The Impact of Footnote Transparency on Managerial Discretion: Evidence from FAS132R Pension Disclosure

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Abstract

This paper finds that footnote transparency is effective at disciplining managerial discretion and that the market will use information provided in footnotes to assess firm value. After the introduction of FAS132R, firms used less discretion in setting pension assumptions, and the distribution of discretion across firms was reduced. The primary driver of changes in pension expense resulting from the increased transparency is the discount rate assumption. Firms were able to offset increases in pension expense by lowering the assumed compensation rate, which was unaffected by FAS132R. I also find that the market responded to the new disclosures. Stock returns are more highly associated with pension expense in the post-FAS132R period, which is consistent with an improvement in the overall quality of pension expense. Moreover, firms experienced a negative abnormal return if they revealed a high use of discretion in their first FAS132R disclosure, which is consistent with the market being able to discriminate the quality of pension expense across firms. The size and funded status of the pension plan impacted how firms responded to the increased disclosure requirements.

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Introduction

This paper investigates how firms and markets respond to increased footnote transparency by examining the reaction to FASB Statement No. 132R ("FAS132R"), Employer's Disclosures about Pensions and Other Postretirement Benefits, which was issued in December 2003. FAS132R provides an ideal setting in which to study the effects of increased transparency since there were no changes in the process managers were required to use or the requirements managers faced in setting pension plan assumptions. Rather, FAS132R only introduced additional information that allows users of financial statements to make general assessments about the reasonableness of the Discount Rate ("DR") and Expected Return on Assets ("ERA") assumptions.

This study is timely not only because of the overhaul of pension accounting currently underway at the FASB, but also because of the regulatory focus on transparency in the wake of the financial crisis. Several commentators have argued that one key ingredient that led to the financial crisis was a lack of transparency into the risks banks were taking (e.g. Markowitz, 2009). However, even if relevant information was disclosed in footnotes, existing research fails to provide evidence that managers behave differently when faced with increased disclosure, or that the market reacts to variations in information disclosed in the footnotes. This is particularly true for the pension footnote, where prior research has generally found that the market does not correctly price disclosed information (e.g. Coronado et al., 2008) and that managers routinely manipulate assumptions (e.g. Bergstresser, Desai and Rauh, 2006).

I collect data on publicly-traded firms with U.S. based pension plans with plan assets exceeding $1 million for the fiscal year before and after the implementation of FAS132R. Firms with U.S. based pension plans were identified by comparing the plan assets reported in the annual report with those reported in the Schedule B attachment to the ERISA Form 5500 filing. Firms where either Compustat or CRSP information was not available for both the pre and post FAS132R periods were discarded. My final sample consists of 296 firms.

This paper makes three contributions. First, I show that footnote transparency impacts earnings management. Firms use less discretion in both the DR and ERA assumptions, with the distribution of discretion across firms more tightly clustered for both assumptions in the post-FAS132R period. However, the impact of the increased transparency is not uniform across firms. For example, firms with larger pension plans continue to use more discretion in the post-FAS132R period. More importantly, firms mitigated the increased pension costs associated with reduced discretion in the DR assumption by lowering the Compensation Rate ("CR") assumption, which was unaffected by the disclosure change.[1] Overall, I show that firms responded to increased transparency by making changes that resulted in a closer adherence to the requirements of the existing accounting standard, consistent with the FASB goal of reducing managerial discretion in pension accounting.

Second, I find that the market reacts to the increased disclosure and uses the new information provided in the pension footnote to assess firm value. This is in contrast to existing studies, where no relationship between market returns and information disclosed in the pension footnote has been found, and where the absence of this relationship is presented as evidence of a poor regulatory regime (Coronado et al., 2008) or market inefficiency (Picconi, 2006). I extend these studies by allowing for the market association to vary by the discretion a firm uses in setting its pension assumptions, rather than the level of those assumptions. Stock returns are more highly associated with pension expense in the post-FAS132R period, providing evidence that the market can better price the accuracy and quality of pension expense in the improved regulatory regime. More importantly, firms experience a negative abnormal return if they revealed a high use of discretion in their first FAS132R disclosure, which is consistent with the market being able to discriminate the quality of pension expense across firms. There isn't a negative abnormal return for firms with high levels of the pension assumptions—only firms with high levels of discretion in their pension assumptions experienced a negative market reaction. These results are consistent with the

[1] The Projected Benefit Obligation, the principal measure of pension liability, is determined using projected pay for pension plans with benefit formulas based on a multiple of salary. Projected pay is determined by applying the compensation rate assumption to current pay.

FASB goal of providing a regime that allows users of financial statements to better assess the quality of reported pension expense.

Lastly, I create a model that accurately estimates the duration of a firm's pension obligations. The duration of the pension plan is the critical input necessary to determine the appropriate DR for disclosure purposes. Existing research has generally ignored the DR and instead focused on the ERA assumption. For example, Bergstresser, Desai and Rauh (2006) examine earnings management in the context of pension expense by focusing exclusively on the ERA assumption. My methodological advance extends this literature by permitting me to also evaluate the DR assumption. Moreover, I am able to determine that the ERA assumption is secondary to the DR and CR for earnings management purposes. The ERA is by far the easiest pension assumption to evaluate, and in my sample, it is also the least powerful lever with which to manage earnings. A 25 basis point adjustment in either the DR or CR assumptions has a more significant impact on reported expense than a 25 basis point adjustment in the ERA assumption.

Literature review and Hypothesis Development

Hunton et al. (2006) use an experimental setting to find that greater transparency reduces the likelihood that managers will engage in earnings management in the area of increased transparency. However, by design, this experimental setting likely fails to reflect the richness of a detailed footnote disclosure. Therefore, even though transparency may be an important tool at limiting managerial discretion when the source of transparency is closely tied to what is actually communicated to the market, it is unclear that footnote transparency behaves in a similar fashion. In fact, existing research on pension accounting has generally found that information disclosed in the pension footnote is not correctly processed by users of financial statements. For example, Picconi (2006) finds that analysts' future forecast errors are in part attributable to incorrect expectations of pension expense. Coronado et al. (2008) find that the market does not correctly value the pertinent information on pension finances contained in footnotes and conclude that footnotes are an ineffective means of providing information about pension obligations. Consistent with

these findings, Bergstresser, Desai and Rauh (2006) find that the ERA assumption is opportunistically set by managers. Collectively, this research suggests that any changes introduced by FAS132R to enhance the pension footnote transparency would do little to discipline managers.

In other contexts, however, information disclosed in the MD&A has been found useful. For example, Sun (2010) finds that the existence and the favorability of MD&A inventory disclosures help users interpret disproportionate inventory increases and predict future firm performance. In addition, prior research has also found that auditors permit more misstatements in disclosed, as opposed to recognized, amounts (see Libby et al., 2006). This finding is consistent with auditors allowing fewer misstatements in items that are newly disclosed. These contradictory lines of research suggest that the impact of increased transparency in footnotes is uncertain.

I predict that the disclosed pension assumptions will be influenced by the increased transparency in the pension footnote. Specifically, managers will use less discretion in setting pension assumptions after the implementation of FAS132R.

> *H1: Firms will respond to increased transparency by reducing the amount of discretion used in setting the DR and ERA assumptions in the post-FAS132R period*

The use of less discretion will manifest itself in two ways. First, on average, firms will use more conservative assumptions. Second, since firms will no longer have the discretion to use assumptions outside a reasonable range, the dispersion of the discretion in the pension assumptions across firms will also be reduced. FAS132R did not impact the disclosures associated with the CR. Therefore, managers still retain some level of discretion with respect to this assumption. Moreover, the discretion in the CR assumption may provide a useful offset to the increased expense that is created by the reduction in discretion in the ERA and DR assumptions.

It is worth noting that my hypothesis focuses on both the ERA and DR assumptions. Existing research has generally focused on the ERA assumption when evaluating managerial discretion in the setting of pension assumptions. Bergstresser, Desai and Rauh (2006) focus exclusively on the ERA assumption by stating that "the setting of discount rate assumptions is the domain of plan actuaries,

whereas firm managers set the assumed return on plan assets." This is incorrect. The actuary is involved as an advisor in the setting of all the pension plan assumptions, and the ownership and qualification of all pension assumptions is exclusively the domain of management and the company's auditors. More importantly, the use of discretion in the ERA assumption may not be the most efficient way to manage reported results. Appendix 2 provides a pension expense calculation that shows the impact of changes in each pension assumption on reported expense for a hypothetical company that reflects the median attributes of the firms in my sample. This calculation shows that a 25 basis point adjustment in the DR is comparable to a 50 basis point adjustment in the CR and a 75 basis point adjustment in the ERA. This example confirms the importance of considering each pension assumption in my tests of the firm response to FAS132R, and also the interaction of each pension assumption.

An improved regulatory regime should not only mitigate the discretion used by firms, but also provide information that allows users of financial statements to better assess firm value. Existing research has generally failed to find an association between the pension footnote information and stock returns. However, this research has generally used tests that focus on the levels of each pension assumption. This has the effect of combining variation in pension assumptions that exists due to differences in the attributes of the pension plan with differences that arise due to managerial discretion. Therefore, it could be the case that existing research has not documented a relationship between items disclosed in the pension footnote and stock returns because of low power in the tests that are used, rather than the absence of such a relationship. I predict that the market will use the additional information provided in the pension footnote to assess the firm's use of discretion, and hence the quality of its reported pension expense.

To the extent that FAS132R was successful at better informing investors, uncertainty as to how pension information should be related to stock prices should be reduced. The focus of FAS132R is to provide more information about current pension expense, but no additional information about what pension expense will be in future periods. To the extent that the market processes this information, then current stock returns should be more highly associated with current pension expense.

H2: The association between pension expense and stock returns is stronger in the post-FAS132R period as compared to the pre-FAS132R period.

This hypothesis focuses on the general quality of reported pension expense. I also expect that investors will be able to discriminate the use of discretion across firms. The disclosures required by FAS132R also provide information on the level of discretion used in the pension expense calculation for the fiscal year prior to the implementation of FAS132R. If the market processes this information, then firms who disclosed a high level of discretion in the pension assumptions used to determine pension expense for the fiscal year prior to FAS132R will experience negative market returns relative to firms who disclosed low levels of discretion.

H3: Firms that report high levels of discretion in the first 10-K containing the FAS132R disclosure requirements for their pension assumptions for the prior fiscal year will experience negative abnormal returns on the date that 10-K is released.

Firms face a number of incentives that can influence how they respond to FAS132R. For example, firms that are underfunded on an Accumulated Benefit Obligation basis may have to report an Additional Minimum Liability and record a charge to Other Comprehensive Income. This discontinuity in pension reporting can cause firms who are at the threshold of meeting this requirement to use more aggressive assumptions since there are disproportionate gains to doing so. Moreover, the size of the pension plan can also lead to increased incentives to use discretion. For example, Comprix and Muller (2010) find that the size of the pension plan relative to reported earnings leads to more aggressive pension accounting choices. This suggests that firms with larger or underfunded pension plans will be more aggressive in the pre-FAS132R period. To the extent that FAS132R is effective at eliminating discretion, these firms should experience greater declines in the use of discretion in the post-FAS132R period relative to firms with smaller or better funded pension plans.

H4: Firms with larger pension plans or who face additional reporting requirements due to the funded position of their pension plan will use more discretion in the pre-FAS132R period and experience greater declines in their use of discretion in the post-FAS132R period.

Sample Selection

The data used in this analysis is primarily taken from Compustat and CRSP. Pension data was downloaded for all companies with plan assets exceeding $1 million for the fiscal years before and after the implementation of FAS132R. Since this study focuses on companies that are setting assumptions using U.S. based methodology, I eliminated companies with substantial foreign pension obligations. This was accomplished by comparing the plan assets in the sample obtained from Compustat with the plan assets reported in the Schedule B attachment to the ERISA Form 5500. Companies with plan assets reported on the Schedule B that were not within 15 percent of the plan assets obtained from Compustat for both years were dropped. This ensures that a significant majority of each company's pension obligations are based in the U.S., and hence that an analysis using U.S. based methodology is appropriate[2].

Missing items were obtained directly from the annual reports. In addition, companies with assumptions that were outside a reasonable range were checked against the annual reports, and updated where necessary.[3] Companies that did not have complete pension information, including the allocation of the plan assets between the various categories required under FAS 132, for the fiscal year before and after the adoption of FAS132R were dropped. All firm level and pension level variables were collection from Compustat. All information on reported earnings and returns were collected from CRSP. I discarded those firms where either Compustat or CRSP information was not available for both the pre and post FAS132R periods. My final sample consists of 296 firms.

