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Persistence in the long-run expected rate of return for corporate pension plans

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A R T I C L E I N F O

A B S T R A C T

Firms that sponsor a defined benefit pension plan are suspected of managing earnings through the choice of the expected long-run rate of return to pension assets. However, data on this rate show it to be quite persistent with more than 50% of firms leaving their ERR unchanged from one year to the next. To capture this persistence, I model the rate using a first-order autoregression. Asset allocation information is included in the model. Endogeneity bias is addressed by estimating the dynamic panel data model using a system GMM estimator. No evidence of earnings management, measured by the relative size of the pension plan to net income and by acquisition activity, was found.

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1. Introduction

It has long been suspected that firms manipulate their earnings to achieve certain objectives. Dechow and Skinner (2000) highlight the challenge of statistically identifying this behavior because it is difficult to distinguish earnings management from legitimate managerial discretion. A number of different accounting practices provide opportunities to manage earnings, especially those that arise from accrual accounting principles, including the specifics of sponsoring a defined benefit pension plan. According to pension accounting rules, firms choose a long-run expected rate of return (ERR) to plan assets when accounting for the earnings of the plan. This return may be greater than or less than actual returns, although the two returns should converge given a sufficient time horizon. Pension accounting rules were designed around the concept that firms should recognize the future cost of the pension benefits earned by current employees well before the payment of the benefits. These costs will be offset by the future value of the plan assets so that accounting for the costs and revenues in the current period involves a best estimate of these future values. In order to construct these estimates, the firm makes assumptions about several factors such as likely salary increases and the expected returns on pension assets. For the current period, the firm uses these assumptions in its calculation of the net periodic pension

expense. Use of the assumptions allows for a systematic and gradual recognition of these costs.[1] Using expected returns instead of actual returns also serves to smooth the impact of plan earnings on the net income of the firm. This smoothing is desirable since actual returns can show extreme volatility during periods of market gyrations, which can impart large changes to net income that have little to do with the operations of the firm. The pension accounting rules concerning the net periodic pension expense and ERR also provide for comparability across firms. The rules stipulate that the choice of ERR be based on the pension fund's asset allocations and the expected returns for these asset classes. The rules also allow firms to take into account the fund's actual returns when setting this rate. But, ultimately, managers have discretion when setting this rate: the higher the ERR, the bigger the impact on the firm's net income.

Managers who engage in earnings manipulations are thought to do so in order to achieve certain earnings thresholds. Because earnings are reported quarterly, yet ERR is set annually, we might surmise that ERR lacks sufficient flexibility to provide managers a tool for achieving their quarterly earnings targets. However, Bergstresser, Desai, and Rauh (2006) and Asthana (2008) report evidence of earnings management using a large sample of firms over the years 1991–2003. A firm whose pension fund is large relative to its net income is thought to have more motivation to choose ERR opportunistically, and these authors find a positive correlation between ERR and the relative size of the pension fund. Bergstresser

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[1] FASB (1985, p. 5).

et al. also find that firms increase their ERR in years in which they engage in acquisitions, and thus conclude earnings management is driven by the desire to acquire. However, Adams, Frank, and Perry (2011) find that a majority of firms have ERR values that are justified by actual long-run returns on plan assets.

In this paper, I step back from the search for earnings management and instead explore alternative drivers of ERR. According to Ball (2013) on the topic of earnings management in general, there is usually an alternative explanation of reported results, and many findings of earnings management are often the result of an omitted variable. With regard to the setting of ERR, I begin with two observations. First, the data on ERR show it to be fairly persistent over time, with many firms leaving their ERR value unchanged from one year to the next. To capture this persistence, I model ERR using a first-order autoregressive model. Secondly, FASB rules direct firms to choose their ERR value based on their asset allocations and the expected returns for these asset classes. Therefore, it is important to include asset allocation information in a model of ERR; however, doing so is problematic because it creates an endogeneity bias in the case of a firm who actually *does* manage earnings. Such a firm will choose ERR to help achieve its earnings target and subsequently alter its asset allocations to justify their choice. In addition to the possibility of bias, data on asset allocations for a large sample of firms have been difficult to obtain prior to 2003, at which time accounting regulations were put in place that required firms to report this information. Using data for the years 2003–2011, I include asset allocation information in the model for ERR and estimate it using a dynamic panel data estimator, which is ideally suited to a model with a lagged dependent variable and endogenous explanatory variables. Having specified a model of ERR that includes persistence as well as asset allocation, I also include two variables that are designed to capture motivations to engage in earnings management. These are the size of the pension fund relative to net income and acquisition activity. I find strong persistence in ERR through the inclusion of lagged ERR, which persists even when the firm fixed effects are included. I also find that asset allocation has a significant effect on the choice of ERR but that historical actual returns have only a weak effect that is sensitive to model specification. Importantly, I find that relative pension size and acquisition activity are statistically insignificant, thus providing no indication of earnings management through the setting of ERR.

