The Financial Review *Vol. 31 No. 4 November 1996 Pp. 695–720*

Managerial Self-Interest, Pension Financial Slack and Corporate Pension Funding

Sudip Datta, Mai E. Iskandar-Datta,** and Edward J. Zychowicz****

Abstract

This paper examines the impact of managerial self-interest on corporate pension funding decisions. It is postulated that managers with no ownership stake in the firm will have incentives to maintain financial slack in the form of excess pension funding. Pension funding slack may be viewed as a managerial perquisite that decreases the probability of necessary future debt financing. Such a strategy may increase the value of undiversified human capital to the detriment of maximizing shareholder wealth. As managerial ownership increases, the incentives to consume such a perquisite will decrease since the interests of managers and shareholders become more aligned. The results presented in this study strongly support this proposition.

Introduction

In recent years, the structure of corporate ownership and its influence on managerial incentives has intrigued researchers from a number of perspectives. For example, Agrawal and Mandelker [1] report that investment decisions appear to increase firm risk when managerial equity holdings are larger. Saunders, Strock and

*Bentley College, Waltham, MA 02154

**University of Massachusetts—Dartmouth, MA 02747

**Hofstra University, Hempstead, NY 11550

We are grateful for helpful comments from David T. Brown and seminar participants at the 1992 Allied Social Sciences Association meetings and Hofstra University.

Travlos [34] suggest that increased stock ownership will also enhance the proclivity of risk taking activities. Papaioannou, Strock and Travlos [33] examine the implication of ownership structure for corporate liquidity policy. This article examines corporate ownership as a determinant of pension funding decisions. The analysis is conducted within a framework that incorporates the risk to managerial human capital associated with such financial decisions. Such an investigation is important because corporate pension funds have increasingly come to be viewed as an integral part of the overall financial management of the firm.

Managers whose wealth portfolio consists mostly of investment in human capital have little incentive to increase equity risk. This is because an increase in the variability of returns on equity, holding everything else constant, will increase the uncertainty associated with the stream of employment income and reduce the value of their human capital. Corresponding to such increases in risk is the increased probability of bankruptcy that can devalue managerial human capital and reputation (Gilson [14] and Gilson and Vetsuypens [15]). Therefore, it is proposed that managers with no equity stake in the firm will pursue activities that minimize default risk via overfunding of pension plans. In contrast, if the firm has risky debt, the equity ownership stake of managers will increase in value as the volatility of the return on equity increases (Black and Scholes [6]). This indicates that equity ownership by managers will increase the incentives for pursuing risky policy alternatives which should result in underfunding of pension plans. It is proposed that equity ownership by managers and the attendant implications on risk taking will influence the pension funding decision.

Researchers have identified two major incentives which may guide corporate pension funding decisions, and help explain the heterogeneity in funding observed across firms. Black [5], Feldstein and Seligman [13], and Tepper [37] suggest that the tax advantages associated with pension fund contributions create incentives for firms to maximize the extent to which pension liabilities are funded. Such contributions are tax deductible, and

the earnings on assets within pension funds are not taxed. In contrast, Sharpe [35] suggests that firms have incentives to minimize the extent to which pension liabilities are funded. This incentive is related to the insurance protection of retiree benefits provided by the Pension Benefit Guaranty Corporation (PBGC). The value of PBGC insurance may be summarized within a put option pricing framework where the level of pension liabilities are analogous to the exercise price and pension fund and net corporate assets represent the underlying asset of the put option. Less funding will enhance the value of this insurance pension put. (For an insightful summary of these tax and insurance motives for pension funding decisions see, for example, Bicksler and Chen [4]).

These two strategies present extreme solutions of either overfunding or underfunding to the maximum extent allowable. Bodie, Light, Morck and Taggart [7, 8] and Bicksler and Chen [4] propose a more general corporate finance perspective of pension decision making. This more comprehensive view suggests that pension policy is not independent of the firm's overall corporate strategy. For example, in addition to including the tax and insurance aspects of funding policy, these studies also suggest that corporate profitability influences funding decisions through the choice of actuarial assumptions. Furthermore, Bodie et al. [7, 8] propose that firms may desire to maintain excess liquidity, or financial slack, in the form of overfunded pension liabilities. Myers and Majluf [31] suggest that managers have incentives to maintain financial slack to finance investment opportunities that arise at inopportune times. To avoid the adverse selection problem associated with external equity financing, firms may maintain financial slack in the form of unused debt capacity, in the form of pension fund assets, or excess liquidity.

This article focuses on the decision by managers to store financial slack in pension funds. Overfunding of pension plans can be viewed as financial slack which has tax benefits that unused debt capacity does not have. After controlling for such tax-related aspects of the funding issue, it is proposed that the extent of managerial

ownership may create incentives for preferring to maintain financial slack in the form of excess pension funding. Managers with no equity stake in the firm may have a motive to pursue a strategy of overfunding to provide a potential source of funds in the future. Such a strategy may reduce the need for future debt financing which can adversely affect the value of managerial human capital.

Clearly, excessive pension funding is not the only method that can be used to reduce the risk of the managers. For example, managers whose portfolio consists only of human capital can achieve reduction in their risk by reducing variability of cash flows via diversification.[1] Amihud and Lev [3] provide evidence that managers behave as though they are more risk averse than stockholders in the context of conglomerate mergers. It is widely acknowledged that mergers undertaken solely for diversification do not benefit the stockholders as the latter group can diversify at the personal level. However, managers will benefit from diversification as they hold partially "undiversifiable" portfolios in the form of non-portable investment in firm specific human capital. Amihud and Lev [3] find that managers of firms with broadly dispersed ownership (i.e., no dominant shareholders to monitor managerial decisions) are more likely to engage in diversifying mergers to reduce the riskiness of the firm.

