a comprehensive review). For instance, past research has documented that superior managerial capabilities, not only intellectual capital but also social capital, can be a source of competitive advantage, and are associated with greater firm performance (e.g., Carpenter, Sanders, and Gregerssn, 2001; Geletkanycz & Hambrick, 1997; Miller & Shamsie, 2001). However, without exploring the rent appropriation within a firm, the answer is incomplete (Coff, 1999). Prior research, additionally, has indicated that top executives play a vital role on rent creation as well as rent appropriation (Castanias & Helfat, 1991 & 2001; Coff, 1999). Thus, examining both rent creation and rent appropriation, this study aims to explore the effects of chief executive officers' (CEOs') managerial capabilities, including intellectual and social capital, on firm performance and CEO's total compensation. This study, furthermore, explores how the social capital of top management team (TMT) affects the above relationships.

One stream of research (e.g., Newbert, 2007) has focused on managerial capabilities as a construct frequently used in the research of the resource-based view of the firm. For example, viewing international assignment experience as valuable intellectual capital which can equip executives to better manage foreign operations, Carpenter et al. (2001) demonstrated that this experience can facilitate performance of multinational corporations. Additionally, Geletkanycz and Hambrick (1997) demonstrated that the external intraindustry and extraindustry social ties can provide necessary information to confirm the effectiveness of strategic moves and, in turn, affect firm performance.

On the other hand, rent appropriation is an emerging topic in strategic management and is starting to get attention from scholars. For example, Chacar and Coff (2000) argued that star stock analysts, as knowledge workers, have private information about their firms, and thus appropriate a large part of rents, so their firms increase the volume of businesses but not firm profitability. In addition, Blyler and Coff (2003) proposed that the social capital of employees determines their rent appropriation capabilities. Since top executives are at the top of a firm, they tend to have more opportunities to appropriate rents. This stream of research examines the phenomenon of managerial rent appropriation through insider trading of shares. For example, Coff and Lee (2003) proposed that top executives have private information on their firms, and thus they can gain personal benefits from the R&D investments. In a similar vein, since top executives possess more knowledge regarding the potential values of their firm's patents, they can acquire personal gains from a firm's patent applications (Ahuja, Coff, and Lee, 2005).

Not only the CEO but also the other TMT members are at the top of a firm (Hambrick, 2007; Pettigrew, 1992). They are jointly to make strategic decisions for their firm so the CEO as well as their TMT members should have impacts on firm performance. Additionally, an emerging line of research has indicated the importance of understanding interactions between CEOs and their TMT members (Buyl, Boone, Hendriks, & Matthyssens, 2011; Klimoski & Koles, 2001). Since the social capital of a TMT reflects the information channels of TMT members (Geletkanycz & Hambrick, 1997; Granovetter, 1985), it should enhance the exercise of CEO's managerial capabilities based on the complementary viewpoint (Amit & Schoemaker, 1993). On the other hand, it may curtail the CEO's ability on rent appropriation, because the value of the CEO's managerial capabilities is dependent on other TMT members' social capital.

Although rent creation and appropriation have drawn considerable attention, researchers have mostly examined rent appropriation through insider trading of shares. However,

executives can get personal gain from insider trading as well as their compensation. Moreover, how social capital of the TMT affects the CEO's ability on rent creation and rent appropriation is, in comparison, less investigated by prior research. Thus, based on the social embeddedness lens, this study develops a strategic contingency theory of CEO rent-creation and rent-appropriation. Since greater social capital, or social ties, of TMT members can assist their CEO to access a broad array of information and to leverage critical resources from the external, the social capital of a TMT should facilitate the CEO's managerial capabilities, including intellectual and social capital, in the rent-creation process. On the other hand, the exercise of a CEO's managerial capabilities will rely on the TMT's social capital. Consequently, greater TMT's social capital may lessen the CEO's power on rent appropriation. The empirical results of this study found that greater TMT social capital, indeed, facilitates the effects of the CEO's intellectual and social capital on firm performance, based on a sample of 548 U.S. firms and 2,010 observations from 2003 to 2009.

The remainder of this study unfolds as follows. First, this study discusses theoretically how managerial capabilities translate into rent creation and the moderating role of TMT social capital. In the following section, this study discusses the same question, but related to rent appropriation. Then, methods of this study, including the sample, the operationalization of variables, and statistical models, are discussed. Next, this study presents empirical results of this study. Finally, the contributions and limitations of this study as well as avenues for future research are included.

Managerial Rent Creation

Top executives have long been argued to be important determinants of organizational outcomes (e.g. Andrews, 1971; Hambrick & Mason, 1984). From the strategic choice perspective, top management - the CEOs and their TMT members - are the agents who make strategic choices based on the analysis of internal resources and external environments, and thus the outcomes of these strategic choices are determined by these top executives (e.g., Andrews, 1971; Hambrick & Mason, 1984). In other words, this viewpoint implicitly proposes that organizational performance is affected by the quality or efficiency of top executives.

To examine the relationship between managerial resources and rents, scholars further argued that top management can be the vital resource for rent creation of a firm (Adner & Helfat, 2003; Castanias & Helfat, 1991 & 2001). For example, Castanias and Helfat (1991) proposed that managerial skills include generic, industry-related, and firm-specific skills. Since these skills are scarce, they generate Ricardian rents. In addition, industry-related and firm-specific skills are best used in particular circumstances. The use of them in other circumstances, such as other firms or industries, may decrease their utilities so these skills may generate quasi-rents. To summarize, not only do all managerial skills generate Ricardian rents because of the scarce traits of managerial skills, but also certain types of skills, such as industry-related and firm-specific, can create quasi-rents, based on their specificity.

