

**Recognition versus Disclosure:
The Case of Employers' Pension Cost Accounting**

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Preliminary Draft – Please do not quote

8 November 2013

Abstract

This paper addresses the fundamental question of whether, and the extent to which, capital markets impound the information contained in disclosed and recognised amounts in the context of employers' pension cost accounting. Using a sample of non-financial UK firms that have only disclosed net pension liabilities (assets) prior to IAS 19, which are subsequently recognised after IAS 19 adoption, we find that while valuation coefficients on *disclosed* net pension liabilities (assets) are not significant, the valuation coefficients on *recognised* net pension liabilities (assets) are significant. We find model-sensitive evidence that recognised balance sheet pension components receive more weight than the equivalent disclosed information in market value association tests. In addition, our results suggest that recognition and disclosure have a differential impact on the complementarities of balance sheet and income statement pension measures. Overall the results from our study are consistent with the 'rational difference' view that recognition and disclosure are not substitutes.

Keywords: recognition; disclosure; IAS 19, FRS 17, net pension liabilities (assets)

Data Availability: Data are available from public sources as indicated in the text.

JEL Classifications: M41

1. INTRODUCTION

The equivalency of recognition and disclosures¹ has been an issue of significant debate among standard setters, academics and practitioners. The ‘efficient market’ hypothesis implies an ‘equivalency’ view, which suggests that the location of accounting amounts reported in financial statements has no direct capital market implication. This is because users in aggregate are knowledgeable and efficient information processors who fully appreciate the meaning of accounting information regardless of where it is presented. Under this view, the standard setters’ decision to recognise a previously disclosed amount conveys no new information (Aboody, Barth, and Kasznik, 2004). By contrast, the competing ‘rational differences’ view posits that information location (disclosure versus recognition) reveals differential characteristics of accounting information in terms of decision usefulness (Schipper, 2007). Schipper argues that this view is consistent with rational investors in aggregate who assess financial reporting requirements to uncover pertinent informational properties of disclosed versus recognised items (e.g. reliability).

The relevant theory by which to analyze and discriminate between recognition and disclosure is very limited, and the mixed evidence from prior empirical research sheds limited light on this debate. Some studies provide evidence that disclosed items are evaluated by capital market participants (e.g. Ely, 1995; Imhoff, Lipe, and Wright, 1993), but are unable to determine whether disclosed information is processed by capital markets ‘correctly’ or equivalently to recognised information. Other studies provide some evidence suggesting that recognised information receives stronger market response than disclosed items (e.g. Davis-Friday et al., 1999; Davis-Friday, Liu and Mittelstaedt, 2004; Ahmed, Kilic and Lobo, 2006; Al Jifri and Citron, 2009).

This study exploits the unique UK financial reporting setting in which accounting for employers’ pension costs moved from notes disclosure to balance sheet recognition regime. Mandatory pension disclosure and accounting practice prior to IFRS adoption in the UK with subsequent recognition of the net pension liability/asset on balance sheet under IAS 19 provide

¹ Recognition is defined as the depictions in numbers with captions on the face of the financial statements, and disclosures as the displays in the notes and supporting schedules that accompany financial statements (Schipper, 2007).

a good experimental setting to test the valuation implication of recognised versus disclosed items. This setting mitigates some of the research design problems in prior recognition and disclosure studies. Bernard and Schipper (1994) noted that cross-sectional comparisons are difficult because if accounting standards allow a choice between recognition and disclosure for the same economic situation, then firms self-select themselves into either recognition or disclosure regime. The use of the mandatorily disclosed liability amounts prior to IAS 19 adoption and the subsequently recognised liability amounts upon IAS19 mandatory adoption allows a unique within-firm design, thereby avoiding self-selection bias. In addition, Bernard and Schipper (1994) also suggest that recognition and disclosure could result in different stock price effects if the investors inappropriately undervalue disclosed amounts or recognition or that they perceive recognition implies greater relevance or reliability. In our setting, the FRS 17 disclosure of the pension liability was provided in anticipation that recognition would be required by the mandated adoption of IAS 19. As a result, it is less likely that investors would perceive the recognised number as more reliable, since UK firms faced broadly similar economic conditions before and after adoption of IAS 19. Therefore, the UK setting greatly reduces the endogeneity issue related to changing investor perceptions of reliability.