Discussion and Hypotheses

The framework utilized in this paper is similar to the one employed by Agrawal and Mandelker [1] in their analyses of managerial financing and investment decisions. The wealth derived from the manager's association with the firm may be dichotomized as follows: First, the managers receive a stream of employment income as remuneration for the provision of services associated with their human capital. Second, if managers have an equity position in the firm, their wealth position will change as the value of the firm's stock changes. Thus, the manager's wealth can be viewed as a portfolio composed of human capital and ownership in the firm. In the absence of ownership by the manager, human capital is the dominant asset in the portfolio.

The preceding incentives associated with managerial wealth can influence the corporate pension funding decision. With no equity ownership in the firm, managers may have an incentive to maintain excess pension funding. When investment opportunities arise in the future, these managers may have an aversion to using additional debt financing since this would increase the riskiness of corporate cash flows, the uncertainty of their employment earnings, and hence reduce the value of their human capital, *ceteris paribus*. This proposition does not imply that overfunding will be debt financed. Rather, managers are averse to using additional debt to finance future investment opportunities (i.e., prefer using pension slack) which would increase the risk of their human capital.

Excess pension assets can be accessed as a source of financing either indirectly or directly (see Canan [10]). Plan sponsoring firms can reduce the size of plan contributions by changing actuarial assumptions (McGill and Grubbs [25] and McGinn [26]). For example, by increasing interest rate assumptions, the present value of promised benefits will be reduced. This in turn enables the sponsoring firm to slow the rate at which it contributes to its plans (McAvoy, Cantor, Dana, and Peck [24] and McGill and Grubbs [25]). The funds not allocated to making pension contributions can be reallocated to other uses within the firm. Mittelstaedt [29] documents that in the 1982-1984 period, 1,061 firms accessed excess pension assets by increasing the actuarial interest rate assumption.

In contrast to such an indirect method of accessing excess pension assets, firms can also terminate overfunded plans and revert the excess assets directly. According to the PBGC, in the 1980s over 2,000 overfunded plans were terminated with a subsequent reversion of over $21 billion to sponsoring firms. Apparently, this potential source of funds has not gone untapped by corporations. Such terminations entail that the plan sponsor's board of directors adopt a resolution authorizing the termination and ensure that arrangements are made to fulfill retirement promises made to employees (Simone and Greene [36]). However, the safety cushion from excessive pension funding could potentially be costly to stockhold-

ers. Mittelstaedt [29] suggests that his empirical results are "consistent with the termination of pension plans being a costly source of financing." Although terminations of pension plans provide a quick access to surplus assets, there are costs incurred by the firm. For example, the firm will incur additional pension benefit obligations upon plan termination since non-vested benefits become vested as required by Sections 4041 and 4044 of *Employee Retirement Income Securities Act* (ERISA) of 1974. Furthermore, a 15 percent excise tax is imposed on the amount of the asset reversion. Finally, terminations cause certain explicit transaction costs, related to the purchase of annuities and the implementation of a replacement plan. Nevertheless, storing internal funds in the form of pension slack has tax advantages that alternative sources of financial slack do not have.

On the other hand, when managers have an ownership stake in the firm, their wealth positions are not solely related to their human capital. Their interests and wealth are more closely aligned with those of shareholders. Thus, as equity ownership of managers increases and managers more fully bear the cost of any perquisite consumption, they will behave in a manner which is more consistent with increasing shareholder wealth (Jensen and Meckling [20]). Therefore, it is proposed that the motive for using excess pension funding to reduce the risk to human capital will be offset by managerial effort to increase shareholder wealth when managers have significant equity exposure.

Although the main objective of this paper is to examine the relationship between managerial equity ownership and the degree of corporate pension funding, some insights pertaining to the preceding proposition may be drawn from existing studies. Alderson and Chen [2], Mitchell and Mulherin [28] and Haw, Ruland and Hamdallah [16], for example, present evidence that shareholder wealth may be enhanced as firms reduce pension funding through excess asset reversions. Thus, if managers own significant equity in the firm, and if shareholder wealth is enhanced through lower funding, they too may have a preference for lower degrees of corporate pension funding.

In contrast, if managers have no equity stake in the firm they may have motives to exploit any device that potentially enhances the safety of their human capital. Bondholders also value safety enhancing mechanisms that reduce the risk associated with their investment in the firm. Thus, when managers own no equity their self-interest to enhance the safety of their human capital investment in the firm may coalesce with the risk-reducing motive of the bondholders. Insights pertaining to this paper's central proposition may again be drawn from existing studies. For example, Martin and Henderson [23] show that lower levels of pension funding adversely affect corporate bond ratings, while Datta, Iskandar-Datta and Zychowicz [11] show that a reduction in pension funding via an excess asset reversion reduces bondholder wealth. It is intuitive that when managers have no equity stake in the firm, their interests may be more closely aligned with bondholders, from the perspective of protecting the safety of their interest in the firm.

Taken together, the preceding discussion of the related literature clearly suggests that managers with an equity stake in the firm will be less likely to exploit excessive pension funding as a human capital risk reducing device. In contrast, managers with no equity stake in the firm are more likely to utilize overfunding as a mechanism to preserve the safety of their human capital. Therefore, the first hypothesis may be summarized as follows.

> *H1: The degree of managerial ownership and the degree of pension funding are expected to be negatively related, ceteris paribus.*

However, the relationship between managerial ownership and pension financial slack may be mitigated by internal and external mechanisms used to monitor management. External monitoring mechanisms include capital markets, the market for corporate control (Jensen [21]) and institutional investors, while internal monitoring is performed via the board of directors and the structure of managerial compensation. If the market

perceives that the maintenance of excessive pension financial slack is more motivated by managerial self-interest rather than a corporate strategy aimed at maximizing shareholder wealth, disciplinary market forces, such as takeovers or institutional investors, may act to constrain management from utilizing excessive funding as a risk reducing device. A similar argument can be made with respect to the board of directors' disciplinary measures on senior management.

