Journal of Financial Economics 119 (2016) 533–558

Contents lists available at ScienceDirect

Journal of Financial Economics

journal homepage: www.elsevier.com/locate/finec

Executive overconfidence and compensation structure☆

Mark Humphery-Jenner[a], Ling Lei Lisic[b], Vikram Nanda[c,d], Sabatino Dino Silveri[e,*]

[a] UNSW Business School, UNSW Australia, AGSM Building, Gate 11, Botany St, UNSW, Sydney, NSW 2052, Australia
[b] School of Business, George Mason University, 4400 University Drive, Fairfax, VA 22030, United States
[c] Rutgers Business School, Rutgers University, New Brunswick, NJ, United States
[d] Naveen Jindal School of Management, University of Texas at Dallas, 800 West Campbell Road, Richardson, TX 75080, United States
[e] Fogelman College of Business and Economics, University of Memphis, 3675 Central Ave, Memphis, TN 38152, United States

ARTICLE INFO

Article history:
Received 28 March 2014
Revised 20 April 2015
Accepted 13 May 2015
Available online 22 January 2016

JEL classifications:
J33
M52

Keywords:
Overconfidence
Compensation structure
Incentive compensation

ABSTRACT

We examine the impact of overconfidence on compensation structure. Our findings support the *exploitation hypothesis*: firms offer incentive-heavy compensation contracts to overconfident Chief Executive Officers (CEOs) to exploit their positively biased views of firm prospects. Overconfident CEOs receive more option-intensive compensation and this relation increases with CEO bargaining power. Exogenous shocks (Sarbanes-Oxley Act of 2002 (SOX) and Financial Accounting Standard (FAS) 123R) provide additional support for the findings. Overconfident non-CEO executives also receive more incentive-based pay, independent of CEO overconfidence, buttressing the notion that firms tailor compensation contracts to individual behavioral traits such as overconfidence.

1. Introduction

We investigate whether overconfidence affects the compensation structure of CEOs and other senior executives. There is a burgeoning literature on the impact of CEO overconfidence on corporate policies. Overconfident CEOs are prone to overestimate returns to investments and to underestimate risks (Dittrich, Guth, and Maciejovsky, 2005; Malmendier and Tate, 2005, 2008; Kolasinski and Li, 2013).[1] Little is known, however, about the nature of incentive contracts offered to overconfident managers or even whether firms "fine-tune" compensation contracts to match a manager's personality traits. We help fill this gap.

While we expect compensation contracts to differ for overconfident managers relative to rational managers, the

☆ We thank an anonymous referee, Robert Durand, Justin Hopkins, Mark Ma, Ron Masulis, Lasse Mertins, and Bill Schwert (Editor) for helpful comments. We also thank the seminar participants at Binghamton University, George Mason University, Kent State University, Loyola Marymount University, Macquarie University, Marquette University, Nanyang Technological University, Rutgers University, University of Akron, University of Arkansas, University of Connecticut, University of Massachusetts at Lowell, University of Memphis, University of North Carolina at Greensboro, University of Technology Sydney, University of Tennessee, University of Texas Dallas, University of Washington Bothell, and Virginia Commonwealth University. We additionally benefited from comments received at the Fourth Behavioral Finance and Capital Markets Conference (2014), the American Accounting Association Mid-Atlantic Regional Meeting (2014), the J.P. Morgan & Co. Quantference (2014) and the Virginia Accounting Research Conference (2014). Mark Humphery-Jenner acknowledges the support of DECRA grant DE150100895. Ling Lei Lisic gratefully acknowledges a summer research award from the School of Business at George Mason University.

* Corresponding author. Tel.: +1 901 678 3893; fax: +1 901 678 0839.
E-mail addresses: mlhj@unsw.edu.au (M. Humphery-Jenner), llisic@gmu.edu (L.L. Lisic), vikram.nanda@utdallas.edu (V. Nanda), ssilveri@memphis.edu (S.D. Silveri).

http://dx.doi.org/10.1016/j.jfineco.2016.01.022
S0304-405X(16)00028-3/

[1] As a result, overconfident CEOs are often associated with more innovative outcomes and a willingness to take risks (Galasso and Simcoe, 2011; Hirshleifer Low, and Teoh, 2012).

nature of these differences is not obvious. On the one hand, an overconfident manager might need weaker incentives in the form of options or restricted stock given the higher probability the manager associates with a successful outcome. With their positively biased view of future firm prospects, a smaller equity stake might be sufficient to induce overconfident managers to deliver the required effort or to make the appropriate decisions.[2] It is also possible for strong incentives to be counterproductive as such incentives could exacerbate risk-taking by an already overconfident manager. We refer to this as the *weak-incentive hypothesis*, which predicts a negative relation between overconfidence and the proportion of incentive-based compensation a manager receives.