Descriptive statistics are provided in Table 1. Panel A provides the results for my sample for the year prior to the implementation of FAS132R. Panel B provides the results for the period following the

[2] FAS132R only applies to U.S. employers. However, it does apply with some delayed effective dates to non-U.S. plans of U.S. employers. More specifically, information relating to foreign plans was deferred until fiscal years ending after June 15, 2004, so there is a six-month delay or in some cases a 12-month delay for that information. My focus on companies with primarily U.S. plans ensures that my results are not contaminated by this specific provision of FAS132R.

[3] The reasonable range was based on the reports, Accounting for Pensions and Other Postretirement Benefits, completed by Watson Wyatt Worldwide and available on the company website.

implementation of FAS132R. The descriptive statistics reveal that there is a great deal of variation in the size of the pension plans that are sponsored by the firms in my sample. In addition, there are firms with pension plans that are insignificant relative to the total size of the firm, and firms whose pension assets are larger than the total assets of the firm. The descriptive statistics also reveal that there is considerable variation in the assumptions used. Firms in my sample have DR assumptions that range from 5.60 percent to 8.00 percent, and ERA assumptions that range from 6.00 percent to 10.40 percent.

Expectations Model

I define the level of discretion used by a particular firm as the difference between what the firm disclosed and what the assumption would be using an unbiased application of the required FAS87 methodology. Fortunately, the FASB requires that each assumption represent a best estimate of anticipated experience.[4] Therefore, each assumption can be evaluated without incorporating other assumptions, such as turnover, payment elections and mortality, which are set in the development of the pension plan expense.

Discretion in the ERA Assumption

The ERA assumption is based on the average rate of earnings expected on the funds held in the pension trust, as well as the anticipated future returns that may be available for reinvestments, over a long horizon. I use the four types of asset allocation reported under FAS132R and ex ante expected returns to determine the predicted ERA assumption. The model is as follows:

$$\text{ERA}_t = \beta_1 * \%\ \text{Equity}_t + \beta_2 * \%\ \text{Bond}_t + \beta_3 * \%\ \text{Real Estate}_t + \beta_4 * \%\ \text{Other}_t$$

I use expected returns for these categories of 5.0%, 9.0%, 6.5%, and 9.0%, respectively.[5] The shortcoming of this approach is that it does not differentiate between types of assets within a particular

[4] Financial Accounting Standards Board Statement No. 87 ("FAS 87") states that it is not appropriate for firms to arbitrarily choose assumptions from a range, nor is it appropriate for firms to choose assumptions that are not best estimates individually, even though they might be best estimates in aggregate. The DR, ERA, and CR assumptions are addressed in detail in paragraphs 43, 44 and 45 of FAS 87, respectively.

[5] These returns were provided by a large actuarial consulting firm. The ex ante returns used by this firm were the same for the 2003 and 2004 fiscal years. I informally surveyed three other actuarial firms and two auditing firms, and found that the ex ante returns were the same at each of these organizations, and were also unchanged for the 2003 and 2004 fiscal years.

category of assets. However, because ERISA regulations provide limits on types of investments available for qualified pension plans, there is generally little variation within classes across firms.

Discretion in the DR Assumption

The DR assumption is based on the rate at which the pension benefits can be effectively settled. Firms meet this requirement by using an appropriate Aa Corporate Bond rate that matches the duration of the pension plan. The duration concept that is typically applied to bonds is defined similarly for pension plans. In the case of bonds, the duration is a measure of the average time to receipt of cash payments from the bond. For pension plans, the duration is a measure of the average length of time over which payments will be made from the plan. I calculate the predicted DR by estimating the duration of the pension plan, and then using the duration matched rate from the Citigroup Pension Discount Curve.[6]

I create a model to estimate the duration using detailed non-public information provided to me for 66 plans by three separate consulting firms. This data includes specifics on the timing of benefit payments and the duration of each plan. The timing of benefit payments are largely determined by the distribution of plan participants. For example, active employees can be expected to receive pension payments in the distant future, while former employees may be currently receiving pension payments. Therefore, the first model I use estimates the duration using a breakdown of the pension liability into four components: vested active, non-vested active, terminated vested, and retired.[7] This approach assumes that each group of employees can be compared across companies. This is similar to the approach used to determine the predicted ERA based on the allocations to specific asset categories. However, there are some unique attributes of pension liabilities that make this approach less suitable. Specifically, the

[6] A more detailed discussion of the duration matching approach mandated by FAS87 and the Citigroup Pension Discount Curve is provided in Appendix 1.

[7] The specific pension liability measure I use is the RPA current liability. The RPA current liability, for plans complying with ERISA, is the present value of accrued plan benefits based on the interest and mortality rates prescribed by the Retirement Protection Act of 1994 (RPA). Since the assumptions used to calculate the RPA current liability are prescribed by statute, this liability measure is generally comparable across firms. Moreover, the breakdown of the RPA current liability is provided in the Schedule B attachment to the required ERISA Form 5500 filing and is therefore available for all U.S. qualified plans.

assumption that pension plan participants in different plans are accruing benefits in the same way and receiving benefit payments on a similar schedule is not entirely reasonable.

I address these shortcomings by adding two additional explanatory variables: normal cost and expected disbursements. The normal cost equals the present value of benefits accrued during the plan year. Therefore, if a plan is frozen, such that active employees are no longer accruing benefits, the normal cost is zero. This allows the model to distinguish between plans where participants are still accruing benefits, which will lead to higher levels of benefit payments in the future and hence a higher duration for the pension plan. The expected disbursements are the total benefits expected to be paid in the upcoming plan year. This is critically important to the duration calculation, since plans that provide for lump sum benefits in lieu of or in addition to annuity benefits will have much higher benefit payments in the short term and hence a much shorter duration. The inclusion of this variable allows the model to distinguish plans that will pay benefits more quickly. The results for both models are shown in Table 2.

Both models have coefficients that are significant at the 1% level, and high values for the coefficient of determination.[8] However, the second model has a much lower root MSE indicating that the second model is better at explaining the variability in the observations.[9] More importantly, the coefficients on each variable make economic sense. The active non-vested employees, who are generally employees hired in the last five years, have the highest duration. Retirees, who are former employees currently receiving pension payments, have the lowest duration. Moreover, each coefficient is consistent with what is used in the actuarial profession.[10] For these reasons, the coefficients from the second model are used to estimate the duration for each pension plan in my sample.

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[8] The t-statistics in this model are not informative, since the independent variables are essentially constituents of the dependent variable. Therefore, even though the t-statistics are very large, my analysis of the model focuses on the root MSE, which is a measure of the in-sample error rate.

[9] The model coefficients and MSE were comparable when I examined the pension plan data by source, indicating that the data provided to me by each firm was consistent and that my out-of-sample MSE is likely to be comparable to my in-sample MSE.

[10] Pension actuaries typically assume that the duration of retiree liabilities is approximately 10 years, and that active and terminated vested liabilities have durations between 15 and 20 years.

Results

This section proceeds as follows. First, I outline my choice of sample period, and why my results would be unchanged if I used a different sample period. The first set of regressions focus on changes in the level of and discretion in each pension assumption. The next set of regressions focus on the market reaction to FAS132R. The third and final set of regressions investigate cross sectional differences due to accounting incentives, attributes of the pension plan, and attributes of the firm.

Sample Period

One potential concern with the research design employed in this study is that the changes I document for the year before and after FAS132R are typical, or that my results would not be similar if I used another sample period. I address this issue by examining time series information of each of the pension plan assumptions. This information is provided in Figure 1a through 1c. Overall, these charts show that the changes in pension assumptions surrounding the passage of FAS132R were not typical. Moreover, they demonstrate that my results would be unaffected if I changed or extended the time period that I consider in my later tests.

In Figure 1a, I focus on the change in the DR. Even though the DR declined by more than 150 basis points from 2000 to 2006, it could be the case that this entire drop was due to a movement in the general level of interest rates rather than a reduction in discretion. I estimate the average discretion as the difference between the average DR and the Aa spot rate derived using a 15 year duration and the Citigroup Pension Discount Curve. This average difference for the years prior to FAS132R is lower than the years after. More specifically, the discretion begins at a relatively low level in 2000 when the average DR was in excess of 7.50 percent. As interest rates declined, the use of discretion increased. After the implementation of FAS132R, the discretion declined despite a continued downward trend in the general level of interest rates.

The standard deviation of the DR assumption used by the firms in my sample also declined over the period. The average standard deviation is approximately 30 basis points in the pre-FAS132R period,

compared with 20 basis points in the post FAS-132R period. Since this standard deviation is determined using the disclosed DR, it could be the case that the reduced dispersion is due to a flattening of the yield curve rather than any underlying change in the use of discretion. When the yield curve is steeper, there will be more variation in the reported DR if firms follow the FAS87 duration matching methodology and hence a higher standard deviation in the DR assumption. In fact, the yield curve actually steepened in the post-FAS132R period. The difference between the 20 year spot rate and the 10 year spot rate increased in the year following the implementation of FAS132R by 10 basis points. Moreover, the average difference between these spot rates over the 3 year period leading up to FAS132R was 71 basis points, compared with 95 basis points afterwards. This indicates that the yield curve was, on average, steeper in the post-FAS132R period. Therefore, the decline in the standard deviation of the DR assumption understates the standard deviation in the discretion of the DR assumption.

Another concern with the standard deviation is that the actual level of the DR declined over the period. This is potentially a problem because the standard deviation measures the absolute change in the level of dispersion. However, it could be that the level of dispersion was unchanged on a percentage basis. To investigate whether this is the case, I convert the standard deviation to the coefficient of variation. This approach allows me to focus on the change in dispersion relative to the general level of interest rates. My conclusion is unchanged. The average coefficient of variation is approximately 5.2% lower in the post-FAS132R period. Therefore, the general finding that the dispersion in the DR has declined is not affected by the decline in the general level of interest rates.

Figure 1b and 1c provide information on changes in the ERA and CR assumptions. As with the DR, both of these assumptions have declined steadily over the period. The CR has declined by approximately 50 basis points, the ERA declined by approximately 90 basis points. The impact of FAS132R on these assumptions is most evident in the frequency with which these assumptions were adjusted in the period immediately surrounding FAS132R. Both of these assumptions are intended to reflect long term economic assumptions, and therefore, should be changed relatively infrequently. Both

Figure 1b (ERA) and 1c (CR) have three lines—the number of firms who increased the assumption, the number of firms who decreased the assumption, and the number of firms who changed the assumption.

For both the ERA and CR there is an unambiguous increase in 2002. In fact, both 2002 and 2003 represent periods where significantly more firms where decreasing both the CR and the ERA assumptions. Even though FAS132R wasn't adopted until December 2003, the ERA assumption was under increased scrutiny starting in late 2002. For example, in December, 2002, the SEC warned companies that it might challenge ERA assumptions above 10%. In addition, the standard deviation of the ERA assumption also declines by approximately 10 basis points after the implementation of FAS132R. This decline is present not only for the immediately surrounding fiscal year, but also for the entire period 2000 through 2006.

Overall, the evidence in these charts suggest that I am actually biasing against finding reduced managerial discretion in the DR and ERA assumptions by focusing on the year before and after the implementation of FAS132R. If I included data from 2001, the charts suggest that I would find steeper declines in each assumption, and that the dispersion would be reduced to a greater extent. In addition, the changes that I document in the year following the implementation of FAS132R persist in future years. Therefore, if I extended my period of observation to two or three years, I would have similar changes but more observations. Again, this would increase the likelihood that I would find statistically significant changes in the use of discretion.

Changes in Individual Assumptions

My first set of regression results are presented in Table 3. Panel A is a univariate regression which illustrates the average change in the level of the DR, ERA, and CR assumptions. Panel B uses a similar approach to illustrate changes in the level of discretion for the DR and ERA assumptions. Each assumption declined in a statistically significant way after the introduction of FAS132R. The DR had the largest decrease, at 49 basis points, followed by the ERA at 20 basis points and the CR at 11 basis points. It is worth noting that reducing the CR actually serves to reduce the pension liability and expense, rather

than increase it as is the case with reductions in the DR and ERA assumptions. That is, a decrease in the CR serves to mitigate the impact of a reduction in the DR on reported results. Only 252 firms are included in the CR regression because only 252 firms reported a CR assumption. Not all firms disclose a CR assumption because not all firms have pension plan formulas that depend on salary. In addition, plans that are frozen typically do not disclose a CR assumption because benefits no longer depend on future salary increases.