The remainder of the paper is organized as follows. In Section 2, I present information on accounting rules that govern defined benefit pension plans. I also present data on the expected rate of return that show it to be a sluggish variable that some firms leave unchanged from one year to the next. In Section 3 I present the model used for estimation. Results follow in Section 4, and Section 5 concludes.

2. Rules and data on ERR

FASB 87 lays out the rules for defined benefit pension plan accounting, including the choice of the long-run expected rate of return on pension plan assets. As discussed in the introduction, this rate of return should be chosen with regard to the allocation of the plan assets and the expected returns on those assets. Although ERR is suppose to be a forward-looking return, firms can also take into account recent actual returns on the fund when choosing ERR. Management is suppose to make the ERR choice at the beginning of the fiscal year. The rate is then used for the quarterly reports as well as the annual report.[2] When actual returns differ from expected

returns, either positively in the case of a gain or negatively in the case of a loss, these gains and losses impact the firm's income statement only slowly, through amortizing the gains/losses over several years. Managers who choose too high of an ERR will have to rectify the choice when actual earnings fall short of expected earnings for an extended period of time, leaving the fund underfunded. However, any gains/losses from a gap between ERR and actual returns are mixed with other unexpected gains/losses on the liability side. Gains/losses can occur on the liability side when there are changes to assumptions on such factors as salary growth and life expectancy. The mixing of gains and losses on the asset and liability sides of the pension fund has the effect of smoothing some of the mismatch between ERR and actual returns. It should also be noted that managers are suppose to make the ERR decision at the beginning of the fiscal year, without complete knowledge of the gains and losses that the plan may incur as the fiscal year progresses.

Since 1987, FASB has issued additional rules concerning the choice of ERR. In 2003 FASB issued Statement Number 132R, which required firms to provide a narrative description of the information used to set ERR as well as basic asset allocation information. In 2008, FASB revised the statement with 132R-1, which required firms to use more detailed asset categories when reporting asset allocations. I analyze a dataset of firms from Compustat over the years 2003–2011. Because the model presented in the next section requires data on asset allocation, the sample begins in 2003 when asset allocation information appeared in annual reports. All firms with defined benefit pension plans that report positive pension assets and report their expected rate of return were included in the sample. The data are annual since accounting regulations require only annual reporting on ERR, pension assets and actual returns. Specifics on the construction of the data set are provided in the Data Appendix.

The first three columns in Table 1 show the cross-sectional means and standard deviations of ERR for each year of data. There is a fairly steady downward trend in average ERR, which is in-line with historical decreases in interest rates over the period. The statistics also show a fair amount of cross-sectional dispersion in ERR across firms. The average standard deviation of ERR across firms within a year has been rising over time, reaching 97 basis points in 2011. Table 1 also contains the frequency of changes to ERR by direction of change (decrease, no change and increase) for each year. Changes to ERR vary substantially over time. Between 2002 and 2003, there were 606 firms who lowered their ERR value, while 46 firms raised it and the remaining 822 firms left the rate unchanged. We see that, by far, the most frequently observed decision is to leave ERR unchanged from one year to the next. These changes to ERR can be compared to return performance of broadly defined assets. The last 2 columns present the return on the S&P and the return on 10-year Treasury bonds by year. The number of firms reducing ERR from 2002 to 2003 was unusually large. Even as the equity market began to recover in 2003, firms continued to adjust their rate downwards in response to lower interest rates over the sample period.

Table 2 presents a summary of the frequency with which firms change their ERR. The first column contains the number of years for which data are available for a particular firm. In the top row is the number of changes a firm made to its ERR. Among the 726 firms for which all 10 years of data are available, 56 firms made no changes to their ERR over the 10 years, and 431 firms (59%) of the firms made only 1–3 changes over the 10 years. These descriptive statistics illustrate the persistence in ERR. The idea that firms are tweaking their ERR, which is set annually at the start of the fiscal year, in an effort to achieve certain quarterly earnings targets throughout the year is difficult to rectify with the descriptive statistics presented here.

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[2] Although the rate is used in measuring quarterly pension expense, often firms report the value only in the annual report.