



## Are managers paid for better levels of pension funding?



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### ARTICLE INFO

#### Article history:

Received 1 May 2017

Accepted 28 June 2017

Available online 29 June 2017

#### JEL classification:

G32

G34

#### J32Keywords:

Corporate pension policy

Managerial incentives

Executive compensation

Unfunded pension liabilities

### ABSTRACT

Despite the evidence that full funding of defined benefit pension obligations is value maximizing, managerial price and volatility sensitivities (deltas and vegas) do not appear to influence funded status for all except the CFOs of plan sponsors with weak credit ratings (Anantharaman and Lee, 2014). Whether realized total compensation (as opposed to changes in the value of securities held) encourages full funding is an open question. Here we examine the empirical relation between realized managerial compensation and the extent to which plan liabilities are funded, and find that CEO pay bears a significant relation with funded status.

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### 1. Introduction

The full funding of defined benefit pension liabilities is value maximizing because unfunded pension obligations waste a valuable tax shelter (Black, 1980; Tepper, 1981), impair the credit rating of the plan sponsor (Carroll and Niehaus, 1988) and increase the cost of capital (Campbell et al., 2012). It follows that shareholders should give a firm's managers an incentive to fully fund the pension plan. Yet, prior research has found no connection between managerial incentives (as measured by the sensitivity of managers' wealth to changes in share price and volatility) and pension funding in healthy firms (Anantharaman and Lee, 2014). Here we examine whether realized managerial compensation, rather than share price and volatility sensitivity, is related to the level of pension funding. We find a significant positive relation, confirming that plan sponsors assign importance to higher levels of pension funding.

On a consolidated basis, pension assets and liabilities can comprise a significant portion of the total assets and liabilities of plan sponsors, and influence the composition of the capital structure. Shivdasani and Stefanescu (2009) find that increasing the pension liability of the average sponsor by one dollar reduces the amount of conventional borrowing by 35 cents. That substitution occurs because conventional debt service and pension contributions draw on the same stream of operating income. The connection between the pension fund and the firm extends to the total amount of systematic risk, as demonstrated by Jin et al. (2006), who show that pension assets and liabilities affect the systematic risk of equity.

In spite of the relative importance of the pension fund to the balance sheet of the plan sponsor, managerial incentives, as measured by the sensitivity of compensation to changes in stock price and stock volatility, bear little relation to the firm's funded status. Anantharaman and Lee (2014) find that the influence of managerial incentives on pension policy is limited to distressed firms, and holds only with respect to the incentives facing the Chief Financial Officer. The observed connection is consistent

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with the opportunity that weak firms have to shift the risk of unfunded pension liabilities to the Pension Benefit Guaranty Corporation (Sharpe, 1976; Treynor, 1977). In contrast, firms that aren't experiencing financial distress do not display any relation between levels of pension funding and the price and volatility sensitivities (delta and vega) of either the CEO or CFO.

The apparent absence of an incentive regime to encourage higher levels of funding is noteworthy. Starting with Coles et al. (2006), a body of research has uncovered an extensive set of empirical relations between managerial incentives and the firm's investment and financing policies. The significance of the pension plan to the financial structure of the plan sponsor is well documented. Bodie et al. (1985) find that plan sponsors manage their pension funds as a component of the financial policy of the consolidated entity, with the maximization of the tax shelter playing a central role in the decision process. Given that shareholder wealth maximization requires the alignment of the interests of the managers and the shareholders, we explore whether firms reward managers with higher amounts of total annual compensation for maintaining higher levels of pension funding.

The discovery of a connection between managerial compensation and pension funding would be consistent with the notion that there are incremental benefits generated by higher funded ratios, and that managers enjoy a significant amount of discretion in the determination of funded status. Further, the sensitivity of compensation to funded status would also be consistent with the increasing popularity of liability-driven investment strategies, which would be favored by managers who bear personal costs in the form of lower compensation when funding levels fall.

Plan sponsors have several reasons to encourage higher levels of pension funding. Pre-tax investment income generated by pension assets accrues to the firm on an after-tax basis (Tepper, 1981). Higher levels of funding therefore allow the shareholders to maximize the value of that tax shield. Holding everything else constant, greater funded ratios reduce or even eliminate mandatory contributions, which lead to a lower cost of capital (Campbell et al., 2012). Improvements in the level of pension funding would therefore appear to allow the firm to invest more.

The analysis begins with an examination of the relation between total compensation and funded status. The results show that total compensation bears a direct relation with funding status in the prior year - a higher ratio of pension assets to pension liabilities last year is significantly related to higher CEO and CFO compensation this year. We next examine how changes in compensation are related to changes in funded status. Because changes in funded status are largely driven by changes in overall market conditions, there is little concern that our results are being driven by an omitted variable that drives both funded status and total compensation. The results show that an improvement in the funded status of the pension fund from the prior year is related to an increase in total compensation.

Our study contributes to the literature by complementing and reconciling the results of several prior studies. In contrast to Anantharaman and Lee (2014), we show that managerial wealth is sensitive to the degree that pension liabilities are funded; the transmission mechanism is total compensation rather than changes in the value or volatility of existing stock and option holdings. Managers will rationally avoid declines in the funded ratio when they cause a reduction in compensation. The pension plan has been shown to influence the capital structure (Shivdasani and Stefanescu, 2009) and the equity beta (Jin et al., 2006) of the plan sponsor; our results show that the method for compensating the CEO is affected as well. Further, Campbell et al. (2012) document an empirical relation between the level of mandatory pension contributions and the cost of capital. Our results show that firms pay the managers to achieve higher levels of pension funding, which reduces or eliminates mandatory contributions, thus lowering the cost of capital. Finally, the results here are consistent with the emerging popularity of liability driven investment strategies in pension plans (Adams and Smith, 2009; Fabozzi, 2014), which are geared toward stabilizing the funded ratio.

The second section of the paper provides a detailed review of the literature and necessary background explanations. The characteristics of the sample and data are described in Section 3; results are discussed in Section 4. Section 5 concludes.

## 2. Background

A defined benefit pension plan is fully funded when the market value of the assets in the pension fund is equal to the present value of the promised benefit stream. Corporations sponsoring a qualified pension plan are allowed to deduct contributions to the pension fund from taxable income and to exclude investment earnings on those contributed assets from taxable income in the current year. The exclusion of investment earnings constitutes a deferral of taxes as investment earnings are eventually taxed to the extent they reduce future contributions and hence increase future taxable income.

The combination of the tax deductibility of contributions and the deferral of taxes on investment earnings creates a valuable tax shield by allowing the plan sponsor to earn the pre-tax rate of return on pension assets (Black, 1980; Tepper, 1981). Plan sponsors maximize shareholder wealth when they exploit the value of that tax shield by contributing the maximum amount allowable to the pension fund. Empirical evidence supports that proposition - Bodie et al. (1985) show contributions to the pension fund are positively related to the marginal tax rate of the plan sponsor.

The funded status of the pension plan also influences the plan sponsor's pretax cost of capital. That is because the minimum required annual contribution to the pension fund increases with the size of the funding gap (pension liabilities minus pension assets). Campbell et al. (2012) document an empirical relation between the level of mandatory contributions and the cost of capital. Higher mandatory contributions increase the asset beta of the plan sponsor, and thus the pretax cost of capital, by augmenting the degree of operating leverage.<sup>1</sup> Plan sponsors maximize shareholder wealth by minimizing the cost of capital, which allows the firm to invest more.

<sup>1</sup> Petersen (1994) examines the role of operating leverage in the selection of pension plans.

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