The dispersion of each assumption in the pre and post samples is tested and reported under two approaches. The first approach, identified as a Test of Variance, is a simple F-statistic test. The second approach, identified as a Robust Test of Variance, relaxes the normality assumption implicit in the basic Test of Variance. The Robust Test of Variance reports the p-value calculated using Levene's robust test statistic for the equality of variances. A significant test statistic indicates that the dispersion of that particular assumption is reduced after the introduction of FAS132R. The p-values shown in Table 3, Panel A indicate that the disclosed assumptions for the DR and ERA were more closely clustered after the introduction of FAS132R. In other words, the distribution of the DR and ERA assumptions had a tighter distribution after the implementation of FAS132R. The distribution of the CR assumption, on the other hand, was unchanged after FAS132R.

The coefficients in Panel B show that there is a reduction in discretion associated with the DR of approximately 50 basis points and the ERA of approximate 30 basis points. Because the DR has more impact on the pension expense for each basis point change, these changes suggest that the impact of the change in the discretion in the DR is around three times the change in the discretion in the CR. In addition, the variance tests indicate that the distribution of the amount of discretion used by the companies in my sample is much more tightly clustered post-FAS132R. The p-value generated by the F-test is statistically significant for both the DR and ERA assumptions, and the robust test of variance is significant for the ERA assumption.

Figure 2a and 2b illustrate this finding graphically for the DR and ERA assumptions, respectively. At a high level, both charts show that the distribution shifted to the left (i.e. the mean was lower after the implementation of FAS132R) and the distribution was tighter (i.e. the standard deviation was reduced). In other words, after the implementation of FAS132R, the average discretion in both the DR and ERA assumptions was lower and the dispersion of the discretion in each assumption was also lower.

Even though the average use of discretion and the dispersion of discretion are both reduced in the post-FAS132R period, it could be the case that firms who use the most discretion do not change their use of discretion in response to FAS132R. In other words, it could be that the firms in the middle of the distribution change their behavior, but firms in either tail do not. To investigate whether this is the case, I filter my results from Table 3 using the levels of pre-FAS132R discretion to group firms. These results are presented graphically in Figures 3a and 3b. For both assumptions, there is a clear pattern in the reduction in discretion after the implementation of FAS132R—firms that used the most discretion in the pre-FAS132R period experienced the greatest decline in the use of discretion in the post-FAS132R period. Similarly, firms that used the least discretion in the pre-FAS132R period experience the smallest decline in the use of discretion in the post-FAS132R period.

Interaction of Pension Assumptions

The results thus far have shown that the level of total discretion in each assumption is sharply curtailed after the implementation of FAS132R. The next set of tests examines the interaction between the different pension plan assumptions. This is of interest because it could be the case that firms use increased discretion in one assumption to offset reduced discretion in another. A correlation matrix for each of the measures of discretion is shown in Table 4. Panel A provides the correlations between the total discretion and change in the total discretion for the DR and ERA assumptions. Panel B expands this analysis to include the CR. There are 296 firms included in Panel A, and 252 firms in Panel B. The correlation between the total discretion in the DR assumption and the total discretion in the ERA

assumption is positive and statistically significant. In both Panel A and Panel B, the correlation coefficient is approximately 0.11. This means that a change in the total discretion in the DR of 100 basis points is associated with a change in the total discretion in the ERA of 11 basis points. Therefore, even though the discretion used in each assumption is correlated in a statistical sense, this suggests that the change in the level of discretion for a particular assumption is principally driven by factors other than the change in the discretion in the other assumption.

The correlation between the total discretion in the DR assumption and the change in the total discretion in the DR assumption is negative and statistically significant. The coefficient is 10 basis points in Panel A, and 13 basis points in Panel B. This indicates that some of the impact of FAS132R on the change in the level of discretion is related to the use of discretion in the pre-FAS132R period. More specifically, firms that used the highest levels of discretion in the prior period also experienced the greatest declines in discretion after the implementation of FAS132R. The correlation between the total discretion in the ERA assumption and the change in the total discretion in the ERA assumption is also negative and statistically significant. The coefficient is 30 basis points in Panel A, and 33 basis points in Panel B. This also indicates that firms that used the highest levels of ERA discretion in the pre-FAS132R period experienced the greatest declines in ERA discretion after the implementation of FAS132R.

The correlation between the variable *Reduced CR* and the *Change in the Total DR Discretion* is positive, and the correlation between *Reduced CR* and the *Total DR Discretion* is negative in Panel B. These correlations are noteworthy because FAS132R did not introduce any increased transparency for the CR. That assumption is still disclosed in isolation, without any additional information for outside investors to evaluate its reasonableness. These correlations suggest that companies may mitigate the increased pension expense that results from the inability to use discretion in the setting of the DR through adjustments to the CR. In other words, companies may simply shift the discretion that they no longer enjoy in the assumptions that are now subject to greater transparency to assumptions where the level of transparency is unchanged.

The results of a multivariate regression that considers the joint impact of each of the other assumptions on the total discretion in either the DR or ERA assumptions is presented in Table 5. This model uses three sets of binary variables that reflect specific actions with regard to the CR: no CR rate, CR is reduced, and CR is unchanged. The DR regressions in the first three columns reveal that there is a statistically significant positive relationship between the total discretion in the DR assumption and the binary variable that takes the value of 1 for firms who reduced their CR in the pre-FAS132R period. However, there is only weak statistical evidence that this increased use of discretion was mitigated in the post-FAS132R period. The coefficients for the post interaction term are negative, indicating that these firms actually responded to FAS132R by enacting greater reductions in their use of discretion, but these coefficients are only statistically significant in a one-tailed test at a 10% significance level. This implies that firms who choose to reduce their CR after the implementation of FAS132R had higher levels of discretion in the pre-FAS132R period. In addition, these firms reduced their use of discretion after the implementation of FAS132R by an amount that was commensurate with firms who did not make any changes in their CR assumption. This is consistent with these firms using the CR to mitigate the earnings impact of their inability to continue to use high levels of discretion in the DR assumption. This result holds even after including variables for the total discretion in the ERA assumption, the change in the discretion for the DR assumption, and the change in the discretion for the ERA assumption. I do not find a similar relationship between the CR and ERA assumption in the last three columns of Table 5. Those results do not indicate that firms with higher discretion in the ERA assumption used the CR to offset the increased cost of forgoing this discretion.

Market Reaction

The results thus far indicate that firms set pension assumptions in the post-FAS132R period that are more closely aligned with FASB pension accounting standards. From the perspective of the FASB, this is an important result. However, closer adherence to the accounting standard does not mean that the revised statement has created a disclosure approach that allows users to more accurately assess firm value. This

finding depends in part on how the market responded to the additional information provided by FAS132R. I test the market response to FAS132R in two ways. First, I investigate whether the earnings response coefficients changed after the implementation of FAS132R. This addresses broadly whether the reported pension expense is of higher quality after FAS132R. Second, I test whether there are abnormal returns upon the first release of FAS132R disclosure information using an event study methodology. This addresses whether the market can correctly discriminate between specific firm disclosures.

Earnings Response Coefficient

I test the association between returns and pension expense using an extension of the basic ERC model:

$$R_t = \beta_0 + \beta_1 * E_{t-1} + \beta_2 * E_t + \beta_3 * E_{t+1} + \varepsilon$$

Where R_t is the annualized stock return for the period t (measured over the period nine months prior to fiscal year end and ending three months after fiscal year end), and E_t is the income available to common shareholders before extraordinary items for fiscal year t deflated by the market value of equity. I follow Barth et al., (1991) and decompose earnings into two parts: Pension related earnings and Non-pension related earnings. In addition, I follow Collins et al., (1994) and Ettredge et al., (2005) and include returns for year t+1 to mitigate the errors in variables bias created by using actual earnings for period t+1 instead of expected earnings as of period t for period t+1. Lastly, I include the variable Post (which takes the value of 1 in the post-FAS132R period) so that I can measure the change in the earnings response coefficients in the post-FAS132R period. The expanded model is as follows:

$$R_t = \beta_0 + \beta_1 * Post + \sum_{i=1}^{3} \beta_{i+1} * NPE_{t-2+i} + \sum_{i=1}^{3} \beta_{i+4} * PE_{t-2+i} + \sum_{i=1}^{3} \beta_{i+7} * Post * NPE_{t-2+i}$$

$$+ \sum_{i=1}^{3} \beta_{i+10} * Post * PE_{t-2+i} + R_{t+1} + Post * R_{t+1} + \varepsilon$$

PE_t is the pension expense for fiscal year t, deflated by the market value of equity, and NPE_t is the income available to common shareholders before extraordinary items plus (minus) pension expense (income), deflated by the market value of equity. The primary coefficient of interest is β_{11}, which represents the change in the contemporaneous earnings response coefficient in the post-FAS132R period. A negative,

statistically significant coefficient indicates that stock returns are more closely tied to reported pension expense. This is consistent with the updated disclosure providing information that allows the market to more accurately assess the quality of current pension expense.

The results of the earnings response coefficient tests are presented in Table 6. The results in Column (1) and (2) use only data for the pre-period and post-period, respectively. Since I am focused on how the coefficients change after the implementation of FAS132R, the interacted model in column (3) provides my main result. Consistent with my hypothesis, the coefficient on *Post * Pension Expense (t)* is negative and statistically significant, indicating that FAS132R reduces managerial discretion and provides investors with information that allows them to better assess the quality of pension expense.

Because of my relatively small sample size, there is some concern that the results in Table 6 are influenced by the presence of multicollinearity. Typically, ERC-type studies use much larger samples which has the beneficial effect of mitigating multicollinearity issues. It is worth noting that the concern that multicollinearity raises in this setting is not related to a violation of OLS. Even extreme multicollinearity does not violate least squares assumptions. Rather, the presence of multicollinearity suggests that the results could be due to chance in the sampling procedure. That is, small changes in some of the dependent variables could generate vastly different results.

I investigate potential multicollinearity problems by examining variance inflation factors ("VIF"), conditioning indexes, and variance decomposition proportions. The VIF is an index that measures how much the variance of an estimated regression coefficient is increased because of collinearity. The maximum VIF in the full model shown in Column (3) is 7.07, which is comfortably below the rule-of-thumb cutoff of 10 for multiple regression models suggested by Neter, Wasserman and Kutner (1985). Large VIFs indicate variables that are involved in some nearly collinear relations, but they don't indicate which other variables the high VIF variable is involved with. For this purpose, Belsley, Kuh and Welsch (1980) ("BKW") propose the calculation of the proportions of variance of each variable associated with each principal component as a decomposition of the coefficient variance for each dimension. BKW's test

for the presence of degrading collinearity requires the joint occurrence of high variance decomposition proportions for two or more coefficients associated with a singular value having a high condition index. The conditioned index is the ratio between a specific eigenvalue and the maximum of all eigenvalues of the data matrix. BKW find that a condition index of 5 to 10 reveals weak dependencies while a number of 30 to 100 is associated with strong to severe collinearity.

The maximum conditioning index for the full regression model shown in Column (3) is 9.38, which is within the range of weak dependencies. Moreover, the variance decomposition proportions for the largest conditioning index were associated with two of the control variables. This indicates that even if the conditioning index were above 30, the regression estimates for the variables of interest would not be adversely affected by the presence of multicollinearity. Overall, these diagnostics suggest that the results in Table 6 are not driven by multicollinearity.

Another factor that may be of concern is the lack of an association between the control variables and returns. For example, none of the coefficients on the earnings variables are positive and statistically significant. This is most likely due to the limited number of observations in my tests compared with the prior literature. For example, Ettredge et al. (2006) use more than 20,000 observations in their interacted ERC model compared with only 296 observations in my model. Even still, the coefficients in their models are not consistently positive and significant.

