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Journal of Economic Behavior & Organization 68 (2008) 100–111

JOURNAL OF
Economic Behavior
& Organization

www.elsevier.com/locate/econbase

Why do firms adopt CEO stock options? Evidence from the United States

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Received 7 July 2005; accepted 12 June 2007
Available online 8 April 2008

Abstract

This paper examines the determinants of stock option introduction as a part of CEO compensation in listed US firms during the 1994–2004 period. The results are consistent with agency costs and recruiting considerations, suggesting that firms do not adjust CEO compensation in order to address the 'investment horizon' problem. The findings also suggest that CEO stock option adoption is not necessarily influenced by the same factors that have been found in the literature to affect the level of CEO stock option compensation and the adoption of broad-based stock option incentives. Overall, the findings provide evidence for several theoretical predictions, thus adding to our understanding of managerial incentives.

JEL classification: J33; M12; M52

Keywords: Stock options; CEO compensation

1. Introduction

Since the late 1980s, listed firms in the United States have experienced an explosion in the use of employee stock options, primarily at the executive echelon but also at the firm-wide level. It is a topic that has garnered widespread media attention and has spurred an interesting array of academic research. In particular, economic literature provides several possible reasons behind a firm's decision to adopt stock options as a part of employee compensation. First, stock options alleviate the agency problem and align managers' interests with those of shareholders (Haugen and Senbet, 1981). Stock options have a non-negative asymmetric payoff that produces monetary gains only after the share price exceeds the exercise price. This convex payoff function provides an incentive to managers to become less risk-averse in their project and strategy selection, thus improving investment and financial decisions (DeFusco et al., 1990; Guay, 1999).[1]

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[1] This traditional view has recently been challenged by Ross (2004), who shows that an agent's risk-taking tendency is influenced not only by the convexity effect of the fee schedule but also by its translation and magnification effects. The latter two effects, which can take any sign, describe the impact of the fee schedule due to translating the domain of the utility function and magnifying (or contracting) any gamble at the margin. As a result, options may be an ineffective way to make managers less risk averse. Interestingly, without making any assumptions about the agent's utility function, Braido and Ferreira (2006) show that stock options can indeed induce managerial risk taking as long as the projects' distributions are at least partially known.

0167-2681/$ – see front matter
doi:10.1016/j.jebo.2007.06.008

Second, compared to straight salary, stock options operate as an attracting, sorting and retaining mechanism since firms awarding stock options can attract specific types of employees, especially those with less risk-aversion and a higher willingness to exert effort (Oyer and Schaefer, 2005; Oyer, 2004). In addition, these employees would have an incentive to stay in the firm and hold on to their stock options rather than lose them by exiting the firm. Third, stock options can provide a solution in employee compensation for firms facing financial constraints (such as liquidity constraints, tax costs and financial reporting costs) since they do not influence cash flows (Core and Guay, 2001).[2]

It is surprising that although there is ample empirical evidence on the determinants of the *level* of CEO stock options (e.g. Core and Guay, 1999; Yermack, 1995), there has been no empirical investigation on what actually prompts firms to *adopt* stock options for the purposes of CEO compensation. There are some studies that focus on the introduction of broad-based stock option plans for employee compensation (e.g. employee stock option plans, ESOs), which however cannot be used to infer conclusions for the case of CEOs.

Unlike the straightforward agency theoretic rationale for CEO stock option adoption, the introduction of broad-based stock option plans is often intended to reduce unions' bargaining power (Cramton et al., 2005), advance organizational cohesion (Pendleton, 2006), and encourage the accumulation of firm-specific human capital (Blair et al., 2000). Moreover, the incentive power of broad-based stock option plans is adversely affected by free rider problems, especially in larger firms, and group norms (Lazear, 2004; Oyer, 2004). Furthermore, the incentive effects of firm-wide use of stock options are doubtful since the risk premia stemming from firms' option-based compensation are far larger than the cost to (lower- and middle-level) employees of the resulting increases in effort (Oyer and Schaefer, 2005, 2006). In this way, it is more likely that broad-based employee stock option plans are introduced for sorting and retention purposes in firms with high recruiting and retaining costs as well as in firms that find it difficult to cut nominal salaries and hence prefer to offset wage cuts with option packages (Ittner et al., 2003; Oyer and Schaefer, 2005).[3]

Moreover, the determinants of the decision to adopt CEO stock options do not need to be the same as the determinants of the level of CEO stock option compensation. Particularly in the US, the portion of large listed firms using CEO stock options increased gradually from the early 1980s, in contrast to the level of CEO stock options awarded that increased dramatically after the mid-1990s (Conyon and Murphy, 2002). These diverse patterns illustrate that there could be different factors driving each trend (or, alternatively, similar factors could affect each trend in different ways).

This paper addresses the surge of interest in the topic of incentive and sorting aspects of compensation structure by examining the determinants behind the adoption of stock options for the purposes of CEO compensation in US firms during the 1994–2004 period. It is important to clarify the difference between adoption and use of CEO stock options. Fig. 1 illustrates that the annual percentage of CEO stock option usage underestimates the percentage of CEOs that generally hold stock options of their firm. While the percentage of CEO stock option usage on an annual basis fluctuated between 66% and 77% during the 1994–2004 period, the percentage of CEOs with stock option awards and holdings increased steadily from 87% to 96%. Since most of the publicly listed US firms had adopted CEO stock options by the mid-1990s, it is interesting to examine whether the remaining firms are adopting CEO stock options due to economic theory predictions. This study utilizes Execucomp, which covers the period from 1992 to present and delivers data on executive compensation provided by the various SEC filings for firms in the S&P 1500 index, and other supplemental S&P indices, as a result of SEC regulation in 1992.[4]

The results in this research are consistent with agency costs and recruiting considerations, suggesting that firms do not adjust CEO compensation in order to address the 'investment horizon' problem. In particular, it is found that the likelihood for adopting stock options as a part of CEO compensation is significantly increased by the incidence of CEO turnover, while it is decreased by CEO ownership and CEO age. These findings provide novel evidence with

[2] A fourth reason could be tax advantages, but this depends both on the type of stock option scheme and the country-specific tax regulation.

[3] An additional factor could be that CEOs demand stock options because they are typically wealthier than lower- and middle-level employees. Using data from Swedish CEOs, Becker (2006) finds that non-firm CEO wealth is positively related to share-based incentives and explains the result with agency theory's premise that wealthier CEOs have less absolute risk aversion.

[4] The S&P 1500 Index includes all the companies in the S&P 500, S&P MidCap 400, and S&P SmallCap 600 indices and represents about 90% of the US equity market's capitalization. The lack of a similarly rich dataset during the stock option explosion in the late 1980s and early 1990s does not allow the examination of the adoption of CEO stock options during that period. For instance, two datasets utilized in the academic literature on CEO compensation in the US during the 1980s that cannot be used in the context of determinants for adoption of CEO stock options are (a) the Forbes data from compensation surveys which have limited information on stock options, and (b) the Hall-Liebman data, which provide detailed information on stock options but contain an unbalanced sample of only 478 firms that are large and possibly less representative of the population of listed firms.