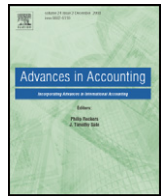




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Earnings management and the allocation of net periodic pension costs to interim periods[☆]

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ABSTRACT

We examine the pattern of reported quarterly net periodic pension costs. Quarterly pension costs are one of the largest single expense items for firms with pension plans (around 15% of income before extraordinary items in our sample). Under ASC 270, net pension costs should be recognized as incurred, or as the benefit provided by the expense is realized. We find that over the period of 2004–2010, there is significant variation in the amount of quarterly pension cost firms report. In addition, we find that income-increasing changes in pension costs are significantly associated with meeting or beating analysts' forecasts in a given quarter. We also show that income-decreasing changes to net periodic pension costs that would cause a firm to miss its earnings forecast are extremely rare. Finally, we find evidence that income-increasing and income-decreasing changes in quarterly pension costs are "settled up" in the fourth quarter (e.g., they are reversed).

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1. Introduction

In this paper, we investigate whether managers use quarterly net periodic pension cost (NPPC) recognition to manage quarterly earnings in order to meet or beat earnings targets. We investigate quarterly NPPC since NPPC represents a material component of earnings for most defined benefit (DB) firms whose application to interim periods is determined by management. In practice, ASC 270, *Interim Reporting*, requires management to estimate net pension costs for quarters one to three based on expectations for the full year ([Financial Accounting Standards Board, 2011b](#)). Since the actual application of these costs is subject to managerial discretion, the recognition of quarterly pension costs provides an opportunity for earnings management, which in turn would suggest uncertain compliance with ASC 270. In addition, pension accounting is complicated; the principles governing cost determination are complex, and the required disclosures are confusing enough that even sophisticated market participants have difficulty understanding them ([Coronado & Sharpe, 2003](#); [Picconi, 2006](#)). This is especially true for interim periods, where the disclosures are less complete. Since small changes in pension parameters often have a material impact on pension cost and earnings, and the motivation underlying such changes is difficult to evaluate, managers may find interim NPPC recognition an effective tool in achieving quarterly earnings targets when operational results alone are insufficient.

On the other hand, it is not clear, a priori, that management has the ability or inclination to manage quarterly earnings through NPPC recognition. While there is some evidence consistent with managing earnings through the annual NPPC number, there has been very little investigation into earnings management of the quarterly numbers through pension cost. It may be that the observed variation in reported quarterly NPPC follows some other economic or conceptual rationale derived from the application of ASC 270 to the firm's particular business. There are several possibilities in this respect. First, since pensions are a form of deferred compensation, management may choose to recognize pension cost on a pro rata basis with salaries and wages as they are incurred by its work force. Second, since pension costs are, at least in part, inventoriable, quarterly recognition of pension cost may potentially be associated with quarterly changes in sales. As revenue increases and production rises to meet demand, it follows that costs – including pension cost – increase in some proportion to the increase in revenue, leading to recognition patterns associated with sales. Finally, it may be that the more timely reporting associated with interim periods naturally leads to less precise quarterly pension cost accruals or deferrals than those reported at fiscal year-end ([Mendenhall & Nichols, 1988](#)).

Using a longitudinal set of quarterly pension data from 2004 to 2010, we examine changes in quarterly NPPC. We find some evidence consistent with recognition based on compensation cost in a minority of firms, but no evidence that NPPC changes are associated with changes in sales. Our principal finding is that changes in quarterly pension costs do not appear to be random, and are consistent with earnings management incentives. Specifically, we document that firms are significantly more likely to exhibit income-increasing changes in pension costs when they would otherwise miss their forecasted quarterly earnings. We also find that this pattern is stronger for firms that meet or beat earnings

[☆] Data availability: Data are commercially available from sources identified in the paper.

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forecasts by a small amount. Similarly, firms that would meet their analyst forecasts regardless of changes in pension cost are significantly more likely to exhibit income-decreasing changes in pension costs than other firms. This result is consistent with managers smoothing earnings through recognizing pension costs when they would make their forecasts anyway, allowing them latitude to reverse these overstatements in order to increase income in later quarters. Finally, in untabulated results, we find that these firms rarely miss their earnings targets (i.e., analysts' earnings forecasts) as a result of income-decreasing changes in pension costs.

This study contributes both to research on interim period reporting and to research into the effects of pension accounting. Although earnings management (EM) has been studied extensively, the topic is still of interest to standard setters, regulators and auditors. In addition, much of the previous research in EM focuses on reporting incentives surrounding annual periods. Although work has begun to add to our understanding of EM in interim periods (e.g., [Brown & Pinello, 2007](#); [Das, Shroff, & Zhang, 2009](#)), little research has been done on specific line items that are useful for managing interim earnings. Because our paper provides evidence of quarterly earnings management through the timing of net periodic pension cost recognition, we provide insight not only into the occurrence of earnings management, but also into how managers achieve quarterly earnings objectives.

In addition, prior research has provided evidence that pension costs are subject to managerial opportunism. For example, both [Comprich and Muller \(2006\)](#) and [Bergstresser, Desai, and Rauh \(2006\)](#) provide evidence that expected rates of return are higher when managers have incentives to report higher annual earnings. In contrast to studies that test earnings management through the choice of pension accounting estimates, this study investigates how annual pension costs are allocated over the four quarters of the year.