Another concern is that the coefficient on the variable *Pension Expense (t)* in the pre-FAS132R regression in Column (1) is actually positive and weakly significant in a two-tailed test. I hypothesize that the positive coefficient could arise in part because of the strong overall market returns during the pre-FAS132R period. During calendar year 2003, the S&P Index returned almost 30 percent. Therefore, it could be the case that the coefficient on *Pension Expense(t)* is positive because the firm returns are being impacted by the strong returns on the overall market. High market returns improve the funded position of the pension plan and hence the value of the firm. In other words, the variable *Pension Expense (t)* may be picking up the effect of the improvement in firm value caused by the overall strong market returns. To

investigate this, I re-run the regressions in Column (1) and (2) adding deflated pension assets as a control variable. The coefficient in the pre-FAS132R period remains positive, but is smaller and the level of significance drops considerably. Conversely, the coefficient in the post-FAS132R period remains negative and has a higher level of significance. These results suggest that the positive coefficient on Pension Expense (t) is attributable, at least in part, to the association between firm value and the returns on the pension trust. More importantly, it provides additional evidence to support my conclusion that the association between pension expense and returns increased in the post-FAS132R period as including deflated pension assets as a control variable increases the statistical significance of my main result.

Event Study

The ERC test is consistent with a broad improvement in the quality of pension disclosures. However, it does not provide evidence that the market was able to distinguish the quality of pension expense across firms. It could be the case that the market expected pension expense to be of a higher quality, but that the market was still unable to fully grasp the use of discretion at the firm level. In this section, I focus on an event study where the result depends on the market's ability to distinguish between low and high discretion firms.

The FAS132R disclosures in the first annual report filed for fiscal years ending after December 15, 2003 was the first opportunity for the market to use the expanded disclosures to evaluate the levels of discretion a firm used in setting its pension assumptions. Firms were required to disclose the updated information not only for the 2004 fiscal year, but also for the 2003 fiscal year. As a result, the market was given new information with which to evaluate the quality of the firm's reported earnings for the 2003 fiscal year. If the FAS132R disclosures were effective at providing the market with information that could be used to evaluate the reasonableness of the pension assumptions, then the market should respond differently based on the level of discretion used by the firm. More specifically, a firm which disclosed that it used a high level of discretion in setting its 2003 pension assumptions should experience a negative abnormal return relative to a firm which used less discretion in setting its 2003 pension assumptions.

I test this hypothesis by using a simple short window event study. The model I use is as follows:

$$CAR_t = \beta_0 + \beta_1 * High\ Discretion_t + \sum \beta_j * Pension_t + \sum \beta_k * Pension_t * High\ Discretion_t + \varepsilon$$

The event date is the date on which the 10-K is released for the first fiscal year for which FAS132R is required. CAR is the cumulative abnormal return for a period of three days surrounding the release of the firm's first FAS132R disclosure, estimated using a 120 day period ending 30 days prior the event date. High Discretion takes the value of 1 if the discretion for that firm is above the median for my sample, and 0 otherwise. Pension is a series of variables, including relative and absolute size of the pension plan, that reflect the importance of the pension to the firm's reported results. My hypothesis is that the coefficient of the interaction term, β_k, will be negative. This implies that firms who revealed that they used high levels of discretion in previously reported earnings, and for whom the pension plan is an important component of the firm's results, will experience a negative stock price reaction.

The results are presented in Table 7, with the discretion in the DR provided in Column (1) and for the ERA in Column (2). In each case, the dependent variable is the cumulative abnormal return for the three day window surrounding the release of the first 10-K that contained the first FAS132R disclosure. The variable of interest is the interaction term, *High Discretion * High Assets and PATA*. The coefficient on this variable is negative and statistically significant in the DR regression, but not the ERA regression. This indicates that firms, where the pension is important in both an absolute and relative sense, experienced a negative abnormal return if they revealed a high use of discretion in their first FAS132R disclosure relative to firms who revealed a low use of discretion in their first FAS132R disclosure. The lack of a market reaction to the ERA assumption is consistent with my earlier finding that the DR assumption has a much greater impact on pension expense. Overall, this result is consistent with the market interpreting the additional information provided by FAS132R accurately, and responding by discounting previously reported earnings that were distorted by overly aggressive pension assumptions. It is worth emphasizing that I do not find any relationship when I use the level of the DR assumption or the ERA assumption. That is, the market reacts to the use of discretion, and not to the use of a high

assumption. When I use the level of the discount rate to identify aggressive firms, the coefficient on *High Assumption * High Assets and PATA* is close to zero, and it is not even close to any level of statistical significance. The market reaction only exists when I focus on the discretion in the DR assumption.

One potential concern with this research design is that the firms that used high discretion, and for whom the pension plan is large on both a relative and absolute basis, possess other characteristics that might explain the negative abnormal return. In other words, if the high discretion firms within the subset of firms for whom the pension assets and ratio of pension to total assets are both in the top quartile of my sample possess a characteristic that is correlated with returns surrounding the release of the 10-K that the low discretion firms do not possess, then my result in Table 7 could be driven by the market's reaction to this factor as opposed to the disclosure of high levels of discretion in the pension assumption. I compared these firms across several dimensions. I find that the firms were the same size, had similar levels of profitability (measured by Return on Assets), and had similar levels of accruals (measured as total accruals deflated by total assets). This provides some assurance that my result is not driven by one of these factors.

A second potential concern with this specification arises because of the relatively small sample, which makes it possible that the result is driven by a few outliers. In other words, it could be that case that there are a few firms with either very high or very low values for the dependent variable, and that these firms influence the results. To address this concern, I winsorize the cumulative abnormal returns for the firms in the top and bottom 1% of my sample. My results are unchanged. The coefficient on *High Discretion * High Assets and PATA* remains negative and has the same level of statistical significance. If I winsorize the top and bottom 5% of my sample, the coefficient remains negative and statistically significant, although in that case the level of significance is reduced slightly (p-value = 0.068). These results suggest that the effects are not being driven by unusual returns on a small subset of my sample.

Cross Sectional Tests

This section provides the results of cross sectional tests that study how discretion is accentuated or mitigated by accounting incentives, attributes of the pension plan, and attributes of the firm.

Accounting Incentives

The selection of the DR assumption also affects the funded position of the plan. Therefore, firms that face additional reporting requirements that are derived from the funded position of the plan may face stronger incentives to maintain higher levels of discretion in the post-FAS132R period. Furthermore, firms that are subject to these additional reporting requirements may use the ERA assumption to mitigate the effect of these reporting requirements. Therefore, it is necessary to examine firms subject to these reporting requirements in order to develop a more complete picture of the impact of FAS132R. The two specific reporting requirements that I consider are the Additional Minimum Liability ("AML") and Other Comprehensive Income ("OCI") charge. The AML calculation is triggered when the Accumulated Benefit Obligation ("ABO") exceeds the plan assets, and there is currently no offsetting pension liability on the books. In this case, companies are required to record an additional liability for the pension plan deficit. The OCI calculation is a by-product of an AML calculation, and represents the excess of the unfunded status of the plan over the accrued pension cost. It is meaningful because it represents an additional charge against shareholder equity. An AML calculation, by itself, has no such impact.

The results are provided in Table 8. In Panel A, I regress the total discretion in the DR assumption or total discretion in the ERA assumption against a set of binary variables that are derived from AML and OCI reporting requirements. None of the coefficients on either the AML or OCI variables are statistically significant in either regression. This indicates that, in my sample, those firms who had either AML or OCI reporting requirements did not use more or less discretion prior to FAS132R, nor did these firms experience larger or smaller reductions in discretion as a result of FAS132R.

This finding does not necessarily mean that firms facing these reporting requirements used more or less discretion. In fact, it is possible that firms who just missed these reporting thresholds were

actually the firms that used more discretion. In other words, it could be that firms use discretion to avoid AML and OCI reporting requirements. Focusing on firms that have AML or OCI reporting requirements would overlook this group. I address this issue in Panel B, where I use groupings based on the funded position of the plan rather than the existence of AML or OCI reporting requirements. Since a value less than 100% implies that a plan is underfunded, it also implies that the plan is subject to an AML calculation, and possibly a charge to OCI. My results are directionally consistent with the hypothesis that firms who just beat the AML threshold used more discretion in the DR and ERA assumption compared with firms who were subject to AML or to firms who were funded over 105%. However, the results are not statistically significant.

Pension Plan Size

I examine whether the size and importance of the pension plan to the firm's reported results affects the use of discretion in Table 9. Larger pension plans create stronger incentives because the use of discretion has a larger impact on reported results. The first set of regressions shown in Column (1) and (2) use two variables—the absolute size of the pension plan, determined using the natural log of pension assets, and the relative size of the pension plan, determined by dividing pension assets by the total assets of the firm. In combination, these two variables recognize that large plans in both an absolute and relative sense could be impacted differently by FAS132R. In particular, the relative measure allows for the case that there are small firms with moderate sized pension plans that have stronger incentives to manage the costs of those plans than large firms with large plans because of the disproportionate effect of the pension plan on reported results for such firms.

For both the discretion in the DR in column (1) and the discretion in the ERA in column (2), I find a statistically significant relationship between pension assets and the levels of discretion used prior to FAS132R, and between the ratio of pension assets to total assets and the levels of discretion used prior to FAS132R. These results indicate that larger pension plans, on both a relative and absolute basis, used more discretion in the pre-FAS132R period. However, the coefficients on both interaction terms are not

statistically significant. This indicates that these firms did not reduce this increased level of discretion in reaction to FAS132R. Rather, they reduced their discretion by an amount commensurate with other firms. In other words, firms with larger pension plans continued to use more discretion in the post-FAS132R period, and the amount of increased discretion that these firms used was similar to the increased discretion they used prior to FAS132R.

It is worth noting that there is a potential benign explanation for the increased use of discretion in the ERA assumption for plans that are larger on an absolute basis. It is not uncommon for the ERA to be different based on plan size due to the investment management fees that are likely to be lower as a percent of assets. In other words, plans that are larger in an absolute sense pay investment fees that are a smaller percentage of the assets under management. Therefore, the ERA for these plans is larger. However, this explanation does not explain the statistically significant relationship between the relative size of the pension plan and the discretion in the ERA assumption. A large company with a medium sized pension plan should have the same costs as a small company with a medium sized pension plan. Moreover, there is no economic justification for differences in the DR based on plan size. DR guidelines are based on a yield curve that doesn't change based on the size of the obligation.

In columns (3) and (4) I include two other variables that prior research has used to measure the importance of the pension plan (e.g. See Comprix and Muller, 2010). Both are relative measures. Pension Sensitivity is equal to the ratio of pension assets to operating income. NPPC to Net Income is the ratio of Net Periodic Pension Cost to Net Income. The inclusion of these variables does not impact the coefficients for Pension Assets or Pension Assets to Total Assets. Moreover, neither Pension Sensitivity nor NPPC to Net Income are statistically significant in either the DR regression (Column (3)) or ERA regression (Column (4)).

The importance of the pension plan could have an impact on the incentives created by AML and OCI reporting requirements, as well as the benefits of using changes in the CR to offset the cost of reduced discretion in the post-FAS132R period. I address this in unreported tests that combine the key

variables from Table 5, Table 8 and Table 9. My conclusions are unchanged. Holding constant the importance of the pension plan, firms that reduced the CR used more discretion in setting their DR assumption prior to FAS132R and experienced greater reduction in this discretion after FAS132R. However, the coefficients are now only significant in a one-tailed test. In addition, firms with OCI reporting requirements do not appear to have used more or less discretion before or after the implementation of FAS132R. Once again, the coefficient on the "Between 100% and 105%" variable is directionally consistent with the hypothesis that firms who just beat the AML threshold used more discretion in the DR and ERA assumption compared with firms who were subject to AML or to firms who were funded over 105%. However, the results are not statistically significant.

Firm-Level Attributes

The analysis thus far has focused on attributes of the pension plan and the accounting requirements under FAS 87. However, it could be the case that certain firm level attributes impact the manner in which firms react to the increased transparency created by FAS132R. I use three broad categories of firm-level attributes that the existing literature has identified as providing evidence that firms may have different incentives or a different ability to manage reported earnings. The three categories are the audit relationship, litigation risk, and information environment.[11]

The coefficients on my pension variables are unchanged. In particular, I continue to find evidence that firms with high levels of discretion in the DR used the CR to mitigate the impact of FAS132R. While I do not find any relationship between the audit variables and the information environment variables and the level of discretion in either the DR or ERA assumption, I do find that the coefficient of high litigation in the DR regression is negative and statistically significant. This indicates that firms who were subject to a higher degree of litigation risk in the pre-FAS132R period used less discretion in setting the DR assumption.

[11] I use the following variables: Audit Fee (which is the natural log of the audit fee), Non-audit Fee (which is the natural log of the non-audit fee), Litigation Risk (calculated using the Rogers and Stocken (2005) litigation risk value) Firm Size (natural log of Total Assets), and Analyst Coverage (based on the number of analysts covering the firm on the disclosure date).

