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Were internal capital markets affected by the ‘perfect’ pension storm?[☆]

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ABSTRACT

We examine capital expenditures in multi-segment firms before and after the “perfect storm” that affected pension plans between 2000 and 2002, when bond yields and stock prices both fell precipitously. Our sample of firms went from having overfunded to underfunded pension plans as a result of the storm. We examine the segment-level relation between investment, Tobin’s q , and cash flow both before and after the event. We find mixed evidence on the change in the relation between investment and q , which may be a result of measurement error in q . We find stronger evidence for the conclusion that after the pension storm, firms with underfunded pension plans directed more investment towards segments that produce higher cash flow.

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1. Introduction

“The Perfect Storm” not only impacts the balance sheet of pension plans, but it may ruin the contribution “holiday” many plans have been enjoying. Recent market losses coupled with declining 30-year U.S. Treasury interest rates could trigger funding contributions and PBGC variable rate premiums.” Hewitt Investment Group commentary, October 2001.

The term “perfect storm” was frequently used during the 2000–02 period to describe the impact of the simultaneous decline in stock prices and bond yields on corporate pension plan sponsors. The shift from surplus to deficit funded status experienced by many firms affected the interests of creditors, stockholders, labor unions, and the Pension Benefit Guaranty Corporation. In hindsight, the event provides an opportunity to study the workings of internal capital markets by observing the effect of incremental financial constraints that were not entirely related to the profitability of future investment.

The existence of internal capital markets appears to be generally accepted, but our understanding of how they function is incomplete. At stake are implications for the valuation of multi-segment firms and the relation between financial leverage and corporate investment policy. Much of the judgment on the efficacy of internal capital allocation rests on the empirical linkage between cash flow and both the quantity and quality of capital expenditures. Some studies suggest that the availability of internal resources does indeed affect both the level of corporate investment and method by which these funds are allocated to different opportunities. Other research indicates that any apparent relation may be the result of measurement error and endogenous influences.

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In other words, documenting an empirical relation between cash flow and capital expenditures is complicated by the fact that current cash flow could reflect the future profitability of investment as well as the funds available to undertake it. Cash flow therefore isn't a reliable measure of financial resources because it might also reflect the quality of investment opportunities. Recent research by [Rauh \(2006\)](#) exploits the independence of mandatory pension contributions and the quality of investment opportunities to demonstrate that the financial constraints created by mandatory pension contributions act to reduce the level of capital expenditures by sponsoring firms. In this paper, we examine multi-segment firms for evidence that increased pension funding obligations affect the allocation of investment between high q and low q segments.

The sample of firms studied here experienced a severe reversal of the funded status of their defined benefit pension plans due to the sharp decline in both equity values and bond yields between 1999 and 2002. For those firms, the simultaneous drop in pension assets and increase in pension liabilities combined to rapidly change previously overfunded plans to severely underfunded ones—by definition, plans with dedicated assets less than the discounted value of projected benefit payments. Extant minimum funding requirements mean that the shift in funded status led to a significant increase in contributions to the pension fund, and with it a new opportunity to examine the impact of large changes in financial constraints on corporate investment activity.

Financial constraints matter because they may decrease or enhance investment efficiency. The analysis of segment-level data has contributed significantly to our understanding of the relation between financial constraints and investment policy. Small sample studies of cash flow shocks have provided one source of evidence. [Lamont \(1997\)](#) examines capital expenditures by diversified oil-related companies and finds evidence that the 1986 oil market crash reduced subsidies to underperforming non-oil segments. [Blanchard et al. \(1994\)](#) find that cash windfalls result in increased investment by the low q segments of diversified firms.

Large sample studies have documented a tendency for diversified firms to direct funds to lower valued uses through the capital allocation process. [Shin and Stulz \(1998\)](#) show that more profitable segments within diversified firms subsidize the investment of other segments, but not always the most valuable ones. [Scharfstein and Stein \(2000\)](#) study the sensitivity of segment investment in multi-segment companies and finds that it is less sensitive to Tobin's q in the cross-section than among single-segment firms. [Rajan et al. \(2000\)](#) find that diversified firms tend to favor low q investment opportunities more than single-segment entities.

Restructuring activities can also affect financial constraints, and there is evidence that tightening control over internal capital market activity reduce the costs of managerial discretion. [Gertner et al. \(2002\)](#) examine investment efficiency around spinoffs and find that among the spunoff divisions, capital expenditures are allocated to higher q segments after the event. [Dittmar and Shivdasani \(2003\)](#) report a similar finding for the remaining segments of a parent firm following the divestiture of a segment. [Ahn and Denis \(2004\)](#) consider both the parent and spunoff subsidiary and also find that, post spinoff, there is a significant increase in measures of investment efficiency. However, [Çolak and Whited \(2007\)](#) re-examine divestitures and spin-offs and demonstrate that the improvements in investment efficiency following those events are correlated with, but not caused by, the restructuring.

This study bears the strongest relation to the work by [Peyer and Shivdasani \(2001\)](#) that examined the effect of leveraged recapitalizations on the investment activity of 22 firms operating in more than one business segment. Using a sample of firms that conducted a leveraged recap between 1982 and 1994, Peyer and Shivdasani find that after the recapitalization capital expenditures were allocated away from high q segments, and toward projects that provided the greatest short term cash flow. Their results suggest that the impact of high leverage on investment policy is not restricted to the classic form of underinvestment in which firms entirely forgo value-creating projects; rather, the costs of high leverage can include a reduction in investment efficiency caused by the need to meet heavy payment obligations. We hereafter refer to these costs as “distortion costs.”

Our paper examines whether sharply higher pension contributions generated those same distortion costs. Mandatory increases in pension contributions that follow a reversal of pension funding status make the event equivalent in many respects to a leveraged recapitalization. Here we exploit that similarity to provide additional evidence on the relation between high leverage and the tendency to favor high cash flow over high value investment opportunities.

Leveraged recapitalizations involve large and discrete increases in financial constraints which make them ideal subjects in a study of internal capital market functions. At the same time, they possess characteristics that suggest the need for an examination of a broader, more random sample. First is the need to control for the endogeneity problem, meaning the possibility that the distortion costs generated in the aftermath of a leveraged recapitalization are symptomatic of the same poor management quality that may have necessitated the leverage increase in the first place. [Peyer and Shivdasani \(2001\)](#) find that the firms in their sample engaged in systematic overinvestment prior to the leveraged recap. The self-interested behavior that led to chronic overinvestment may have also generated the distortion costs that they document if “bad” managers sought to avoid the personal costs of financial distress by favoring high cash flow over high value projects. The sample examined by Peyer and Shivdasani is also small (22 firms), creating a natural interest in the study of a larger sample.

We examine firms that experienced a tightening of financial constraints because of a sharp reversal of the funded status of their pension plans. The sample of 125 multi-segment companies that we examine is larger in number and drawn from a broader array of industries than in prior studies, and is not dominated by firms that chose to restructure their assets or their debt. The benefits associated with these characteristics are partially offset by the potential effects of calendar time clustering and the reduced power of tests involving a more gradual imposition of financial constraints stemming from the smoothing characteristics of pension mathematics. We also consider the implications of measurement error in the q ratio for our results.

We find that prior to the reversal of funded status, the companies in our sample directed more funds to segments with higher q ratios. Following the sharp decline in funded status, the relation was reversed, with more funds being directed to lower q segments. However, virtually identical results are obtained from a control sample of defined benefit sponsors that stayed in surplus over the same time period. Since the control sample of surplus firms is presumably not subjected to the same incremental financial

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