Some existing research reports that the termination of overfunded plans are often part of more general corporate restructuring (Mitchell and Mulherin [28], and Moore and Pruitt [30]). If corporate restructuring is required to remedy existing firm inefficiencies, and if such inefficiencies are more symptomatic of low ownership firms, then management teams with low ownership may be unable to use pension plans as a superfluous risk-reducing device without incurring disciplinary market pressures. In this scenario no relation between managerial ownership and pension slack is expected. Furthermore, it is possible that the excise tax imposed on reverted excess assets acts as an additional deterrent to management's excessive use of pension slack.

In the managerial compensation literature, managerial risk aversion in corporate decision making is well established. A study by Lambert and Larcker [22] attempts to show whether stock options motivate managers to reduce their risk aversion and behave more in the interests of the stockholders. The standard option pricing model implies that the value of stock options will rise with the increase in the variability of the stock return resulting in an alignment of managerial interests with those of shareholders. However, the standard option pricing framework may not work in the case of managerial stock options since these options are normally "in-the-money," and managers may avoid taking risk which might lead to their options being "out-of-the money." In summary, if external and internal monitoring mechanisms are effective in constraining management from excessive use of funding as a risk reducing device, then no relation will be observed between managerial ownership and pension funding slack.

H2: Given effective disciplinary internal and external pressures, the degree of managerial ownership and the degree of pension funding are expected to be unrelated.

The Model

This section presents a model that allows for testing the preceding propositions concerning managerial ownership and pension funding slack. The theoretical underpinnings of the model are well established in the existing pension literature. The model is specified as follows:

$$PFSL_i = f(OWN_i, PROF_i, RISK_i, TAX_i, GOVN_i) \quad (1)$$

where $PFSL_i$ is the degree of pension funding slack for firm i, OWN_i denotes the degree of managerial ownership, $PROF_i$ is corporate profitability, $RISK_i$ is corporate risk, TAX_i represents the potential tax benefits derived from pension funding, and $GOVN_i$ denotes the external and internal disciplinary (governance) mechanisms. An explanation of the variables, their measurement and their predicted relation to corporate pension funding are presented next.

Degree of Pension Funding Slack (*PFSL*)

The degree of corporate pension funding slack (*PFSL*) is defined as the value of pension fund assets minus adjusted vested pension liabilities divided by net corporate assets. Vested liabilities are an accrued benefit that employees have earned while with the firm and represent the retirement obligation of the firm if an employee were to leave the firm. Although projected benefit obligations are another measure of potential liabilities, vested benefits have been the conventional choice of past researchers, and have been found to be used by the market in valuing corporate equity (see for example Feldstein and Morck [12], and Ippolito [18]). Vested pension liabilities are adjusted to reflect the heterogeneity of the actuarial assumption rates used by different firms. It is

recognized that actuarial interest rate assumptions are crucial in determining the reported value of pension liabilities. Following Feldstein and Morck's [12] adjustment method, this study uses the interest rate assumptions for individual firms along with a sample-wide average interest rate assumption to perform the following adjustment to reported vested benefits:

$$VBA = VB * (INT_i / INT_{avg}) \quad (2)$$

where *VBA* is the adjusted vested benefits, *VB* represents reported vested benefits, INT_i denotes interest rate assumption used by firm i to find the present value of future vested pension obligations, and INT_{avg} is the average interest rate assumption used by firms in the study sample. This formulation has the effect of increasing pension liabilities for firms which use above average actuarial interest rate assumptions while reducing pension liabilities for firms which use below average actuarial interest rate assumptions.

Managerial Ownership (*OWN*)

The managerial ownership stake in the firm, *OWN*, is measured by the percentage of outstanding shares owned by the top five corporate insiders. Two propositions are offered concerning the relationship between managerial ownership and pension funding policy. The first proposition predicts a positive relationship. If excess pension fund assets provide a source of funds which are less risky relative to potential external borrowing, then the managers with low degree of ownership are expected to attempt to minimize the risk to their human capital by maintaining a greater degree of pension funding slack.

In contrast, the alternative proposition predicts no relationship between managerial ownership and the degree of pension funding if monitoring devices effectively discipline managers who maintain pension financial slack to reduce the risk to their human capital. To determine which of the two preceding propositions is more ac-

curate is the major focus of the analysis reported in this paper.

Firm Profitability (*PROF*)

The extent to which firms fund pension liabilities is related to a firm's ability to do so. Bodie et al. [7, 8] report findings which show that pension funding and profitability are positively related. The ability to fund pension liabilities is measured as firm cash flow scaled by net assets, *PROF*.

Corporate Risk (*BETA* and *CVCF*)

The equity risk is expected to be negatively related to pension funding, *ceteris paribus*. This is because the value of PBGC pension insurance may be conceptualized as a put option which increases in value as pension funding is reduced (Sharpe [35] and Bicksler and Chen [4]). The pension put option allows firms to put the pension assets plus 30 percent of the market value of corporate net worth to the PBGC in satisfaction of pension claims. Pension liabilities are analogous to the exercise price while the pension plan assets and corporate net worth represent the underlying asset of the put option. Therefore, less funding will enhance the value of this insurance pension put. The value of the insurance put option will also increase with higher risk of the underlying value of the equity. Since the risk of pension plan assets is not easily obtainable, the risk measures are restricted to equity beta, *BETA*, and coefficient of variation of corporate cash flows over a ten year period, *CVCF*.

Tax Benefits of Pension Funding (*TXNA* and *TLCF*)

Because pension contributions are tax deductible and the earnings on assets within pension funds are not taxed, it is expected that the extent of corporate pension funding is positively related to the tax benefits associated with such funding (Bicksler and Chen [4], Black [5], Feldstein and Seligman [13] and Tepper [37]). It is pro-

posed by Bodie et al. [7] [8] that such tax benefits are positively associated with the tax-paying status of individual firms. Consequently, the potential tax benefits are measured as the total taxes paid by each firm scaled by net corporate assets, *TXNA*. An alternative indicator of the tax benefits associated with pension funding is the tax loss carryforward, *TLCF*, reported by individual firms. Haw, Ruland, and Hamdallah [16] report that firms which reduce pension funding levels through excess asset reversions have higher tax loss carryforwards. The tax benefits of pension funding are expected to be lower when firms have tax loss carryforwards to offset taxable income. This suggests a negative relationship between pension funding slack and tax loss carryforward.