Robustness Test: Total versus Relative Discretion

The models used in my primary analysis focus on estimating the total discretion—that is, the deviation in the reported assumption from that determined using an unbiased application of FASB and SEC guidance. A simple adjustment to each of the models allows me to also determine the relative discretion—that is, the deviation in the reported assumption from what one would expect based on what other companies are reporting. For the ERA assumption, this is accomplished by allowing the regression to estimate the coefficients of each asset category rather than using ex ante expected returns. Under this approach, the residuals are estimated separately for both the pre and post period. This ensures that changes in the macro level expectations of returns are not included in later regressions that examine the change in the ERA assumption. In addition, it ensures that for each period, the residual is picking up the deviation from what other companies are doing in that period.[12] The approach used for the DR discretion is very similar. Again, I run separate regressions for the pre and post period and use the same model as was used for the total discretion calculation. However, rather than using the Citigroup Pension Discount Curve to determine the appropriate DR, I use a yield curve that is based on what the firms in my sample are reporting in each period. In effect, I am comparing each firm with other firms of a similar duration, and using the average of the DR reported by these comparable firms in developing my estimate of what the DR should be for each firm. These approaches eliminate concerns raised by the specific ex ante asset returns I use and my choice of yield curve.

My results are unchanged when I substitute relative discretion for total discretion in my analysis. There continues to be a shift in the distribution of discretion to the left, and a statistically significant reduction in the dispersion of discretion after the implementation of FAS132R. Moreover, the patterns in the use of discretion (e.g. larger firms use more discretion, firms with higher pre-FAS132R levels of discretion experience greater declines in the use of discretion) are the same under the relative approach.

[12]The expected return by class is essentially unchanged between the pre and post periods. The expected return on equities of 8.5% is unchanged between the two periods, and the expected return on bonds is only 40 basis points less in the post period. These two asset classes represent over 90 percent of the investments, with approximately 60 percent invested in equities and 30 percent invested in bonds.

Conclusion

This paper tests whether the introduction of FAS132R reduces the discretion that firms use in setting pension plan assumptions. I find that firms used less discretion in both the DR and ERA assumptions, and that the dispersion of the discretion in these assumptions across firms is reduced post-FAS132R. Stock returns are more highly associated with pension expense in the post-FAS132R period, which is consistent with an improvement in the overall quality of pension expense. Moreover, firms experienced a negative abnormal return if they revealed a high use of discretion in their first FAS132R disclosure, which is consistent with the market being able to discriminate the quality of pension expense across firms. Overall, my results provide evidence that footnote transparency is effective at disciplining managerial discretion and that the market will use information provided in footnotes to assess firm value. In addition, I find that the impact of FAS132R was consistent the FASB goal of providing pension disclosure that reduces managerial discretion and provides investors with information that allows them to assess the quality of pension expense.

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Appendix 1: Setting the Discount Rate Assumption

FASB Statement No. 87 ("FAS87") requires that firms set the Discount Rate using the rate at which the pension benefits can be effectively settled. This means that firms need to use rates of return on high-quality fixed-income investments currently available and expected to be available during the period to maturity of the pension benefits. This FAS87 requirement was clarified by the SEC through EITF Topic No. D-36 on September 23, 1993, which in part stated:

> "The objective of selecting assumed Discount Rates is to measure the single amount that, if invested at the measurement date in a portfolio of high-quality debt instruments, would provide the necessary future cash flows to pay the benefit obligation when due. Notionally, that single amount . . . would equal the current market value of a portfolio of high-quality zero coupon bonds."

In later guidance, the SEC confirmed that fixed-income debt securities with one of the two highest ratings giving by a recognized ratings agency, such as a security that receives a rating of Aa or higher from Moody's Investor Service Inc., is considered high quality for the purpose of complying with FAS87. The result of these guidelines is that firms are required to set the DR assumption for their pension plans so as to reflect the level of interest rates on zero coupon Aa corporate bonds that are not callable on the disclosure date.

Since such a yield curve is not readily available, the Citigroup Pension Discount Curve, which was originally called the Salomon Brothers Pension Discount Curve, was developed specifically to meet the requirements of FAS87. The Citigroup Pension Discount Curve is published in tabular form in half year duration increments on a monthly basis. It is composed of individual, zero-coupon interest rates for 60 different time periods (i.e. 30 years with semi-annual gradations). The zero-coupon rates are mathematically derived from observable market yields for AA-rated corporate bonds, as prescribed by FAS87. At a basic level, a yield curve approach discounts each cash flow of the liability stream at an interest rate specifically applicable to the timing of that cashflow, and then sums each of these discounted cashflows to determine the total pension liability. The discount rate reported in the financial statements is the single rate that, if applied to all years' payments, would result in the same discounted value. This rate can be approximated by selecting the rate that matches the duration of the plan's liabilities.

The Citigroup Pension Discount Curve is the only approach that specifically complies with the requirements of FAS87. Other bond indices, such as Moody's Aa Corporate Bond Index or Merrill Lynch's High Quality Bond Index, have not been designed to match the benefit payments stream of a pension plan, and as such only give an indication of the yields produced by a certain group of high-quality bonds at a fixed date. As a result, changes in either of these indices can be used as an indication of the

general movement in interest rates, but they cannot be used in isolation to determine the appropriate DR under FAS87.[13] In addition, there are a number of features of the Moody's Aa Corporate Bond Index that make it inappropriate for selecting a DR that complies with FAS87. For example, the duration of the Moody's Index varies from year to year, and is unknown, since Moody's doesn't calculate it. Therefore, a change in the Moody's Index could result from changes in the bonds used to determine the index, rather than an actual movement in interest rates. Only the Citigroup Pension Discount Curve follows the SEC guidance, and generates yields using Aa corporate spot yields at each maturity combined with Treasury par curve data.[14]

[13] In a SEC action dated January 22, 2009 against General Motors related to its reported pension results, the complaint notes that internal GM documents referred to the use of the Moody's index as a "sense check only."
[14] For further details, see Lawrence Bader, "Discounting Pension Liabilities under the New SEC Rules", Pension Section News, June 1994, available on the Society of Actuaries website http://www.soa.org.

Appendix 2: Pension Expense Calculation

The importance of considering all the pension assumptions can best be illustrated by a simple numerical example, shown on the next page. The calculations highlight how each of the components of pension expense is affected by modest changes in each of the three primary assumptions: the DR, the ERA, and the CR. My calculations use a hypothetical plan which reflects the median attributes of the pension plans in place at the time FAS132R was adopted. More specifically, the plan has employees who are actively accruing benefits using a salary based formula, and who represent approximately half of the total pension obligation. The plan is reasonably well funded, with a funded ratio of approximately 70 percent on a Projected Benefit Obligation basis. In addition, the plan has neither a net transition obligation nor prior service cost components, but does have a loss amortization base.

The first column is a baseline calculation, where the assumptions for the DR, ERA and CR are set at 6.00%, 8.50% and 5.00% respectively. Each successive column then adjusts the pension expense calculation to show the earnings impact of a change in one of these assumptions. The second column shows the impact of a 75 basis point increase in the ERA assumption, the third column the impact of a 25 basis point increase in the DR, and the fourth column the impact of a 50 basis point decrease in the CR. The expense impact of each of these changes for this hypothetical company is approximately the same. For companies that need to report unfunded obligations as a result of an additional minimum liability calculation, the DR and CR also offer additional benefits through a reduction in the pension liability. The ERA assumption, on the other hand, only affects the determination of expense.

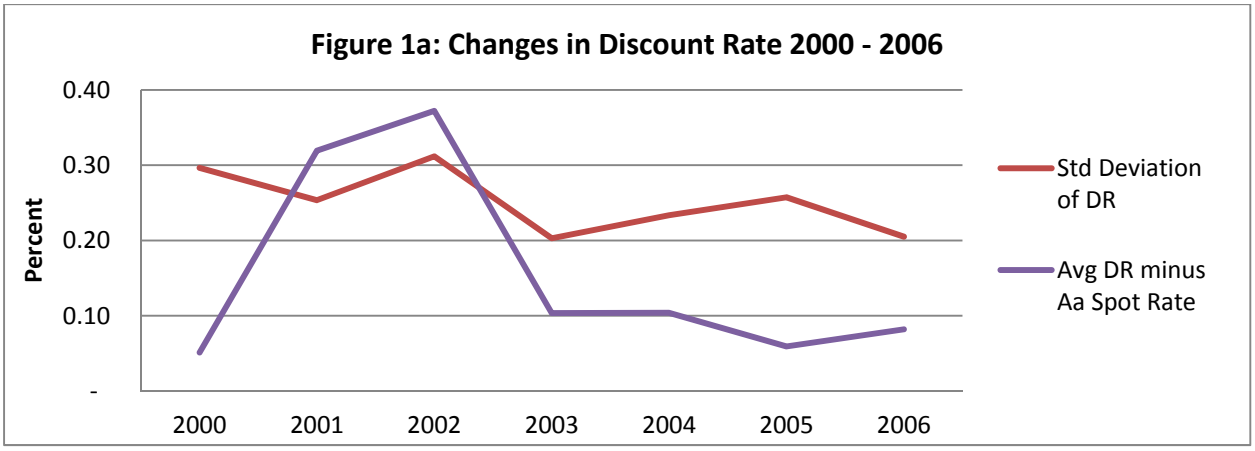
For companies that are frozen, overfunded, and don't have a loss amortization, the impact of the DR and CR relative to the ERA would be reduced. However, each of these attributes occurs relatively infrequently. In my sample of 296 firms, 280 have a loss amortization and 204 report a service cost that is at least 50% of the expected return on assets. Moreover, only 47 firms have a funded ratio in excess of 100%. In fact, there are more firms that are likely to have a stronger expense impact from the DR and CR assumptions relative to the ERA. 72 firms reported a service cost that was higher than the expected return on assets, and 75 have a loss amortization base that is more than double the level used in my hypothetical example.

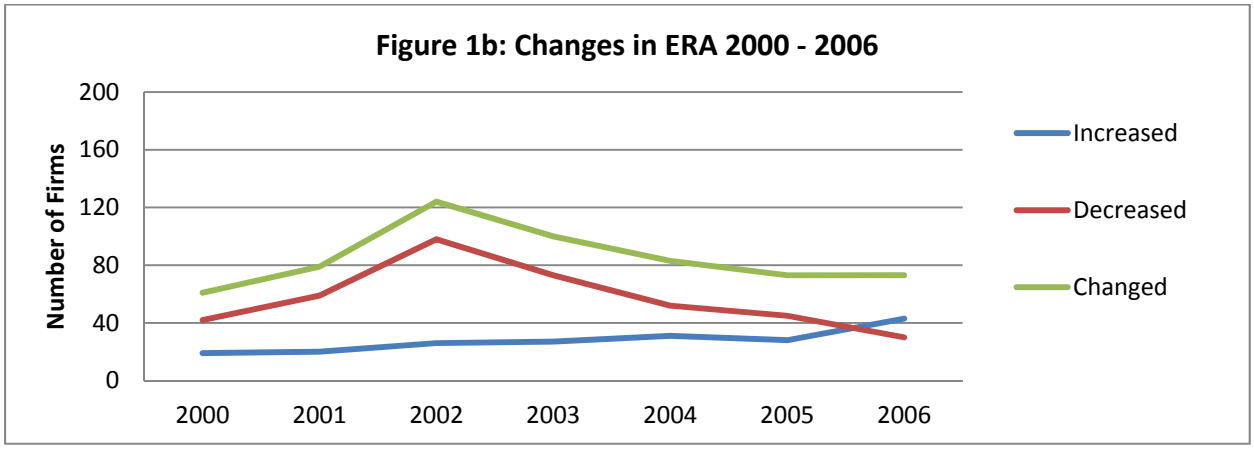
Illustration of Relative Importance of Each Pension Assumption to Pension Expense Calculation

