

**Economic Determinants of the Decision to Voluntarily Adopt
Mark-to-Market Accounting for Pension Gains and Losses**

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ABSTRACT

Since 2010 a number of firms have voluntarily adopted mark-to-market (MTM) accounting for the actuarial gains and losses associated with their defined benefit pension plans. This change requires them to begin immediately reporting such gains or losses in their income statements and is in marked contrast to their previous policy which smoothed such gains or losses into income over time. A novel aspect of the change is that adopting firms give up a reporting alternative with a built-in smoothing mechanism in exchange for one (MTM) that is expected to increase earnings volatility due to the unpredictable effect of uncontrollable market factors on the firms' future MTM adjustments. In this paper we develop and test predictions of the economic determinants of firms' decision to voluntarily adopt MTM for their pension-related actuarial gains and losses. The results paint a nuanced picture of how the costs and benefits of different accounting policies vary across firms and reveal that in addition to managerial opportunism, the information perspective and efficient contracting are also important considerations behind firms' adoption decisions. We further document that firms' MTM accounting choices are interconnected with their voluntary disclosures of non-GAAP earnings.

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1. Introduction

Beginning in 2010 a number of firms voluntarily adopted mark-to-market accounting for the actuarial gains and losses associated with their defined benefit (DB) pension plans (hereafter, MTM pension accounting or simply MTM) which would require them to report such gains or losses in their income statements. This voluntary change was a marked departure from their previous policy which smoothed such gains or losses into income over time. The objective of this paper is to develop and test predictions of the economic determinants of firms' decision to voluntarily adopt MTM for their pension-related actuarial gains and losses. While financial reporting rules for pensions have allowed such reporting since 2006 (FASB No. 158), prior to 2010 few firms availed themselves of that option. The paper's novel aspect is that it focuses on an accounting policy choice where firms gave up a smoothing mechanism (i.e., a financial reporting method) in exchange for a mechanism that likely increases earnings volatility. The likely increase in earnings volatility stems from the unpredictable effect of future uncontrollable market factors on the firms' pension MTM adjustments, where such factors would naturally increase, not decrease the volatility of earnings. Our setting is novel because the presumption in the accounting choice literature is that managers prefer smooth earnings and dislike volatility in reported earnings (e.g., DeFond and Park, 1997 and Graham et al., 2005).

We draw on prior literature and consider three non-mutually exclusive explanations of firms' decision to adopt MTM pension accounting -- the "information perspective", "efficient contracting" and "managerial opportunism" (e.g., Holthausen and Leftwich, 1983, Watts and Zimmerman, 1986, and Holthausen, 1990). As stated in Holthausen (1990), "the information perspective suggests accounting methods are chosen by managers to reveal managers'

expectations about the future cash flows of the firm.” Holthausen further states that “(t)he efficient contracting perspective with respect to accounting choice implies that accounting methods...will be selected to minimize agency costs amongst the various parties to the firm. This optimization will result in maximizing the value of the firm.” Therefore, under both the information and efficient contracting perspectives, managers make efficient and value-maximizing accounting choices.¹ This is in contrast to the “managerial opportunism” explanation, under which managers use accounting method choice to extract private benefits, for example, in the form of higher compensation or lower probabilities of dismissal. Thus the managers’ accounting choice is designed to maximize their own wealth, which may reduce, rather than increase firm value.

Prior research suggests that accounting information can simultaneously play a dual role in valuation and contracting/stewardship (e.g., Bushman et al., 2006). If the adoption of MTM pension accounting results in more informative financial information for investors, it may also improve the efficiency of the contracts that rely on the accounting information. For the purpose of hypothesis testing, we do not explicitly distinguish between the information perspective and the efficient contracting view (we recognize both factors in our hypothesis development and empirical results). Rather, we combine these two explanations and refer to them collectively as the “informativeness” hypothesis, and contrast this hypothesis with the “managerial opportunism” hypothesis.

Building on the distinction developed above, the adoption of MTM pension accounting could be motivated by managers’ desire to improve accounting informativeness. This is because

¹ When contrasting the efficient contracting and information perspectives, Holthausen (1990, p. 209) notes that accounting choices made under the efficient contracting perspective affect a firm’s cash flows (for example, by reducing agency costs) while those choices made under the information perspective do not directly affect a firm’s cash flows, but rather “provide information about the future cash flows of the firm.” Nevertheless, firm value can still be influenced by accounting method choices under the information perspective through the effect of accounting information quality on the discount rate (e.g., Lambert, Leuz and Verrecchia, 2007).

under FAS No. 158 firms amortize actuarial gains and losses through a complicated smoothing mechanism that may bear little relation to the firms' fundamental performance. As a component of pension expense, the amortized actuarial gains/losses are typically included as a part of the firm's core earnings which are often the focus of analyst forecasts and can also affect the performance measures in various contracts. As a result, the informativeness of earnings for both valuation and contracting purposes may be compromised by the inclusion of amortized actuarial gains/losses in a firm's core earnings. However, by adopting MTM pension accounting, a firm's pension expense and core earnings are not longer affected by the amortized actuarial gains/losses. If these amortized gains/losses previously had a negative effect on accounting informativeness, MTM adoption is expected to be associated with an improvement in the usefulness of accounting earnings for both valuation and contracting purposes.

On the other hand, the adoption of MTM pension accounting also results in a potentially significant and volatile item (i.e., the actuarial gains/losses that mainly reflect market forces outside of the manager's control), now being included in a firm's bottom line net income, which may decrease the informativeness of earnings (e.g., Hann et al., 2007). We find evidence that the MTM actuarial gains/losses are for the most part excluded from firm pro-forma earnings and from the earnings measures that firms use for management compensation contracts after adoption. These findings are consistent with firms acting to mitigate the potential negative impact of MTM accounting on the informativeness of accounting earnings from both a valuation and contracting perspective.

The above discussion is supported by the anecdotal evidence of adopting firms (e.g., AT&T, United Parcel Service (UPS), and Verizon) indicating that MTM pension accounting

benefits investors, analysts, etc., by leading to more transparent financial reports. For example, in a January, 13, 2011 press release AT&T states:

“AT&T Inc. (NYSE:T) announced today via a filing with the SEC that, in order to improve the transparency of its financial reporting, it has changed its method of recognizing actuarial gains and losses for pension and other post-retirement benefits... *AT&T expects the change to a market-based approach will result in simpler, more transparent financial results by linking results directly to current market returns, interest rates and health care costs. The change will not impact AT&T's cash flow or pension funding requirements.*” (emphasis added)²

However, the potential for firms’ adoption of MTM to be driven by managers’ desire to strategically alter their firms’ financial statements to report higher current and future profits (i.e., managerial opportunism) did not go unnoticed by analysts and commentators in the financial press. Such observations were based on the fact that the balance sheets of most MTM adopters showed large accumulated losses that had not yet been amortized into income, but absent the MTM adoption would otherwise have had to be amortized into income in the coming years. For such firms, “opportunistic” adoption of MTM means that all such losses would be written off as an adjustment to stockholders’ equity in the year of the change, which means that such losses would no longer hit future years’ income statements as amortization expense. Such opportunism is analogous to the “big bath” explanation offered to explain managers’ rationale to take large accounting write-offs. Along these lines, a March 9, 2011 article in *The Wall Street Journal* on firms’ adoption of MTM reporting quoted a Credit Suisse analyst as saying “They’ll put the bad news behind them.”

Our sample consists of 40 firms that adopted MTM pension accounting between 2010 and 2013 and their industry-size matched control firms. Even though our sample represents only about 3% of the total number of firms with DB plans on COMPUSTAT, they account for close

² See Appendix A for press releases of several adopting firms.

to 9% of the total projected pension obligations (PBO).³ As we show later, the annual adoption frequency is highly correlated with the pension discount rate and overall market performance, both determinants of the accumulated actuarial gains/losses.

To test predictions of the economic determinants of firms' voluntary choice of MTM accounting and to assess the resulting consequences of that choice we conduct the following tests. First, we use a logistic regression model to identify the economic factors that we hypothesize to explain firms' adoption of MTM pension accounting. Second, to test the informativeness hypothesis we compare the firms' earnings response coefficients (ERCs) and analyst forecast dispersion before and after the adoption of MTM. Finally, to explicitly test the opportunistic explanation we analyze the relation between CEO cash compensation and the pre-adoption period amortized actuarial losses (all adopting firms have accumulated actuarial losses pre-MTM adoption).

At a general level, the results reveal that both the informativeness and opportunism hypotheses are useful in explaining cross-sectional variation in MTM adoption decisions. The informativeness hypothesis is supported by the results of the logistic regression where we find that firms with a low level of pre-adoption ERCs are more likely to adopt MTM accounting. In addition, we find that MTM adopting firms experience an increase in ERC (i.e., an increase in earnings informativeness) and a decrease in analyst forecast dispersion from the pre- to post-adoption period relative to a matched-sample of control firms. The logistic regression results also support the opportunistic explanation for MTM adoption because such tests document that the likelihood of MTM adoption is higher when analysts have lowered expectations about a firm's future performance. A decline in a firm's expected future earnings performance is a determinant

³ There are around 1,400 firms with DB plans in COMPUSTAT between 2010 and 2013. These firms have a combined market value of roughly \$11 trillion and PBO of \$2.4 trillion.

of managers' opportunistic adoption of MTM because MTM adoption enables managers with large accumulated and unrecognized actuarial losses (that would otherwise have had to hit future income statements in the form of amortization expense) to instead be opportunistically written off as a one-time adjustment to retained earnings in the adoption year. Simply put, managers opportunistically use MTM adoption to take a "big bath" to get bad news/large accumulated pension actuarial losses behind them (again, all adopting firms have accumulated actuarial losses pre-MTM adoption).

In addition, based on regression tests and examination of the bonus plans in the adopting firms' proxy statements, we find that the CEO cash compensation of adopting firms is sensitive to the amortization of actuarial losses in the pre-MTM adoption period, evidence of a compensation-related motive for MTM adoption because such adoption effectively removes the effect of the accumulated actuarial losses from future earnings and hence from future management bonuses.

On the other hand, we also find, based on both regression tests and examination of the adopting firm's proxy statements, that after MTM adoption, adopting firms' CEO cash compensation is insensitive to the firms' actual reported MTM pension adjustments regardless of the sign of the adjustments. Since post-adoption MTM pension adjustments can be either a gain or loss depending on market conditions (our sample firms have a median MTM pension adjustment of zero), these results are less consistent with the opportunism explanation and more consistent with efficient contracting because uninformative earnings components are excluded from the performance measure used in contracts post-adoption.

Our paper adds to the accounting method choice literature by investigating the economic determinants of firm voluntary adoption of MTM pension accounting. Prior work that examines

firms' accounting choices generally conclude in favor of the managerial opportunism hypothesis (e.g., Amir and Ziv, 1997, Dechow et al., 2010, Baderscher et al., 2012, Shalev et al., 2013) while evidence on the information perspective and efficient contracting hypothesis is limited and often inconclusive (e.g., Holthausen and Leftwich, 1983, Holthausen, 1990, Christie and Zimmerman, 1994). We answer the call in Fields et al. (2001) to consider multiple goals of managers and our analysis paints a nuanced picture of the alternative managerial incentives and considerations that go into the adoption decision. While we find support for the opportunism explanation, our evidence indicates that the information perspective and efficient contracting motive are also important considerations in the adoption decision.

Our analysis and results also relate to the pro-forma earnings disclosure literature because we find that the income statement classification of an expense can be an important consideration in firms' accounting method choice decisions. Specifically, our findings reveal that after adopting MTM pension accounting, managers utilize non-GAAP earnings disclosures which exclude MTM pension adjustments presumably in order to attenuate the adverse impacts (i.e., decreases in the persistence, and increases the volatility, of earnings) of immediately recognizing unrealized gains or losses in net income. Our results are consistent with financial reporting method choices, in particular MTM accounting choices, and voluntary disclosure of non-GAAP earnings being interconnected to each other.

Our paper also contributes to the pension accounting literature. Prior research focuses primarily on managers' opportunistic motives of exercising discretion under accounting rules for pensions to manipulate earnings (Bergstresser, et al., 2006; Chuk, 2013), and usefulness of pension footnotes to investors or sell-side equity analysts (Picconi, 2006; Hann, et al., 2007). Although opportunism arises as a motive of MTM adoption, our evidence is consistent with

managers exercising an option to adopt MTM pension accounting in order to improve accounting informativeness as well.

The remainder of the paper is organized as follows. Section 2 provides institutional background on financial reporting for defined benefit pension plans. Section 3 reviews related literature and develops predictions under the “informativeness” and “managerial opportunism” explanations for firms’ adoption of MTM accounting. Section 4 describes the research design, Section 5 reports the results of the empirical tests and Section 6 concludes.