Governance (*OPTION, BOARD* and *INST*)

To control for managerial self-interested behavior regarding pension funding decisions, three disciplinary proxy variables are used. The binary variable *OPTION*, denoting whether a firm has outstanding stock options in its managerial compensation package, and the variable *BOARD*, defined as the proportion of insiders[2] in the board of directors, serve as measures of internal monitoring of the managers. It is expected that the degree of internal monitoring is directly related to the inclusion of stock options in the compensation package and the proportion of independent outside directors on the board. On the other hand, the extent of institutional ownership (*INST*), measured as the percentage of outstanding shares held by institutions, is used as a proxy for the degree of external monitoring. If these monitoring devices are optimally structured, they will reduce the agency conflict between managers and shareholders regarding the pension funding decision of the firm.

Sample Selection and Data Sources

All firms in the sample meet the following three criteria. The first criterion is that firms with defined benefit plans be listed on the *Compustat* database. The second criterion is the availability of insider ownership

data for the top five firm insiders (officers and directors) from the *Value Line Investment Survey*. The final criterion eliminates firms that did not have pension data, such as pension plan assets, vested benefits and the actuarial assumption rate, on SEC 10-K filings. The robustness and stability of the proposed model over time is examined by analyzing the sample of firms for two nonconsecutive years, 1985 and 1988. Because pension funding occurs over a period of time, the financial variables are normalized over a number of years. The variables *PROF, TXCF,* and *TXNA* are normalized over three-year periods (1983-1985 for the 1985 sample and 1986-1988 for the 1988 sample) while the coefficient of variation of cash flows, *CVCF,* is computed over ten-year periods of 1976-1985 and 1979-1988, respectively. Beta coefficients reported by *Value Line* are used as an alternative measure of risk. After deleting all firms with insufficient data, the final samples for 1985 and 1988 contain 207 and 201 firms respectively. The regressions using the governance variables for the two sample years 1985 and 1988 have sample sizes of 177 and 174, respectively, due to unavailability of data on one or more of the these variables which are retrieved from the SEC 10K filings and CD *Disclosures* database.

The Financial Accounting Standards Board (FASB) statements 35, 87 and 88 introduced new pension accounting standards which were to be phased in between 1986 and 1988 to enhance the quality and quantity of the disclosure of pension related information (Jarnagin [19]). Firms with unfunded pension liabilities are now required to report these liabilities on corporate balance sheets. However, from an economic perspective, the market efficiently recognized such liabilities when they were strictly off-balance sheet items. Such liabilities are found to be impounded in corporate equity prices by numerous researchers (see Oldfield [32], Feldstein and Morck [12], and Feldstein and Seligman [13]).

Table 1 provides summary profiles of the sample firms. For 1985 (1988) sample, the degree of pension funding slack stands at 0.095 (0.158) where 6.8 percent (4.5 percent) of the sample firms have underfunded pension plans. This is in agreement with Mitchell and Mul-

TABLE 1

Summary Statistics for Firms with Defined Benefit Pension Plans for 1985 and 1988

Panel A: 1985

Variable	Mean (N = 207)	Standard Deviation	Maximum	Minimum
PFSL[a]	0.0952	0.1507	1.3812	–0.2359
OWN	0.1677	0.1637	0.6400	0.0000
PROF	0.2413	0.0769	0.5823	0.0573
BETA	1.0937	0.2282	2.0000	0.5000
CVCF	0.3853	0.1641	1.5130	0.1096
TXNA	0.1085	0.0570	0.4411	0.0012
TLCF	0.0081	0.0895	1.2812	0.0000
OPTION	0.0213	0.0283	0.3083	0.0000
BOARD	0.3030	0.1350	0.7060	0.0670
INST	0.4705	0.1489	0.8950	0.0930

Panel B: 1988

Variable	Mean (N = 207)	Standard Deviation	Maximum	Minimum
PFSL[b]	0.1583	0.3608	4.5529	–0.1962
OWN	0.1412	0.1538	0.6300	0.0060
PROF	0.2800	0.2621	2.1878	–0.3386
BETA	1.0980	0.2290	2.0000	0.5000
CVCF	0.3919	0.1772	1.1420	0.1083
TXNA	0.0967	0.0558	0.3220	–0.1290
TLCF	0.0055	0.0351	0.4380	0.0000
OPTION	0.0340	0.0384	0.3020	0.0000
BOARD	0.3110	0.1563	0.9290	0.0670
INST	0.4739	0.1480	0.8494	0.0000

[a]14 firms have underfunded pension liabilities (i.e. negative *PFSL*).

[b]9 firms have underfunded pension liabilities (i.e. negative *PFSL*).

Variable Definitions: OWN is the percentage of outstanding shares owned by top five insiders; *PROF* is the corporate cash flow scaled by net assets; *BETA* is the beta of equity; *CVCF* is the coefficient of variation of cash flow for the preceding 10-year period; *TXNA* is the total taxes paid scaled by net assets; *TLCF* is the amount of tax loss carry forward; *OPTION* is the number of stock options as a percent of outstanding shares; *BOARD* is the proportion of inside directors in the board; and *INST* is the proportion of institutional holding of the outstanding shares.

herin's [28] study which shows that defined benefit plans, on average, were overfunded during the 1980s. The magnitude of senior management ownership in the firm was similar in both sample years, 16.77 percent in 1985 and 14.12 percent in 1988. Mikkelson and Partch [27] report average ownership by officers and directors of 13.9 percent for a sample of 715 NYSE and AMEX firms, which is similar to the sample used in this study.