Since strategic management research is concerned with the long-term rent-generation ability of a resource, Castanias and Helfat (1991) further argue that managerial skills fit the criteria of isolating mechanisms (Rumelt, 1984) from at least three viewpoints. First, since most top executive's tasks involve tacit and hardly codifiable rather than explicit knowledge, it is difficult to identify the causal relationship between managerial skills and organizational outcomes. Therefore, managerial skills may have the characteristic of causal ambiguity. Second, since these skills maybe tailored to particular firms or industries, they are likely to have the trait of specialization. Third, not only is it difficult for other competitors to imitate a firm's managerial knowledge, but also these managerial talents are not widely dispersed in each firm. Thus, managerial skills tend to be unique.

In addition, Castanias and Helfat (2001) employed the lens of the resource-based view of a firm to examine managerial resources. Managerial resources are not homogeneous since each firm has a different quality and quantity of top managers. Although top executives can migrate to other firms, some of their skills or knowledge cannot be mobilized, because they can only be applied in particular contexts. Thus, managerial resources meet two basic assumptions of the resource-based view of a firm. Castanias and Helfat (2001) further argue that managerial resources are valuable, unique, difficult to imitate, and difficult to substitute, and thus are a source of sustained competitive advantages. In sum, based on the above arguments, managerial resources not only generate a short-term performance but also lead to sustained competitive advantages.

Since business environments are dynamic rather than static, in order to achieve the sustained competitive advantages, a firm needs to develop dynamic capabilities to continually coordinate and reconfigure its resources to meet the changing environments (e.g. Teece, Pisano, & Shuen, 1997). From the dynamic capabilities perspective, Augier and Teece (2009) posited that management plays an important role in developing dynamic capabilities. They proposed that management creates, maintains, or changes organizational routines, integrates resources to acquire complementarities, and thus aligns internal resources with external environments. Augier and Teece's (2009) arguments echo Adner and Helfat's (2003) concept of dynamic managerial capabilities that top executives efficiently develop, integrate, and deploy organizational resources and competences. Thus, managerial capabilities are the critical base for a firm to develop dynamic capabilities, and thus generate rents.

CEO intellectual capital and rent creation

The critical role of managerial intellectual capital in strategic decisions has been well documented (Carpenter & Fredrickson, 2001). The impact of managerial intellectual capital on organizational performance has also been widely explored (Carpenter et al., 2001; Miller 1991; Miller & Shamsie, 2001, Henderson, Miller, & Hambrick, 2006; Kor, 2003). The main reason for the importance of intellectual capital is that the skills of top executives largely come from learning-by-doing processes (Mintzberg, 1973). These processes are highly associated with the length of experience. Although other sources of information and knowledge may confer managerial knowledge, these sources of information and knowledge may be less beneficial, because they do not experience practice. In addition, the application of managerial knowledge is highly context-specific, since each firm faces different internal and external conditions.

In addition, from the path dependency viewpoint (Penrose, 1959; Nelson & Winter, 1982), the accumulation of knowledge is beneficial for an organization, because historical knowledge can assist a firm to better match its capabilities and environments. Particularly, managerial tasks involve dealing with complicated situations and tacit knowledge. Managerial tacit knowledge is difficult to transfer among top executives or top executives and their apprentices. This study proposes that managerial intellectual capital is derived from managerial position tenure. Viewing the CEO tenure as a life cycle, Hambrick and Fukutomi (1991) argued that CEOs with less experience continually gain benefits from learning their internal and external environments. However, after a certain point, past experience may constrain the CEOs' cognitive ability, lead to inertia, and consequently negatively impact firm performance. Thus, Hambrick and Fukutomi (1991) suggest that the effect of CEO tenure, on firm performance is an inverted-U shape. This argument has also been empirically validated (e.g., Miller & Shamsie, 2001). Consequently, this study suggests:

Hypothesis 1a: The relationship between CEO intellectual capital and firm performance is an inverted-U shape.

CEO social capital and rent creation

Basically, managerial social capital derives from social relationships that represent one agent's influence, control, and power on the others (Adler & Kwon, 2002). Although social ties have been categorized as internal and external social ties, most research focuses on external social ties in the field of strategic management. Interlocking directorships of executives, which refer to executives' board sets in other firms, especially, have been well documented for the study of executives' external social ties.

Executives' interlocking directorships have several benefits for firms (see Mizruchi, 1996 for a comprehensive review). First, executives' interlocking directorships can be important channels for a firm to access external resources. Based on the resource dependence perspective (e.g., Pfeffer & Salancik, 1978), when a firm lacks a critical resource, the firm will seek the resource from external environments. In this case, the relationship between the firm and external organizations is vital for the firm to acquire the resource. Interlocking directorships of executives can assist a firm to secure external resources, and even acquire external resources under more beneficial terms (e.g. Mizruchi & Steams, 1994). Therefore, greater interlocking directorships may represent more channels to access critical external resources, and thus be beneficial for firm performance.

In addition, interlocking directorships also play a critical role to access external information. The main function of top executives is to make strategic decisions for their firms. Top executives require related information to formulate and assess alternatives, and then select a proper one from these alternatives. Under dynamic environments, especially, information is critical for strategic decision-making. Thus, interlocking directorships are critical channels for top executives to access external information.

Ussem (1984) argued that top executives with greater social ties may have better abilities to scan environments and foresee future trends. In addition, sitting in other firms' board positions, top executives have the chance to acquire the information regarding strategic formation and implementation of other firms. For example, Haunschild (1993) found that the acquisition behaviors of a firm are affected by its interlocking directorships with other firms. In addition, linking interlocking directorships with organizational performance, Gelatkanycz and Hambrick (1997) proposed that the alignment between information requirements and the types of executives' interlocking directorships will enhance organizational performance. Thus, this study expects:

Hypothesis 1b: The greater extent of a CEO's social capital, the better the firm performance.