	Baseline	75bp ERA	25bp DR	50bp CR
Reconciliation of Funded Status				
Projected Benefit Obligation	$ (7,000,000)	$ (7,000,000)	$ (6,763,000)	$ (6,876,000)
Fair Value of Assets	5,000,000	5,000,000	5,000,000	5,000,000
Funded Status	$ (2,000,000)	$ (2,000,000)	$ (1,763,000)	$ (1,876,000)
Unrecognized:				
• Net Transition Obligation	$ 0	$ 0	$ 0	$ 0
• Prior Service Cost	0	0	0	0
• Net (Gain) or Loss	1,000,000	1,000,000	763,000	876,000
(Accrued)/Prepaid Pension Cost	**$ (1,000,000)**	**$ (1,000,000)**	**$ (1,000,000)**	**$ (1,000,000)**
Net Periodic Pension Cost				
Normal Cost	$ 280,000	$ 280,000	$ 265,000	$ 265,000
Interest Cost	401,250	401,250	403,156	393,810
Expected Return on Assets	(415,438)	(452,094)	(415,438)	(415,438)
Amortization of:				
• Net Transition Obligation	0	0	0	0
• Prior Service Cost	0	0	0	0
• Net (Gain) or Loss	30,000	30,000	8,670	18,840
FAS 87 Pension Expense/(Income)	**$ 295,812**	**$ 259,156**	**$ 261,388**	**$ 262,212**
Discount Rate	**6.00%**	6.00%	**6.25%**	6.00%
Expected Return on Assets	**8.50%**	**9.25%**	8.50%	8.50%
Compensation Rate	**5.00%**	5.00%	5.00%	**4.50%**
Expected Contribution	$ 400,000	$ 400,000	$ 400,000	$ 400,000
Expected Benefit Payments	$ 625,000	$ 625,000	$ 625,000	$ 625,000

Figure 1: Time Series Information

Figure 1 shows changes in the Discount Rate, Expected Return on Assets, and Compensation Rate for the period from 2000 through 2006. Figure 1a shows the trend in the standard deviation of the discount rate assumption for the firms in my sample, and the difference between the average discount rate for the firms in my sample and the benchmark Aa corporate bond rate. Figure 1b identifies the number of firms that have increased, decreased, or changed the Expected Return on Assets assumption. Figure 1c identifies the number of firms that have increased, decreased, or changed the Compensation Rate assumption.





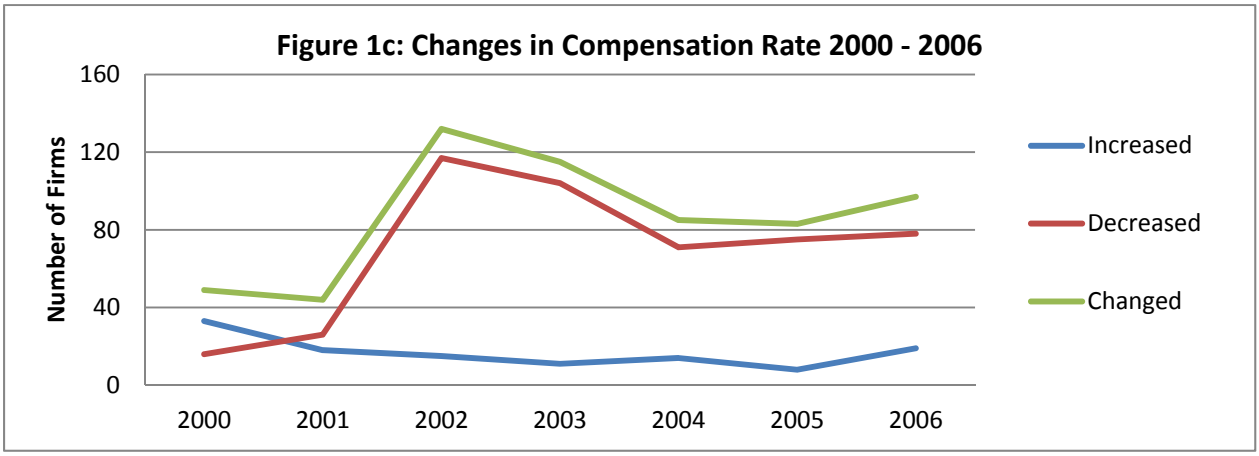
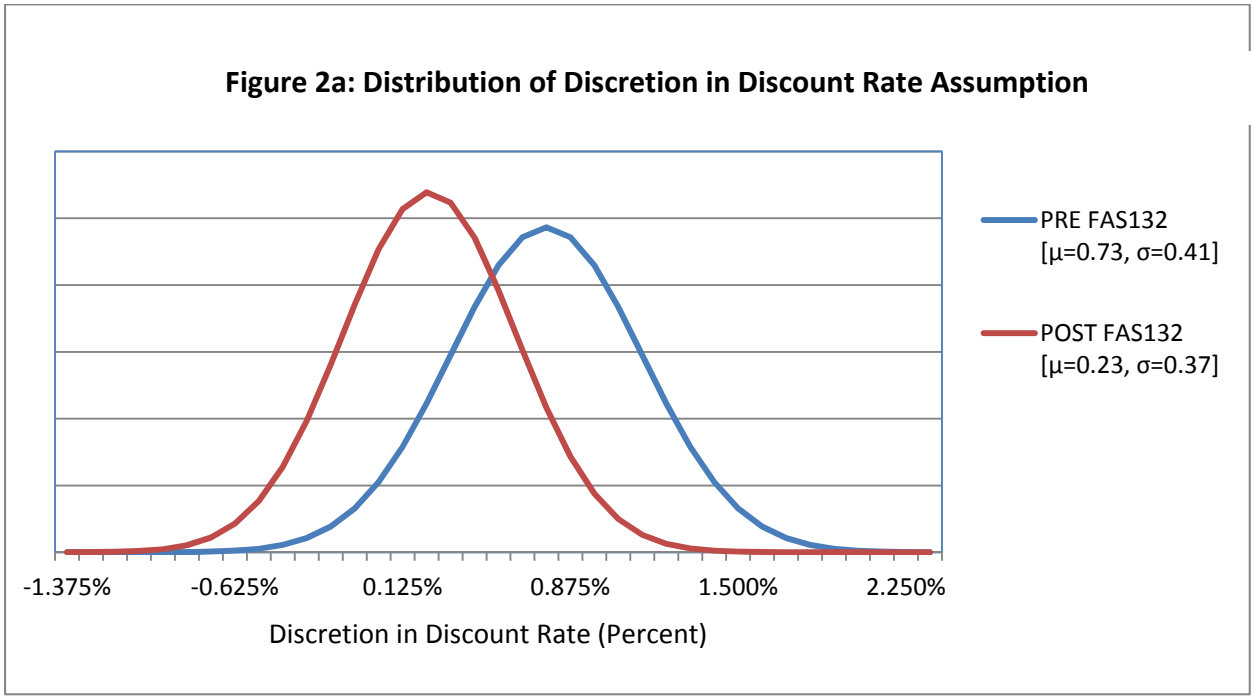


Figure 2: Distribution of Discretion

Figure 2 illustrates the distribution of the total discretion in the DR (Figure 2a) and ERA (Figure 2b) for the pre- and post-FAS132R periods. The distribution for the pre-FAS132R period is shown in blue, and for the post-FAS132R period in red. Both charts illustrate that the distribution of discretion shifted to the left (i.e. discretion was reduced) and became more tightly clustered after the implementation of FAS132R.



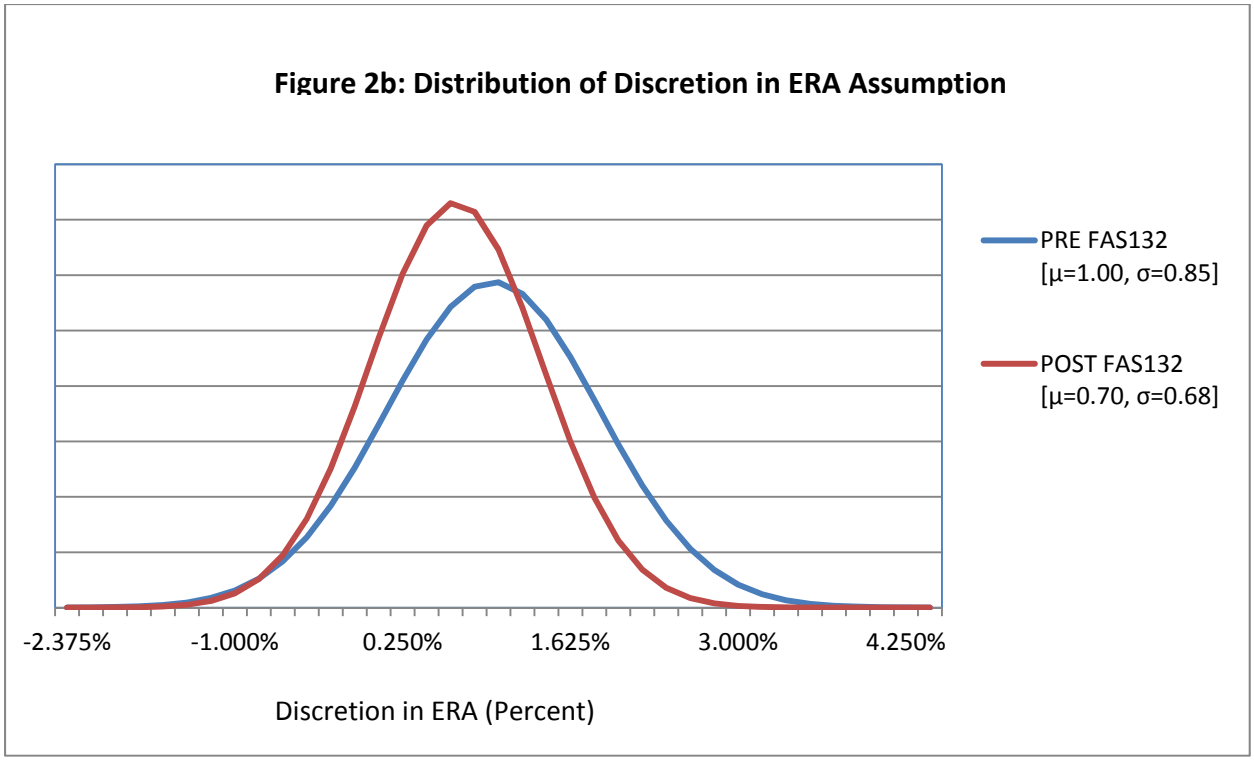
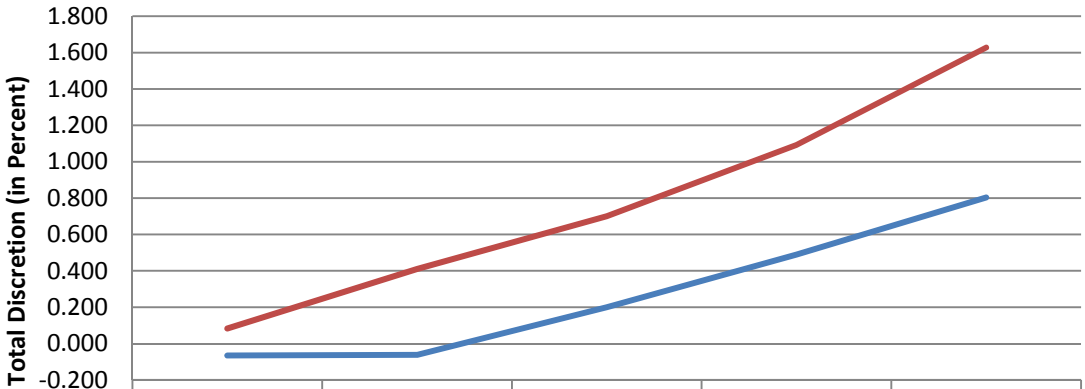


Figure 3: Total Discretion

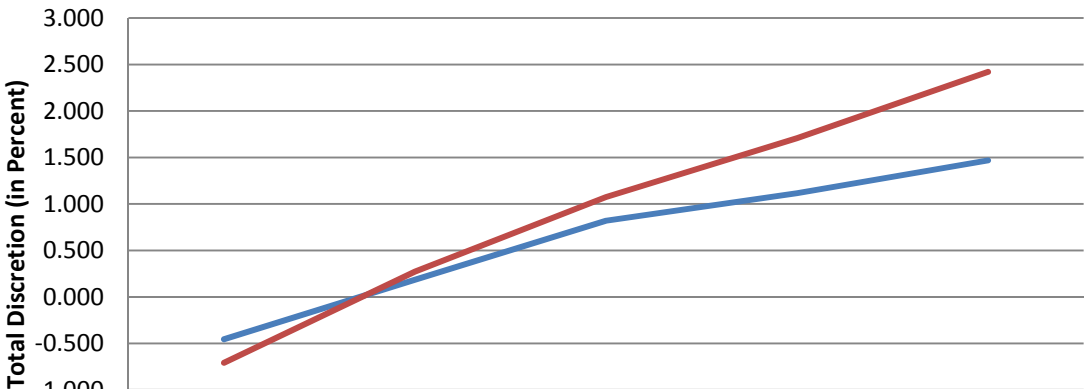
Figure 3 illustrates the results of a regression of the total discretion in the DR (Figure 3a) and ERA (Figure 3b) assumptions on Post, a variable which takes the value of 1 for the period following the implementation of FAS132R, and 0 otherwise. Firms are categorized based on the level of discretion prior to the implementation of FAS132R. The five groups are: (1) firms in the lowest decile; (2) firms in the lowest quartile but not in the lowest decile; (3) firms in the middle 50%; (4) firms in the highest quartile but not in the highest decile; and (5) firms in the highest decile. The red line represents the average level of discretion for firms in that group in the pre-FAS132R period. The blue line represents the average level of discretion for firms in that group in the post-FAS132R period. The values are reported in the table immediately below each chart. Each value is statistically significant at a 1% level. Both charts illustrate that those firms that used the most (least) discretion in the pre-FAS132R period experienced the greatest (least) decline in the use of discretion after the implementation of FAS132R.