Empirical Results

Cross-Sectional Analysis

To ascertain the relation between the percentage of managerial ownership and the degree of financial slack stored in the form of excess pension assets, six configurations of the cross-sectional model outlined earlier are estimated. The regression results for the years 1985 and 1988 are presented in Tables 2 and 3 respectively. Each of the six estimated regressions includes the ownership variable plus different combinations of the remaining explanatory variables discussed above.

In all six regression models for the two sample years, the coefficients of the ownership variable (*OWN*) have a negative sign and are statistically significant at the conventional levels. This indicates that firms with more pervasive inside ownership maintain less pension financial slack. The observed relation strongly supports the proposition that managers with low equity ownership in the firm may attempt to maintain a relatively safer source of potential funds in the form of pension funding slack, thereby reducing the risk exposure to their human capital.

The profitability variable (*PROF*) is included in four of the six regressions for each of the two years. For both 1985 and 1988, this variable is significantly positive at the conventional levels. This indicates that firms with stronger cash flows maintain higher degrees of pension funding which is consistent with previous empirical studies reporting a positive relation between corporate profitability and corporate pension funding (Bodie et al [7] [8]).

TABLE 2

Regressions Explaining the Degree of Pension Funding Slack for the Year 1985 (*t*-statistics in parentheses)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CONST	0.064 (1.04)	0.091*** (2.65)	0.035 (0.82)	0.104 (0.68)	0.081 (0.54)	0.116 (0.77)
OWN	–0.130** (–2.03)	–0.141** (–2.21)	–0.129** (–2.02)	–0.143** (–2.00)	0.112* (–1.53)	0.173** (–2.27)
PROF	0.271** (1.97)		0.258** (1.88)		0.239** (1.60)	0.214* (1.44)
BETA	–0.011 (–0.24)				–0.016 (–0.33)	
CVCF		0.060 (0.94)	0.053 (0.83)	0.101 (1.42)		0.088 (1.28)
TXNA		0.046 (0.25)		0.007 (0.04)		
TLCF	–0.088 (–0.74)		–0.096 (–0.81)		–0.086 (–0.71)	–0.098 (–0.82)
OPTION				–0.029 (–1.13)		
BOARD					–0.010 (–0.11)	
INST						–0.002** (–1.91)
Adj R^2	0.043	0.029	0.048	0.035	0.034	0.061
N[•]	207	207	207	177	177	177

Variable Definitions: OWN is the percentage of outstanding shares owned by top five insiders; *PROF* is the corporate cash flow scaled by net assets; *BETA* is the beta of equity; *CVCF* is the coefficient of variation of cash flow for the preceding 10-year period; *TXNA* is the total taxes paid scaled by net assets; *TLCF* is the amount of tax loss carry forward; *OPTION* is a binary variable denoting the presence or absence of managerial stock options in the compensation package; *BOARD* is the proportion of inside directors in the board; and *INST* is the proportion of institutional holding of the outstanding shares.

[•]Models 4, 5 and 6 have fewer observations due to unavailability of data on *OPTION*, *BOARD* and *INST* for some firms. Using all three monitoring variables (*OPTION*, *BOARD* and *INST*) in the same regression preserves our result of a significant negative relation between pensions funding slack (*PFSL*) and *OWN*.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

TABLE 3

Regressions Explaining the Degree of Pension Funding Slack for the Year 1988 (*t*-statistics in parentheses)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CONST	0.170* (1.32)	0.178*** (2.44)	0.097* (1.40)	0.120 (0.67)	0.208 (1.27)	0.140 (0.85)
OWN	–0.326** (–1.96)	–0.394** (–2.38)	–0.340** (–2.04)	–0.23*** (2.57)	–0.166** (–1.93)	–0.232*** (–2.54)
ROF	0.226** (2.35)		0.220** (2.28)		0.317*** (5.88)	0.326*** (5.98)
BETA	–0.026 (–0.24)				–0.108** (–1.96)	
CVCF		0.142 (0.97)	0.125 (0.85)	0.044 (–0.58)		0.027 (–0.38)
TXNA		0.197 (–0.43)		0.468** (1.98)		
TLCF	–0.100 (–0.14)		–0.273 (–0.36)		–0.052 (–0.15)	–0.045 (–0.13)
OPTION				(0.016) (0.47)		
BOARD					–0.066 (–0.79)	
INST						–0.113 (–1.17)
Adj R^2	0.053	0.031	0.056	0.062	0.221	0.209
N[•]	201	201	201	174	174	174

Variable Definitions: OWN is the percentage of outstanding shares owned by top five insiders; *PROF* is the corporate cash flow scaled by net assets; *BETA* is the beta of equity; *CVCF* is the coefficient of variation of cash flow for the preceding 10-year period; *TXNA* is the total taxes paid scaled by net assets; *TLCF* is the amount of tax loss carry forward; *OPTION* is a binary variable denoting the presence or absence of managerial stock options in the compensation package; *BOARD* is the proportion of inside directors in the board and *INST* is the proportion of institutional holding of the outstanding shares.

[•]Models 4, 5 and 6 have fewer observations due to unavailability of data on *OPTION*, *BOARD* and *INST* for some firms. Using all three monitoring variables (*OPTION*, *BOARD* and *INST*) in the same regression preserves our result of a significant negative relation between pensions funding slack (*PFSL*) and *OWN*.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

The coefficients of the risk variable *BETA* are generally insignificant, except in Model 5 for the year 1988. Likewise, the second risk variable *CVCF* is also insignificant in explaining the degree of pension funding slack. Alternate proxies for risk, such as the standard deviation of the return on book equity and the standard deviation of the return on market equity (measured over the preceding ten-year period) yield similar results. The variable *TXNA* (an indicator of potential tax benefit from pension funding) is significantly positive only in Model 4 for the year 1988. The variable *TLCF* is also insignificant in explaining the pension funding slack.