Using a sample of non-financial UK firms that have only disclosed their pension balance sheet pension liability and asset amounts under FRS 17, which is subsequently recognised after IAS 19 adoption, we perform price association tests for evaluating the value relevance of recognised and disclosed pension liability/asset information (on a ‘net’ and a ‘disaggregated’ basis). There are three key results from our value relevance tests. First, we find that while valuation coefficients on disclosed net pension liabilities (assets) are not significant, the valuation coefficients on recognised net pension liabilities (assets) are significant. Second, recognition seems to make a difference. The incremental benefit from recognising the *net* pension liability (asset) information on balance sheet is significantly greater than merely place it as footnote disclosures. Third, our tests on incremental value relevance of pension asset and liability versus pension cost component provide evidence that recognition and disclosure have a differential impact on the complementarities of balance sheet and income statement pension

measures. More specifically, recognition of pension balance sheet components appears to have reduced the explanatory power of pension costs in price association tests.

The study contributes to recognition versus disclosure debate and related academic literature in a number of ways. First, it contributes significantly to the recognition versus disclosure debate against a unique UK setting of an extended IAS 19 adoption period. We present evidence consistent with the ‘rational difference’ view that recognition and disclosure are not substitutes. Such view is supportive of the beliefs of accounting standard setters for financial statement elements that meet recognition criteria (e.g. Barth, Clinch and Shibano, 2003; Al Jifri and Citron, 2009). Second, it contributes to the prior pension value relevance research on complementarities of pension balance sheet and pension cost component information. We present evidence suggesting that recognition and disclosure have differential impact on incremental value relevance of pension asset and liability versus pension cost components. Third, the evidence on value relevance of ‘disaggregated’ pension liability and asset information under both disclosure and recognition regimes lends some support to recent accounting standard setters’ proposal recommending the full recognition of companies’ pension assets and liabilities on a ‘disaggregated’ basis rather than on a ‘net’ basis.

The remainder of this paper proceeds as follows. Section 2 describes the institutional background required for this study. Section 3 reviews prior recognition and disclosure research, and the literature on value relevance of pension accounting information. Section 4 overviews the research design. Section 5 describes the sampling procedure, data, and descriptive statistics. Section 6 reports the results of empirical analysis, while Section 7 concludes.

2. PENSION ACCOUNTING: FROM FRS 17 TO IAS 19

Prior to the 1980s, pension accounting in the UK was based on the cash contributions made by employer sponsors during the accounting period. Statement of Standard Accounting Practice 24 (hereafter SSAP 24) “Accounting for Pension Costs” was issued in 1988 by the UK Accounting Standards Committee (ASC), the predecessor body to the UK Accounting Standards Board (ASB). SSAP24 introduced the fundamental principle of accruals to pension accounting but was mainly income statement focused, with the primary objective of

maintaining a regular pension cost each year that was a substantially level percentage of the pension payroll. Any variations from the regular costs were recognised gradually over the remaining service life of employees. However, SSAP 24 did not address the issue of the appropriate treatment of the pension asset and liability on an employer sponsor's balance sheet, which is central to the pension accounting debate.

On 30 November 2000, the ASB issued Financial Reporting Standard 17 ('Retirement Benefits', FRS 17) which represented a significant pension accounting regime change in the UK. The ASB's major objectives were to ensure that the 'fair value' approach is used in measuring pension assets and liabilities and to achieve transparency and comparability in accounting for pension costs (FRS 17, para 1). One of the most significant and controversial changes required the recognition of the pension surplus or deficit as a net pension liability/asset on balance sheet (FRS17, para.37). The surplus or deficit is required to be valued annually, using market prices for pension investments and the AA corporate bond rate to discount pension obligations (FRS17, para14). The recognition of this "pension balance" in a firm's financial statement is consistent with the corporate finance perspective which would treat the pension fund as part of the employer firm's net worth, requiring full consolidation on its balance sheet.