2. Institutional Aspects of Financial Reporting for Defined Benefit Pension Plans

The FASB and its predecessor the Accounting Principles Board (APB) issued numerous pronouncements related to pensions.⁴ Extant authoritative accounting rules for pensions are specified in the FASB Accounting Standards Codification 715 (ASC 715), Compensation-Retirement Benefits. Under ASC 715, a reporting entity (hereafter a firm) recognizes the funded status of its pension plans on its balance sheet as a net increase to a liability (asset) account if the plans are underfunded (overfunded) where funding status is the difference between the fair value of the plan assets (FV) and the projected benefit obligations (PBO). As a result, balance sheet recognition rules reflect to some extent MTM information prior to the sample firms’ decision to adopt MTM accounting for the actuarial gains and losses associated with their pension plans. In contrast to the balance sheet reporting rules, recognition of the effects of pension plans in the income statement does not strictly adhere to MTM accounting, but rather involves several smoothing mechanisms. Specifically, the expected return on plan assets are measured using an expected rate of return times the market-related value, instead of fair value, of the plan assets and a firm is allowed to smooth market-related value over a period of not more than five years. In

⁴ These include APB No. 8 in 1966, followed up by FAS No. 87 in 1985, FAS No. 132 in 1998, FAS No. 132R in 2003 and FAS No. 158 in 2006.

addition, the recognition of the prior service cost attributable to plan amendments is also smoothed, as opposed to being recognized into the income statement when it occurs (this cost is generally amortized into income over the average remaining service life of plan participants).

Arguably, the most controversial aspect of the smoothing mechanism is the amortization of actuarial gains and losses (which were introduced in pre-Codification FAS No. 87 in 1985 and continue to remain in pre-Codification FAS No. 158 in 2006). Actuarial gains and losses arise because (ex-post) actual outcomes typically differ from (ex-ante) actuarial assumptions, for example, regarding mortality rate, turnover, pay raises and discount rate, and actual returns on plan assets may differ from expected returns. A key feature of such actuarial gains and losses is that authoritative accounting rules governing pensions do not require a firm to recognize unexpected gains and losses in the income statement when they incur. Instead only a small fraction of the netted actuarial gains or losses are amortized into the income statement, i.e., the amount that is outside of the “corridor” of 10% of the higher of market-related value of pension plan assets or PBO, amortized over the average remaining service life of plan participants, while the remaining portion of any unrecognized actuarial gains and losses is recognized as a component of accumulated other comprehensive income with a corresponding offset to a pension asset or liability in the balance sheet. Even though the smoothing of actuarial gains and losses reduces the volatility of accounting earnings, compared to the alternative of immediate income statement recognition of actuarial gains and losses, it is heavily criticized by analysts and other users of financial statements due to the concern that when accounted for in this way, reported pension costs do not reflect the economic costs of maintaining pension plans.⁵

⁵ Specifically, the Association for Investment Management and Research (forerunner of CFA Institute) criticized pension accounting in a comment letter to the FASB’s exposure draft for FAS No. 132R as follows: “...the financial statement recognition provisions which permitted much of the unfunded pension obligations to remain off-balance sheet, combined with the dense labyrinth of *cost-deferral and smoothing mechanisms*, worked to ensure that little of

While the authoritative accounting rules prescribe the smoothing mechanisms above, firms have additional options. Under FAS No. 158, a firm can adopt amortization methods to recognize actuarial gains and losses faster than the specified minimum in the authoritative pension rules, an extreme version of which would be to use MTM accounting for actuarial gains and losses.⁶ Despite such options being available since 2006, most firms did not exercise the option of adopting MTM until 2010. As indicated in Table 1, we have identified 40 firms voluntarily adopting MTM pension accounting since 2010. Upon doing so, such firms are required to report changes in accounting for pensions to prior periods' financial statements through retrospective application (per ASC 250, Accounting Changes and Error Corrections and Pre-Codification FAS 154 in 2005). In other words, they applied MTM pension accounting to all financial statements presented in the year of adoption as if the new accounting policy had always been used. For example, when AT&T adopted MTM pension accounting in 2010 it made adjustments to its 2008 and 2009 financial statements as if the new policy had been applied from the beginning of 2008. Perhaps the most compelling financial reporting consequence of reporting its MTM adoption in this fashion is that AT&T was able to charge \$17 billion of actuarial losses, previously held in accumulated other comprehensive income and thus awaiting amortization to future years' income, in total against its fiscal year 2008 beginning Retained Earnings balance.⁷

the economic status and changes in the status of the plan reached the company's financial statements in a timely fashion [*emphasis added*].”

⁶ ASC 715-30-35-25 states: any systematic method of amortization of gains or losses may be used in lieu of the minimum specified the preceding paragraph [ASC 715-30-35-24] provided that (a) the minimum is used in any period which the minimum amortization is greater (reduces the net balance included in accumulated other comprehensive income by more), (b) the method is applied consistently, [and] (c) the method is applied similarly to both gains and losses.

⁷ Our reading of adopting firms' press releases and annual reports revealed several interesting reporting practices subsequent to the adoption. First, firms usually report MTM gains and losses in the fourth quarter, whereas they report other pension costs every quarter. Second, firms often change the method of allocating pension costs to operating segments. For example, after adopting MTM, firms often allocate MTM gains and losses to the “corporate/others” segment, whereas they allocate all pension costs to operating segments pre-adoption. Third, the firms usually exclude MTM gains and losses from their non-GAAP results in the post-adoption period. Additional analysis of adopting firms' post-adoption reporting practices is provided in Section 5.7.

In addition to the recognition requirements of pension accounting, current accounting rules also require firms to disclose detailed information about pensions in the footnotes. Required footnote disclosures include: (1) reconciliations of the beginning and ending balances of the pension benefit obligation (PBO) and the fair value of the plan's assets and its funding status, (2) actuarial assumptions, (3) the composition of the major categories of pension plan assets in the portfolio, (4) net periodic pension benefit costs (i.e., service cost, interest cost, expected return on plan assets, amortization of prior service cost, and amortization of actuarial gains and losses), and (5) actuarial gains and losses and prior service cost included in accumulated other comprehensive income (AOCI) that have not yet been recognized in net periodic pension benefit costs. An interesting feature of the required footnote disclosures is that amortization of actuarial gains and losses and actuarial gains and losses that have not yet been recognized in net periodic pension benefit costs are available to users of the financial statements. We revisit this aspect of pension reporting in Section 3.

3. Related Research and Predictions

3.1. Related research

Prior research on accounting choice has identified the information perspective, efficient contracting and managerial opportunism as economic explanations for why firms choose the accounting methods they do, and why they change from one policy to another (see for example, Watts and Zimmerman, 1986, Holthausen and Leftwich, 1983, Holthausen, 1990, and Fields, et al., 2001). Much of the empirical work on managerial accounting choice to date has focused on the opportunism explanation. Summaries of early work on opportunism can be found in Watts and Zimmerman (1986), Holthausen and Leftwich (1983) and Fields, et al., (2001). Several recent studies document the role of managerial opportunism in the context of fair value

accounting choice. For example, Dechow, et al. (2010) analyze the application of fair value accounting to asset securitization transactions and find results consistent with managers using fair value gains to increase reported income and management compensation. Shalev, et al. (2013) study post-acquisition purchase price allocations and find results consistent with managers over-allocating purchase price to Goodwill (which is not amortized) to increase post-acquisition earnings and bonuses.

Clear empirical evidence supporting the efficient contracting view of accounting method choice has been limited. Christie and Zimmerman (1994) examine the accounting methods of a sample of takeover targets (to maximize the likelihood of finding opportunism) and conclude that efficient contracting is a more important explanation of managerial accounting choice although they also find evidence of opportunism. Holthausen and Leftwich (1983) and Holthausen (1990), on the other hand, point out the difficulties in drawing definitive inferences with regard to the role of efficient contracting in accounting method choice.

Empirical support for the information perspective is also limited. Aboody, et al. (2004) analyze firm decision to voluntarily recognize stock-based compensation expense via early adoption of FAS No. 123 and find that early adopters, particularly those stating improving earnings transparency as a motive, experience positive announcement period stock returns. Badertscher, et al. (2012) study a sample of restatement firms and find that both opportunism (in terms of meet-or-beat behavior) and transparency drive firms' discretionary accounting choice. Haggard, et al. (2014) who investigate whether earnings "baths" (large, non-recurring charges) improve or degrade firms' information environment, concluding that the information environment generally improves after such earnings charges, where improvements are more pronounced for baths involving less managerial discretion.

In light of prior research, our setting of MTM pension reporting provides a unique opportunity to develop predictions related to both the accounting informativeness (which encompasses the information perspective and efficient contracting view in the literature) and managerial opportunism explanations of firms' choice of MTM pension accounting. Accounting informativeness is a particularly salient issue when it comes to pension reporting because current pension accounting rules, especially those governing the amortization of pension gains and losses, have long been assailed as overly complex, thus adding to concerns about reporting opacity (e.g., Picconi, 2006). On the other hand, under MTM pension accounting the unrealized pension gains and losses are directly reflected in net income, potentially lowering the persistence and increasing the volatility of earnings and reducing their decision usefulness (e.g., Hann, et al., 2007).

3.2. Predictions

As noted in Section 2, under the smoothing mechanism that is a part of the sample firms' pre-MTM adoption pension reporting policy, the firms' amortized pension gains and losses as well as the unamortized portion of their gains and losses are disclosed in the pension footnotes. Therefore, the firms' switch to MTM accounting does not necessarily result in an expansion of the total information available to investors and analysts. Rather, if the amortized pension gains and losses under the pre-adoption smoothing model in fact obfuscated a firm's underlying economic performance, presumably investors and analysts could have backed it out of the firm's reported income. However, the income statement recognition versus footnote disclosure of amortized pension gains and losses is unlikely a matter of indifference to the firms, for two reasons. First, compensation and debt contracts are generally written on reported earnings. Even though the performance measures may be adjusted based on information disclosed in the

footnotes, making these adjustments in contracts are unlikely to be costless. Second, extant literature finds that investors treat financial statement recognition and footnote disclosures differently. For example, Amir (1993) finds that investors underestimate post-retirement benefits other than pensions based on footnote disclosure under FAS. No. 87, while Picconi (2006) finds that investors and analysts do not fully impound information contained in pension footnotes.

Another important consideration that likely factors into a manager's decision to adopt MTM accounting is that the classification of pension-related gains and losses likely changes upon adoption. Specifically, while the amortized gains/losses under the pre-adoption smoothing model are part of the firms' operating income, the post-adoption unrealized gains and losses under MTM accounting are likely treated as non-operating/non-recurring items on the income statement, making it easier for managers, investors and analysts to remove them from reported earnings, pro-forma earnings and street earnings, and from the performance measures used in contracts.

Turning to our predictions, while there is no universally accepted definition of accounting informativeness, we measure informativeness using short-window earnings response coefficients (ERCs). Pension gains and losses under MTM reporting are a clearly defined non-operating item reported on the income statement, which is expected to increase earnings volatility. Given the expected effect on earnings volatility, we expect our sample of MTM adopting firms to exclude this item from their pro-forma earnings. We note this because street earnings exclusions are likely influenced by management guidance (e.g., Christensen et al., 2011), hence it is likely that MTM pension gains and losses are excluded from (I/B/E/S) analyst earnings forecasts as well as actual earnings. As a result, it is not obvious that MTM pension gains and losses will affect the

adopting firms' post-adoption ERCs. On the other hand, under the pre-adoption smoothing regime the amortized gains and losses are part of the firm's operating income and disclosed in the pension footnotes. Hence it seems less likely that analysts would consistently exclude this item from their earnings forecasts. As a consequence, the amortized gains and losses from the pre-adoption smoothing model are likely to have an impact on the firms' pre-adoption ERCs. If such amortized gains and losses are less indicative of a firm's real underlying economic performance as alleged by critics of existing pension reporting rules, then unexpected earnings is predicted to trigger smaller stock price reactions from investors (i.e., ERCs would be lower). This discussion leads to the following prediction:

Informativeness Hypothesis: Firms with a low level of short-window earnings response coefficient are more likely to adopt MTM accounting.

Amir and Ziv (1997) find that firms that experience income increasing effects from the adoption of FAS No. 106 for post-retirement benefits are likely to adopt the standard early. Similarly, the adoption of MTM for pensions can also reflect a manager's incentive to increase reported income, and by extension, their own compensation. For firms with large unrealized pension losses, adopting MTM accounting removes all accumulated losses in one strategic action because the one-time adjustment upon adoption is made to beginning Retained Earnings, which means those accumulated losses would never appear in the income statement. From an opportunistic perspective the adopting manager avoids the hit to future earnings and potentially to management compensation that would otherwise have resulted from future amortization expense. This discussion leads to the following prediction:

Opportunism Hypothesis: Firms that experience decreases in expectations about future profitability are more likely to adopt MTM accounting.

