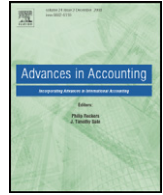




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## The effect of stock-based incentives and governance mechanisms on voluntary disclosure of intangibles<sup>☆</sup>

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### ABSTRACT

The purpose of this study is to investigate the role of stock-based incentives in encouraging more voluntary disclosures about firm-specific intangibles. I also examine whether corporate governance, previously found to be related to voluntary disclosures, is a complement to or substitute for stock-based incentives. Using content analysis of annual reports of a sample of high-tech firms, I find that stock-based incentives are positively associated with firms' voluntary disclosures about intangibles. With regard to the effect of governance mechanisms, I find that corporate governance does not have a relationship with disclosures when stock-based incentives are low. On the other hand, better governance will strengthen the positive effect of stock-based incentives on disclosures, suggesting that governance and incentives mechanisms are complements instead of substitutes. The results also show that this complementary effect primarily results from the internal monitoring provided by the board of directors.

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### 1. Introduction

The separation of ownership and control in the modern corporation has created serious agency problems and governance challenges for shareholders. One way to align managers' decisions with shareholders' interests is through compensation systems. Researchers argue that top managers are only motivated to act in shareholders' best interests if they are offered incentive contracts that link their wealth to changes in firm value (Jensen & Murphy, 1990). Recent trend in executive compensation practices of US companies has shown a significant increase in the use of stock options and restricted stock awards as an integral part of executives' compensation package (Hall & Liebman, 1998; Murphy, 1999). The use of equity-based compensation seems to be consistent with motivating managers to act on behalf of shareholders because the agent's wealth is directly tied to the company's stock performance. Many studies have examined the effect of different types of compensation plans on managerial incentives as well as the determinants of firms' compensation structures (e.g., Lippert & Moore, 1994; Yermack, 1995; Ryan & Wiggins, 2001). The purpose of this study is to investigate the role of stock-based incentives in encouraging more voluntary disclosures about firm-specific intangibles.

Prior literature suggests that intangibles-intensive firms tend to experience significant information asymmetry due to scarce public

disclosures about their intangibles, but there is limited research studying the mechanisms that help mitigate this problem. Intangible assets such as a skilled workforce, brand names, know-how, and organizational capabilities have been recognized to be the most significant value-creation factor in today's new economy. However, there are increasing concerns about the deficiencies of information about intangible assets in corporate financial reports under current accounting rules (e.g., Lev & Zarowin, 1999). This lack of public information has been attributed to resulting in misvaluation by capital market participants as well as misallocation of resources within companies (Lev, 2004). Therefore, it is important to understand whether incentives mechanisms could motivate managers to disclose more information about intangibles-related activities.

I consider intangibles a valuable setting to examine the relation between stock-based incentives and voluntary disclosures because intangibles-related activities have been shown to be a significant source of private information (e.g., Aboody & Lev, 2000). Managers may be reluctant to reveal their private information because of proprietary cost concerns (Verrecchia, 2001) or because of uncertainty about the capital market's response to disclosures (Nagar, 1999). Since prior compensation research documents that intangibles-intensive firms use more equity-based compensation (e.g., Clinch, 1991; Kole, 1997), it is important to enhance our understanding of whether higher stock-based incentives also encourage firms to provide more voluntary disclosures about their intangibles.

Moreover, prior literature has well documented the role of corporate governance in alleviating agency problems. More specifically, better governance can reduce opportunistic behavior in financial reporting (e.g., Beasley, 1996; Klein, 2002) and encourage more management

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earnings forecasts (Ajinkya, Bhojraj, & Sengupta, 2005; Karamanou & Vafeas, 2005). Nevertheless, the interaction effect between governance mechanisms and incentive contracts is not clear. Therefore, this study also answers the call from Hermalin and Weisbach (1991) to investigate whether corporate governance and stock-based incentives are complements or substitutes.

Since intangibles are industry-specific, the sample used in this study is concentrated on the high-tech sector consisting of firms in the pharmaceutical, electronics, and software industries. The results support the hypothesis that stock-based incentives are positively related to intangibles-related voluntary disclosures. Further, this positive association is strengthened by better governance. In particular, corporate governance, especially the board structure, and stock-based incentives complement rather than substitute each other in enhancing firms' voluntary disclosures about intangibles.

This study contributes to the literature along several avenues. First, no prior research has conducted a comprehensive study on firms' voluntary disclosures about firm-specific intangibles. Therefore, this study will provide insights on what firms disclose about their intangibles-related activities which are documented to be a significant source of private information. Second, I augment the compensation literature by establishing the link between stock-based incentives and voluntary disclosures. Although this relationship was documented in Nagar, Nanda, and Wysocki (2003), their study does not address intangibles-specific disclosures nor do they appropriately address the endogeneity of stock-based compensation (see Barth, 2003). Third, previous literature on corporate governance generally examines the direct effect of monitoring mechanisms provided by the board of directors, outside blockholders and institutional investors, but no study has considered the interaction effect between alternative governance mechanisms. Since both compensation contracts and governance structures are designed to alleviate agency problems, it is important to understand whether the incentives and monitoring mechanisms complement or substitute each other in influencing managerial behavior.