TMT social capital and rent creation

Since the upper echelons of a firm includes not only the CEO but also other non-CEO executives, this study expects that TMT's social capital can also facilitate firm performance, in addition to CEO's social capital, because the more interlocking directorships that the TMT members possess will benefit from more resources or information that they can access. These sufficient resources and information, consequently, can be the bricks for firms to outperform (Gelatkanycz & Hambrick, 1997). Therefore:

Hypothesis 2: The greater extent of a TMT's social capital, the greater the firm performance.

The moderating role of TMT's social capital on rent creation

In addition to viewing managerial resources individually, the interaction between CEO and TMT capabilities should also be emphasized. This interaction can be analyzed by the complementarity perspective (Amit & Schoemaker, 1993). Amit and Schoemaker (1993), basically, argued that the value of a particular resource or capability for creating rents may depend on other resources or capabilities. Applying to the upper echelons, Carmeli and Tishler (2006) also posited that complementary managerial skills are the crucial indicators of the quality of a TMT, because these skills can help a firm to handle different managerial challenges. The concept of complementarities applies not only to resources and capabilities, but also to individuals' or groups' social capital (Krishnan, Miller, & Judge, 1997). Based on Barney's (1986) argument, different functional backgrounds and knowledge could offset each other, and thus form complementary competencies. For example, in the line of acquisition research, the effects of offsetting differences have been posited to create acquisition value, because functional weaknesses in one firm's TMT could be compensated by corresponding strengths in the other firm's TMT (e.g. Porter, 1987).

According to the embeddedness perspective (Granovetter, 1985), strategic actions of firms are affected by the social capital or networks of the firms, because social capital or networks determine the abilities of firms to search for information and critical resources (Mizruchi, 1996). A firm contains not only the CEO's but also the TMT's social capital at its top. Consequently, TMT's social capital should affect the exercise of the CEO's intellectual and social capital. Firms may benefit from greater CEO intellectual capital frequently associated with greater learning-by-doing processes. However, these capabilities may have negative impacts on firm performance, because as the CEO intellectual capital accumulated, CEOs may shape their perception, limit their information stimuli, and become less open-minded (Hambrick & Fukutomi, 1991). Since critical strategic decisions are usually made jointly by the CEOs and their TMT members, greater TMT's social capital, which broadens information channels during strategic-making, may lessen the negative impact of CEO intellectual capital on firm performance. The combination of a CEO's intellectual capital and the TMT's social capital can greatly benefit from both the CEO's learning-by-doing processes and information channels of the TMT, which may have sufficient external information to detect and predict industrial trends and environmental changes. Thus, this study proposes:

Hypothesis 3: A TMT's social capital moderates the relationship between CEO's intellectual capital and firm performance in such a way that effects are more positive in the contexts of a greater TMT's social capital.

A CEO's as well as the TMT's social capital can be information and resource channels, and thus are beneficial to firm performance (Gelatkanycz & Hambrick, 1997). This study expects that the greatest benefits can be acquired by having both greater CEO and TMT's social capital. Thus, this study argues:

Hypothesis 4: A TMT's social capital moderates the relationship between CEO's social capital and firm performance in such a way that effects are more positive in the contexts of a greater TMT's social capital.

Managerial Rent Appropriation

The use of managerial capabilities or resources is not without costs. However, the resource-based view of the firm only concerns the ability of a resource to create rents for a firm,

but does not answer the question of how the rents are divided among internal stakeholders. Coff (1999) was among the pioneers to address this question. Integrating the bargaining power theory into the resource-based view of the firm, Coff (1999) argued that competitive advantages do not always generate rents for a firm. He further proposed that researchers should distinguish the rent appropriation from the rent creation when exploring organizational performance.

Coff (1999) portrayed a firm as a nexus of contracts (Jensen & Meckling, 1976), and thus only individuals, instead of a firm, can appropriate rents. Based on the bargaining power theories such as resource dependence theory (e.g. Pfeffer & Salancik, 1978) or Porter's (1980) five market forces framework, he further posited that rent-appropriation ability is based on the bargaining power of internal stakeholders. The bargaining power is stronger, when stakeholders can act as a collective union, have access to key information, can generate high replacement cost to the firm, and have low switch costs. Therefore, valuable resources or capabilities can generate rents, but the rents may be appropriated by other inside stakeholders rather than shareholders.

Focusing on managerial capabilities, Castanias and Helfat (2001) proposed that top executives both create and appropriate rents. Unlike other rent appropriation research (e.g. Chacar & Coff, 2000) that implicitly assumes rent appropriation among stakeholders is under given rents, Castanias and Helfat (2001) proposed that rents appropriated by top executives can be the incentives for the top executives, and thus drive them to create more rents for their firms. They call this is a win-win situation. Thus, managerial capabilities or capital can not only create rents for a firm but also appropriate them from the firm.

Based on basic economic rationales, the supply of managerial capabilities or capital also determines the extent of managerial rent appropriation. Since incumbent CEOs accumulate firm-specific knowledge and build their external networks, recruiting new CEOs from external markets may not fully replace the incumbents. Firms may prefer to recruit new CEOs internally rather than externally. Therefore, internal managerial labor markets become important, and the quality of internal managerial resources becomes an issue. When TMT members possess equal or higher quality of managerial capabilities, the bargaining power of CEOs' managerial capabilities will be decreased. Particularly, a TMT's social capital may constrain the function or use of the CEO's intellectual and social capital, and thus curtail the rent appropriation ability of the CEO. This rationale also reflects Coff's (1999) argument that replacement cost to the firm is positively associated with the bargaining power of the inside stakeholders. In conclusion, managerial capabilities with fewer substitutes or their exercises without a necessary complement appropriate greater portions of rents, and vice versa.