Figure 3a: Total Discretion in DR Assumption



	Lowest Decile	Lowest Quartile	Middle 50%	Highest Quartile	Highest Decile
Post	-0.066	-0.062	0.200	0.489	0.803
Pre	0.083	0.410	0.700	1.092	1.628

Figure 3b: Total Discretion in ERA Assumption



	Lowest Decile	Lowest Quartile	Middle 50%	Highest Quartile	Highest Decile
Post	-0.456	0.184	0.820	1.115	1.468
Pre	-0.708	0.273	1.075	1.708	2.420

Table 1: Summary Statistics

This table provides summary statistics for the pre and post FAS132R periods. There are 296 firms in each panel. The Pension Liability is the Projected Benefit Obligation. Firm Size is equal total assets. Pension Assets is the market value of assets in the pension trust. Pension to Total Assets is the ratio of Pension Assets to Total Assets. Pension Expense is the net periodic pension cost. Net Income is income available to common shareholders before extraordinary items. The Discount Rate, Compensation Rate, and Expected Return on Assets are the disclosed pension assumptions. The Duration is the average length of time over which benefit payments will be made from the pension plan, determined using the model presented in Table 2, Column (2). The Percent Equities, Bond, Real Estate and Other are the reported allocations of pension assets to those asset categories.

Panel A: Prior to Implementation of FAS132R

	Mean	SD	p25	p50	p75
Pension Liability (PBO)	842	2,727	34	115	451
Firm Size (Total Assets)	13,892	59,273	401	1,588	7,013
Pension Assets	731	2,721	27	83	357
Pension to Total Assets	0.123	0.149	0.021	0.073	0.161
Pension Expense/(Income)	14.2	85	0.8	3.2	11.8
Net Income/(Loss)	200.3	1,582	5.6	31.6	166.3
Discount Rate	6.68	0.29	6.50	6.75	6.75
Duration	15.60	2.80	13.65	15.52	17.58
Compensation Rate	3.88	1.46	3.90	4.00	4.55
Expected Return on Assets	8.62	0.72	8.03	8.75	9.00
Percent Equities	57.8	15.4	53.0	60.0	67.0
Percent Bond	33.7	14.3	26.8	33.0	41.0
Percent Real Estate	1.1	3.2	0.0	0.0	0.0
Percent Other	7.3	13.9	0.0	3.0	8.0

Panel B: After the Implementation of FAS132R

	Mean	SD	p25	p50	p75
Pension Liability (PBO)	932	3,052	40	138	483
Firm Size (Total Assets)	15,135	66,400	434	1,770	7,843
Pension Assets	857	3,163	32	110	421
Pension to Total Assets	0.138	0.166	0.025	0.085	0.187
Pension Expense/(Income)	21.4	71	0.9	4.0	13.6
Net Income/(Loss)	306.2	1,245	8.7	36.3	211.5
Discount Rate	6.19	0.21	6.00	6.25	6.25
Duration	15.30	2.88	13.44	15.24	17.15
Compensation Rate	3.81	1.39	3.50	4.00	4.50
ERA Assumption	8.42	0.63	8.00	8.50	9.00
Percent Equities	62.0	13.4	58.0	65.0	70.0
Percent Bond	31.3	13.2	25.0	30.1	35.4
Percent Real Estate	1.0	2.5	0.0	0.0	0.0
Percent Other	5.7	9.9	0.0	2.0	7.0

Table 2: Estimation Models for Duration of Pension Liability

This table provides the results of two models used to estimate the duration of a pension plan using information available on the Schedule B attachment to the ERISA Form 5500 filing. For both models, the sample consists of sixty-six pension plans where detailed nonpublic plan level data, including the duration of the plan, was provided by three separate actuarial consulting firms.

The first model, shown in Column (1), is as follows:

$$\text{Duration}_t = \beta_1 * \text{Act\_Vst}_t + \beta_2 * \text{Act\_Non}_t + \beta_3 * \text{TV}_t + \beta_4 * \text{Ret}_t + \varepsilon$$

This model estimates the duration using the percent of the total RPA current liability represented by four components: vested active, non-vested active, terminated vested, and retired. The RPA current liability, for plans complying with ERISA, is the present value of accrued plan benefits based on the interest and mortality rates prescribed by the Retirement Protection Act of 1994 (RPA). The liabilities are provided on the Department of Labor Form 5500 filing, Schedule B, item 2(b).

The second model, shown in Column (2), is as follows:

$$\text{Duration}_t = \beta_1 * \text{Act\_Vst}_t + \beta_2 * \text{Act\_Non}_t + \beta_3 * \text{TV}_t + \beta_4 * \beta_4 * \text{Ret}_t + \beta_5 * \text{NC}_t + \beta_6 * \text{Dis}_t + \varepsilon$$

This model adds two additional independent variables. The RPA normal cost equals the present value of benefits accrued during the plan year. The expected disbursements are the total benefits expected to be paid in the upcoming plan year. Both items are provided on the Department of Labor Form 5500 filing, Schedule B, item 1(d)(2).

	(1) Model A b/se	(2) Model B b/se
Active Vested	14.775***	16.859***
	(1.85)	(0.49)
Active Nonvested	31.257***	20.595***
	(4.13)	(1.35)
Terminated Vested	27.008***	23.693***
	(2.42)	(1.31)
Retired	5.782***	10.578***
	(0.84)	(0.46)
RPA Normal Cost		26.720***
		(1.53)
RPA Expected Disbursements		-50.560***
		(2.42)
Observations	66	66
Root MSE	2.6176	0.8846

*, **, *** Denotes significance at a probability of <0.10, <0.05 and <0.01 respectively. All significance tests are based on two-tailed tests.

Table 3: Impact of FAS132R on Pension Assumptions

Panel A: Impact of FAS132R on Levels of Pension Assumptions

This table reports the results of a regression of the level of each of the three primary pension assumptions on Post, a variable which takes the value of 1 for the period following the implementation of FAS132R, and 0 for the period before implementation. The constant term represents the average assumption during the period prior to the implementation of FAS132R. The Post term represents the change in that average after the implementation of FAS132R.

	(1) DR b/se	(2) ERA b/se	(3) CR b/se
Post	-0.486***	-0.196***	-0.109*
	(0.02)	(0.06)	(0.06)
Constant	6.680***	8.619***	4.305***
	(0.02)	(0.04)	(0.04)
Number of Firms	296	296	252
Test of Variance (p-value)	0.000	0.013	0.403
Robust Test of Variance (p-value)	0.022	0.006	0.212

*, **, *** Denotes significance at a probability of <0.10, <0.05 and <0.01 respectively. All significance tests are based on two-tailed tests. The "Test of Variance" reports the p-value from a one-sided F-test on the equality of the variance for the pre-FAS132R and post-FAS132R periods. The Robust Test of Variance reports the p-value calculated using Levene's robust test statistic for the equality of variances. A significant test statistic under either test indicates that the dispersion of that particular assumption is reduced after the introduction of FAS132R.

Panel B: Impact of FAS132R on Discretion in Pension Assumptions

This table reports the results of a regression of the total discretion in the DR and ERA assumptions on Post, a variable which takes the value of 1 for the period following the implementation of FAS132R, and 0 for the period before implementation. The total discretion in the DR (ERA) is equal to the DR (ERA) disclosed by the firm minus the predicted DR (ERA), using my expectations model. The constant term represents the average discretion during the period prior to the implementation of FAS132R. The Post term represents the change in that average after the implementation of FAS132R.

	(1) DR b/se	(2) ERA b/se
Post	-0.504***	-0.296***
	(0.03)	(0.06)
Constant	0.733***	0.996***
	(0.02)	(0.05)
Number of Firms	296	296
Test of Variance (p-value)	0.055	0.000
Robust Test of Variance (p-value)	0.322	0.001

*, **, *** Denotes significance at a probability of <0.10, <0.05 and <0.01 respectively. All significance tests are based on two-tailed tests. The "Test of Variance" reports the p-value from a one-sided F-test on the equality of the variance for the pre-FAS132R and post-FAS132R periods. The Robust Test of Variance reports the p-value calculated using Levene's robust test statistic for the equality of variances. A significant test statistic under either test indicates that the dispersion of that particular assumption is reduced after the introduction of FAS132R.

Table 4: Correlation of Changes in Discretion Levels

Table 4, Panel A provides a correlation matrix across four variables for each firm in my sample. Table 4, Panel B provides a correlation matrix across six variables for each firm that reported a CR in my sample. The total discretion in the DR is measured as the difference between the predicted DR, based on the estimated duration of the plan and the Citigroup Pension Discount Curve, and the DR actually used by the firm. The Change in the Total Discretion in the DR is the difference in the level of discretion for the period prior to FAS132R and the period after the implementation of FAS132R. Similarly, the total discretion in the ERA assumption is measured as the difference between the predicted ERA assumption, based on the composition of the pension trust, and the ERA actually used by the firm. The Change in the Total Discretion in the ERA is the difference in the level of discretion for the period prior to FAS132R and the period after the implementation of FAS132R. The CR assumption is the disclosed compensation rate assumption. Reduced CR takes the value of 1 if the firm reduced its compensation rate during the implementation of FAS132R, and zero otherwise.

Panel A: Correlation of Changes in Discretion Levels for DR and ERA (N=296)

	Change in Total DR Discretion	Total DR Discretion	Change in Total ERA Discretion	Total ERA Discretion
Change in Total DR Discretion	1.0000			
Total DR Discretion	-0.1006**	1.0000		
Change in Total ERA Discretion	0.1903***	-0.0200	1.0000	
Total ERA Discretion	-0.0051	0.1128***	-0.3028***	1.0000

Panel B: Correlation of Changes in Discretion Levels for DR and ERA and Changes in CR (N=252)

	Change in Total DR Discretion	Total DR Discretion	Change in Total ERA Discretion	Total ERA Discretion	CR Assumption	Reduced CR
Change in Total DR Discretion	1.0000					
Total DR Discretion	-0.1255***	1.0000				
Change in Total ERA Discretion	0.2348***	0.0171	1.0000			
Total ERA Discretion	-0.0285	0.1133**	-0.3329***	1.0000		
CR Assumption	0.0366	-0.0603	-0.0833*	0.1636***	1.0000	
Reduced CR	0.0827*	-0.1645***	0.0683	-0.0634	-0.0566	1.0000

*, **, *** Denotes significance at a probability of <0.10, <0.05 and <0.01 respectively. All significance tests are based on two-tailed tests.

Table 5: Interaction between DR Discretion and ERA Discretion and Other Pension Assumptions

This table provides a set of regressions using either the total discretion in the DR (Columns 1, 2 and 3) or the total discretion in the ERA (Columns 4, 5 and 6) on a set of variables that reflect the level of and changes in each of the other pension assumptions. Post takes the value of 1 for the period following the implementation of FAS132R, and 0 for the period before implementation. Reduced Comp Rate takes a value of 1 if the disclosed CR was reduced after the implementation of FAS132R, and zero otherwise. No Comp Rate takes a value of 1 if the firm did not disclose a CR, and zero otherwise. The change in the total DR discretion is equal to the level of DR discretion for the period before the implementation of FAS132R minus the level of DR discretion for the period following the implementation of FAS132R. The change in the total ERA discretion is equal to the level of ERA discretion for the period before the implementation of FAS132R minus the level of ERA discretion for the period following the implementation of FAS132R.