The remainder of the study is organized as follows. Section 2 reviews related literature and develops research hypothesis. Section 3 describes the research design, including variable measurement and empirical models. Data and sample are presented in Section 4. Section 5 discusses the empirical results and Section 6 provides concluding remarks.

## 2. Literature review and research hypothesis

### 2.1. Accounting for intangibles and information asymmetry

Prior studies have documented that internally developed intangibles, such as R&D and advertising, provide future economic benefits (Grabowski & Mueller, 1978; Sougiannis, 1994; Lev & Sougiannis, 1996) and that these benefits are more uncertain than those associated with investments in traditional tangible assets (Kothari, Laguerre, & Leone, 2002). Moreover, studies on market valuation of intangibles, in particular R&D, find that information about intangibles investment is value relevant to investors (Ben-Zion, 1978; Hirschey, 1982; Hirschey & Weygandt, 1985; Chauvin & Hirschey, 1993; Sougiannis, 1994; Lev & Sougiannis, 1996; Aboody & Lev, 1998) but that the market seems not to incorporate fully the benefits of these intangibles as manifested in contemporaneous stock returns (Chan, Lakonishok, & Sougiannis, 2001; Chambers, Jennings, & Thompson, 2002; Eberhart, Maxwell, & Siddique, 2004). Accordingly, the accounting and reporting of intangible assets have been an ongoing debate and many researchers criticize current rules as leading to the decline in the usefulness of financial statement information (e.g., Lev & Zarowin, 1999).

Under current financial reporting rules, many internally generated intangibles are not capitalized in the financial statements, nor are they required to be separately disclosed. The nondisclosure of this information creates information asymmetry between corporate insiders (managers) and external investors. Many studies have provided empirical evidence

of a positive relation between information asymmetry and the level of intangibles. Barth and Kasznik (1999) predict and find that firms with more intangibles associated with R&D and advertising are more likely to repurchase shares and enjoy significantly positive share repurchase announcement returns, consistent with these firms having higher information asymmetry arising from differences in valuation beliefs held by managers and investors. Barth, Kasznik, and McNichols (2001) find that firms with larger R&D and advertising expenses receive greater analyst coverage because of the potential benefits from private information acquisition. Arguing that R&D is a major source of information asymmetry, Aboody and Lev (2000) find that insider trading gains are significantly larger in R&D-intensive firms than in firms without R&D, suggesting that insiders exploit their private information about the firm's R&D projects. Another study by Boone and Raman (2001) also shows that information asymmetry for R&D-intensive firms is higher than that for non-R&D-intensive firms and that the magnitude of information asymmetry is positively related to the magnitude of unrecorded R&D assets. Despite the abundant literature documenting significant information asymmetry related to intangible assets, limited studies examine the mechanisms that can mitigate this problem, with the exception of Mohd (2005), who documents a reduction of information asymmetry in software firms after the introduction of SFAS No. 86 that requires capitalization of software development costs.

Although Entwistle (1999) and Jones (2007) specifically study firms' voluntary disclosures about R&D, they do not consider other intangible assets such as brands and human capital. Lev and Radhakrishnan (2003) find that investors do not fully factor the value of organizational capital into equity prices and ascribe this market inefficiency to poor disclosure of information about intangible capital. Other researchers examine the information deficiencies of intangibles-intensive companies from the perspective of financial analysts and find that the presence of expensed intangibles such as R&D is associated with the error in analysts' short-term earnings forecasts (Barron, Byard, Kile, & Riedl, 2002; Amir, Lev, & Sougiannis, 2003).

### 2.2. Executive compensation and stock-based incentives

There is a large literature on the theoretical and empirical determinants of the choice of executive compensation contracts (e.g., Jensen & Murphy, 1990; Smith & Watts, 1992; Sloan, 1993; Bizjak, Brickley, & Coles, 1993). Early studies draw on the economic theory of optimal contracting and focus on the role of performance measures in promoting congruence between the principal's objective and that of the agent (e.g., Holmstrom, 1979; Lambert & Larcker, 1987). Economics research by Jensen and Murphy (1990) and Hall and Liebman (1998) document the pay-performance sensitivity provided by various incentives including compensation and stockholdings. Studies on the cross-sectional differences in the form or structure of executive compensation generally find that firms grant stock-based compensation in accord with agency cost reduction (Smith & Watts, 1992; Gaver & Gaver, 1993, 1995; Bizjak et al., 1993; Bryan, Hwang, & Lilien, 2000).

A stream of research studying the incentive effect of stock-based compensation on managerial risk taking behavior shows that stock options have a positive relationship while restricted stocks have a negative relationship with firms' risky investments (e.g., Larcker, 1983; Defusco, Johnson, & Zorn, 1990; Rajgopal & Shevlin, 2002; Williams & Rao, 2006). Some studies find that firms with higher R&D investment grant more equity-based compensation (e.g., Clinch, 1991; Kole, 1997; Ryan & Wiggins, 2001, 2002), while others find that innovation performance is positively related to long-term based compensation plans (e.g., Holthausen, Larcker, & Sloan, 1995; Lerner & Wulf, 2005). The role of equity incentives in alleviating managers' opportunistic behavior also receives empirical evidence. For example, Dechow and Sloan (1991) show that stockholdings reduce CEOs' tendency to cut R&D

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