The three monitoring variables—*OPTION, BOARD* and *INST*—are included in Models 4, 5 and 6 for each of the sample years to investigate the effects of internal and external disciplinary mechanisms on the managers' pension funding decision. Due to the observed correlation between these three variables, only one of these variables is included per model. It is found that, except for the significant negative coefficient of *INST* in Model 6 for year 1985, none of these monitoring variables are significant.[3] Since the inclusion of the external and internal monitoring variables is not effective in changing the significant negative relation that exists between the degree of insider ownership and pension funding slack, the analysis fails to find support for the second hypothesis. This finding is not consistent with the findings of Byrd and Hickman [9], but is congruent to the results reported by Hermalin and Weisbach [17] and McAvoy et al. [24] who find no relation between corporate performance and board composition. The result related to the effectiveness of the board composition in mitigating the divergent behavior of the managers is consistent with the fact that the top management plays a significant role in the board selection process.

This study finds that managerial self-interest under low insider ownership outweighs the control mechanisms that the market and the firm place on managers via institutional holdings, board composition and compensation packages. The results are also in support of Lambert and Larcker's [22] argument that managers will avoid taking risks as it may lead to their stock op-

tions, normally "in-the-money," to become "out-of-the money." In general, the findings suggest that internal and external disciplinary mechanisms do not have a significant influence on the pension funding decision of top managers which is driven partly by the degree of their ownership in the firm.

Finally, if managers with high ownership stake underfund pension plans *and* engage in risky allocation of plan assets (e.g. all stock portfolios) as Sharpe [35] suggests, then the results of this analysis understate the relation between managerial ownership and underfunding. Such a strategy of risky asset allocation would be consistent with Sharpe's view of maximizing the value of pension insurance. The inter-relationship between ownership structure, capital structure, pension funding and asset allocation of pension funds is a complex issue which cannot be currently addressed due to unavailability of firm-specific asset allocation data for the sample period.

Components of Financial Slack

Table 4 reports the analysis of the relation between managerial ownership, pension slack and other forms of financial slack by partitioning the sample into quartiles based on the ownership stakes of corporate insiders. First, an alternative measure of pension funding slack is considered. The magnitude of excess pension funding per employee (*PFMP*) is examined for each quartile of insider ownership. The null hypothesis of equality between the mean values of *PFMP* for the quartiles with highest and lowest insider ownership can be rejected at the 5 and 1 percent level of significance with t-statistics of –2.00 and –12.81, respectively, again indicating a significant negative relation between the degree of insider ownership and pension funding slack.

The managerial motive for maintaining pension financial slack may also have implications for maintaining slack in the form of unused debt capacity. In Table 4, the times-interest-earned ratio, *TIE*, is employed as a proxy for unused debt capacity, and it is hypothesized that the higher the degree of insider ownership, the higher the *TIE* ratio. The relation between insider ownership and unused

TABLE 4

Mean Values for Inside Ownership, Pension Funding Slack, Unused Debt Capacity and Liquidity Slack

Sample Year	Variables				
	OWN[a]	*PFSL*[b]	*PFMP*[c]	*TIE*[d]	*LQD*[e]
Panel A: Highest Ownership Quartile (N = 52, 1985) (N = 50, 1988)					
1985	0.414	0.063	27.678	30.782	0.099
1988	0.378	0.105	40.594	63.626	0.128
Panel B: Second Ownership Quartile (N = 51, 1985) (N = 51, 1988)					
1985	0.183	0.079	26.822	10.671	0.084
1988	0.126	0.070	39.321	10.135	0.065
Panel C: Third Ownership Quartile (N = 52, 1985) (N = 50, 1988)					
1985	0.060	0.122	43.113	23.478	0.089
1988	0.046	0.199	116.500	22.745	0.090
Panel D: Fourth Ownership Quartile (N = 52, 1985) (N = 50, 1988)					
1985	0.014	0.116	45.585	13.041	0.101
1988	0.016	0.238	78.938	11.910	0.072

[a]*OWN:* percentage of outstanding shares owned by insiders.

[b]*PFSL:* degree of pension funding slack.

[c]*PFMP:* pension fund assets minus vested pension liabilities divided by number of employees (in hundreds of dollars).

[d]*TIE:* mean operating income divided by the mean interest expense normalized over previous three years.

[e]*LQD:* cash plus marketable securities divided by total assets normalized over previous three years.

debt capacity, as measured by *TIE*, is consistent with the proposition that managers with low ownership may attempt to minimize the risk associated with their human capital by maintaining (storing) greater degrees of financial slack in the form of excess pension assets rather than excess debt capacity. These insiders will be more averse to using additional debt to finance future investment opportunities which would increase the risk to their human capital. However, it must be acknowledged that this hy-

pothesized relation might not necessarily hold as it is conceivable that a low insider ownership associated with high pension slack does not rule out a high unused debt capacity (high *TIE*), as the two stores of financial slack may not necessarily be perfect substitutes. Hence, this argument about the positive relation between insider ownership and unused debt capacity must be interpreted with caution.

For the 1985 (1988) sample, the firms with the highest insider ownership have mean *TIE* ratio of 30.782 (63.626), while the firms with the lowest degree of insider ownership have mean TIE ratio of 13.041 (11.910). The *t*-statistic testing the mean difference for *TIE* variable between the highest and lowest quartiles is 1.71 (2.09), indicating significance at the 5 and 1 percent levels respectively.[4]

The results of the analysis do not reveal any consistent relationship between unused debt capacity and the degree of insider ownership. Specifically, the analysis reveals that for firms with lowest insider ownership (Panel D), pension overfunding is high and unused debt capacity (*TIE*) is low. This is consistent with the prediction. On the other hand, the results in Panel A indicate that for firms with highest insider equity stakes, overfunding is low (consistent with hypothesis H1) and unused debt capacity is high. This latter finding reveals that for firms with high insider ownership, a preference exists for storing financial slack in the form of unused debt capacity rather than pension overfunding.