From 1 Jan 2005, all listed companies across Europe are required to adopt IAS 19 'Employee Benefits' in their consolidated accounts, as part of EU-endorsed International Financial Reporting Standards ('IFRS'). As a result, ASB extended the full adoption of the UK standard (FRS 17) over the reporting period from 2001 to 2004. This extended adoption has resulted in a unique experimental setting for testing value relevance of recognition versus disclosure. Prior to IAS 19, UK companies have the choice under the transitional regime of FRS 17 to recognise the net pension liabilities (assets) on balance sheet; or continue to report under SSAP 24, and provide comprehensive mandatory disclosures in pension footnotes the effects on the main financial statements as if FRS 17 had been fully implemented. From 1 Jan 2006 all firms adopting IAS 19 had to recognise the pension assets and liabilities on balance sheets, however, again firms could choose how to report the actuarial gains and losses. In June 2011, the IASB issued an amended version of IAS 19 (*Employee Benefits*), which required the

full and immediate recognition of actuarial gains and losses in ‘other comprehensive income’. The US pension accounting rules are consistent with IAS 19 approach in mandating balance sheet recognition of the net pension liability/asset. In September 2006, the US FASB adopted SFAS 158 (Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans, an Amendment of FASB Statements Nos. 87, 88, 106, and 132(R)), which requires balance-sheet recognition of the funding status of defined benefit pension and OPEB plans.²

3. REVIEW OF PRIOR RESEARCH

3.1. Recognition versus disclosure

Prior academic research into the effects of recognition versus disclosure has advanced our understanding of whether users interpret accounting information differently when it is presented in different locations (e.g., see Ely 1995; Imhoff, Lipe, and Wright, 1993; Barth, Clinch and Shibano, 2003; Aboody, Barth and Kasznik, 2004; Nelson and Tayler, 2007). Two elements of this strand of literature are relevant to our study. The first investigates whether the capital market processes accounting information disclosed in financial statement notes in their financial decision making. A large volume of empirical research provides evidence that disclosed items appear to be taken into account by capital market participants (e.g., see Ely 1995; Imhoff, Lipe, and Wright, 1993; Barth, Clinch and Shibano, 2003; Aboody, Barth and Kasznik, 2004; Nelson and Tayler, 2007). For example, Aboody, Barth and Kasznik (2004) show that disclosed stock-based compensation expense has a negative relation to share price. Imhoff, Lipe and Wright (1993) and Ely (1995) provide evidence that disclosed future minimum operating-lease payments are related to market assessment of equity risk. One UK-based study investigates whether the UK market incorporates footnote operating lease disclosures in its assessment of equity risk (Beattie, Goodacre and Thomson 2000). Using an improved measure of operating lease liabilities, they find a significantly positive relation between equity risk and their estimate of operating lease liabilities. They conclude that operating leases disclosures are incorporated in UK market participants’ assessments of equity risk, thus corroborating prior US-based research findings.

² Crucially, for the purpose of the paper, the mandatory disclosure and recognition requirements of FRS 17 and IAS 19 are almost identical.

However, this element of the literature does not assess whether investors process disclosed information ‘appropriately’ or equivalently to recognised information. The second element of the literature addresses this issue. A few empirical studies document evidence suggesting that recognised information receives stronger market response than disclosed items (e.g. Davis-Friday et al., 1999; Davis-Friday, Liu and Mittelstaedt, 2004; Ahmed, Kilic and Lobo, 2006; Bratten, Choudhary and Schipper, 2013). Most relevant to the present study, David-Friday et al. (1999) investigate whether the market priced firms’ obligations for postretirement benefit other than pensions (PRB) measured under SFAS 106 (FASB, 1990) equivalently before and after formal recognition. Their results suggest that both disclosed PRB liabilities prior to SFAS 106 and those recognised subsequent to the adoption of SFAS 106 significantly contribute to explaining stock prices. They also find some evidence that the market priced the PRB liability differently before and after it was recognised under SFAS 106. In a follow-up study, Davis-Friday, Liu and Mittelstaedt (2004) presents evidence consistent with the market treating disclosed PRB liabilities as less reliable than recognised PRB liabilities. In a different context, for a sample of banks, Ahmed, Kilic and Lobo (2006) find that information on derivatives recognised in financial statements pursuant to SFAS 133 is significantly positively valued by the market, whereas the equivalent derivatives information disclosed in footnotes does not appear to be valued. By contrast, Al Jifri and Citron (2009) found that *both* recognised and disclosed good-will (in the UK) are significantly associated with share price. Bratten, Choudhary and Schipper (2013) examine whether and why capital market participants treat recognized and disclosed lease amounts differently in setting the costs of debt and equity. Using a sample of US firms reporting both capital and operating leases, they present evidence that recognized information and disclosed information is processed similarly when the disclosed information is salient, reliable and easily processed. Bratten et al. (2013) suggest that equivalence of recognized versus disclosed amounts are attributable to the setting in which the disclosed amounts are reliable and the disclosed information is readily identifiable and easily processed. They provide further evidence showing that the associations between costs of debt and equity, and recognized amounts versus as-if recognized amounts are statistically distinguishable only when the as-if recognized values are imputed from less-reliable