4. Research Design

4.1. Sample selection

We identify firms adopting MTM for their pension reporting from the *Accounting Observer*.⁸ We check and augment that list by searching press releases on Factiva and 10-K and 10-Q filings on Lexis/Nexis. This process yields 40 firms adopting MTM accounting with adoption (fiscal) years ranging from 2010 to 2013 (we also identify the actual fiscal quarter of adoption). We lose 7 firms because two firms are private or incorporated overseas while five lack financial statement, proxy statement or stock price data. The final sample of the 33 firms is provided in Table 1. We construct a sample of control firms from the COMPUSTAT/Pension dataset, which ensures that the control firms have defined benefit pension plans. We require a control firm to be incorporated in the U.S., have the same fiscal year end, be the closest in terms of total assets, and be in the same two-digit SIC code as its matched treatment firm.

Figure 1 plots the number of adopting firms from 2006 (when MTM accounting for actuarial gains/losses was first allowed under FAS No. 158) to 2013, along with the pension discount rate.⁹ As noted earlier, we start to observe firms adopting MTM pension accounting since 2010. A large part of the time series variation in the number of adoptions can be explained by the movement in the pension liability discount rate (a Pearson correlation of -0.93 between the two time series). It appears that the decline in discount rate in recent years, which would have increased actuarial losses and pension liabilities, was a major impetus for the adoptions. Figure 2 plots the expected rate of returns on pension plan assets versus the actual returns over time. The

⁸ We thank Jack Ciesielski of R. G. Associates, Inc. for providing the list of firms.

⁹ We use the Citigroup Pension Liability Index, which is provided by The Society of Actuaries to its members, for the discount rate. However, firms have discretion to use other sources for setting pension liability discount rates. The Citigroup Pension Liability Index is constructed as an annualized yield on a “typical” pension liability to summarize the level of the Pension Discount Curve into a single number. During the period 2006–2013, a “typical” pension plan has the duration of 16.9 years.

expected returns are fairly stable, though actual returns indicate large losses during the financial crisis, which again would have contributed to actuarial losses.

4.2. The Economic Factors Associated with Firms' Decision to Adopt MTM Pension Accounting

To test predictions of the economic determinants of firms' voluntary adoption of MTM accounting we estimate the following logistic regression model using 61 firms (32 treatment firms and 29 size-matched control firms) for which data are available to compute all variables:¹⁰

$$\begin{aligned} Prob[TREAT = 1] = & \text{logit}(\beta_0 + \beta_1 ACT_L/G_{t-1} + \beta_2 ERC_{q-1} + \beta_3 EPS_GR_REV_q + \\ & \beta_4 OPINC_{t-1} + \beta_5 EVOL_{t-1} + \beta_6 MNC_IND_t + \beta_7 DBTISS_{t+1,t+3} + \beta_8 STKISS_{t+1,t+3} + \\ & \beta_9 LNTA_t), \end{aligned} \quad (1)$$

where TREAT is an indicator variable that equals one (zero) for firms adopting MTM pension accounting (control firms); t is the fiscal year of adoption for treatment firms (a pseudo fiscal year for control firms); and q is the fiscal quarter of adoption for treatment firms (a pseudo fiscal quarter for control firms). A pseudo fiscal year and quarter denote a year and quarter in which size-matched control firms are presumed to adopt MTM pension accounting.

ACT_L/G is a firm's accumulated unrecognized actuarial losses or gains measured as of the pre-adoption year and deflated by lagged total assets, with a *positive* (negative) value indicating actuarial *losses* (gains); ERC is a firm's short-window firm-specific earnings response coefficient estimated over the eight quarters ending with the quarter prior to the adoption quarter (we estimate OLS regressions of cumulative abnormal stock returns over the three days centered on the earnings announcement date on unexpected earnings measured as the difference between actual EPS and median analyst EPS forecast, both from I/B/E/S, deflated by stock price); EPS_GR_REV measures revisions in EPS growth, which is our proxy for changes in expectations about a firm's future profitability at the time of its adoption of MTM

¹⁰ We exclude one (four) treatment (control) firm(s) because they lack I/B/E/S data.

[EPS_GR_REV = the natural logarithm of $\frac{EPS_{END}^{t=0}}{EPS_{BEG}^{t=0}} \times \frac{EPS_{END}^{t=1}}{EPS_{BEG}^{t=1}} \times \frac{EPS_{END}^{t=2}}{EPS_{BEG}^{t=2}}$, where END and BEG indicate the latest and the earliest median analyst annual EPS forecast over the twelve months leading up to the adoption of MTM pension accounting, for the adoption year ($t = 0$) and the subsequent two years]; OPINC is operating income deflated by average total assets.

These variables can be related back to our predictions as follows. First, ACT_L/G is a proxy for both the informativeness and opportunism explanations for MTM adoption. For example, since the magnitude of actuarial losses or gains is associated with the amount of future amortization expense (which by definition would serve to lower future earnings since all adopting firms have actuarial losses), ACT_L/G is a proxy for the benefits derived by managers from opportunistically adopting MTM and to strategically recognize all accumulated losses as a one-time adjustment to Retained Earnings, thereby bypassing current and future years' income statements in the process. On the other hand, ACT_L/G can also be a proxy for the informativeness motive because the smoothing of this amount into firms' reported earnings under their pre-adoption policy can adversely affect the informativeness of the firm's earnings by masking its real underlying performance. In either case, ACT_L/G will be positively related to the MTM adoption decision (i.e., $\beta_1 > 0$). Second, ERC is our proxy for the informativeness motivation. If firms adopt MTM accounting to improve the informativeness of their financial statements so that they better reflect the firm's underlying economic performance then ERC will be negatively associated with the adoption of MTM accounting (i.e., $\beta_2 < 0$). Third, if firms adopt MTM accounting in anticipation of deteriorating future profitability, under the opportunism hypothesis, we expect EPS_GR_REV to be negatively associated with the adoption decision (i.e., $\beta_3 < 0$). In a similar fashion (i.e., under the opportunism hypothesis), we also expect OPINC

(a measure of current profitability) to be negatively associated with firms' MTM adoption choice (i.e., $\beta_4 < 0$).

The logistic regression model also includes several control variables. EVOL is the volatility of a firm's earnings measured over a minimum (maximum) of three (five) firm-years prior to the adoption fiscal year and is designed to control for a disincentive (i.e., a cost) to voluntarily adopting MTM accounting because firms that have a high level of earnings volatility at the adoption date face higher costs of giving up the smoothing mechanism in exchange for a mechanism (i.e., MTM) expected to increase earnings volatility even further. MNC_IND is an indicator variable equal to one (zero) if a firm is (is not) a multinational corporation and is designed to control for a firm's incentive to adopt MTM because the firm may be preparing financial statements for its foreign operations under International Financial Reporting Standards which already include similar MTM adjustments. We include two variables related to firms' capital market activities. DBTISS and STKISS are an indicator variable equal to one (zero) if a firm issues (does not issue) long-term debt and seasoned equity during the three year post-adoption period, respectively. Finally, we include the natural logarithm of a firm's total assets to control for firm size (see Appendix B for additional details related to variable definitions and measurement).

4.3. Changes in Earnings Response Coefficients and Analyst Forecast Dispersion from Pre- to Post-Adoption

To further test the informativeness hypothesis we compare the ERC and analyst forecast dispersion of the treatment and control groups before and after the adoption of MTM accounting. For ERC, we estimate the following regression on a sample of 518 firm-quarters consisting of four quarters prior to and four quarters subsequent to the (pseudo) adoption quarter for adopting

(control) firms. The unit of observation is a firm-quarter and the adoption quarter is included in the post-adoption period:

$$\begin{aligned}
 CAR_{-1,+1} = & \theta_0 + \theta_1 UE + \theta_2 POST + \theta_3 TREAT + \theta_4 UE * POST + \theta_5 UE * TREAT + \\
 & \theta_6 UE * POST * TREAT + \theta_7 UE * BETA + \theta_8 UE * LNMVAL + \theta_9 UE * MB + \epsilon_{-1,+1}, \\
 (2)
 \end{aligned}$$

where $CAR_{-1,+1}$ is the firm's cumulative market-adjusted abnormal return (using the value-weighted index) over the three days centered on its quarterly earnings announcement date; UE is unexpected earnings (I/B/E/S reported EPS - median analyst EPS forecast) deflated by stock price; $POST$ is an indicator variable taking on a value of one for the post- (pseudo) adoption period, and zero otherwise; $TREAT$ is an indicator variable equal to one (zero) for the treatment (control) group; $BETA$ is a firm's systematic risk (estimated using monthly stock returns and the CRSP value-weighted returns over the 36 month period ending in the month prior to the adoption quarter-end); $LNMVAL$ is the natural logarithm of the firm's market capitalization; and MB is the ratio of the firm's market value of equity to its book value of equity. Our interest is the coefficient on $UE*POST*TREAT$ (θ_6) because it captures the incremental ERC of adopting firms relative to control firms from the pre- to post-adoption period. If the MTM accounting change of adopting firms increased the earnings informativeness relative to that of the control firms, θ_6 will be positive.

In addition to ERC we use analyst forecast dispersion to proxy for accounting informativeness and estimate the following regression model based on 484 firm-quarter observations.

$$\begin{aligned}
 A_DISP_q = & \varphi_0 + \varphi_1 POST + \varphi_2 TREAT + \varphi_3 POST * TREAT + \varphi_4 BETA + \\
 & \varphi_5 LNMVAL + \varphi_6 MB + \epsilon_{-1,+1}, \\
 (3)
 \end{aligned}$$

where A_DISP is analyst forecast dispersion measured as the average of the monthly standard deviations of analyst EPS forecasts as reported in I/B/E/S for the quarter. Other variables are as previously defined. Our interest lies in the coefficient on POST*TREAT (ϕ_3) because it measures the incremental shift in analyst forecast dispersion for adopting firms relative to control firms from the pre- to post-adoption period. We expect ϕ_3 to be negative if the adoption of MTM pension accounting is associated with reduced analyst forecast uncertainty (i.e., improved accounting informativeness).

4.4. Relations between CEO Cash Compensation and the Pre-Adoption Amortization of Actuarial Losses/Gains and the Post-Adoption MTM Pension Adjustments

To test the managerial opportunism hypothesis we analyze the sensitivity of CEO cash compensation to the amortization of actuarial losses pre-adoption. As noted earlier, all adopting firms have actuarial losses pre-adoption. Therefore, if the amortization of the losses is factored into CEO compensation before adoption, managers can have an incentive to adopt MTM accounting, which will effectively shield future earnings and future management compensation from the losses. We estimate the OLS regression below separately for the treatment group and control groups (basic specification following Sloan, 1993 and Leone, et al., 2006):

$$\begin{aligned} \Delta \ln(\text{Cash})_t = & \gamma_0 + \gamma_1 \Delta \text{AMT}_t + \gamma_2 \Delta \text{ROA_OPINC_adj}_t + \gamma_3 \text{RET}_t + \gamma_4 \text{SALES}_t + \\ & \gamma_5 \text{SALES}_t * \text{SALES}_t + \varepsilon_t, \end{aligned} \quad (4)$$

where $\Delta \ln(\text{Cash})$ is the change in the natural logarithm of CEO cash compensation; ΔAMT is the change in amortization of actuarial losses/gains, where a *positive* (negative) value for AMT denotes amortization *expense* (income), deflated by lagged total assets; $\Delta \text{ROA_OPINC_adj}$ is the change in operating income adjusted for amortization of actuarial losses or gains, deflated by lagged total assets; RET is the buy-and-hold stock return for fiscal year t. SALES and SALES*SALES are included to control for non-linear effects of size. The coefficient of interest

is γ_1 (the coefficient on ΔAMT). If CEO cash compensation includes changes in amortization of actuarial losses or gains, γ_1 will be negative (recall that AMT is positive (negative) when it reflects pension expense (income)). We estimate eq. (4) on samples of 133 (123) treatment (control) firm-years consisting of a maximum of five years prior to the adoption fiscal year (pseudo adoption fiscal year) for treatment (control) firms.

We also analyze the sensitivity of CEO cash compensation to post-adoption MTM pension adjustments by estimating the following model for the treatment group only (firms adopting MTM pension accounting in fiscal year 2013 are excluded because their post-adoption proxy statements are not yet available):

$$\Delta\ln(\text{Cash})_t = \delta_0 + \delta_1\text{MTM_adjustment}_t + \delta_2\text{LOSS_IND}_t + \delta_3\text{MTM_adjustment}_t * \text{LOSS_IND}_t + \delta_4\Delta\text{ROA_adj}_t + \delta_5\text{RET}_t + \delta_6\text{SALES}_t + \delta_7\text{SALES}_t * \text{SALES}_t + \varepsilon_t \quad (5)$$

where MTM_adjustment is a firm's post-adoption MTM pension adjustment measured on an annual basis deflated by lagged total assets, where a *positive* (negative) value for MTM_adjustment denotes a *loss* (gain); LOSS_IND equals one for negative MTM pension adjustments, and zero otherwise; $\Delta\text{ROA_adj}$ is the change in earnings before extraordinary items deflated by lagged total assets and after adjusting for the firm's MTM adjustment. Unlike eq. (4), which uses operating income, eq. (5) uses earnings before extraordinary items because post-change MTM adjustments are typically made to bottom-line earnings in the fourth quarter of each year.