Although the primary focus of this paper is to investigate the relation between managerial ownership and corporate pension funding, this article offers a potential explanation for this observed preference for storing financial slack in the form of unused debt capacity for high insider ownership firms. This explanation is based on the premise that at low levels of equity ownership, managers have a greater incentive to minimize their risk to human capital while possessing an enhanced proclivity for shareholder wealth-destroying perquisite consumption. With higher degrees of managerial ownership, the potential for such agency problems will be mitigated. Therefore, at low levels of insider ownership, managers maintain financial slack in the form of pension overfunding and excess li-

quidity to avoid debt financing, which may increase the risk exposure to their human capital. It also allows them to circumvent the monitoring and disciplinary pressures of the capital markets that may expose or constrain their perquisite consumption. However, at high degrees of insider ownership, the lower proclivity for managerial perquisite consumption makes the monitoring of the capital markets of much less concern to managers. More important for managers of such firms, any increase in risk to their human capital may be offset by possible enhancement to the value of their equity stake in the firm. This line of reasoning may explain the observed preference for high insider ownership firms to store financial slack in the form of unused debt capacity.

A second alternative to maintaining financial slack in the form of overfunded pension plans is to maintain a store of liquidity in the form of cash and readily marketable securities. Hence, the liquidity ratio, *LQD*, is defined as cash and marketable securities scaled by total assets. It is postulated that for managers for whom the human capital component of wealth dominates equity ownership, there will be an incentive for maintaining excessive financial slack in the form of liquid assets, *LQD*, to minimize the necessity for future borrowing that exposes human capital to greater risk. For the 1985 sample, the firms with the highest degree of ownership (first quartile) have a mean *LQD* ratio of 0.099, while the firms with the lowest degree of insider ownership (quartile four) have a mean liquidity ratio of 0.101. The difference between these two mean values is not statistically significant. However, for the 1988 sample, firms with more prevalent insider ownership have a mean *LQD* ratio of 0.128, while the comparable figure for firms with the lowest insider ownership is 0.072. The difference between these two variables is statistically significant (t-statistic = 2.52). Thus, it appears that for the 1988 sample firms, characterized by extreme degrees of high managerial ownership or low managerial ownership, excess pension funding and cash and marketable securities are substitute methods of storing financial slack. However, reliable conclusions cannot be drawn from this evidence because these two types of financial slack (pension

and liquidity) have different tax advantages. A firm has to use debt (reduce financial slack) to take advantage of the debt tax shield, while with pension funding, a firm can get the tax shield advantage and increase financial slack at the same time.

Overall, the empirical investigation reveals that managerial self-interest provides motivations for maintaining a source of potential funds in the form of pension financial slack. This finding is consistent with the view that when managerial ownership is small *vis-a-vis* the investment in human capital, human capital will be the dominant factor influencing managers pension funding decision. In addition, this relation seems stable and consistent over time as the results for both samples, 1985 and 1988, are very similar.

Summary and Conclusions

In this paper, it is proposed that managerial self-interest may be a motive for preferring to maintain pension financial slack. When managers have no ownership stake in the firm, the source of their wealth, originating from their association with the firm, is their human capital. This may create incentives for such managers to build up relatively safer sources of funds to finance future investment opportunities. The potential to borrow in the future, as reflected by unused debt capacity, may be perceived as a riskier source of funds in comparison to excess pension funding. The findings reported in this paper provide strong evidence that firms characterized by low managerial ownership maintain greater degrees of pension funding slack, while firms characterized by higher insider ownership have lower degrees of pension slack. However, no consistent relationships between the degree of insider ownership and the other two forms of financial slack, namely, unused debt capacity and excess liquidity are found.

Notes

1. It is not clear whether excessive pension funding dominates diversification as a method of reducing human capital risk. In some instances, such as when the firm has a low tax status, excessive pension funding

may be less beneficial. However, diversification efforts may be less beneficial. On the other hand, diversification efforts may depend on the presence of indenture covenants restricting mergers sale of corporate assets. Finally, firms experiencing financial distress are less likely to use either method because of the cash needs of the firm.

2. Board members not affiliated with the firm in any manner are classified as independent outsiders. All other members (officers of the firm, consultants, legal counsel etc.) are considered insiders.

3. Using all three variables in the same regression preserves the significant relation between pension funding slack and insider ownership. The results are also not different when the *OPTION* variable is measured as the number of stock options as a percent of outstanding shares.

4. To identify any relationship between managerial ownership and the leverage of the firm, we calculate the correlation between the degree of managerial ownership and the firm's debt ratio (total debt/total assets) for both samples. We find that the correlations, although negative (–0.07 for 1985; –0.08 for 1988), are statistically insignificant.

References

[1] Agrawal, Anup, and Gershon N. Mandelker. "Managerial Incentives and Corporate Investment and Financing Decisions." *Journal of Finance* 42(September 1987): 823-838.

[2] Alderson, Michael J., and K.C. Chen. "Excess Asset Reversions and Shareholder Wealth." *Journal of Finance* 41(March 1986): 225-241.

[3] Amihud, Yakov, and Baruch Lev. "Risk Reduction as a Managerial Motive for Conglomerate Mergers." *Bell Journal of Economics* 12(1981): 605-617.

[4] Bicksler, James L., and Andrew H. Chen. "The Integration of Insurance and Taxes in Corporate Pension Strategy." *Journal of Finance* 40(July 1985): 943-955.

[5] Black, Fischer., "The Tax Consequences of Long Run Pension Policy." *Financial Analysts Journal* 36(July/August 1980): 21-28.

[6] Black, Fischer and Myron Scholes. "The Pricing of Options and Corporate Liabilities." *Journal of Political Economy* 81(1973): 637-654.

[7] Bodie, Zvi, Jay O. Light, Randall Morck, and Robert A. Taggart, Jr. "Corporate Pension Policy: An Empirical Investigation." *Financial Analysts Journal* 41(September/October 1985): 10-16.