CEO intellectual capital and rent appropriation

Based on economic rationales, CEOs' compensation should reflect their unique abilities and skills. For instance, from the loss of managerial skills viewpoint, Harris and Helfat (1997) find that external CEO successors ask for higher non-contingent compensation in order to compensate the loss of their prior firm-specific knowledge. Categorizing external CEO successors based on whether they are from the same industry or not, they further find that new CEOs from other industries may gain higher non-contingent compensation in order to compensate the loss of their industry-specific knowledge. Under the context of the sudden death of a highly paid executive, Combs and Skill (2003) also show that stock price decreases reflecting the loss of superior human resources.

From the managerial rent appropriation aspect (Coff, 1999), CEO intellectual capital not only help the CEO to access valuable information from organizational routines (Nelson & Winter, 1982) but also create a non-replaceable position in the firm. The power associated with

greater CEO intellectual capital can help the CEO to bargain for and gain higher compensation. Thus, this study argues:

Hypothesis 5a: The greater extent of a CEO's intellectual capital, the greater the CEO total compensation.

CEO social capital and rent appropriation

Based on the value of external information and resources that a CEO's social capital bring into a firm, Geletkanycz, Boyd, and Finkelstein (2001) found that greater CEO external directorships lead to greater CEO total compensation. Thus, based on the logic of managerial rent appropriation (Coff, 1999), this study also expects:

Hypothesis 5b: The greater extent of a CEO's social capital, the greater the CEO's total compensation.

TMT social capital and rent appropriation

According to Coff's (1999) argument that bargaining power can be determined by the availability of substitutes, the value of CEOs' social capital may be affected by their substitutes. This study argues that TMTs' social capital may be strategically equivalent to that of CEOs. Thus, from the internal managerial labor market viewpoint, the value of a CEO's external social ties on asking for higher compensation may be diminished, when a TMT's social capital is greater. Therefore:

Hypothesis 6: The greater extent of a TMT's social capital, the less the CEO's total compensation.

The moderating role of TMT's social capital on rent creation

In addition to examining the direct effect of substitutes from the TMT's social capital on CEO total compensation, this study examines their indirect effects. To fully acquire the benefits of the CEO's intellectual and social capital depends on the social capital of TMT. Grounded by the rent appropriation aspect (Coff, 1999), this study expects that a TMT's social capital can weaken the CEO's abilities to appropriate rent from their firms. Therefore:

Hypothesis 7: A TMT's social capital moderates the relationship between CEO's intellectual capital and CEO total compensation in such a way that effects are more positive in the contexts of a less TMT's social capital.

Hypothesis 8: A TMT's social capital moderates the relationship between CEO's social capital and CEO total compensation in such a way that effects are more positive in the contexts of a less TMT's social capital.

METHODS

Sample and Data Collection

The sample was drawn from publicly traded firms which have sales revenue greater than \$5 million from 2003 to 2009. Data were obtained from the following sources: (a) firm

performance and other industry and firm-level financial data were collected from the *Compustat* database; (b) data on international diversification was taken from the *Directory of Corporate Affiliations*; (c) the CEO and TMT data were acquired from the *Compustat ExecuComp* database; and (d) the board characteristic data was taken from the *Corporate Library* database. To limit the reverse causality issue, this study lagged the data of the independent and control variables by one year. Consequently, data on independent and control variables are from 2002 to 2008. After merging data from the above sources and dropping observations with missing values, our final sample contains 548 firms and 2,010 observations.

Statistical Model

This study tested our proposed hypotheses by the fixed-effects regressions models. The fixed-effects regressions models are suitable for analyzing a panel data set which is the data format of this study. Additionally, this study tested interaction effects, so independent, moderating, and control variables were standardized before they entered into the regression models in order to lessen the possible issue of multicollinearity resulting from the inclusion of the moderators in the regression models.

Variables

Dependent Variables. Since this study examines managerial rent creation and appropriation, both firm performance and CEO total compensation are dependent variables of this study. This study employs sales growth, $(sale_t - sale_{t-1})/sale_{t-1} * 100$, to measure firm performance. In addition to sales growth, other performance indicators, such as return on assets (ROA) or return on sales (ROS), have been used by prior research. This study chose sales growth rather than other indicators based on the following three reasons. First, an indicator of change is more likely to capture recent rather historical influences (Simons, Pelled, & Smith, 1999). Second, sales change is closely linked to the fundamental rationale of social influences (Peng, 2004). More importantly, Chacar and Coff (2000) have indicated that cross performance, such as the volume of sales or sales grow, compared to residual performance, such as ROA or ROS, is a better indicator to reflect rent creation. In addition, this study uses the natural log of CEO total compensation, including CEO base salary, annual bonus, and other annual compensation, to measure the amount of rents that have been appropriated by the CEOs.

Independent variables. Independent variables of this study include: CEO intellectual capital, CEO social capital, and TMT social capital. CEO intellectual capital can be captured by length of experience, such as length of a managerial position or the firm service. Thus, this study uses CEO tenure to measure CEO intellectual capital. CEO tenure is defined as length of years that a CEO serves at the CEO position. Additionally, Social capital, largely, is reflected by external social ties. Among various managerial external social ties, the important role of interlocking directorships has been identified (Mizruchi, 1996). Thus, this study employs a CEO's interlocking directorships as CEO social capital. The CEO's interlocking directorships are measured by counting the number of directorships a CEO has. Finally, Similar to CEO directorships, this study measures TMT social capital as TMT interlocking directorships. It was calculated by summing the counts of directorships which non-CEO executives have over the number of non-CEO executives.

Control variables. Ten control variables of this study are as below:

Industry profitability. Industry profitability here reflects generally the profitability of a firm's competitors in a particular industry. Average industry ROA which is the percentage of the industry net income over industry total assets is used to measure industry performance. The

data on an industry are based on firms with the same three-digit standard industrial classification (SIC) code but exclude the focal firms.

Product diversification. Product diversification was controlled by this study with product diversification measured using Chatterjee and Wernerfelt's entropy measure (1991).