The remainder of the study is organized as follows: [Section 2](#) develops the conceptual background for the study. [Section 3](#) contains the hypotheses and research design. [Section 4](#) provides a description of our sample selection techniques and the variables used in our empirical analyses along with our analyses and the empirical findings. [Section 5](#) concludes.

2. Conceptual development

2.1. Management incentives to meet quarterly targets

While managers' compensation arrangements tend to reflect annual numbers,³ and most studies examining executive compensation and earnings management focus on annual earnings⁴ rather than quarterly earnings, and there are several reasons to believe that managers would focus at least as strongly on quarterly earnings targets regardless of their particular compensation arrangements. [Mendenhall and Nichols \(1988\)](#) document a significantly larger market reaction to bad news relating to interim period earnings than to fourth-quarter earnings. In an attempt to mitigate such bad news, managers may seek generally to avoid bad publicity for the firm ([Matsumoto, 2002](#)), or more specifically, to avoid the unambiguously large penalty associated with missing analysts' forecast estimates ([Brown and Caylor, 2005](#)), the potentially asymmetric price responses due to expectational errors about future earnings ([Skinner & Sloan, 2002](#)), or adverse effects on their own human capital ([Brown & Pinello, 2007](#)). In fact, [Mergenthaler, Rajgopal, and Srinivasan \(2009\)](#) find that missing quarterly earnings forecasts results in greater career penalties for managers. The incentive is not entirely negative, however; [Bartov, Givoly, and Hayn \(2002\)](#) note

that firms meeting or beating analyst's quarterly earnings expectations enjoy a return premium, even when the expectation was achieved through earnings management. Further, [Baik and Jiang \(2006\)](#) find a pervasive downward bias in management forecasts, confirming earlier findings by [Matsumoto \(2002\)](#) and [Brown and Caylor \(2005\)](#) consistent with managers attempting to manage quarterly expectations downward. [Das et al. \(2009\)](#) find evidence suggestive of earnings management among firms that reverse the trend of their reported interim earnings during the fourth quarter, and [Myers, Myers, and Skinner \(2007\)](#) find evidence of earnings management in firms reporting strings of consecutive quarterly earnings increases. Taken together, there is consistent and compelling evidence that managers have strong incentives to meet quarterly earnings targets, not merely annual earnings targets. [Brown and Pinello \(2007\)](#) provide evidence that, because of less rigorous expense recognition rules and auditor involvement during interim periods, there is a greater tendency for upward earnings management during interim periods and greater downward expectations management during the annual reporting period. This finding suggests that earnings management activity during interim periods is not considered in isolation but becomes part of a larger reporting strategy where quarterly numbers are eventually "settled up" into the annual number.

2.2. Opportunistic use of pension assumptions

Recent research into the use of pension estimates as an earnings management tool is mixed. Several studies have reported evidence consistent with the notion that managers take advantage of the significant actuarial assumptions required in accounting for pensions in order to help meet annual earnings objectives (see, for example, [Asthana, 2008](#); [Bergstresser et al., 2006](#); [Comprich & Muller, 2006](#)). These studies examine the impact of changes in the expected rate of return assumption (ERR) and show that managers tend to set these assumptions in a way that allows them to augment earnings or cash compensation. In contrast, [Adams, Frank, and Perry \(2011\)](#) examine the potential for inflating earnings through expected rate of return assumptions and find no evidence of pervasive income inflation through ERR estimates. [Jiang \(2011\)](#), however, examines the long-term smoothing characteristics of accounting for unrecognized gains and losses on pensions and finds that, over the long term, the smoothing mechanism leads to significant understatement of recognized pension expense. Jiang concludes that the evidence suggests that the bias originates from managers' choices – and changes to – pension rate estimates.⁵

Indeed, since pension cost is the sum of multiple components,⁶ each of which is subject to actuarial estimation, managers can affect a material impact on annual earnings by making small changes to the estimates ([Winklevoss, 1993](#)). What is more, the effects of such changes are difficult to undo and not widely understood. [Picconi \(2006\)](#) provides evidence that analysts have difficulty impounding actuarial estimate changes into their earnings forecasts, and [Coronado and Sharpe \(2003\)](#) find that pension accounting leads to price distortions. These characteristics suggest that pension accounting contributes to

⁵ To determine pension expense under the accounting for DB pension plans, managers must estimate three different rates: the *discount rate*, which is used to determine the service cost and interest cost components of NPPC; the *ERR*, which is used to determine the expected return component; and the *expected rate of future compensation*, which affects the liability measure, in turn impacting the service and interest cost components.

⁶ In practice, NPPC represents the sum of five separate cost components: *service cost*, which represents the benefits earned by employees during the year; *interest cost*, which reflects the increase in the projected benefit obligation due to the passage of time; *amortization of deferred gains and losses*, which arise due both to changes in the assets or liability, and to the difference between the pension assumptions and actual experience; *prior service cost*, which represents amendments to the pension plan granting employees increased (or decreased) benefits for past service; and the *expected return on plan assets*, which under U.S. GAAP is calculated as the expected rate of return times the market-related value of the plan assets.

³ For example, Ford Motor Company bases its incentive compensation on annual numbers, requiring managers to achieve specified levels related to annual pre-tax profits, automotive operating cash flows, business unit cost performance, market share and quality metrics ([Ford Motor Company, 2012](#)).

⁴ See, for example, [Healy \(1985\)](#), [Yang \(1991\)](#), [Holthausen, Larcker, and Sloan \(1995\)](#), [Bergstresser et al. \(2006\)](#), and [Eckles, Halek, He, Sommer, and Zhang \(2011\)](#).

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