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Valuing restricted stock grants to non-executive employees

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ABSTRACT

We estimate the value of restricted stock (RS) grants to non-executive employees using a unique proprietary database by calibrating theoretical models that account for the non-marketability of securities and the potential effects of the employee's non-diversification. The calibration results predict an average discount of 30.3% on the RS grant. This discount depends on firm and industry characteristics, is significantly higher during the financial crisis and robust across time and across industries. The discount increases when the employee is undiversified because of the granted stocks. The findings contribute to the discussion on the efficiency of RS grants to non-executive employees, which became a dominant form of equity-based compensation.

1. Introduction

During the past decade, there has been a significant shift in equity-based compensation from employee stock options (ESOs) towards restricted stock (RS) compensation (Black, 2012; Brown & Lee, 2011; Hayes, Lemmon, & Qiu, 2012; Irving, Landsman, & Lindsey, 2011; Qiu, 2012; Skantz, 2012). Conyon, Fernandes, Ferreira, Matos, and Murphy (2013) report that the proportion of RS grants of the total compensation for the median chief executive officer (CEO) pay increased from approximately 5–6% during the 1990s to approximately 35–40% a decade later for Standard & Poor's (S&P)

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500 firms, and that currently, it is the dominant form of compensation (see also Bettis, Bizjak, Coles, & Kalpathy, 2010).[1] In most companies, this shift from ESOs to RS was rank dependent—the higher the employee level, the less the change in compensation structure, which resulted in greater changes to lower level employees. For example, in December 2005, Intel announced a rank-dependent shift in equity-compensation structure (from ESOs to RS).[2] Hence, RS is likely to be prevalent as a form of compensation among non-executive employees.

In this paper, we analyse the value of RS grants to non-executive employees using a proprietary database that details such grants in publically traded firms. While the unrestricted stock value is publically available—it is the market value of the company's stock—the value of the RS is unobservable. To estimate the RS value, we calibrate our proprietary data with several theoretical models, such that each model captures a different facet of the RS value. The analysis is straightforward because it focuses on the simplest form of RS grants: stocks that are restricted from trading during the vesting (restriction) period without any other limitations (e.g., performance requirements). These grants, known as 'grants with time-vesting provisions', are very common (after the shift from ESO compensation), and account for the majority of performance-based pay in United States (US) companies (Bettis et al., 2010).[3]

A vesting period of an RS grant scheme is similar to a non-marketability period—a lockup period during which the stocks cannot be traded.[4] Hence, the use of models from the non-marketability literature is appropriate to estimate the RS value for non-executive employees. The main assumption of these models is that the value of a non-marketable (or non-tradable) stock is lower than a parallel marketable stock due to the additional risk to which the investor is exposed during the lockup period. Therefore, the expected return increases and decreases the stock's value (Silber, 1991). In addition, there are cases in which holdings of non-marketable securities cause the holder to be undiversified because a non-marginal portion of their wealth is invested in the non-marketable stock. Such circumstances should also be considered in valuing the RS grant (Hall & Murphy, 2002; Kahl, Liu, & Longstaff, 2003).

We use three theoretical models from the non-marketability literature to estimate RS value. The first two models—Longstaff (1995) and Finnerty (2012)—assume frictionless markets, in which a diversified investor holds a marginal proportion of their wealth in a restricted security that cannot be sold for a predetermined period. Longstaff's (1995) look-back put option (LBPO) model measures the upper bound for non-marketability assuming an investor with perfect market-timing ability. This framework is appropriate to insiders with private information (as documented empirically by Brooks, Chance, & Cline, 2012).[5] Finnerty's (2012) average-strike put option (ASPO) model calculates an average non-marketability discount, assuming that without any special ability or information, the employee is equally likely to sell the stocks during the restriction period. The third model assumes that the employee becomes undiversified due to their holding in non-marketable securities, as demonstrated by the private pricing (PP) model described in Abudy and Benninga (2013), which extends the framework of Benninga, Helmantel, and Sarig (2005). In this model, the investor demands a higher expected return due to their exposure to the additional idiosyncratic risk that cannot be diversified away (because the stock is restricted from trading). In summary, each model captures a different aspect of the non-marketability value: Longstaff (1995) captures the discount for employees with private information; Finnerty (2012) captures the discount for employees without any specific information; and Abudy and Benninga (2013) capture the discount for employees that become undiversified due to their holdings in the RS.

[1] The shift in the equity-compensation structure has been widely attributed to the adoption of the *Statement of Financial Accounting Standards* 123R (SFAS 123R), which removed the favorable accounting treatment of ESOs (Carter, Lynch & Tuna, 2007; Brown & Lee, 2011; Black, 2012). Carter et al. (2007) find that firms that began expensing options voluntarily (before SFAS 123R took effect) shifted from option compensation to RS compensation.

[2] See http://news.cnet.com/2100-1006_3-5998834.html. There are also reports about trends in equity compensation (e.g., the Towers-Watson survey, which appears on www.mystockoptions.com) that report that RS is more common than ESO to employees at the low-managerial and low-employee levels.

[3] RS grants with time-vesting provisions usually require mandatory employment during the vesting period.

[4] This is contrary to ESOs, which remain non-marketable after the options are vested.

[5] Brooks et al. (2012) find evidence that executives use private information when exercising their ESOs.