International diversification. International diversification in this study is measured by the number of foreign countries in which the firms have subsidiaries located. The measure of international diversification is in line with prior research (e.g. Geringer, Beamish, & DaCosta, 1989).

R&D intensity. This study used R&D intensity to be a proxy for innovation. This study measured R&D intensity by the ratio of R&D spending over total sales.

Firm profitability. Return on assets (ROA), an accounting-based profitability measure, is frequently used by prior research (Carpenter et al., 2001). Thus, this study used ROA, the percentage of the net income over total assets, as the indicator of firm profitability.

Firm size. Firm size can influence the ability of a firm to grow. Thus, total assets of a firm are used to measure firm size and are controlled by this study.

Board size. Board size is one of the important corporate governance variables. It was calculated by the number of directors on a board.

Outside director ratio. Outside director ratio can reflect the extent of board vigilance and thus impact firm performance. The outside director ratio was measured by the number of outside directors over the total number of directors.

CEO duality. This variable is a dummy variable. When a CEO is also the chairperson, the value of 1 was coded. Otherwise, the value of 0 was assigned.

TMT size. This study used a count of the number of top executives to measure TMT size, following past research (Carpenter et al., 2001; Simons et al., 1999).

RESULTS

Means, standard deviations, and correlations for all variables are as indicated in Table 1 (Appendix). This study reports the results of the fixed-effects regression analyses for firm performance as indicated in Table 2 (Appendix). In Table 2, model 1 is the baseline model where only control variables are included. The model is significant ($F = 11.79$; $p < .001$). In the baseline model, this study found that R&D intensity, firm profitability, and CEO duality have significant positive impacts on sales growth ($b = 7.707$, $p < .001$; $b = 3.168$, $p < .001$; $b = 3.828$, $p < .05$, respectively). However, Product diversification, firm size, and outside director ratio are negatively associated with sales growth ($b = -4.715$, $p < .05$; $b = -10.904$, $p < .01$; $b = -6.715$, $p < .001$).

Models 2 to 4 add three predictors, separately. Additionally, Models 5 and 6 examine the moderating effects of TMT social capital on the relationships between CEO managerial capabilities, including CEO intellectual and social capital, and sales growth. Finally, Model 7 presents the full model. Models 2 to 7 are all significant ($F = 10.44$, $P < .001$; $F = 11.39$, $P < .001$; $F = 12.86$, $P < .001$; $F = 11.88$, $P < .001$; $F = 11.87$, $P < .001$; $F = 11.14$, $P < .001$, respectively).

In Hypothesis 1a, this study proposes that the relationship between CEO intellectual capital and firm performance is an inverted-U shape. However, the coefficients for the CEO intellectual capital are negative in Model 2 ($b = -4.207$, $p < .05$) and Model 7 ($b = -2.879$, $p < .05$). The coefficient for the CEO intellectual capital squared is not significant in Model 2 ($b = 1.000$, $p > .10$). Consequently, Hypothesis 1a is not supported. Hypothesis 1b proposes that CEO social capital is positively associated with firm performance. Hypothesis 1b receives marginal support because the coefficient for CEO social capital is significant in Model 3 ($b = 2.091$, $p < .05$) but not in Model 7 ($b = 1.273$, $p > .10$). In Hypothesis 2, this study

expects that TMT social capital is positively associated with firm performance. This argument is supported in Model 4 ($b = 3.668$, $p < .001$) as well as in Model 7 ($b = 3.852$, $p < .001$).

The moderating effects of a TMT's social capital on the relationships between CEO intellectual capital, CEO social capital, and firm performance are proposed in Hypotheses 3 and 4. Hypothesis 3 suggests that the positive relationship between CEO intellectual capital and firm performance will be strengthened, when TMT social capital is greater. Hypothesis 3 is supported in Model 5 ($b = 2.829$, $p < .01$) and Model 7 ($b = 2.845$, $p < .01$). Figure 1 presents the graph. Furthermore, Hypothesis 4 proposes that TMT social capital can strengthen the positive relationship between CEO social capital and firm performance. Indeed, this argument is supported in Model 6 ($b = 1.054$, $p < .05$) and Model 7 ($b = 1.046$, $p < .05$). Figure 2 shows this graph.

In addition to managerial rent creation in Table 2 (Appendix), Table 3 (Appendix) provides the results of fixed-effects linear regression analyses for CEO total compensation, or rent appropriation by CEOs. Model 8 of Table 4 is a baseline model encompassing only control variables. The results show that firm profitability and TMT average firm tenure have strong positive effects on CEO total compensation ($b = 0.048$, $p < .01$; $b = 0.054$, $p < .10$, respectively). However, TMT size has a negative impact on CEO total compensation ($b = -0.067$, $p < .001$). The main effects of independent variables are included in models 9 to 11. Models 12 and 13 add moderating factors one at a time. Finally, the full model, including all main and interaction effects, is displayed in model 14.

Hypotheses 5a and 5b predict that both CEO intellectual capital and CEO social capital are positively associated with CEO total compensation. However, these two hypotheses are not supported in Models 9, 10, and 14. Hypothesis 6 predicts that TMT social capital will be negatively associated with CEO total compensation. This hypothesis receives marginal evidence, because the coefficient for TMT social capital is significant and negative in Model 11 ($b = -0.040$, $p < .05$) but not Model 14 ($b = -0.033$, $p > .10$).

Hypothesis 7 predicts that interaction between CEO intellectual capital and TMT social capital will be negatively associated with CEO total compensation. From Model 12 and Model 14 of Table 4, the interaction coefficient (CEO intellectual capital * TMT social capital) is insignificant ($b = 0.041$, $p > .10$; $b = 0.041$, $p > .10$) and thus Hypothesis 7 is not supported. Hypothesis 8 expects that the interaction between CEO and TMT's social capital will be negatively associated with CEO total compensation. From Model 13 and Model 14 of Table 4, the interaction coefficient (CEO social capital * TMT social capital) is not significant ($b = 0.010$, $p > .10$; $b = 0.010$, $p > .10$). Therefore, Hypothesis 8 is not supported.

