



Optimal inside debt compensation and the value of equity and debt [☆]



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ABSTRACT

We use firm and chief executive officer (CEO) characteristics motivated by optimal contracting theory to estimate optimal CEO relative debt-equity incentive ratios. Equity values rise as firms adjust CEO incentive ratios toward their predicted optimums, whether that increases or decreases the relative incentive ratio. Debt values rise as firms adjust ratios upward and do not fall as they adjust them downward. Our predicted optimums explain changes in equity and debt values better than a model in which firms simply match CEO inside debt-equity ratios to firm debt-equity ratios. The results suggest important cross-sectional differences in firms' optimal inside debt policies.

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1. Introduction

Many recent studies focus on CEO debt or debt-like claims (called inside debt) that a CEO has on the firm. Sundaram and Yermack (2007) find that inside debt is a significant fraction of CEO compensation, and is associated with less risky policy decisions. Cassell, Huang, Sanchez, and Stuart (2012) provide additional evidence that inside

debt is associated with conservative managerial policies. Several other studies find lower debt costs for firms with high inside debt, which also suggests an association between inside debt and conservative management.¹ Wei and Yermack (2011) find that disclosures by firms with relatively high levels of inside debt in their CEO incentives are associated with increases in debt values and declines in equity values and overall enterprise values. The changes in security values, together with other evidence in Wei and Yermack, imply that many firms choose suboptimally high

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¹ See Anantharaman, Fang, and Gong (2014), Chava, Kumar, and Warga (2010), Chen, Dou, and Wang (2010), Shivdasani and Stefanescu (2010), Bolton, Mehran, and Shapiro (2011), and Wang, Xie, and Xin (2011).

inside debt ratios that wind up inducing CEOs to manage their firms too conservatively. Though evidence is growing that inside debt is associated with conservative firm policies, there is little evidence about the optimal use of inside debt. We begin filling this important gap by estimating the optimal inside debt ratio and studying how movements towards this ratio (both from above and below) affect debt and equity values.

Jensen and Meckling (1976, p. 352) were among the first to note that inside debt and inside equity compensation used together can alleviate shareholder-bondholder conflicts that stem from risk-shifting incentives; if shareholders bear the associated agency costs, then they benefit from alleviating the conflicts (see also John and John, 1993). They propose a straightforward, one-size-fits-all solution: the firm grants the manager's inside debt and equity incentives so that their ratio equals the firm's leverage ratio. Edmans and Liu (2011) develop a much more complex model that adds managerial effort and liquidation values to the risk-shifting problem.² In their model, the CEO's optimal debt-equity ratio can fall above or below the firm's debt-equity ratio for a particular firm depending on the relative importance of risk-shifting, value in solvency, and value in bankruptcy.

Our basic empirical approach involves estimating optimal inside debt-equity ratios, and then examining whether adjustments toward those predicted optimums are related to changes in equity and debt values. We conduct our tests in the 2006–2009 period, which immediately follows when the Securities and Exchange Commission (SEC) began requiring firms to disclose inside debt levels in their proxy statements. We follow Wei and Yermack (2011) to define the CEO's inside debt-equity incentive ratio as the ratio of pension and deferred compensation to the overall delta of the CEO's equity compensation; we then divide that ratio by the firm's analogous incentive ratio to calculate the CEO's *relative* incentive ratio. We regress the relative incentive ratio on a number of firm and CEO characteristics suggested by the optimal contracting framework of Edmans and Liu (2011) and by results in Sundaram and Yermack (2007). We define the target relative incentive ratio for each CEO in each year as the predicted value from that regression. For each firm on each inside debt disclosure date, we then compute the absolute difference between the target relative incentive ratio and the actual relative incentive ratio to measure the distance to the target relative incentive ratio. For each firm's second and subsequent disclosures of inside debt, we compute the year-over-year change in the distance to the target. We then examine whether the disclosure announcement returns to equity and debt are related to reductions in firms' distances to their target relative incentive ratios.

Our predictive regressions show that firm and CEO characteristics motivated by optimal contracting concerns

are associated with CEO's relative incentive ratios in economically sensible ways. We also find evidence that firms adjust their relative incentive ratios to reduce the distance to the optimal contracting-based targets implied by the model. Thus, firms appear to view the targets as important, at least on average.

The stock price response to the announcement of changes in relative incentive ratios increases as the distance to the predicted target decreases, regardless of whether the adjustment is an increase or a reduction in the relative incentive ratio. The fact that increases in the relative incentive ratio can increase stock prices may seem surprising because higher inside debt would seem to align managers with bondholders. However, this is consistent with the proposition that equityholders bear the cost of shareholder-bondholder agency conflicts when managers are not sufficiently aligned with bondholders (Jensen and Meckling, 1976). On the other hand, reducing an inside debt level that was too high could transfer wealth back from bondholders to equityholders. This would essentially be the reversal of the wealth transfers that Wei and Yermack (2011) find occur when firms initially disclose relatively high inside debt levels. Thus, an interesting question is whether the increases in equity value that we find for firms that close the distance to their predicted optimums represent transfers of wealth back from bondholders. We investigate this proposition for the subset of firms for which we also have bond price data and a subset of firms for which we have credit default swap (CDS) spreads.³ We find no evidence that the increases in equity value are simply wealth transfers back from bondholders. Indeed, bond values rise with increases in the relative incentive ratio toward a predicted optimum and do not fall for reductions in the relative incentive ratio toward a predicted optimum. The fact that we cannot observe bond values for the majority of our sample firms is an important caveat to these results; the increases in equity value could stem from wealth transfers from bondholders for these firms. The collective results are important in light of the existing literature because they suggest a shareholder wealth-maximizing use of inside debt during the period in which firms began disclosing inside debt. The results further suggest that the target relative incentive ratio captures important components of the optimal relative incentive ratio.

The fact that firms adjust relative incentive ratios toward our optimal contracting target provides evidence that our model provides meaningful estimates of optimal inside debt. We know, however, that the estimates are noisy. To examine the signal about optimal relative incentive ratios in our measure, we compare our optimal contracting target to two other possible targets. First, Jensen and Meckling (1976) suggest an optimal relative incentive ratio of 1.0 for all firms (i.e., that firms should set the CEO's inside debt-equity ratio equal to the firm's

² Bolton, Mehran, and Shapiro (2011) show a related model in which compensation can tie directly to credit default swap (CDS) spreads rather than inside debt. They also suggest that the risk-shifting incentive and value in default create an optimal debt and equity exposure for the manager, though they present a novel way of achieving it.

³ When we include an indicator variable for firms for which we have bond data in the equity return regression, the coefficient is not significant (p -value approximately 0.70). This implies that there is no systematic difference in equity returns for firms that do and do not have bond returns in our sample.

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