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Growth through rigidity: An explanation for the rise in CEO pay☆

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ABSTRACT

The dramatic rise in CEO compensation during the 1990s and early 2000s is a longstanding puzzle. In this paper, we show that much of the rise can be explained by a tendency of firms to grant the same number of options each year. Number-rigidity implies that the grant-date value of option awards will grow with firm equity returns, which were very high on average during the tech boom. Further, other forms of CEO compensation did not adjust to offset the dramatic growth in the value of option pay. Number-rigidity in options can also explain the increased dispersion in pay, the difference in growth between the US and other countries, and the increased correlation between pay and firm-specific equity returns. We present evidence that number-rigidity arose from a lack of sophistication about option valuation that is akin to money illusion. We show that regulatory changes requiring transparent expensing of the grant-date value of options led to a decline in number-rigidity and helps explain why executive pay increased less with equity returns during the housing boom in the mid-2000s.

1. Introduction

The dramatic rise in compensation awarded to chief executive officers (CEOs) in the United States during the 1990s and early 2000s is a long-standing puzzle. Median compensation in 2011 dollars for Standard & Poor's (S&P) 500 CEOs grew more than threefold from \$2.9 million in 1992 to \$9.3 million in 2001. After the mid-2000s, growth leveled off considerably, with the median CEO earning \$9 million in 2011 (Murphy, 2013). Compensation for US CEOs was also relatively flat in the decades leading up to the 1990s (Frydman and Saks, 2010). Thus, the compensation

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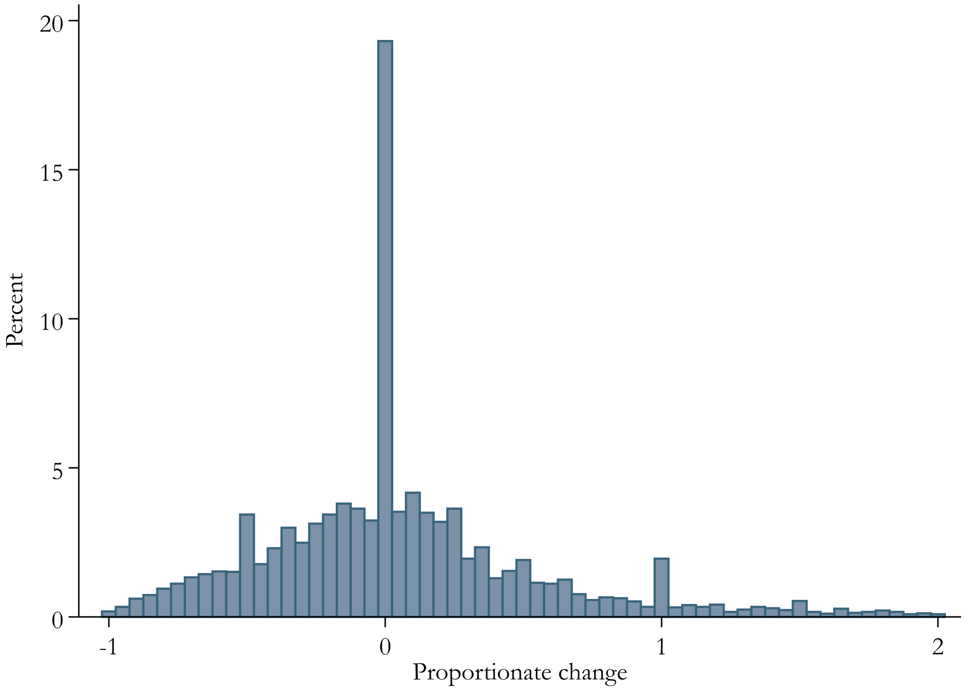

Fig. 1. Number-rigidity in option grants.
This figure shows the distribution of the proportional change in the number of options granted in the current year relative to the previous year. The sample is limited to chief executive officers who receive options in the current and previous year at firms that were ever a part of the Standard & Poors 500 from 1992 to 2010.

growth during the 1990s and early 2000s was a sharp break from both the trend established in preceding years and that which prevailed in subsequent years. Adding to the puzzle, the growth in CEO pay was considerably off-trend relative to growth in other high-income occupations (Kaplan, 2013; Kaplan and Rauh, 2010).

A number of explanations have been proposed for the rise in CEO pay, including weak corporate governance (Bebchuk and Fried, 2004; Kuhnen and Zwiebel, 2009), an increase in managers' marginal product due to technological advancement (Cuñat and Guadalupe, 2009a; 2009b; Dow and Raposo, 2005; Garicano and Rossi-Hansberg, 2006; Hubbard and Palia, 1995), greater competition for CEOs with general skills (Frydman, 2014; Murphy and Zábojník, 2004), and increases in firm size combined with a multiplicative managerial production function (Gabaix and Landier, 2008; Tervio, 2008). While all these theories are likely to be important contributors to growth in executive compensation, each also has shortcomings in explaining some of the stylized facts (Frydman and Jenter, 2010), particularly the off-trend growth of CEO pay during the 1990s and early 2000s, hereafter referred to as the tech boom.

In this paper, we explore an alternative and complementary explanation for the surge in executive compensation. The bulk of the growth in CEO pay arrived in the form of new at-the-money option grants. While much of the existing research focuses on the rising grant-date value of these options, we instead start by examining the number of options awarded to executives. We show that a high degree of rigidity exists in the number of options awarded. That is, firms often grant executives the same number of options as in the previous year. In addition, other round multiples of the previous year's number are common. These patterns suggest a tendency to think of option compensation in number instead of dollar terms. Such a tendency is also consistent with the fact that many firms use multi-year option plans, which prespecify that the same number of options be granted in consecutive years (Hall, 1999; Shue and Townsend, 2014). Preplanned or not, rigidity in number can have major implications for the level of CEO pay.

If a firm grants its CEO the same number of new at-the-money options as in the previous year, and if the firm's stock price is X% higher than in the previous year, the grant-date value of the option award also is X% higher than in the previous year. This fact follows directly from the Black-Scholes formula. Thus, in an environment such as the tech boom with rapid growth in stock prices, number-rigidity leads to rapid growth in the grant-date value of option pay.

Our analysis builds on insights from two comprehensive review articles on executive compensation by Murphy (1999, 2013). Murphy shows a near-perfect historical correlation between average executive pay and the S&P 500 index in the 1990s and early 2000s. He notes that such a pattern would be consistent with compensation committees focusing on the number of options granted, rather than the value of options granted. In this paper, we extend Murphy's insights by first providing direct evidence that option grants over our sample period are strongly rigid in number. As shown in Fig. 1, nearly 20% of new grants