DISCUSSION AND CONCLUSION

The purpose of this study is to explore the rent creation and appropriation at the top of a firm. Based on the rent creation and appropriation perspectives, this study explores the direct effects of CEO intellectual capital, CEO social capital, and TMT social capital on firm performance and CEO total compensation. This study further examines how TMT social capital plays as a moderator in the CEO rent-creation and rent-appropriation processes. Our results indeed found that the fit between CEO-intellectual capital and TMT social capital achieve superior firm performance. This study also demonstrated that TMT social capital can enhance the relationship between CEO social capital and firm performance. However, our results did not show any evidence to support the argument that TMT social capital can lessen CEO's rent-appropriation ability.

This study also has some research implications. First, this study underscores the importance of managerial intellectual capital as well as managerial social capital on firm

performance. The critical role of these two constructs has been frequently proposed, (e.g., Newbert, 2007) but they are rarely examined simultaneously. In order to advance our understanding of the contributions of these two constructs on firm performance, this study examines their implications on firm performance in this study. Additionally, this study contributes by showing that rent creation is jointly determined by both CEOs and their TMT members. Most past research either explores the impact of CEOs on firm performance or views a CEO as one member of the TMT (Henderson et al., 2006; Wiersema & Bantel, 1992). However, the interactions between CEOs and their TMTs receive less attention. In order to fill this gap, this study intends to explore the complementary role of the TMT's social capital on the CEO managerial capabilities to affect firm performance. This study also examines the substituting role of the TMT's social capital on the CEO managerial capabilities to influence CEO total compensation.

This study is not without limitations. First, the intellectual and social capital of top executives are multifaceted constructs. This study merely uses CEO tenure and interlocking directorships to be proxies of these two constructs, respectively. Thus, future research may use surveys or multiple archival data sources to gain multifaceted dimensions of intellectual and social capital of top executives. Secondly, this study only concerns about the quantity of managerial intellectual capital and social capital but leaves the quality of those without considerations. Future studies may include the quality of managerial intellectual and social capital in their models. For instance, future research may examine the impacts of managerial bridging ties or managerial structural holes on firm performance. Finally, following the above suggestion, future research may view the TMT as the analysis unit of managerial social ties and investigate whether the TMT members' social ties can complement or substitute those of their CEO.

The managerial applications of this study have, at least, the following two perspectives. First, this study demonstrates the importance of TMT's social capital on firm performance. In other words, firms which would like to achieve rapid growth should be equipped with TMT members possessing greater social capital or social ties. Moreover, this study emphasizes the importance of fit between the managerial capabilities of CEOs and the social capital of their TMTs. The findings of this study show that the performance implications of the managerial capabilities of CEOs depend on TMTs' social capital. For instance, CEOs with greater intellectual capital, or longer CEO position tenure, require matching with TMT members possessing greater social capital in order to maximize their firm performance.

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APPENDIX

Figure 1 Relationship between Sales Growth and CEO Intellectual Capital at Different Levels of TMT Social Capital

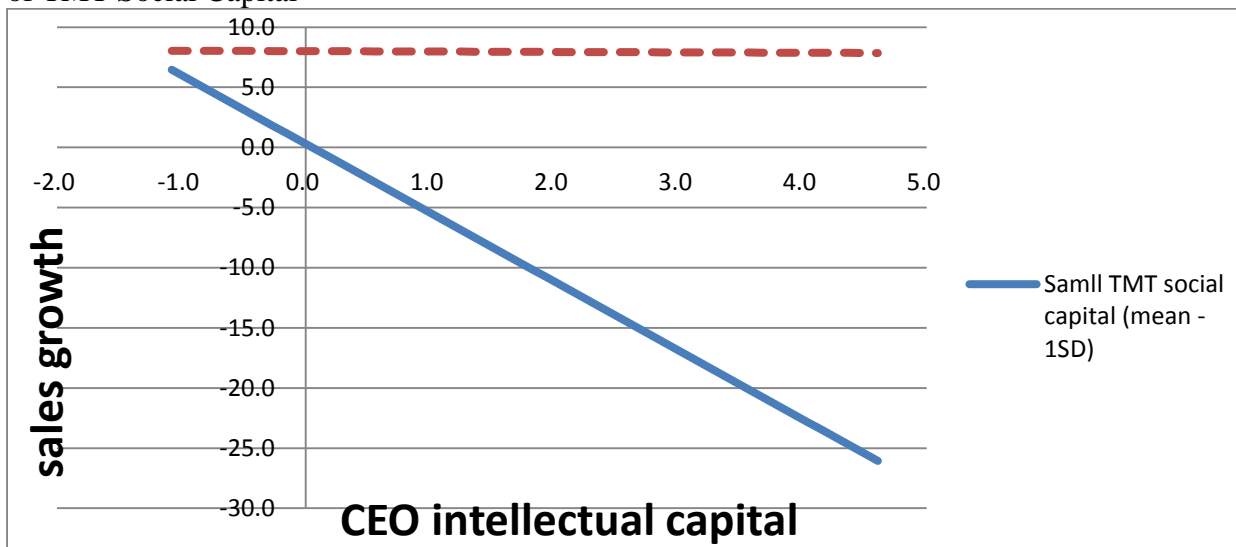


Figure 2 Relationship between Sales Growth and CEO Social Capital at Different Levels of TMT Social Capital