Managerial opportunism would suggest a negative δ_1 on the main effect of MTM_adjustment for gains and a positive δ_3 on the interactive term MTM_adjustment*LOSS_IND. In other words, actuarial losses affect compensation less than actuarial gains. On the other hand, insignificant coefficients on these regression terms would

imply that an MTM pension adjustment is excluded from CEO cash compensation regardless of its sign, which is inconsistent with opportunism but supports the efficient contracting view, i.e., the less informative earnings components are adjusted out of the performance measures used in CEO compensation contracts.

5. Results

5.1. Descriptive Statistics

Table 2 presents descriptive statistics for variables used in the empirical tests where Panel A reports descriptive statistics for variables used in the logistic regression tests of the determinants of the decision to adopt MTM accounting; Panel B (C) for variables used in the ERC (analyst forecast dispersion) analysis; and Panel D (E) for variables used in the CEO cash compensation and pre-adoption amortized actuarial losses/gains (post-adoption MTM pension adjustments). Panel A reveals that the treatment group reports a greater amount of actuarial losses in the year prior to adoption compared to the control group. Specifically, means of actuarial losses or gains (ACT_L/G) are 15.2% (6%) of lagged total assets for the treatment (control) group, respectively. It is also the case that *all* firms, in both the treatment and control groups, report unrecognized actuarial *losses* (unreported results). The existence of actuarial losses is a reflection of the general economic conditions (i.e., low interest rates and poor stock market performance) in recent years and likely motivated some firms' decisions to adopt MTM accounting. The mean ERC of adopting firms is lower than that of the matched control firms, consistent with the idea that improve accounting informativeness may be a motive behind the adoption of MTM accounting. While OPINC is lower for adopting firms than control firms, suggesting an opportunistic motive for the adoption decision, the difference in EPS_GR_REV between the treatment and control groups is insignificant. The control variables do not exhibit

significant differences between the treatment and control groups. The summary statistics in Panels B (C) for the ERC (analyst forecast dispersion) analysis reveal slightly higher MB ratio and lower forecast dispersion for the treatment sample relative to the control firms. The Panel D descriptive statistics for the variables used in the CEO cash compensation and pre-adoption period amortized actuarial losses/gains reveal that adopting firms report a much higher level of amortized actuarial losses (AMT) than control firms in the years prior to the adoption. Specifically, amortization of actuarial losses comprises 0.7% of lagged total assets for adopting firms compared to 0.2% for control firms. Beyond that, treatment firms experience poor operating performance after adjusting for amortization of actuarial losses and gains (ROA_OPINC_adj) versus control firms. Turning to Panel E for the variables used in the CEO cash compensation and post-adoption MTM pension adjustments analysis, where data are only available for adopting firms, we note MTM_adjustment has a fairly modest mean of 0.001 (0.1% of lagged total assets) but a substantial standard deviation of 3.6% of total assets.

Table 3 presents simple correlations (Pearson above and Spearman below the diagonal) for the variables used in the empirical tests. The correlations in Panel A reveal that TREAT is positively associated with the magnitude of unrecognized actuarial losses and gains (ACT_L/G), and negatively related to ERC and OPINC. These initial findings are consistent with both the informativeness and opportunism explanations for the adoption of MTM pension accounting. The correlations in Panel B show the expected positive relation between unexpected earnings and stock returns at earnings announcement dates. As expected, the correlations in Panels D and E show that CEO cash compensation (i.e., $\Delta \ln(\text{Cash})$) is sensitive to firm performance as measured by $\Delta \text{ROA_OPINC_adj}$, $\Delta \text{ROA_adj}$ and RET.

5.2. Economic Determinants of Firms' Decision to Adopt MTM Pension Accounting

Table 4 presents the results of the eq. (1) logistic regressions of the economic determinants of the decision to voluntarily adopt MTM pension accounting (marginal effects for each variable are reported along with the coefficient estimates). Overall, Table 4 provides empirical support for both the informativeness and opportunism hypotheses. For example, the ERC variable, which is designed to test the informativeness hypothesis, is significantly negative ($\beta_2 = -0.099$, $p\text{-value}=0.015$) as predicted. This supports the inference that firms with a low level of earnings informativeness (i.e., low ERCs) are more likely to adopt MTM accounting. Such findings are consistent with adopting firms' arguments that their adoption of MTM for pensions would benefit investors, analysts, etc., by leading to more transparent financial reports. Nonetheless, we also find evidence consistent with an opportunistic motive of adoption of MTM for pensions based on a significantly negative coefficient on EPS_GR_REV ($\beta_3 = -1.340$, $p\text{-value}=0.024$). A significant and negative coefficient on this variable is evidence that the likelihood that a firm voluntarily adopts MTM accounting is higher when equity analysts had lowered their expectations about the firm's future profitability over the twelve months immediately prior to the adoption. Stated differently, this finding is consistent with an expected deterioration in a firm's future earnings performance being a determinant of managers' opportunistic adoption of MTM for pensions. Turning to the other variables, the coefficient on ACT_L/G (β_1) is significantly positive ($\beta_1 = 15.546$, $p\text{-value}=0.004$). As discussed in Section 4.2., this variable does not distinguish between the informativeness and opportunism hypotheses, but rather is expected to be positively related to MTM adoption under both predictions.

Turning to the marginal effects, the magnitude of the actuarial loss has the largest economic impact on the adoption decision, with an interquartile change in ACT_L/G increasing

the probability that a firm adopts MTM for pensions by 41.2%.¹¹ As discussed before, this can be consistent with either the opportunism or transparency hypothesis. The marginal effect of ERC is -27.0%, suggesting that an interquartile change in ERC decreases the probability that a firm adopts MTM for pensions by 27%, supporting the informativeness motive of the adoption. The marginal effect of EPS_GR_REV is -5.1%, suggesting that an interquartile change in EPS_GR_REV reduces the likelihood of a firm adopting MTM by 5.1%, offering support for the opportunism explanation.¹²

5.3. Changes in Earnings Response Coefficients and Analyst Forecast Dispersion from Pre- to Post-Adoption

We present additional analyses in this section which involve comparing pre- and post-adoption period ERCs and analyst forecast dispersion. The motivation for this analysis is that if firms indeed adopt MTM to improve informativeness of their financial reports, then we should observe an increase in ERC and decrease in forecast dispersion for the treatment group relative to the control group from the pre- to post-adoption period.

Table 5 Panel A reports the results of estimating eq. (2) on ERC and the results are consistent with the informativeness hypothesis. Specifically, focusing on model (2), we find that the coefficient on UE*POST*TREAT is significantly positive ($\theta_6 = 3.111$, p-value=0.003), evidence that adopting firms experienced an increase in ERC from the pre- to post-adoption period relative to the matched control group. While control firms exhibit a decrease in ERC from the pre- to post adoption period (the coefficient on UE*POST is significantly negative $\theta_4 = -$

¹¹ We assess the marginal effect of a continuous variable as the change in outcome probability when the variable moves from 1st to 3rd quartile when all other variables are held at their means. For the marginal effect of a dichotomous variable we assess the change in outcome probability when the variable moves from zero to one, holding all other variables at their means.

¹² With regard to the control variables, MNC_IND is significantly positively related to the adoption likelihood (p-value=0.008), an indication that firms that likely compete against foreign firms overseas are more likely to adopt MTM. We also find that firm size is positively associated with the likelihood of MTM adoption, while the capital market variables are not related to the likelihood of MTM adoption (i.e., DBTISS and STKISS are insignificant).

1.508, p-value=0.013), the sum of θ_4 and θ_6 ($1.603=-1.508+3.111$, with a one-tail p-value of 0.019) indicates that the total magnitude of ERC increases for adopting firms in the post-adoption period. Overall, the ERC results suggest that voluntary adoption of MTM improved the informativeness of the adopting firms' earnings measured as the sensitivity of their stock returns to unexpected earnings.

The results of eq. (3) on analyst forecast dispersion in Table 5 Panel B also support the accounting informativeness hypothesis. Focusing on column (2), we show that the coefficient on POST*TREAT is negative and statistically different from zero ($\phi_3=-0.339$, p-value=0.024). This suggests that adopting firms experience an incremental decrease in analyst forecast dispersion relative to industry-size matched control firms from the pre- to post-adoption period. As suggested by the coefficient on POST ($\phi_1=0.257$, p-value=0.051), control firms exhibit an increase in analyst forecast dispersion from the pre- to post-adoption period. However, adopting firms experience a decrease in analyst forecast dispersion after adopting MTM accounting ($\phi_1+\phi_3 = -0.082$, with a one-tail p-value of 0.06). Collectively, both the ERC and analyst forecast dispersion analyses support the accounting informativeness explanation for adopting MTM pension accounting for actuarial gains and losses.

5.4. The Sensitivity of CEO Cash Compensation to Amortization of Actuarial Losses or Gains in the Pre-Adoption Period

Table 6 reports the results of estimating eq. (4), which is designed to assess the sensitivity of CEO cash compensation to amortization of actuarial losses/gains over the years prior to the adoption of MTM pension accounting. The regression results reveal that CEO cash compensation is sensitive to amortization of actuarial losses/gains in the pre-MTM adoption period, but only for the treatment group. Specifically, examination of the results for model (1), which is estimated on the treatment firms, reveals that the coefficient on ΔAMT is significantly

negative, -21.499 (p-value=0.016). This is evidence that amortization of actuarial losses/gains in the pre-adoption period is a determinant of (i.e., included in the determination of) CEO cash compensation for MTM adopting firms. In contrast, the coefficient on ΔAMT is insignificant for the matched control firms. The key takeaway from this result, coupled with the fact that the balance sheets of almost all adopting firms showed large accumulated losses that had not yet been amortized into income (but which would otherwise have had to be amortized into income in the coming years), is that managers of MTM adopters had an incentive to adopt MTM for pensions to shield future cash compensation from future amortization expense. With regarding to the other variables, as expected, ΔROA_OPINC_adj is significantly positive for both the treatment and control groups. On the other hand, after controlling for accounting performance (i.e., ΔROA_OPINC_adj), RET is insignificant in both groups, as are $SALES$ and $SALES*SALES$.

5.5. The Sensitivity of CEO Cash Compensation to Post-Adoption Period MTM Pension Adjustments

Table 7 reports the results of estimating eq. (5) on the treatment group to assess the sensitivity of CEO cash compensation to their reported annual MTM pension adjustments in years after they adopt MTM pension accounting. Examination of the results reported for models (1) and (2) reveals that the coefficients on $MTM_adjustment$ are insignificant.¹³ This is evidence that, after their adoption of MTM accounting, CEO cash compensation is *insensitive* to annual MTM pension adjustments. Further, model (3) suggests that there is no differential treatment between the gains and losses for CEO cash compensation. Of course, failing to reject the null hypothesis can be attributable to lack of power (N=44). On the other hand, as we report later, our examination of the adopting firms' proxy statements suggest that firms typically exclude the

¹³ In models (1) and (2), we do not include ΔROA_adj and RET at the same time because they are highly correlated ($\rho=0.508$).

MTM pension adjustments from their earnings performance measure used to determine CEO bonus, regardless of the sign of the adjustments. This confirms the inferences from the above regression analysis.

Such results are inconsistent with managerial opportunism hypothesis, but rather, support the efficient contracting view. Because the fair value pension adjustments largely reflect market forces that are out of managers' control, excluding them from performance measures likely improve the efficiency of compensation contracts. While the amortized gains/losses under the pre-adoption smoothing model are a part of the firms' operating expense, the post-adoption unrealized gains and losses under MTM accounting are likely treated as non-operating/non-recurring items on the income statement, making it easier for the board to remove them from the performance measures used in compensation contracts. In other words, improving contract efficiency may be one of the motives behind the adoption of MTM pension accounting.

5.6. CEO Annual Bonus Plans

In Tables 6 and 7 we find that CEO cash compensation is sensitive to amortization of actuarial losses prior to MTM adoption, and insensitive to MTM pension adjustments subsequent to adoption. To add texture to these results we analyze actual CEO annual incentive bonus plans, specifically whether they include or exclude pension expense/income, of which the amortized actuarial losses and gains is a component, in the pre-adoption period and MTM adjustments in the post-adoption period. To perform this analysis we examine the proxy statements of the 33 MTM adopting firms in the year prior to, and the year immediately following, their adoption of MTM accounting. The results of this analysis are described below and they corroborate the findings in Tables 6 and 7.

Of the 33 MTM-adopting firms in our sample, nine firms do not provide enough information to allow us to unambiguously conclude whether or not pension expense/income or MTM pension adjustments are included or excluded in the calculation of CEO's annual cash bonus. For the remaining 24 firms we identify 21 firms that implicitly include (i.e., do not exclude) pre-adoption pension expense/income, but explicitly exclude post-adoption MTM pension adjustments in the determination of CEO's annual cash bonus. In contrast, we are able to identify only three firms that exclude both pension expense/income and MTM pension adjustments in determining annual CEO bonus. Appendix C provides illustrative examples of the proxy statement disclosures.

