Managerial incentives and R&D investments: The moderating effect of the directors’ and officers’ liability insurance

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ABSTRACT

Literature regarding the impact of managerial incentives on firm’s research and development (R&D) investments suggests that due to the riskiness of R&D activities, firms need to provide managerial incentives to encourage managerial discretion on corporate long-term investments of R&D. In spite that managerial incentives influence corporate R&D spending, some also argue corporate R&D spending a function of managerial incentive schemes. This paper applies the simultaneous equation to investigate the association between managerial discretion on R&D investments and the incentive scheme of CEO compensations by using the sample firms listed in Taiwan Security Exchange and Taipei Exchange. The results indicate that the listed firms in Taiwan simultaneously determine corporate R&D investments and CEO compensations. They reward their CEOs in compliance with their efforts on R&D investments and CEO compensation motivates CEOs to align their interests with firms’ long-term investments on R&D. A further analysis of the protection effect from the directors’ and officers’ (D&O) liability insurance suggests that D&O protection intensifies the relationship between R&D investments and CEO compensation. It encourages CEOs to allocate resources on R&D activities and make CEO incentive contracts efficacious on corporate long-term investments. The result is robust in the electronic industry of Taiwan.

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1. Introduction

Literature regarding determinants of corporate R&D spending focuses on the agency problems of managerial myopia where managers trade off corporate long-term value for the short-term earnings (Bushee, 1998; Chen, Lin, & Yang, 2015; Cheng, 2004). The two-edged prescriptions to the agency problems include the corporate governance mechanisms which deter managerial myopia on R&D spending and the managerial incentives which motivate managerial discretion on R&D investments.

External governance to facilitate R&D investments comes from the control market and institutional investors. However, the managerial myopia due to the pressures from the active takeover market (Shleifer & Vishny, 1989; Stein, 1988) as well as the quiet life which the managers harbor under the protection of takeover provisions (Becker–Blease, 2011) brings negative

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effects on corporate R&D investments. Institutional investors also play confounding roles in monitoring corporate R&D spending. Transient institutional investors cause managerial myopia on R&D investments (Bushee, 1998; Chen, Lin, & Yang, 2015; Dikolli, Kulp, & Sedatole, 2009). Thus, the monitoring effect from external governance seems limited (Chung & Wang, 2014).

Except for the monitoring mechanisms of managerial efforts on R&D, literature on the determinants of R&D suggests that managerial incentives encourage R&D investments (Cheng, 2004; Lin, Lin, Song, & Li, 2011; Tsao, Lin, & Chen, 2015). Cheng’s (2004) study on Forbes 500 firms found that changes in compensation could deter managerial myopia in R&D spending. Lin, Lin, Song, and Li (2011) indicated that CEO incentive schemes increase corporate innovation effort and performance in Chinese private sector. However, if the firms’ incentive compensation aligns managerial interests with the firms’ long-term investments such as R&D, the investment decision will also be influenced by the incentive schemes. Ryan and Wiggins (2002) posited that corporate R&D investment decisions and compensation policy are simultaneously determined. So, the first purpose of this paper is to conduct simultaneous equations to examine whether CEO compensation motivates corporate R&D investments by using the sample firms of an emerging market, Taiwan.

Since R&D activities are risky and costly, the extent to which CEOs devote to R&D activities depends on how the firms motivate their CEOs so as to align their interests with the firm’s long-term goals. Manolopoulos (2006) survey found that economic compensation motivates R&D professionals in Greece most. Ryan and Wiggins (2002) separated the types of equity compensation into options and restricted stock. They found that restricted stock exerts a negative influence on R&D, but the nonlinear feature of options motivates risk-taking behavior. Moreover, Core (1997) and Aguir, Burns, Mansi, and Wald (2014) regarded directors’ and officers’ liability insurance as part of managerial incentive schemes and hypothesized that directors’ (and officers’) liability insurance would impact on director (officer) compensation. The mechanisms of compensation schemes and liability insurance could substitute for each other, implying that directors (officers) require greater compensation if they face less protection from corporate directors’ and officers’ (D&O) liability insurance. However, only the sample firms from the US supported the hypothesis (Aguir et al., 2014). As such, the second purpose of this paper is to investigate whether D&O liability insurance in Taiwan moderates the relationship between R&D spending and CEO compensation.

This paper focuses on the listed firms of the Taiwan Stock Exchange (TWSE) and Taipei Exchange between 2008 and 2013. The reasons to select Taiwan to study the research question are the encouraging environment of industrial innovation and corporate governance. Taiwan has been one of the “Asia Four Dragons” and experienced rapid growth due to its R&D efforts and performance. Under the guidance of Statute for Industrial Innovation, the government of Taiwan encourages corporate investing in R&D. Moreover, according to Corporate Governance Best Practice Principles for TWSE/GTSM Listed Companies, the listed firms are suggested to purchase the directors’ and officers’ (D&O) liability insurance so as to reduce the risk associated with the possible faults caused by business decisions. Both reasons make Taiwan an ideal template to study the relationship between R&D, CEO compensation and D&O liability insurance.

The empirical results prove that the listed firms in Taiwan simultaneously determine their R&D investment and compensation policy. The determinants of CEO compensation include R&D spending, market-to-book ratio, firm size, CEO tenure and firms’ operating cash flows. On the other side, CEO compensation and tenure have positive relations with R&D investments. Overall, the evidences support our hypothesis that as CEOs devote to corporate R&D activities, they will be rewarded with a higher level of CEO compensation. Simultaneously, a higher level of CEO compensation motivates CEOs to align their interests with firms’ long-term investments on R&D.

Further analysis indicates that D&O liability insurance in Taiwan positively moderates the relationship between R&D investments and CEO compensation, implying that CEOs in Taiwan regard D&O liability insurance as a complement to their compensation. This result contradicts with the substitute role of D&O liability insurance in the US (Aguir et al., 2014). Two behavioral theories might explain the complementary role of D&O liability insurance. Firstly, most companies reward their CEOs with high level of compensations. Higher level of compensations makes CEOs more loss-averse. So, CEOs with higher level of compensations require higher level of D&O protection to accept risky and uncertain R&D investments. Secondly, CEOs separate their compensations and insurance protection into two different mental accounts. The compensation schemes reward to their efforts and performance; while the liability insurance protects them from the possible loss associated with their duties.

The paper has the following structure: Section 2 reviews literature and develops hypotheses. Section 3 designs the research. Section 4 presents empirical results. Section 5 concludes this paper.

2. Literature review and hypothesis development

2.1. CEO compensation and R&D investments

R&D investing is one of the essential corporate decisions made by top managers of firms (Barker & Mueller, 2002). It seems that corporate takeovers by the control markets discipline managers to act in the best interests of the shareholders (Grossman & Hart, 1980). However, an active takeover market may cause managerial myopia where managers fear of under-valuation of their firms and focus more on short-term profits than long-term value (Shleifer & Vishny, 1989; Stein, 1988). Even with the presence of takeover provisions, the quiet life hypothesis predicts that managers exploit the provision protection to reduce their managerial efforts into risky projects such as R&D (Becker-Blease, 2011). The monitoring effect from
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