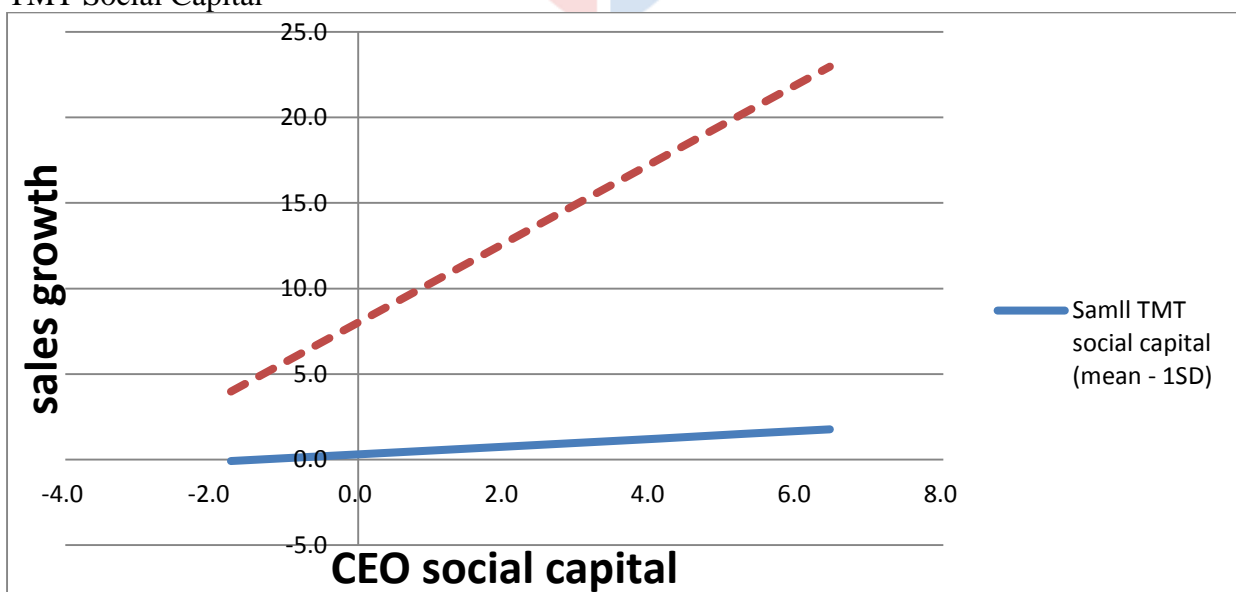


Table 1 Descriptive Statistics and Correlations

	Mean	SD	1	2	3	4	5	6	7
1 Sales growth	7.48	24.37	1.00						
2 CEO total compensation	7.98	1.05	0.15	1.00					
3 Industry profitability	4.14	9.71	0.06	0.05	1.00				
4 Product diversification	0.31	0.59	-0.01	0.17	-0.02	1.00			
5 International diversification	2.56	6.92	-0.05	0.24	0.02	0.10	1.00		
6 R&D intensity	8.43	31.94	0.17	-0.02	0.03	-0.06	0.02	1.00	
7 Firm profitability	3.60	14.86	0.14	0.17	0.06	0.02	0.04	-0.26	1.00
8 Firm size	7.60	36.43	0.01	0.21	-0.01	0.22	0.12	-0.03	0.01
9 Board size	8.94	2.22	0.01	0.41	0.02	0.24	0.19	-0.08	0.11
10 Outside director ratio	68.29	14.90	-0.13	0.20	0.05	0.08	0.14	0.01	-0.03
11 CEO duality	0.55	0.50	0.04	0.10	-0.04	0.08	0.02	-0.10	0.09
12 TMT size	4.86	1.21	-0.06	0.01	-0.02	0.05	0.03	0.01	-0.11
13 TMT average firm tenure	11.26	8.73	0.04	-0.01	-0.04	0.06	0.04	-0.07	0.09
14 CEO intellectual capital	9.28	8.62	0.03	-0.11	0.00	-0.04	-0.06	0.01	0.05
15 CEO social capital	1.49	0.86	0.05	0.24	0.04	0.12	0.09	-0.03	0.05
16 TMT social capital	0.84	0.84	0.14	0.16	0.01	0.08	0.09	0.02	0.01

	8	9	10	11	12	13	14	15	16
1 Sales growth									
2 CEO total compensation									
3 Industry profitability									
4 Product diversification									
5 International diversification									
6 R&D intensity									
7 Firm profitability									
8 Firm size	1.00								
9 Board size	0.29	1.00							
10 Outside director ratio	0.04	0.10	1.00						
11 CEO duality	0.09	0.01	0.10	1.00					
12 TMT size	0.00	0.13	0.07	-0.04	1.00				
13 TMT average firm tenure	0.14	0.14	-0.30	-0.07	-0.08	1.00			
14 CEO intellectual capital	-0.05	-0.12	-0.17	0.40	-0.15	0.13	1.00		
15 CEO social capital	0.04	0.21	0.13	0.11	0.04	-0.07	-0.05	1.00	
16 TMT social capital	0.10	0.23	-0.21	0.00	0.08	0.09	-0.02	0.19	1.00

Note: N=2010; All correlations larger than .05 in absolute value are significant at the $p=.05$ level.