5.7. Non-GAAP Earnings

Adopters of MTM pension accounting face the potentially negative effect of recognizing unrealized gains and losses in post-adoption net income. While removing amortization of actuarial gains or losses improves the transparency of post-adoption operating income, it potentially decreases decision usefulness of post-adoption net income by lowering the persistence, and increasing the volatility, of the net income (e.g., Hann, et al., 2007). To mitigate such adverse impact, managers can treat post-adoption MTM adjustments as non-operating/non-recurring items, thereby helping investors and analysts remove such items from reported earnings (i.e., define non-GAAP earnings). To test this conjecture, we examine earnings releases of 33 MTM-adopting firms in the year following the adoption and find that most firms exclude post-change MTM pension adjustments from non-GAAP earnings. Firms take MTM pension adjustments out of non-GAAP earnings by labeling them with such terms as non-operating charge, special items, non-cash items, items impacting comparability, non-core or non-recurring items, etc. Table 8 provides the terms firms use for their non-GAAP earnings measures. With the

exception of three firms, where “Non-GAAP Earnings Measures” is marked as “N/A”, all firms exclude MTM pension adjustments from their pro-forma earnings definition. Appendix D provides select firm earnings releases where non-GAAP earnings measures are discussed.

6. Summary

Beginning in 2010 a number of firms voluntarily adopted mark-to-market (MTM) pension accounting for recognizing the actuarial gains and losses. That switch mandated them to begin immediately recognizing such gains or losses in their income statements and was in stark contrast to their previous accounting policy which allowed them to amortize (and smooth) such gains or losses into operating income over time. This is a novel accounting change to study because adopting firms abandoned a reporting alternative with a built-in smoothing mechanism in exchange for one (MTM) that was anticipated to increase earnings volatility due to the unpredictable effect of future uncontrollable market factors on the firms’ future MTM adjustments.

This paper develops and tests predictions of the economic determinants of firms’ decision to voluntarily adopt MTM for the actuarial gains and losses associated with their pension plans. To accomplish our objective we structure the analysis around two non-mutually exclusive explanations for MTM adoption, an “informativeness” explanation (which encompasses the information perspective and the efficient contracting view in prior literature) and a “managerial opportunism” explanation. We find that the likelihood of MTM adoption is higher for firms with a low level of earnings informativeness and for firms experiencing decreases in expectations of future profitability. We further show that, compared to a sample of control firms, adopting firms’ ERCs increase and their analyst forecast dispersion decreases post-adoption, consistent with the informativeness hypothesis. At the same time, we also find that MTM adopting firms’ CEO cash

compensation were affected by the amortized actuarial losses pre-adoption, suggesting an opportunistic motive for the adoption, namely, to shield future earnings and CEO bonuses from the effect of the pre-adoption accumulated actuarial losses. Finally, we document that after adoption, CEO cash compensation is *insensitive* to annual MTM pension adjustments, regardless of the sign of the adjustments. Such results are inconsistent with opportunism hypothesis, but rather, support the efficient contracting view.

Our paper contributes to several strands of the accounting literature. We add to the accounting method choice literature by providing the economic determinants of firm voluntary adoption of MTM pension accounting. As opposed to prior work that primarily tests the opportunistic motive of firms' accounting choices, our paper provides a broader view of how managerial incentives and considerations determine the MTM adoption decision. The evidence suggests that besides opportunism, the information perspective and efficient contracting motives are also important considerations for firms' adoption of MTM pension accounting.

Our paper also extends the pro-forma disclosures literature by providing evidence on how managers' use of non-GAAP earnings disclosures and their financial reporting method choice are interconnected. Finally, we contribute to the pension accounting literature. While prior research mainly tests the opportunistic motive of abusing opaqueness associated with accounting rules for pensions, we provide evidence on how managers exercise discretion (i.e., a fair-value option) to potentially improve the informativeness of financial reports.

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Appendix A: Select Firm and Analyst Statements about the Effect of the Adoption of MTM Accounting for Pension Actuarial Gains and Losses on Financial Reporting Transparency

January 21, 2011 Verizon press release

Verizon Communications Inc. (NYSE, NASDAQ:VZ) announced today that it has adopted a new policy that changes the method of accounting for pensions and other post-employment benefits (OPEB). The improved policy recognizes gains and losses in the year they are incurred, rather than amortizing them over time. Under the new method, annual adjustments will be made to reflect actual return on pension plan assets, changes in discount rates and differences from other actuarial assumptions. There is no impact on cash flow or pension funding requirements as a result of this change, and there is no change to Verizon's pension or OPEB liability. In addition, Verizon Wireless is not impacted by this change. *"Our decision to adopt this new accounting policy will make our financial reporting easier to understand and more transparent," said Fran Shammo, Verizon executive vice president and chief financial officer (emphasis added).*

January 27, 2012 UPS press release

UPS (NYSE:UPS) today announced an accounting change relating to expense recognition for company-sponsored pension and postretirement benefit plans. The new method, adopted in the fourth quarter of 2011, will result in simpler, more transparent financial reporting. ... This methodology is fully acceptable under U.S. GAAP and is considered preferable since it aligns closer with fair value principles and does not delay the recognition of gains and losses into future periods. ... *"This policy provides greater transparency to the company's underlying operating results," said Kurt Kuehn, UPS's chief financial officer. "I want to emphasize that this change has no impact on benefits for plan participants or UPS cash flow (emphasis added).*

Rewriting Pension History; Some Big Firms Move to Recognize Gains and Losses in the Years They Occur, 9 March 2011, The Wall Street Journal Online, Copyright 2011 Dow Jones & Company, Inc. All Rights Reserved.

Some big companies are changing how they account for their pension plans in a way that could make their earnings look better in coming years.

AT&T Inc., Verizon Communications Inc. and Honeywell International Inc. recently ended a longstanding practice in which they "smooth" large gains and losses generated by pension assets into their financial results over a period of years. From now on, these companies will count all such gains and losses in the same year they are incurred.

While the moves might seem like arcane accounting steps, they have important implications for investors. *The companies say the changes will make their earnings reporting more transparent, but they also sweep away tens of billions in past pension losses the companies have yet to smooth into—and hurt—their results [emphasis added].* By charging them against their earnings from 2008, when the losses were incurred, they are taking lumps for years that many investors may no longer care about.

"They'll put the bad news behind them" said David Zion, an accounting analyst with Credit Suisse.

Still, the accounting change will make it clearer to investors how pension plans' performance affects the companies' income statements, where it is factored into operating earnings. And the current rock-bottom interest rates make it a good time to make such a change. Any increases in rates could improve pension-plan performance, and clearing away the old losses will heighten the impact that better performance has on the companies' earnings.

Excerpt from Deutsche Bank Analyst report on FirstEnergy 26 Jan 2012

Pension accounting change - mixed earnings quality, improves credit metrics, likely boosts non-GAAP EPS about \$0.20/sh in 2012 and declining slightly thereafter. FE announced a change to pension accounting so that actuarial gains/losses are booked in the year they occur rather than smoothed, resulting in a \$0.73/sh one-time loss in 2011. Going forward, we expect the change to provide a boost to operating earnings (~\$0.20 in 2012, declining gradually thereafter) as FE no longer records gains/losses in operating earnings. The change boosts common equity by \$530M, which potentially helped FE make a \$600M pension contribution, bringing funding status to 90% which should help credit metrics. *We view the change as mixed for earnings quality. Moving away from smoothing is positive, but putting future gains/losses below the line is arguably less transparent* [emphasis added]. Either way, the change provides a ~\$0.20 boost vs. prior 2012/13 guidance.

Appendix B: Detailed Variable Definitions

Variable Name	Definition/Measurement
<i>Variables in the logistic regression model of the determinants of the decision to adopt MTM pension accounting</i>	
ACT_L/G	A firm's actuarial losses or gains scaled by lagged total assets. A positive (negative) value indicates actuarial losses (gains). (Data source: hand-collected from 10-Ks)
ERC	A firm specific earnings response coefficient (ERC) estimated using 16 quarters of data just prior to the adoption quarter. (Data source: COMPUSTAT and CRSP)
EPS_GR_REV	The revision in a firm's EPS forecast growth measures as the natural logarithm of: $\left[\frac{EPS_{END}^{t=0}}{EPS_{BEG}^{t=0}} \times \frac{EPS_{END}^{t=1}}{EPS_{BEG}^{t=1}} \times \frac{EPS_{END}^{t=2}}{EPS_{BEG}^{t=2}} \right]$, where END and BEG indicate the latest and the earliest median analyst annual EPS forecast over the twelve months leading up to the adoption of MTM pension accounting, for the adoption year ($t = 0$) and the subsequent two years. (Data source: I/B/E/S)
OPINC	A firm's operating income deflated by average total assets. (Data source: COMPUSTAT)
EVOL	The standard deviation of a firm's earnings before extraordinary items deflated by total assets estimated over a maximum (minimum) of five (three) years prior to the adoption year. (Data source: COMPUSTAT)
MNC_IND	An indicator variable set to 1 for firms reporting either foreign assets or foreign income, or both and 0 otherwise. (Data source: COMPUSTAT)
DBTISS	An indicator variable set to 1 if the firm issued a long-term debt anytime in the three years subsequent to the adoption year, and 0 otherwise. The firm is coded as issuing a long-term debt if $DLTIS > 0$ for a given year. (Data source: COMPUSTAT cash flow statement)
STKISS	An indicator variable set to 1 if the firm issued equity anytime in the three years subsequent to the adoption year, and 0 otherwise. (Data source: SDC)
TA	A firm's total assets (in millions). (Data source: COMPUSTAT)
LNAT	The natural logarithm of TA. (Data source: COMPUSTAT)
<i>Variables used in the Earnings Response Coefficient and Analyst Earnings Forecast Dispersion analyses</i>	
CAR [-1,+1]	A firm's cumulative market adjusted (value-weighted market index) abnormal stock return for the three days centered on its quarterly earnings announcement date. (Data source: CRSP)
UE	A firm's unexpected earnings measured as [Actual quarterly EPS minus the median analyst EPS forecast as reported in I/B/E/S] / End of quarter stock price. (Data source: CRSP and I/B/E/S)
TREAT	An indicator variable set to 1 for firms adopting MTM pension accounting, and 0 otherwise.
POST	An indicator variable set to 1 for the adoption quarter and three quarters subsequent to the adoption of MTM pension accounting, and 0 otherwise.
BETA	A firm's systematic risk (estimated using monthly stock return data and the CRSP value-weighted returns over the 36 month period ending the month prior to the adoption quarter end. (Data source: CRSP)
LNVAL	The natural logarithm of a firm's market capitalization. (Data source: COMPUSTAT)
MB	The ratio of a firm's market value of equity to its book value of equity. (Data source: COMPUSTAT)
A_DISP	Analyst forecast dispersion measured as the average of monthly standard deviations of I/B/E/S reported analyst EPS forecasts for the quarter. (Data source: I/B/E/S)

Appendix B (cont'd)

Variable Name	Definition/Measurement
<i>Variables used in the CEO cash compensation and pension amortization expense/income analysis and pension MTM adjustments analyses</i>	
Cash	Salary plus bonus (in thousands). (Data source: Execucomp or hand-collected).
ΔCash	The change in Cash.
Ln(Cash)	The natural logarithm of Cash.
ΔLn(Cash)	The change in Ln(Cash).
AMT	A firm's amortization of actuarial losses or gains scaled by lagged total assets. A positive (negative) value of this variable indicates amortization expense (income). (Data source: hand-collected from 10-Ks or annual reports).
ΔAMT	The change in AMT.
ROA_OPINC_adj	A firm's operating income after adjusting for AMT, then scaled by lagged total assets. (Data source: hand-collected from 10-Ks and COMPUSTAT).
ΔROA_OPINC_adj	The change in ROA_OPINC_adj.
RET	A firm's buy-and-hold stock return for its fiscal year. (Data source: CRSP).
Sales	A firm's annual Sales. (Data source: COMPUSTAT).
MTM_adjustment	A firm's pension mark-to-market adjustment to pension assets/liabilities (if a loss (gain) then a positive (negative) value), deflated by lagged total assets (Data source: hand-collected from 10-Ks).
ROA_adj	A firm's income before extraordinary items after adjusting for its MTM_adjustment, then scaled by lagged total assets. (Data source: hand-collected from 10-Ks and COMPUSTAT).
ΔROA_adj	The change in ROA_adj.