[8] Bodie, Zvi, Jay O. Light, Randall Morck, and Robert A. Taggart, Jr. "Funding and Asset Allocation in Corporate Pension Plans: An Empirical Investigation." In *Issues in Pension Economics*, edited by Bodie, Zvi, Shoven, John B. and David A. Wise. Chicago: University of Chicago Press, 1987.

[9] Byrd, John W., and Kent A. Hickman. "Do Outside Directors Monitor Managers? Evidence From Tender Offer Bids." *Journal of Financial Economics* 32(October 1992): 195-222.

[10] Canan, Michael J. *Qualified Retirement and Other Employee Benefit Plans*. Long Island, New York: West Legal Publishing Handbook Series, 1991.

[11] Datta, Sudip, Mai E. Iskandar-Datta, and Edward J. Zychowicz. "Pension Plan Terminations, Excess Asset Reversions and Securityholder Wealth." *Journal of Banking and Finance* 19 (June 1995):245-259.

[12] Feldstein, Martin, and Randall Morck. "Pension Funding Decision, Interest Rate Assumptions, and Share Prices." In *Financial Aspects of the U.S. Pension System*, edited by Bodie Z. and J.B. Shoven, NBER, 1983.

[13] Feldstein, Martin, and Stephanie Seligman. "Pension Funding, Share Prices, and National Savings." *Journal of Finance* 36(September 1981): 801-824.

[14] Gilson, Stuart C. "Management Turnover And Financial Distress." *Journal of Financial Economics* 25(December 1989): 241-262.

[15] Gilson, Stuart C., and Michael R. Vetsuypens. "CEO Compensation in Financially Distressed Firms: An Empirical Analysis." Working paper, Harvard Business School, 1992.

[16] Haw, In-Mu, William Ruland, and Ahmed Hamdallah. "Investor Evaluation of Overfunded Pension Plan Terminations." *Journal of Financial Research* 11(Spring 1988): 81-88.

[17] Hermalin, Benjamin E., and Michael S. Weisbach. "The Effects of Board Composition and Direct Incentives on Firm Performance." *Financial Management* 20(Winter 1991): 101-112.

[18] Ippolito, Richard. *Pensions, Economics and Public Policy*. Published for the Pension Research Council, Wharton School, University of Pennsylvania, by Dow Jones-Irwin, 1986.

[19] Jarnagin, Bill. *New Pension Accounting Rules, Explanation & Analysis of FASB Statements 35*. Commerce Clearing House, Inc., 1987.

[20] Jensen, Michael, and William Meckling. "Theory of the Firm: Management Behavior, Agency Costs and Capital Structure, *Journal of Financial Economics* 3(October 1976): 305-360.

[21] Jensen, Michael. "Agency Costs of Free Cash flows, Corporate Finance, and Takeovers." *American Economic Review* 76(May 1986): 323-329.

[22] Lambert, Richard A., and David F. Larcker. "Stock Options and Managerial Incentives." Working paper, Northwestern University, 1984.

[23] Martin, Larry J., and Glenn V. Henderson Jr. "On Bond Ratings And Pension Obligations: A Note." *Journal of Financial and Quantitative Analysis* 18(December 1983): 463-470.

[24] McAvoy, Paul W., Scott Cantor, Jim Dana, and Sarah Peck. ALI Proposals for Increased Control of the Corporation by the Board of Directors: An Economic Analysis, Statement of the Business Roundtable on the American Law Institute's Proposed "Principle of Corporate Governance and Structure: Restatement and Recommendations." New York, Business Roundtable, 1983.

[25] McGill, Dan M., and Donald S. Grubbs Jr. *Fundamentals of Private Pensions*, sixth edition. Published for the Pension Research Council, Wharton School, University of Pennsylvania, by Irwin, 1989.

[26] McGinn, Daniel F. *Corporate Retirement Plans: An Actuarial Perspective*. International Foundation of Employee Benefit Plans, Inc., 1988.

[27] Mikkelson, Wayne, and M. Megan Partch. "Manager's Voting Rights and Corporate Control." *Journal of Financial Economics* 25(December 1989): 263-290.

[28] Mitchell, Mark L., and J. Harold Mulherin. "The Stock Price Response to Pension Terminations and the Relation of Terminations with Corporate Takeovers." *Financial Management* (Autumn 1989): 41-56.

[29] Mittelstaedt, H. Fred. "An Empirical Analysis of the Factors Underlying the Decision to Remove Excess Assets From Overfunded Pension Plans." *Journal of Accounting and Economics* 11(June 1989): 399-418.

[30] Moore, Norman H., and Stephen W. Pruitt. "A Comment on Excess Asset Reversions and Shareholder Wealth." *Journal of Finance* 45(December 1990): 1709-1714.

[31] Myers, Stewart C., and Nicholas S. Majluf. "Corporate Financing and Investment Decisions When Firms Have Information that Investors Do Not Have." *Journal of Financial Economics* 13(June 1984): 187-221.

[32] Oldfield, George S. "Financial Aspects of the Private Pension System." *Journal of Money, Credit and Banking* 9(February 1977): 48-54.

[33] Papaioannou, George J., Elizabeth Strock, and Nicholaos G. Travlos. "Ownership Structure and Corporate Liquidity Policy." *Managerial and Decision Economics* 13(1992): 315-322.

[34] Saunders, Anthony, Elizabeth Strock, and Nicholaos G. Travlos. "Ownership Structure, Deregulation, and Bank Risk Taking." *Journal of Finance* 45(June 1990): 643-654.

[35] Sharpe, William F. "Corporate Pension Fund Policy." *Journal of Financial Economics* 3(October 1976): 183-194.

[36] Simone, Joseph R., and Fred R. Green. *The Pension Answer Book*, fifth edition, New York: Panel Publishers Inc., 1990.

[38] Tepper, Irwin. "Taxation and Corporate Pension Policy." *Journal of Finance* 36(March 1981): 1-14.