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A test of the Bolton–Scheinkman–Xiong hypothesis of how speculation affects the vesting time of options granted to directors

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ABSTRACT

This paper investigates empirically the Bolton et al. (2006) hypothesis, according to which initial shareholders may provide incentives to managers to take actions that stimulate speculative bubbles. We test this hypothesis with data on up to 8544 directors and up to 1677 companies between 2004–2008. Using vesting time as a measure of the short-term performance weighting in CEO compensation and various alternative measures of the extent of speculation, the findings support the hypothesis: vesting time decreases with more intensive speculation. The results prove robust in various empirical model specifications.

1. Introduction

Vesting time determines when an executive can effectively exercise options. In a principal–agent framework à la Holmstrom and Tirole (1993), the principal (shareholder) prefers longer vesting times since this increases the time horizon of granted incentives and thus the horizon of the agent (executive). Yet, the risk-averse agent has a preference for shorter vesting periods to reduce the risk of her equity portfolio. Bolton et al. (2006) develop a modified principal–agent framework, where both parties may prefer shorter vesting periods. Then, the short-termist speculative behavior of shareholders leads to optimal incentive contracts which induce chief executive officers (CEOs) to pursue strategies that increase the speculative option value of a company's stock.

The aim of this paper is to empirically investigate this hypothesis of Bolton et al. (2006). Providing such evidence is important, because if policy makers wish to maximize long-run fundamental value, they should incentivize shareholders to have longer time horizons instead of increasing the degree of board independence. As Bolton et al. (2006) suggest, this could be achieved, for instance, by extending stock-option vesting periods.

We follow Bolton et al.'s (2006) advice to use vesting time of stock options granted to managers as a measure of short-term performance weighting in executive compensation. We employ a panel data-set of up to 1677 companies and up to 8544 directors from

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21 countries for the time period 2004–2008 from BoardEx and augment it with information from Compustat. The findings suggest that the length of vesting time decreases with speculation. This result is robust to a number of alternative measures of speculation or the choice of control variables.

The remainder of the paper is structured as follows. Section 2 puts the hypothesis at stake in the context of the literature, Section 3 presents the data, the empirical strategy, and the results. Section 4 summarizes a number of robustness checks, and Section 5 concludes.

2. The Bolton–Scheinkman–Xiong hypothesis in the context of the literature

A number of theoretical models explain executive compensation in general and the use of stock options and shares as incentive devices for managers and directors in particular. For instance, Holmstrom (1979) and Holmstrom and Tirole (1993) consider stock options for managerial compensation as a solution to the principal–agent moral-hazard problem. In their framework with risk-averse managers, the optimal contract includes an effort-independent wage along with output-dependent options or shares, which align the incentives of the shareholders and the manager.

However, observing the tremendous increase in CEO pay in recent decades and the divergence between executive compensation and firms' performance, other theories have been advanced, suggesting that managerial compensation itself may aggravate the agency problem. For instance, Bertrand and Mullainathan (2001), Bebchuk et al. (2002), and Bebchuk and Fried (2006) argue that the failure of corporate governance is the root of the problem of CEO compensation.

Even though the rising trend in executive compensation during the last two decades seems to confirm this rent-extraction hypothesis, there was a trend towards more independent boards of directors and lower CEO tenure during the same time period (see Hermalin, 2005). Furthermore, as Core et al. (2006) show, the shareholder returns of companies with weak shareholder rights did not underperform compared to those of companies with strong shareholder rights.[2] This creates a puzzle as to the role of compensation and stock options for managerial incentives. Moreover, a number of empirical studies have found an increase in the strength of corporate governance during the 1990s, thus providing support neither for the rent-seeking nor for the board-capture hypothesis.

There is now increasing evidence against the traditional view that stock markets are efficient and reflect firms' long-run fundamental values (see Shleifer, 2000; Shiller, 2000). Hirota and Sunder (2007) illustrate in the laboratory that investors' horizons influence stock-price formation, and share prices form bubbles in short-term markets. Along the same lines, Allen et al. (2006) develop a model to show that when investor rationality is not common knowledge or investors have heterogeneous information, security prices may deviate from their fundamental value since short-term investors do not use backward induction to evaluate share prices.

Bolton et al. (2006) illustrate that the role of shares and options in executive compensation contracts is questionable under such circumstances. They depart from the Holmstrom and Tirole (1993) framework in two main ways. First, they assume investors to have heterogeneous beliefs and allow for stock prices to include a speculative component. Second, besides providing effort to increase the fundamental value of the firm, an executive can perform actions that encourage speculation. This can be interpreted in the spirit of the multi-task problem introduced by Holmstrom and Milgrom (1991). Then, it can be in the interest of the initial shareholders to provide incentives to managers to undertake projects that stimulate speculative bubbles, and allow them accordingly to make capital gains by selling their shares to new overconfident investors with higher profit expectations. As in the standard principal–agent model, the incumbent shareholders design contracts which align the manager's interests with theirs. However, in this framework this does not maximize the fundamental value of the firm. In Bolton et al. (2006), controlling shareholders may have short-term interests themselves,[3] and thus may also favor short-term strategies as they make refinancing cheaper by reducing the cost of capital.[4]

The particular role of vesting time of options and restricted stock has been a central topic in two very recent papers by Gopalan et al. (2010) and Laux (2012). Gopalan et al. (2010) compute a measure of the duration of CEO compensation that reflects the vesting period of different pay components. Their findings suggest a negative relationship between pay duration and the magnitude of stock mispricing (or the quality of corporate governance). To the extent that stock mispricing may be interpreted as an indirect measure of speculativeness, these results are in line with the ones in Bolton et al. (2006). Moreover, Gopalan et al. (2010) also find that CEOs with a shorter duration of pay engage more likely in short-termist investment behavior than others. Laux (2012) advances a somewhat different theory for the optimal design of option vesting time in an environment in which CEOs face the risk of being fired at an interim date. As opposed to Bolton et al. (2006), he shows that long vesting periods can even encourage short-termism. If the CEO is replaced due to poor performance at an interim date, awarding options with longer vesting time makes her relinquish her option compensation. While from an effort-incentive perspective such long vesting times might be beneficial, they also bias the CEO's investment decision towards short-term projects given the threat of option forfeiture. Hence, the crucial assumption is whether the CEO is fired at an interim date. The analysis in this paper permits distinguishing to some extent between the predictions generated by these different theories.

[2] Kumar and Sivaramakrishnan (2006) illustrate that a board of more independent directors may even perform worse than one with more dependent directors, since the directors' dependence on the manager affects her contracting and monitoring performance in offsetting ways.

[3] See also Froot et al. (1992). Our findings provide support for this argument.

[4] See Bolton et al. (2006, p. 578).