Appendix C: Select Descriptions of Annual Bonus Plans for MTM Pension Accounting Adjustments for Adopting Firms

Exhibit 1: Honeywell [Year of adoption: 2010]

Excerpt from 2009 DEF 14A

Annual Incentive Bonus (“ICP”). Each Named Executive Officer has an annual target ICP opportunity expressed as a percentage of base salary. The CEO’s target opportunity is 175% of base salary, while the other Named Executive Officers’ target opportunity is 100% of base salary. ICP payouts can vary significantly from year-to-year, but are capped at 200% of each Named Executive Officer’s annual ICP target opportunity. The aggregate annual ICP payout for senior executive employees is also limited to 2% of the Company’s consolidated earnings for the year (subject to adjustment for extraordinary items).

At the beginning of each year, the Committee sets specific annual corporate financial objectives. For 2009, the ICP goals and actual performance were:

Measure ⁽¹⁾	2009 Target	2009 Actual	Rationale for Metric
Earnings per share	\$3.20–\$3.55	\$2.85	Measures delivery of shareowner value at the corporate level
Free cash flow conversion	At least 100%	155%	Emphasizes link between net income and strong cash generation during global recession
Working capital turns ⁽²⁾	6.3 turns	5.6 turns	Measures efficiency and effectiveness of the Company’s business operations

⁽¹⁾ Each SBG has corresponding objectives, with net income being used in lieu of earnings per share; *unusual, infrequently occurring and/or extraordinary items are excluded in determining achievement of Corporate and SBG objectives* [emphasis added].

⁽²⁾ Defined as sales divided by working capital, which is trade accounts receivable plus inventory less accounts payable and customer advances.

Appendix C (cont'd)

Excerpt from 2011 DEF 14A

2011 Pre-Established ICP Goals: Robust Targets and Results

Annual ICP targets are set to drive meaningful, sustainable improvement in key metrics on a year-over-year basis. To fully assess results vs. target, the Committee believes it has to look at both the absolute results and the strength of the comparable prior year results.

Consistent with the Company's planning and external guidance, *the EPS target and results vs. target set forth below exclude the impact of any mark-to-market pension adjustment*, and the FCF target and results vs. target set forth below exclude the impact of cash contributions to U.S. pension plans [emphasis added].

Performance vs. ICP Targets (T = Target; A = Actual)

	<u>2011T</u>	<u>2011A</u>
EPS (proforma)	\$3.60 - \$3.80	\$4.05
FCF	\$3.6 billion	\$3.7 billion
WCT	7.1 turns	6.9 turns

Metrics shown above are at the Honeywell Corporate level. Each SBG also has corresponding objectives, with net income being used in lieu of earnings per share; *unusual, infrequently occurring items, extraordinary items and any mark-to-market pension adjustments are excluded in determining achievement of Corporate and SBG objectives* [emphasis added].

EPS: 2011T represented a 20-27% increase over 2010 proforma EPS of \$3.00; 2011A reflects a 35% increase over 2010 and a 6.6-12.5% overdrive of target.

FCF: 2011A exceeded target by approximately \$100 million with 115% free cash flow conversion (excluding the impact of the pension mark-to-market adjustment on net income), reflecting continued strong quality of earnings.

WCT: WCT remained flat vs. peak performance in the prior year; although 2011A was less than 2011T, the Company was able to maintain WCT at the same record level as in the prior year (which represented more than a full turn increase over 2009) even though sales increased by 13% (vs. planning estimates of 5-8% sales growth at the time the 2011 WCT target was set). The Company will continue to drive further WCT improvement through its functional processes, including sales/inventory/operations planning, procurement and collections.

Appendix C (cont'd)

Exhibit 2: Verizon [Year of adoption: 2010]

Excerpt from 2009 DEF 14A

2009 Short-Term Incentive Compensation

Adjusted EPS. The Committee views adjusted EPS as an important indicator of Verizon's success. The Committee has selected adjusted EPS as one of the performance measures under the Short-Term Plan because it is broadly used and recognized by investors as a significant indicator of Verizon's ongoing operational performance. Adjusted EPS excludes non-recurring and non-operational items, such as impairments and gains and losses from discontinued operations, business combinations, changes in accounting principles, extraordinary items and restructurings. As a result, adjusted EPS is not positively or negatively impacted from period to period by these types of items, so it better reflects the relative success of the Company's ongoing business.

In setting the adjusted EPS target for 2009 and in evaluating the Company's success in meeting that target, the Committee took into account that the Company's stock repurchases were within the limits of the stock repurchase plan approved by the Board at the time the adjusted EPS target was established.

In addition, the Committee's policy requires *the exclusion of the effect of any net impact from pension income and other postretirement benefit costs*. For 2009, the Committee reviewed the net impact of pension and postretirement benefit costs on adjusted EPS and determined the adjusted EPS measure for compensation purposes after excluding the impact of any net cost from pension and other postretirement benefit costs [*emphasis added*].

Excerpt from 2011 DEF 14A

2011 Short-Term Incentive Compensation

Adjusted EPS. The Committee views adjusted EPS as an important indicator of Verizon's success. The Committee assigns the greatest weight to adjusted EPS in determining awards under the Short-Term Plan because it is broadly used and recognized by investors as a significant indicator of Verizon's ongoing operational performance and is a clearly defined indicator of the Company's profitability. Adjusted EPS excludes non-recurring and non-operational items, including but not limited to impairments and gains and losses from discontinued operations, business combinations, changes in accounting principles, *the net impact of pension and post-retirement benefit costs*, extraordinary items and restructurings. As a result, adjusted EPS is not positively or negatively impacted from period to period by these types of items, so it better reflects the relative success of the Company's ongoing business [*emphasis added*].

**Appendix D: Excerpts from a Post-Adoption Earnings Release of Verizon
(Verizon adopted MTM pension accounting in 2010)**

Verizon Reports Record Revenue Growth in 4Q, Fueled by
Strong Demand for Wireless, FiOS and Strategic Services

*Verizon Generates Strong Cash Flows, 18.2 Percent Shareholder Returns in 2011;
4Q Earnings Impacted by Non-Cash Pension Items*

4Q 2011 HIGHLIGHTS

Consolidated

- 7.7 percent year-over-year quarterly revenue growth in 4Q, a company record.
- A loss of 71 cents in diluted earnings per share (EPS), impacted by non-cash pension items, compared with earnings of 93 cents per share in 4Q 2010.
- 52 cents per share in adjusted EPS (non-GAAP), which excludes \$1.23 per share in non-operational items, compared with 54 cents in adjusted EPS in 4Q 2010.

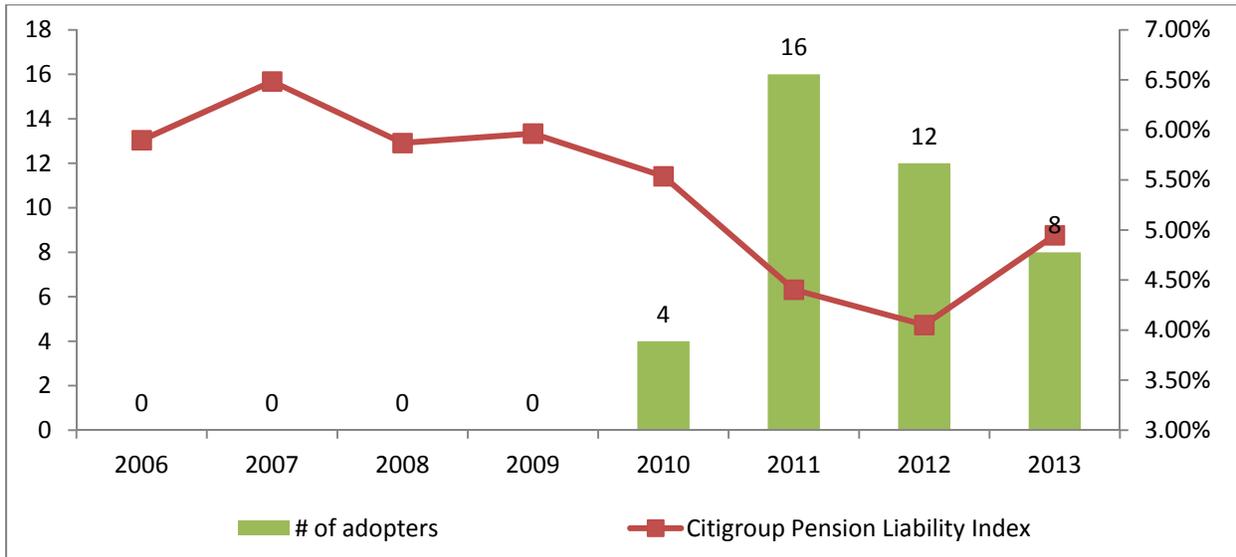
4Q and Full-Year Earnings Results

Due primarily to the impact of previously announced non-cash pension items, Verizon reported a loss of 71 cents in EPS in fourth-quarter 2011, compared with earnings of 93 cents per share in fourth-quarter 2010.

Adjusted fourth-quarter 2011 earnings (non-GAAP) of 52 cents per share exclude \$1.20 per share, or \$3.4 billion after-tax, due to the actuarial valuation of Verizon's benefit plans, and 3 cents per share for the early extinguishment of debt. This annual valuation adjustment, resulting from changes in actuarial assumptions, is in accordance with a Verizon accounting policy adopted last year. Comparable adjusted fourth-quarter 2010 earnings were 54 cents per share, excluding the impact of non-operational items, the largest of which was a gain from benefit-plan valuation of 44 cents per share.

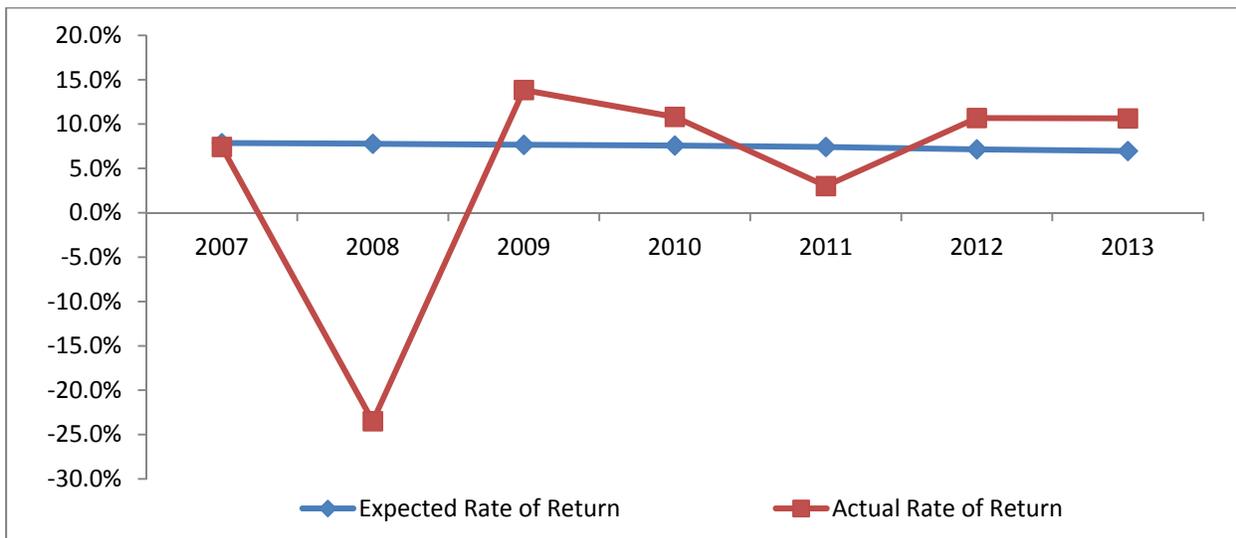
On an annual basis, Verizon reported 85 cents in 2011 EPS, compared with 90 cents per share in 2010. Adjusted annual EPS (non-GAAP) was \$2.15 in 2011, compared with \$2.08 on a comparable basis (non-GAAP, excluding results from divested businesses) in 2010.

Figure 1
The number of adopting firms and pension liability discount rate over time



The figure presents the number of firms that adopted MTM pension accounting for actuarial gains and losses over time. The line displays the Citigroup Pension Liability Index, which is “the single rate equivalent to discounting a set of hypothetical pension plan cash flows at the Citigroup Pension Discount Curve rate applicable to each cash flow.” The Pearson correlation between the number of adopting firms and the Citigroup Pension Liability Index is -0.93.

Figure 2
Expected rate of return vs. actual rate of return on plan assets



The figure presents the expected rate of returns on plan assets and the actual rate of returns over time for the U.S. firms in Compustat/Pension database. The actual rate of returns on plan assets are computed as actual returns divided by average plan assets.

Table 1
Mark-to-Market Pension Accounting Adopting Firms

The table presents a set of firms that adopted MTM pension accounting for actuarial gains and losses over the period 2010–2013. Firms that adopted MTM pension accounting but are not included in our analyses because of data availability are: Appleton Papers, Pentair, Veramark, Kraft, Voya, Rexnord, and Fortune Brands Home&Secure.