Table 2 Results of fixed-effects linear regression analyses for sales growth

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	5.371*** [1.137]	2.939† [1.588]	5.597*** [1.139]	5.018*** [1.131]	4.129** [1.251]	5.021*** [1.135]	4.157** [1.252]
Industry	0.844	0.823	0.737	0.783	0.742	0.763	0.722
Profitability	[0.679]	[0.679]	[0.679]	[0.675]	[0.673]	[0.674]	[0.672]
Product	-4.715*	-4.146*	-4.933*	-4.989*	-4.665*	-5.197*	-4.880*
diversification	[2.061]	[2.072]	[2.059]	[2.047]	[2.049]	[2.042]	[2.044]
International	-2.180	-2.173	-2.097	-1.760	-1.845	-2.038	-2.125
diversification	[1.548]	[1.548]	[1.545]	[1.539]	[1.537]	[1.541]	[1.539]
R&D intensity	7.707*** [1.252]	7.696*** [1.250]	7.778*** [1.250]	7.709*** [1.242]	7.688*** [1.239]	7.723*** [1.239]	7.703*** [1.235]
Firm	3.168***	3.152***	2.998***	3.179***	3.204***	3.098***	3.123***
performance	[0.696]	[0.696]	[0.698]	[0.691]	[0.689]	[0.693]	[0.691]
Firm size	-10.904** [3.690]	-10.000** [3.705]	-10.941** [3.683]	-9.942** [3.668]	-9.714** [3.670]	-10.041** [3.657]	-9.826** [3.659]
Board size	-1.981 [1.418]	-1.736 [1.423]	-1.966 [1.415]	-2.420 † [1.411]	-2.232 [1.413]	-2.384† [1.406]	-2.202 [1.408]
Outside director	-6.715*** [0.972]	-6.647*** [0.974]	-6.686*** [0.970]	-5.361*** [1.006]	-5.395*** [1.003]	-5.535*** [1.005]	-5.567*** [1.002]
ratio	3.828* [1.875]	6.431** [2.179]	3.417 † [1.878]	4.471* [1.866]	6.187** [2.103]	4.099* [1.868]	5.774** [2.102]
CEO duality	-0.467 [0.741]	-0.544 [0.742]	-0.320 [0.742]	-0.473 [0.735]	-0.379 [0.734]	-0.287 [0.736]	-0.193 [0.734]
TMT size	-0.778 [1.318]	-1.054 [1.329]	-0.735 [1.315]	-0.538 [1.309]	-0.646 [1.320]	-0.686 [1.307]	-0.784 [1.317]
TMT average							
firm tenure							
CEO intellectual		-4.207* [1.784]			-2.928* [1.266]		-2.879* [1.263]
capital							
CEO intellectual		1.000 [0.682]					
capital squared							
CEO social			2.091* [0.820]			1.268 [0.848]	1.273 [0.846]
capital							
TMT social				3.668*** [0.771]	4.640*** [0.846]	2.871*** [0.821]	3.852*** [0.889]
capital							
CEO intellectual							
capital * TMT					2.829** [1.058]		2.845** [1.055]
social capital							
CEO social						1.054* [0.437]	1.046* [0.436]
capital * TMT							
social capital							
No. of firms	548	548	548	548	548	548	548
No. of	2010	2010	2010	2010	2010	2010	2010
observations							
F value	11.79***	10.44***	11.39***	12.86***	11.88***	11.87***	11.14***

Notes:

1. S.E. in square brackets.
2. *** p < 0.001; ** p < 0.01; * p < 0.05; † p < 0.10; t test are all two-tailed tests.

Table 3 Results of fixed-effects linear regression analyses for CEO total compensation

Variables	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
Constant	7.970*** [0.028]	7.971*** [0.031]	7.970*** [0.028]	7.973*** [0.028]	7.978*** [0.031]	7.972*** [0.028]	7.976*** [0.031]
Industry	0.002	0.002	0.002	0.002	0.002	0.003	0.003
Profitability	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]
Product	-0.010	-0.011	-0.010	-0.007	-0.009	-0.008	-0.009
diversification	[0.051]	[0.051]	[0.051]	[0.051]	[0.051]	[0.051]	[0.051]
International	0.052	0.052	0.052	0.048	0.045	0.045	0.042
diversification	[0.038]	[0.038]	[0.038]	[0.038]	[0.038]	[0.039]	[0.039]
R&D intensity	0.050	0.050	0.050	0.050	0.050	0.049	0.049
	[0.031]	[0.031]	[0.031]	[0.031]	[0.031]	[0.031]	[0.031]
Firm	0.048**	0.048**	0.048**	0.048**	0.048**	0.049**	0.049**
performance	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]
Firm size	0.098	0.098	0.098	0.088	0.082	0.087	0.081
	[0.091]	[0.092]	[0.092]	[0.092]	[0.092]	[0.092]	[0.092]
Board size	-0.003	-0.003	-0.003	0.002	0.001	0.002	0.001
	[0.035]	[0.035]	[0.035]	[0.035]	[0.035]	[0.035]	[0.035]
Outside director	0.025	0.025	0.025	0.011	0.011	0.009	0.009
ratio	[0.024]	[0.024]	[0.024]	[0.025]	[0.025]	[0.025]	[0.025]
CEO duality	0.022	0.020	0.022	0.015	0.009	0.014	0.007
	[0.046]	[0.053]	[0.047]	[0.047]	[0.053]	[0.047]	[0.053]
TMT size	-0.067***	-0.067***	-0.067***	-0.067***	-0.066***	-0.066***	-0.065***
	[0.018]	[0.018]	[0.018]	[0.018]	[0.018]	[0.018]	[0.018]
TMT average	0.054†	0.054	0.054†	0.051	0.055†	0.050	0.054
firm tenure	[0.033]	[0.033]	[0.033]	[0.033]	[0.033]	[0.033]	[0.033]
CEO intellectual		0.002			-0.026	-0.002	-0.002
capital		[0.031]			[0.021]	[0.021]	[0.032]
CEO social			0.001				-0.002
capital			[0.020]				[0.021]
TMT social				-0.040*	-0.003	-0.046*	-0.033
capital				[0.019]	[0.032]	[0.021]	[0.022]
CEO intellectual					0.041		0.041
capital * TMT					[0.026]		[0.026]
social capital							
CEO social						0.010	0.010
capital * TMT						[0.011]	[0.011]
social capital							
No. of firms	548	548	548	548	548	548	548
No. of	2010	2010	2010	2010	2010	2010	2010
observations							
F value	3.17***	2.90***	2.90***	3.26***	2.97***	2.86***	2.65***

Notes:

1. S.E. in square brackets.
2. *** p < 0.001; ** p < 0.01; * p < 0.05; † p < 0.10; t test are all two-tailed tests.