On the other hand, as Gervais, Heaton, and Odean (2011) [hereafter GHO] argue, it can be optimal to offer incentive-intensive contracts to overconfident CEOs.[3] Their insight is that if an overconfident CEO places a sufficiently high probability on good outcomes, it is relatively inexpensive for the firm to offer a compensation package with high option and stock intensity. Hence, at the margin, the purpose of an incentive-heavy compensation contract is to take advantage of the CEO's misvaluation rather than to provide incentives. We call this the *exploitation hypothesis*, which predicts a positive relation between overconfidence and the proportion of incentive-based compensation a manager receives.

A question, though, is whether the only reason to give overconfident managers incentive-heavy compensation contracts is to exploit their overvaluation. We develop an alternative hypothesis, based on a simple extension of GHO's model, to show that the need to provide incentives—rather than exploitation—can also lead to overconfident managers receiving greater incentive-based compensation. The reason is that some incentives are only worth providing by the firm when the CEO is overconfident and that, when this is the case, stocks and stock options serve mainly to align the CEO's incentives with those of the firm's shareholders. That is, additional options are only provided to CEOs who are known or are expected to be overconfident. We refer to this as the *strong-incentive hypothesis*.

We conduct empirical tests to explore the relation between CEO overconfidence and incentive compensation and to differentiate among the three hypotheses (weak-incentive, exploitation, and strong-incentive hypotheses). We use the compensation data of CEOs between 1992 and 2011 to create option-based measures of overconfidence.[4] These measures are premised on the idea that a manager's human capital and compensation are tied to the company, rendering the CEO undiversified. Consequently, a rational CEO exercises deep in-the-money options as soon as they vest. Thus, holding deep in-the-money options indicates overconfidence. Our results are robust to using media-based measures of overconfidence.

Consistent with both the exploitation and the strong-incentive hypotheses, but not with the weak-incentive hypothesis, CEO overconfidence increases both option and equity intensity, measured as the proportion of total compensation that comes from option and equity grants, respectively. We also find some evidence that overconfident CEOs receive even greater option and equity intensity in innovative and risky firms.

We complement the CEO-level results with evidence on the compensation of overconfident non-CEO executives. We hypothesize and find that overconfidence impacts non-CEO executive compensation in a similar manner to which it impacts CEO compensation. That is, we find overconfident executives also receive higher levels of option and equity intensity than do rational executives.[5] Importantly, the impact of executive overconfidence on compensation is independent of CEO overconfidence, i.e., regardless of whether the CEO is overconfident or not, overconfident non-CEO executives receive higher levels of option and stock intensity. This is an important finding since it indicates incentive compensation for CEOs and non-CEO executives is being driven by the same economic rationale, reflecting individual traits and not merely firm-level characteristics.

We next conduct tests to differentiate between the exploitation and the strong-incentive hypotheses. In particular, we first examine the impact of CEO bargaining power. As discussed in GHO, under the exploitation hypothesis an increase in CEO bargaining power results in an increase in option intensity. The argument is that since overconfident (but risk-averse) CEOs overvalue options relative to the firm (and relative to the rational CEO), an increase in compensation resulting from an increase in CEO bargaining power takes the form of more options-based pay. On the contrary, the strong-incentive hypothesis predicts a decrease in option intensity: as incentive conditions are satisfied and, with risk-averse overconfident CEOs valuing options less than the firm (but more than their rational counterparts) any additional compensation takes the form of cash. We find empirically that the positive relation between overconfidence and option intensity increases with CEO bargaining power, consistent with the exploitation hypothesis but not the strong-incentive hypothesis.

We then use the passage of the Sarbanes-Oxley Act of 2002 (SOX) as an exogenous shock to also help differentiate between the exploitation and the strong-incentive hypotheses. Given increased board monitoring post-SOX, if incentive compensation and board monitoring are substitute governance mechanisms, then firms will lower the option intensity of compensation contracts. However, under the exploitation hypothesis, options-based pay at the margin is used to exploit CEO overconfidence. Hence, there

[2] Throughout the paper, when we refer to equity we refer to both options and stock.

[3] GHO differentiate between mild overconfidence and excessive overconfidence. The weak-incentive hypothesis we outlined above aligns with GHO's mild overconfidence scenario. Throughout the paper, when we refer to overconfidence, we refer to excessive overconfidence within the GHO framework.

[4] We follow the recent finance literature in creating our overconfidence measures. See, among others, Campbell, Gallmeyer, Johnson, Rutherford, and Stanley (2011), Malmendier, Tate, and Yan (2011), and Hirshleifer Low, and Teoh (2012).

[5] For ease of exposition, throughout the paper we will refer to non-overconfident executives (and non-overconfident CEOs) as "rational" rather than "relatively rational" or "more rational."