Company	Industry (2-Digit SIC)	Adoption Fiscal Year	Adoption Fiscal Quarter
AT&T INC	Communications (48)	12/31/2010	12/31/2010
HONEYWELL INTERNATIONAL INC	Transportation Equipment (37)	12/31/2010	12/31/2010
POLYONE CORP	Chemical & Allied Products (28)	12/31/2011	3/31/2011
VERIZON COMMUNICATIONS INC	Communications (48)	12/31/2010	12/31/2010
ASHLAND INC	Chemical & Allied Products (28)	9/30/2011	9/30/2011
CONAGRA FOODS INC	Food & Kindred Products (20)	5/31/2012	5/31/2012
EASTMAN CHEMICAL CO	Chemical & Allied Products (28)	12/31/2012	3/31/2012
FIRSTENERGY CORP	Electric, Gas, & Sanitary Services (49)	12/31/2011	12/31/2011
GRAFTECH INTERNATIONAL LTD	Electronic & Other Electric Equipment (36)	12/31/2011	3/31/2011
IHS INC	Business Services (73)	11/30/2011	11/30/2011
KAMAN CORP	Wholesale Trade - Durable Goods (50)	12/31/2011	12/31/2011
PERKINELMER INC	Instruments & Related Products (38)	12/31/2011	12/31/2011
REYNOLDS AMERICAN INC	Tobacco Products (21)	12/31/2011	12/31/2011
STARRETT (L.S.) CO -CL A	Fabricated Metal Products (34)	6/30/2011	6/30/2011
TCF FINANCIAL CORP	Depository Institutions (60)	12/31/2011	12/31/2011
UNITED PARCEL SERVICE INC	Trucking & Warehousing (42)	12/31/2011	12/31/2011
WINDSTREAM HOLDINGS INC	Communications (48)	12/31/2011	12/31/2011
ALBEMARLE CORP	Chemical & Allied Products (28)	12/31/2012	12/31/2012
BABCOCK & WILCOX CO	Industrial Machinery & Equipment (35)	12/31/2012	12/31/2012
CORNING INC	Electronic & Other Electric Equipment (36)	12/31/2013	3/31/2013
FERRO CORP	Chemical & Allied Products (28)	12/31/2012	9/30/2012
JOHNSON CONTROLS INC	Furniture & Fixtures (25)	9/30/2012	9/30/2012
KELLOGG CO	Food & Kindred Products (20)	12/31/2012	12/31/2012
PVH CORP	Apparel & Other Textile Products (23)	1/31/2013	1/31/2013
TERADYNE INC	Instruments & Related Products (38)	12/31/2012	3/31/2012
TOWER INTERNATIONAL INC	Transportation Equipment (37)	12/31/2012	12/31/2012
CELANESE CORP	Chemical & Allied Products (28)	12/31/2013	3/31/2013
CYTEC INDUSTRIES INC	Chemical & Allied Products (28)	12/31/2013	6/30/2013
GRACE (W R) & CO	Chemical & Allied Products (28)	12/31/2013	6/30/2013
LEXMARK INTL INC -CL A	Industrial Machinery & Equipment (35)	12/31/2013	12/31/2013
NCR CORP	Industrial Machinery & Equipment (35)	12/31/2013	3/31/2013
SPX CORP	Industrial Machinery & Equipment (35)	12/31/2013	12/31/2013
STANDARD REGISTER CO	Printing & Publishing (27)	12/31/2013	9/30/2013

Table 2
Summary Descriptive Statistics for Variables Used in the Empirical Tests

The table presents descriptive statistics for variables used in the empirical tests. Panel A reports descriptive statistics for the variables used in the logistic regression tests of the determinants of the decision to adopt Mark-to-Market pension accounting (see Table 4 for the corresponding logistic regression results); Panel B for the variables used in the Earnings Response Coefficient analysis (see Table 5, Panel A for the corresponding regression results); Panel C for the variables used in the Analyst Forecast Dispersion analysis (see Table 5, Panel B for the corresponding regression results); Panel D for the variables used in the CEO cash compensation and pension amortization expense/income analysis (see Table 6 for the corresponding regression results); and Panel E for the variables used in the CEO cash compensation and pension MTM adjustments analysis (see Table 7 for the corresponding regression results). P-values on the differences between treatment and control samples are for two-tailed t-tests for mean and Wilcoxon rank tests for median. Variable definitions are provided in Appendix B.

	N	Treatment Sample (MTM Adopters)			N	Control Sample			<i>p-value</i>			
		Mean	Median	STD		Mean	Median	STD	Mean (t-test)	Median (Wilcoxon)		
<i>Panel A: Variables in the logistic regression model tests of the determinants of the decision to adopt Mark-to-Market pension accounting (see Table 4 for the logistic regression results)</i>												
ACT_L/G (t-1)	33	0.152	0.113	0.203	33	0.060	0.038	0.020	0.027	**	0.001	***
ERC (q-1)	33	6.982	4.721	11.274	32	14.558	5.469	21.816	0.087	*	0.307	
EPS_GR_REV (q)	32	-0.234	-0.018	0.887	29	0.051	0.046	0.642	0.153		0.238	
OPINC (t-1)	33	0.121	0.113	0.050	33	0.156	0.144	0.102	0.087	*	0.179	
EVOL (t-1)	33	0.036	0.025	0.045	33	0.042	0.027	0.046	0.605		0.353	
MNC_IND (t)	33	0.818	1.000	0.392	33	0.697	1.000	0.467	0.258		0.262	
DBTISS (t+1,t+3)	33	0.939	1.000	0.242	33	0.848	1.000	0.364	0.238		0.243	
STKISS (t+1,t+3)	33	0.091	0.000	0.292	33	0.091	0.000	0.292	1.000		1.000	
LNTA (t-1)	33	8.872	8.960	1.573	33	8.598	8.618	1.410	0.459		0.549	
TA (t-1)	33	25,330	7,782	58046	33	12,555	5,532	17976	0.235		0.549	

Table 2 (cont'd)

	Treatment Sample				Control Sample				<i>p-value</i>			
	N	Mean	Median	STD	N	Mean	Median	STD	Mean (t-test)	Median (Wilcoxon)		
<i>Panel B: Variables used in the Earnings Response Coefficient analysis (see Table 5, Panel A for the regression results)</i>												
CAR [-1,+1]	262	-0.001	0.001	0.068	256	0.002	0.006	0.069	0.555		0.552	
UE	262	-0.001	0.001	0.014	256	-0.002	0.001	0.016	0.451		0.426	
BETA	262	1.395	1.462	0.732	256	1.321	1.187	0.669	0.226		0.236	
LNIVAL	262	8.456	8.537	1.797	256	8.356	8.417	1.458	0.485		0.186	
MB	262	3.230	2.320	3.113	256	3.070	2.085	5.156	0.671		0.068	*
<i>Panel C: Variables used in the Analyst Earnings Forecast Dispersion analysis (see Table 5, Panel B for the regression results)</i>												
A_DISP	246	0.042	0.032	0.033	238	0.274	0.040	1.732	0.039	**	0.001	***
BETA	246	1.410	1.462	0.749	238	1.341	1.213	0.682	0.294		0.370	
LNIVAL	246	8.738	8.613	1.463	238	8.568	8.477	1.231	0.166		0.144	
MB	246	3.433	2.513	3.103	238	3.286	2.138	5.390	0.713		0.057	*
<i>Panel D: Variables used in the CEO cash compensation and pension amortization expense/income analysis (see Table 6 for the regression results)</i>												
Cash (t)	133	2986	2119	2625	123	3607	2351	3851	0.136		0.427	
ΔCash (t)	133	100	0	2109	123	71	1	1985	0.907		0.772	
Ln(Cash) (t)	133	7.680	7.659	0.823	123	7.812	7.763	0.824	0.201		0.428	
ΔLn(Cash) (t)	133	0.036	0.000	0.616	123	0.008	0.000	0.519	0.700		0.583	
AMT (t)	133	0.007	0.004	0.012	123	0.002	0.001	0.003	<.0001	***	<.0001	***
ΔAMT (t)	133	0.001	0.004	0.004	123	0.000	0.000	0.002	0.360		0.294	
ROA_OPINC_adj (t)	133	0.138	0.136	0.064	123	0.164	0.145	0.124	0.035	**	0.243	
ΔROA_OPINC_adj (t)	133	0.001	-0.001	0.051	123	0.003	0.002	0.052	0.732		0.667	
RET (t)	133	0.142	0.093	0.537	123	0.202	0.133	0.643	0.420		0.834	
Sales (t)	133	13356	4178	25109	123	8485	3686	11065	0.043		0.954	

Table 2 (cont'd)

	Treatment Sample				Control Sample				<i>p-value</i>	
	N	Mean	Median	STD	N	Mean	Median	STD	Mean (t-test)	Median (Wilcoxon)
<i>Panel E: Variables used in the CEO cash compensation and pension MTM adjustments analysis (see Table 7 for the regression results)</i>										
Cash (t)	44	3968	2727	4316						
ΔCash (t)	44	279	29	4477						
Ln(Cash) (t)	44	7.915	7.911	0.862						
ΔLn(Cash) (t)	44	0.048	0.020	0.527						
MTM_adjustment (t)	44	0.001	0.000	0.036						
ROA_adj (t)	44	0.044	0.039	0.037						
ΔROA_adj (t)	44	-0.013	-0.016	0.052						
RET (t)	44	0.280	0.184	0.424						
Sales (t)	44	26603	8010	40888						

Table 3
Simple Correlations for Variables Used in the Empirical Tests

The table presents simple correlations (Pearson above and Spearman below the diagonal) for the variables used in the empirical tests. Panel A reports correlations for the variables used in the logistic regression tests of the determinants of the decision to adopt Mark-to-Market pension accounting (see Table 4 for the corresponding logistic regression results); Panel B for the variables used in the Earnings Response Coefficient analysis (see Table 5, Panel A for the corresponding regression results); Panel C for the variables used in the Analyst Forecast Dispersion analysis (see Table 5, Panel B for the corresponding regression results); Panel D for the variables used in the CEO cash compensation and pension amortization expense/income analysis (see Table 6 for the corresponding regression results); and Panel E for the variables used in the CEO cash compensation and pension MTM adjustments analysis (see Table 7 for the corresponding regression results). Bold text indicates significance at the 10% level. Variable definitions are provided in Appendix B.

Panel A: Variables in the logistic regression model tests of the determinants of the decision to adopt Mark-to-Market pension accounting (see Table 4 for the logistic regression results)

		1	2	3	4	5	6	7	8	9	10
1	TREAT		0.276	-0.217	-0.189	-0.213	-0.065	0.141	0.148	0.000	0.093
2	ACT_L/G (t-1)	0.435		-0.025	-0.204	-0.109	0.167	0.126	0.038	-0.155	-0.175
3	ERC (q-1)	-0.130	0.283		-0.058	0.327	-0.203	0.219	0.006	-0.151	0.044
4	EPS_GR_REV (q)	-0.126	-0.165	-0.102		0.365	0.397	0.238	-0.115	0.003	-0.176
5	OPINC (t-1)	-0.169	0.050	0.161	0.432		0.022	0.040	0.113	-0.028	0.043
6	EVOL (t-1)	-0.117	-0.128	-0.302	0.365	0.095		0.061	-0.380	-0.041	-0.416
7	MNC_IND (t)	0.141	0.252	0.265	0.268	0.150	0.108		0.035	0.056	-0.100
8	DBTISS (t+1,t+3)	0.148	0.050	-0.065	-0.067	0.118	-0.270	0.035		0.109	0.351
9	STKISS (t+1,t+3)	0.000	-0.288	-0.212	0.052	0.069	-0.022	0.056	0.109		-0.062
10	LNTA (t-1)	0.076	-0.007	0.054	-0.272	0.055	-0.418	-0.160	0.324	-0.055	

Table 3 (cont'd)

Panel B: Variables used in the Earnings Response Coefficient analysis (see Table 5, Panel A for the regression results)

		1	2	3	4	5	6	7
1	CAR [-1,+1]		0.195	-0.049	-0.026	0.066	-0.017	0.041
2	UE	0.373		-0.095	0.033	0.063	0.266	0.114
3	POST	-0.054	-0.085		0.004	-0.034	0.057	0.031
4	TREAT	-0.026	-0.035	0.004		0.053	0.031	0.019
5	BETA	0.115	0.213	-0.033	0.052		-0.349	-0.069
6	LNMVVAL	-0.029	-0.020	0.070	0.058	-0.409		0.198
7	MB	-0.056	0.069	0.068	0.080	-0.095	0.308	

Panel C: Variables used in the Analyst Earnings Forecast Dispersion analysis (see Table 5, Panel B for the regression results)

		1	2	3	4	5
1	A_DISP		0.079	0.018	0.013	0.092
2	POST	0.007		-0.033	0.061	0.033
3	BETA	0.300	-0.029		-0.497	-0.088
4	LNMVVAL	-0.062	0.072	-0.492		0.105
5	MB	-0.059	0.072	-0.147	0.180	