	(1) DR b/se	(2) DR b/se	(3) DR b/se	(1) ERA b/se	(2) ERA b/se	(3) ERA b/se
Post * Reduced Comp Rate	-0.126	-0.121	-0.121	-0.074	-0.045	-0.046
	(0.08)	(0.08)	(0.08)	(0.16)	(0.16)	(0.14)
Reduced Comp Rate	0.152**	0.142**	0.123**	0.161	0.126	0.108
	(0.06)	(0.06)	(0.06)	(0.13)	(0.13)	(0.11)
Post * No Comp Rate	0.033	0.020	0.020	0.207	0.200	0.200
	(0.10)	(0.11)	(0.11)	(0.19)	(0.19)	(0.19)
No Comp Rate	0.177**	0.193***	0.195***	-0.270*	-0.310**	-0.223*
	(0.07)	(0.07)	(0.07)	(0.14)	(0.14)	(0.13)
Post	-0.483***	-0.465***	-0.464***	-0.311***	-0.201**	-0.204**
	(0.04)	(0.04)	(0.04)	(0.08)	(0.08)	(0.08)
Total ERA Discretion		0.059***	0.062***			
		(0.02)	(0.02)			
Total DR Discretion					0.228***	0.222***
					(0.08)	(0.08)
Change in Total DR Discretion			-0.156**			0.097
			(0.08)			(0.11)
Change in Total ERA Discretion			0.017			-0.431***
			(0.03)			(0.08)
Constant	0.676***	0.616***	0.543***	1.003***	0.849***	0.766***
	(0.03)	(0.04)	(0.05)	(0.06)	(0.08)	(0.10)
Number of Firms	296	296	296	296	296	296

*, **, *** Denotes significance at a probability of <0.10, <0.05 and <0.01 respectively. All significance tests are based on two-tailed tests.

Table 6: Impact of FAS132R on Market's Association of Earnings and Returns

This table tests the association between returns and pension expense, and the impact of the expanded FAS132R disclosures on that association, using an earnings response coefficient regression. The model is as follows:

$$R_t = \beta_0 + \beta_1 * Post + \sum_{i=1}^{3} \beta_{i+1} * NPE_{t-2+i} + \sum_{i=1}^{3} \beta_{i+4} * PE_{t-2+i} + \sum_{i=1}^{3} \beta_{i+7} * Post * NPE_{t-2+i} + \sum_{i=1}^{3} \beta_{i+10} * Post * PE_{t-2+i} + R_{t+1} + Post * R_{t+1} + \varepsilon$$

The results presented in Column (1) and (2) are for the pre-FAS132R and post-FAS132R periods, respectively. Column (3) uses data for both the pre- and post-FAS132R periods. R_t is the cumulative daily returns for the fiscal year t. Returns are accumulated for the period beginning 9 months prior to fiscal year end, and ending 3 months after fiscal year end. Post takes the value of 1 for the period following the implementation of FAS132R, and 0 otherwise. NPE_t is the income available to common shareholders before extraordinary items plus (minus) pension expense (income), deflated by the market value of equity. PE_t is the pension expense for fiscal year t, deflated by the market value of equity.

	(1) Pre-FAS132R b/se	(2) Post-FAS132R b/se	(3) Interacted b/se
Pension Expense(t-1)	1.4380	14.1921	1.4380
	(3.456)	(6.994)	(3.456)
Pension Expense(t)	9.2747	-7.4207*	9.2747
	(4.541)	(5.661)	(4.541)
Pension Expense(t+1)	-7.2120***	-5.1654*	-7.2120***
	(3.057)	(3.441)	(3.057)
Earnings(t-1)	-0.2237	-0.1047	-0.2237
	(0.163)	(0.116)	(0.163)
Earnings(t)	0.0412	-0.1580	0.0412
	(0.131)	(0.470)	(0.131)
Earnings(t+1)	0.2678	0.0990	0.2678
	(0.347)	(0.140)	(0.347)
Post*Pension Expense(t-1)			12.7541
			(7.801)
Post*Pension Expense(t)			-16.6954**
			(7.257)
Post*Pension Expense(t+1)			2.0465
			(4.603)
Post*Earnings(t-1)			0.1190
			(0.200)
Post*Earnings(t)			-0.1992
			(0.488)
Post*Earnings(t+1)			-0.1688
			(0.374)
Return(t+1)	-0.0427	0.0123	-0.0427
	(0.072)	(0.114)	(0.072)
Post*Return(t+1)			0.0550
			(0.135)
Post			0.0243
			(0.048)
Constant	0.0610**	0.0853***	0.0610**
	(0.033)	(0.035)	(0.033)
Number of Firms	296	296	296
Adjusted R2	0.077	0.145	0.113

*, **, *** Denotes significance at a probability of <0.10, <0.05 and <0.01 respectively. All significance tests are based on one-tailed tests where the coefficients on all Earnings variables are hypothesized to be positive, and all Expense variables are hypothesized to be negative.

Table 7: Market Reaction to Initial FAS132R Disclosure

This table tests whether firms that used high levels of discretion in setting pension assumptions for the pre-FAS132R fiscal year experienced negative abnormal returns when their use of discretion was disclosed to the market for the first time with the FAS132R disclosures. The regression model is as follows:

$$CAR_t = \beta_0 + \beta_1 * High\ Discretion_t + \sum \beta_j * Pension_t + \sum \beta_k * Pension_t * High\ Discretion_t + \varepsilon$$

CAR is the cumulative abnormal return for a period of three days surrounding the release of the firm's first FAS132R disclosure, estimating using a 120 day period ending 30 days prior the event date. In Column (1), High Discretion takes the value of 1 if the Total DR discretion is above the median for my sample, and zero otherwise. In Column (2), High Discretion takes the value of 1 if the Total ERA discretion is above the median for my sample, and zero otherwise. There are three pension variables included in this regression to indicate the importance of the pension plan to the firm. High Assets takes the value of 1 if the pension assets are in the top quartile of my sample, and zero otherwise. High PATA takes the value of 1 if the ratio of pension assets to total assets is in the top quartile of my sample, and zero otherwise. High Assets and PATA takes the value of 1 if both the pension assets and PATA are in the top quartiles, and zero otherwise.

	(1) DR	(2) ERA
High Discretion * High Assets	0.007	0.005
	(0.01)	(0.01)
High Assets	-0.007	-0.007
	(0.01)	(0.01)
High Discretion * High PATA	0.013	-0.007
	(0.01)	(0.01)
High PATA	-0.007	0.004
	(0.01)	(0.01)
High Discretion * High Assets and PATA	-0.032**	0.021
	(0.02)	(0.03)
High Assets and PATA	0.008	-0.026
	(0.01)	(0.03)
High Discretion	-0.000	0.004
	(0.01)	(0.01)
Constant	0.006*	0.005
	(0.00)	(0.00)
Number of Firms	296	296
Adjusted R^2	0.019	0.023

*, **, *** Denotes significance at a probability of <0.10, <0.05 and <0.01 respectively. Reported significant levels are based on one sided tests that the abnormal return is negative for high discretion firms.

Table 8: Effect of Accounting Incentives on Total Discretion

Panel A: Impact of AML and OCI Reporting on Total Discretion

This table examines the impact of accounting incentives created by the thresholds for reporting an Additional Minimum Liability (AML) or a charge to Other Comprehensive Income (OCI) on total discretion in the DR (Column 1 and 2) and ERA (Column 3 and 4). Post takes the value of 1 for the period following the implementation of FAS132R. The variables OCI and AML take the value of 1 if OCI or AML were reported for the fiscal year. The coefficient on OCI and AML represent the additional discretion firms with these reporting requirements used prior to the implementation of FAS132R, and the interaction terms the change in that discretion.

	(1) DR	(2) DR	(3) ERA	(4) ERA
Post * AML	0.045	0.155	0.093	-0.086
	(0.12)	(0.21)	(0.19)	(0.30)
AML	-0.015	0.009	0.030	0.069
	(0.11)	(0.13)	(0.17)	(0.19)
Post	-0.520***	-0.520***	-0.352***	-0.352***
	(0.04)	(0.04)	(0.08)	(0.08)
Post * OCI		-0.054		0.319
		(0.29)		(0.45)
OCI		-0.098		-0.161
		(0.24)		(0.39)
Constant	0.735***	0.735***	0.993***	0.993***
	(0.02)	(0.02)	(0.05)	(0.05)
Firms	296	296	296	296

*, **, *** Denotes significance at a probability of <0.10, <0.05 and <0.01 respectively based on two-tailed tests.

Panel B: Changes in Total Discretion Filtered by Funding Ratio

This table examines the impact of accounting incentives created by the funded position of the pension plan on total discretion in the DR (Column 1 and 2) and ERA (Column 3 and 4). The funded percent is the plan assets divided by the Accumulated Benefit Obligation (ABO). A ratio less than 100% implies that the plan is subject to an Additional Minimum Liability (AML) calculation, and possibly a charge to Other Comprehensive Income (OCI). The variable "between 100 and 105%" takes the value of 1 if the funded percent is between 100% and 105%, and zero otherwise. The variable "over 105%" takes the value of 1 if the funded percent is over 105%, and zero otherwise.

	(1) DR	(2) DR	(3) ERA	(4) ERA
Post * Funded Percent	-0.086		-0.328	
	(0.13)		(0.28)	
Funded Percent	0.156		0.113	
	(0.10)		(0.22)	
Post * Between 100% and 105%		-0.003		-0.032
		(0.12)		(0.24)
Between 100% and 105%		0.125		0.155
		(0.11)		(0.22)
Post * Over 105%		-0.095		-0.205
		(0.08)		(0.17)
Over 105%		0.026		0.050
		(0.07)		(0.13)
Post	-0.430***	-0.487***	0.009	-0.252***
	(0.13)	(0.04)	(0.26)	(0.07)
Constant	0.593***	0.720***	0.895***	0.977***
	(0.10)	(0.03)	(0.20)	(0.06)
Firms	296	296	296	296

*, **, *** Denotes significance at a probability of <0.10, <0.05 and <0.01 respectively based on two-tailed tests.

Table 9: Impact of Pension Plan Size on Total Discretion

Table 9 provides a set of regressions using either the total discretion in the DR (Columns (1), (3)) or the total discretion in the ERA (Columns (2), (4)) on a set of variables that reflect size of the pension plan. Post takes the value of 1 for the period following the implementation of FAS132R, and 0 for the period before implementation. Pension Assets is the natural log of the market value of the pension assets at year end. Pension to Total Assets is equal to Pension Assets divided by the Total Assets of the firm. Pension Sensitivity is the ratio of pension assets to operating income. NPPC is the FAS87 Pension Expense (Net Periodic Pension Cost) for the fiscal year following the disclosure date. NPPC to Net Income is the absolute value of the ratio of NPPC to Net Income before Extraordinary Items.

	(1) DR b/se	(2) ERA b/se	(3) DR b/se	(4) ERA b/se
Post * Pension Assets	-0.002	-0.040	-0.003	-0.042
	(0.02)	(0.03)	(0.02)	(0.03)
Pension Assets	0.026*	0.108***	0.026*	0.109***
	(0.01)	(0.03)	(0.01)	(0.03)
Pension to Total Assets * Post	-0.158	-0.260	-0.123	-0.312
	(0.21)	(0.35)	(0.22)	(0.35)
Pension to Total Assets	0.700***	0.557**	0.672***	0.628**
	(0.17)	(0.28)	(0.18)	(0.29)
Post FAS132R	-0.490***	-0.098	-0.480***	-0.097
	(0.10)	(0.18)	(0.10)	(0.19)
Pension Sensitivity * Post			-0.668	1.216
			(1.78)	(2.93)
Pension Sensitivity			0.796	-1.195
			(1.78)	(2.93)
NPPC to Net Income * Post			-0.027	0.073
			(0.06)	(0.09)
NPPC to Net Income			0.023	-0.078
			(0.06)	(0.09)
Constant	0.530***	0.432***	0.525***	0.435***
	(0.07)	(0.14)	(0.07)	(0.14)
Number of Firms	296	296	296	296

*, **, *** Denotes significance at a probability of <0.10, <0.05 and <0.01 respectively. All significance tests are based on two-tailed tests.