Panel D: Variables used in the CEO cash compensation and pension amortization expense/income analysis (see Table 6 for the regression results)

		1	2	3	4	5	6
1	$\Delta \ln(\text{Cash}) (t)$		-0.035	0.256	0.219	-0.037	-0.027
2	$\Delta \text{AMT} (t)$	0.070		0.106	0.106	-0.100	-0.071
3	$\Delta \text{ROA_OPINC_adj} (t)$	0.363	0.070		0.203	0.001	0.004
4	RET (t)	0.297	0.279	0.307		-0.080	-0.052
5	Sales (t)	-0.044	-0.088	-0.018	-0.059		0.929
6	Sales*Sales (t)	-0.044	-0.088	-0.018	-0.059	1.000	

Table 3 (cont'd)

Panel E: Variables used in the CEO cash compensation and pension MTM adjustments analysis (see Table 7 for the regression results)

		1	2	3	4	5	6
1	$\Delta\text{Ln}(\text{Cash})$ (t)		-0.052	0.393	0.321	-0.015	-0.027
2	MTM_adjustment (t)	-0.040		0.082	-0.222	0.216	0.148
3	$\Delta\text{ROA}_{\text{adj}}$	0.266	0.451		0.508	0.047	0.049
4	RET (t)	0.295	-0.141	0.175		-0.148	-0.134
5	Sales (t)	0.019	0.112	0.094	0.094		0.974
6	Sales*Sales (t)	0.019	0.112	0.094	-0.056	1.000	

Table 4
Logistic Regression Tests of the Economic Determinants of the Decision to Voluntarily Adopt Mark-To-Market Pension Accounting

The table presents the results of logistic regressions of the hypothesized economic determinants of the adoption of Mark-to-Market (MTM) accounting for pension actuarial gains or losses. The dependent variable TREAT equals one for firms that adopted MTM pension accounting and zero for control firms. Model estimation is based on a sample of 32 (29) adopting (control) firms. Variable definitions are provided in Appendix B. *, **, and *** denote significance at the $p < 0.10$, 0.05, and 0.01 levels, respectively. p -values are based on one- (two-) tailed t-tests for variables/coefficients with signed (unsigned) predictions.

Dependent variable:	Expected	Coefficient		Marginal
TREAT [=1]	sign	<i>(p-value)</i>		Effects
<i>Intercept</i>	+/-	-5.747		
		0.314		
ACT_L/G (t-1)	+	15.546	***	41.2%
		0.004		
ERC (q-1)	-	-0.099	**	-27.0%
		0.015		
EPS_GR_REV (q)	-	-1.340	**	-5.1%
		0.024		
OPINC (t-1)	-	-6.763		-11.5%
		0.218		
EVOL (t-1)	-	-2.109		3.4%
		0.451		
MNC_IND (t)	+	3.501	***	57.9%
		0.008		
DBTISS (t+1, t+3)	+	1.695		44.6%
		0.211		
STKISS (t+1, t+3)	+	-0.559		-10.5%
		0.666		
LNTA (t-1)	+	0.886	**	28.7%
		0.039		
Observations		61		
Pseudo-R ²		0.397		
Auditor Fixed Effects		Yes		
Year Fixed Effects		Yes		

Table 5
A Comparison of the Earnings Response Coefficients and the Analyst Forecast Dispersion of MTM Adopting and Matched Control Firms in the Pre and Post-Adoption Periods

The table presents the results of testing the informativeness hypothesis for adoption of Mark-to-Market (MTM) accounting for pension actuarial gains or losses by comparing the short-window earnings response coefficients (Panel A) and the analyst forecast dispersion (Panel B) of treatment and control firms. Model estimations are based on 262 (246) quarters for the treatment group and 256 (238) quarters for the control group for the short-window earnings response coefficients tests in Panel A (the analyst forecast dispersion tests in Panel B). Variable definitions are provided in Appendix B. *, **, and *** denote significance at the $p < 0.10$, 0.05, and 0.01 levels, respectively. p -values are based on one- (two-) tailed t-tests for variables/coefficients with signed (unsigned) predictions.

Panel A: The Short-Window Earnings Response Coefficients

Dependent variable:	Expected	Model (1)		Model (2)		Model (3)	
CAR [-1,+1]	sign	Coefficient		Coefficient		Coefficient	
		<i>(p-value)</i>		<i>(p-value)</i>		<i>(p-value)</i>	
<i>Intercept</i>	?	-0.022		-0.014		-0.018	
		<i>0.392</i>		<i>0.595</i>		<i>0.500</i>	
UE	+	1.102	***	2.050	***	-0.107	
		<i>0.009</i>		<i><.0001</i>		<i>0.523</i>	
POST	?			-0.006		-0.004	
				<i>0.314</i>		<i>0.490</i>	
TREAT	?			-0.003		-0.003	
				<i>0.574</i>		<i>0.599</i>	
UE*POST	?			-1.508	**	-1.536	**
				<i>0.013</i>		<i>0.014</i>	
UE*TREAT	?			-2.023	***	-2.040	***
				<i>0.010</i>		<i>0.002</i>	
UE*POST*TREAT	+			3.111	***	3.393	***
				<i>0.003</i>		<i>0.001</i>	
UE*BETA	?					1.311	*
						<i>0.097</i>	
UE*LNMVAl	?					0.090	
						<i>0.717</i>	
UE*MB	?					-0.109	
						<i>0.238</i>	
Observations		518		518		518	
R ²		0.113		0.145		0.172	
Industry Fixed Effects		YES		YES		YES	
Calendar Quarter Fixed Effects		YES		YES		YES	
Std. Errors clustered by Calendar Qtr		YES		YES		YES	

Table 5 (cont'd)

Panel B: Analyst Forecast Dispersion

		Model (1)		Model (2)	
Dependent variable:	Expected	Coefficient		Coefficient	
Analyst Forecast Dispersion (A_DISP)	sign	<i>(p-value)</i>		<i>(p-value)</i>	
<i>Intercept</i>	?	0.163	**	0.769	***
		0.032		0.002	
POST	?	0.181		0.257	*
		0.104		0.051	
TREAT	?	-0.096	***	-0.076	*
		0.003		0.050	
POST*TREAT	-	-0.344	*	-0.339	**
		0.029		0.024	
BETA	?			0.128	
				0.224	
LNVAL	?			-0.113	*
				0.013	
MB	?			0.039	*
				0.096	
Observations		484		484	
R ²		0.119		0.141	
Industry Fixed Effects		YES		YES	
Calendar Quarter Fixed Effects		YES		YES	
SE Clustered by Calendar Quarter		YES		YES	

Table 6
The Relation between CEO Cash Compensation and Pre-Adoption Period Amortization of Actuarial Losses or Gains

The table presents the results of testing the efficient contracting versus the managerial opportunism hypotheses for adoption of Mark-to-Market (MTM) accounting for pension actuarial gains or losses by examining the sensitivity of CEO cash compensation to amortization of actuarial losses and gains. The sample includes 133 treatment firm-years prior to the adopting year and 123 control firm-years before the pseudo adoption year. Variable definitions are provided in Appendix B. *, **, and *** denote significance at the $p < 0.10$, 0.05, and 0.01 levels, respectively. p -values are based on one- (two-) tailed t -tests for variables/coefficients with signed (unsigned) predictions.

		Model (1)		Model (2)	
		TREAT		CONTROL	
Dependent variable:	Expected	Coefficient		Coefficient	
$\Delta \ln(\text{Cash})$	sign	$(p\text{-value})$		$(p\text{-value})$	
<i>Intercept</i>	?	0.206		-0.227	
		0.255		0.527	
$\Delta \text{AMT (t)}$	-	-21.499	**	-20.435	
		0.016		0.231	
$\Delta \text{ROA_OPINC_adj (t)}$	+	2.926	**	1.806	**
		0.008		0.010	
RET (t)	+	-0.004		0.168	
		0.513		0.109	
Sales (t)	?	0.000	**	0.000	
		0.024		0.773	
$\text{Sales (t) *Sales (t)}$?	0.000	**	0.000	
		0.036		0.678	
Number of Observations		133		123	
Adjusted R ²		0.205		0.254	
Industry Fixed Effects		YES		YES	
Year Fixed Effects		YES		YES	
Std. Errors Clustered by Firm		YES		YES	

Table 7
The Relation between CEO Cash Compensation and Post-Adoption Period MTM Pension Adjustments

The table presents the results of testing the managerial opportunism hypothesis for adoption of Mark-to-Market (MTM) accounting for pension actuarial gains or losses by examining the sensitivity of CEO cash compensation to MTM pension adjustments. Model estimation is based on a sample of 44 adoption firm-years. Variable definitions are provided in Appendix B. *, **, and *** denote significance at the $p < 0.10$, 0.05, and 0.01 levels, respectively. p -values are based on one- (two-) tailed t-tests for variables/coefficients with signed (unsigned) predictions.

		(1)		(2)		(3)	
Dependent variable:	Expected	Coefficient		Coefficient		Coefficient	
$\Delta \ln(\text{Cash})$	sign	$(p\text{-value})$		$(p\text{-value})$		$(p\text{-value})$	
<i>Intercept</i>		-0.682	***	-0.964	***	-0.974	*
		0.001		<.0001		0.079	
MTM_Adjustment	?	2.203		3.734		0.382	
		0.662		0.450		0.960	
LOSS_IND	?					0.373	
						0.528	
MTM_Adjustment*LOSS_IND	?					-0.214	
						0.979	
$\Delta \text{ROA}_{\text{adj}}$	+	4.176	***			4.151	***
		0.000				0.003	
RET	+			0.646	**		
				0.022			
Sales	?	0.000		0.000		0.000	
		0.446		0.324		0.844	
Sales*Sales	?	0.000		0.000		0.000	
		0.500		0.296		0.893	
Number of Observations		44		44		44	
Adjusted R ²		0.362		0.333		0.382	
Industry Fixed Effects		YES		YES		YES	
Year Fixed Effects		YES		YES		YES	
Standard Errors Clustered by Firm		YES		YES		YES	

Table 8
Mark-to-Market Pension Accounting Adopting Firms' Use of Non-GAAP Earnings

The table presents the terms that MTM adopting firms use for their post-adoption non-GAAP earnings measures. All firms exclude MTM pension adjustments from their non-GAAP earnings, except for three firms where the “Non-GAAP Earnings Measures” column is marked as “N/A.”

Company	Non-GAAP Earnings Measures
AT&T INC	Adjusted EBITDA
HONEYWELL INTERNATIONAL INC	Adjusted EBITDA; non-operating charge
POLYONE CORP	Special items
VERIZON COMMUNICATIONS INC	Adjusted EBITDA; Non-cash pension items
ASHLAND INC	Adjusted EBITDA; operating key items
CONAGRA FOODS INC	Diluted EPS adjusted for items impacting comparability
EASTMAN CHEMICAL CO	excluding non-core or non-recurring items
FIRSTENERGY CORP	non-GAAP earnings; special items; non-GAAP guidance
GRAFTECH INTERNATIONAL LTD	Adjusted EBITDA
IHS INC	Adjusted EBITDA
KAMAN CORP	N/A
PERKINELMER INC	Adjusted earnings per share; adjusted operating income; adjusted SG&A
REYNOLDS AMERICAN INC	Adjusted EPS; Excludes charges for non-cash pension and postretirement mark-to-market adjustments
STARRETT (L.S.) CO -CL A	Non-GAAP earnings, which were adjusted to exclude a pension adjustment
TCF FINANCIAL CORP	N/A
UNITED PARCEL SERVICE INC	Adjusted diluted earnings per share; as adjusted income data
WINDSTREAM HOLDINGS INC	Adjusted OIBDA; Adjusted OIBDA removes the impact of restructuring charges, pension expense and stock-based compensation
ALBEMARLE CORP	Earnings per share, excluding special and non-operating items; Non-operating pension and OPEB items
BABCOCK & WILCOX CO	Adjusted earnings per share
CORNING INC	Core earnings
FERRO CORP	On an adjusted basis, earnings per diluted share
JOHNSON CONTROLS INC	Non-GAAP earnings; non-recurring items; a non-cash mark-to-market gain
KELLOGG CO	Comparable earnings

Table 8 (cont'd)

Company	Non-GAAP Earnings Measures
PVH CORP	Non-GAAP EPS; Non-GAAP Exclusions
TERADYNE INC	Diluted non-GAAP net income; On a non-GAAP basis
TOWER INTERNATIONAL INC	Adjusted EBITDA; Adjusted Earnings Per Share (EPS)
CELANESE CORP	Adjusted earnings per share; adjusted EBIT; certain items are included in Net earnings (loss) and are adjustments to non-GAAP measures
CYTEC INDUSTRIES INC	As-Adjusted EPS
GRACE (W R) & CO	Adjusted EBIT
LEXMARK INTL INC -CL A	Non-GAAP EPS
NCR CORP	Non-pension operating income
SPX CORP	Non-cash pension expense
STANDARD REGISTER CO	N/A