disclosures. Their findings however are not consistent with prior studies (e.g. Ahmed et al. 2006; Davis-Friday et al. 1999) which find valuation differences between recognized and disclosed values for derivatives and post-retirement benefits. They attribute the difference to a combination of reliability and ease-of-use effects; that is, investors and creditors appear to use recognized and disclosed information similarly when there are few or no difficulties in identifying and processing the information and the information itself is reliable.

Experimental and analytical research of individual users provide converging evidence, supporting that argument that recognition or disclosure of information affects the extent of some financial statement users' response. A recent experimental study by Nelson and Tayler (2007) examines how financial statement users' judgements are influenced by the process of transforming financial statements from disclosed information to on balance sheet recognition. The authors provide evidence suggesting that *disclosed* information acquired via reconciled information displays and effortful processing influences financial decision making to a greater extent than if it had been *recognised*. Analytical research typically models disclosure separately from recognition by characterising disclosures as freely available information, but less used by some investors. For example, Barth, Clinch and Shibano (2003) find that because of costs associated with understanding footnote disclosures, recognition can affect the extent to which information is reflected in share prices. Disclosures receive a lower valuation weight because some investors do not understand these items.

Overall, empirical research on recognition versus disclosure suggests that the market reacts to disclosed information, but possibly to a lesser degree than to recognised information. This may reflect a perception that recognised amounts are more reliable than merely disclosed amounts. However, empirical evidence to date is mixed given a number of difficulties in research designs including the choice of model specification (for a detailed discussion see Schipper, 2007). Typically, earlier research studies rely upon an equity valuation framework with over-simplifying assumptions. For example, Davis-Friday et al. (1999) model the market value of equity as the sum of market values of assets and liabilities, where book values of assets and liabilities are used as proxies for market values, under the premise that market value captures earnings and other factors. Such regression specification fails to capture

‘unrecognised goodwill’, i.e. the omitted expected future ‘rents’ that are also priced by investors.

3.2. Market valuation of pension liabilities

The second strand of research concerns the value relevance of pension liabilities or pension cost components (e.g. Landsman, 1986; Feldstein and Morck, 1983; Daley, 1984; Barth, 1991; Barth, Beaver and Landsman, 1992; Picconi, 2006; Hann, Lu and Subramanyam, 2007). An implicit assumption in these studies is that recognition or disclosure does not affect value relevance. A majority of these studies relies on some form of pricing model to structure their tests. Typically, they use equity market value as the benchmark to assess how well disclosed and/or recognised pension accounting amounts reflect information used by investors. However, evidence from this strand of US-based empirical accounting literature is also somewhat mixed.

Some studies find evidence that disclosed pension amounts are incorporated in firms’ equity valuation. For example, Barth (1991) investigates disclosures of pension assets and liabilities information under SFAS 87 to determine which information investors appear to use in their valuation of firm equity. She finds that footnote disclosures are closer to those assessed in market valuation than the measures recognised in the balance sheet at that time. This suggests that the market pays some attention to the pension information reported in the financial statement notes, but that it may have trouble properly weighting this information. Barth, Beaver and Landsman (1992) test whether the market assigns different coefficients to the various components of reported pension cost based on their perceived permanence. They find that, in general, the market weights the various components differently, although not necessarily with the magnitude or sign predicted. Hann, Lu and Subramanyam (2007) examine the value relevance of disclosed projected pension obligation (PBO) under SFAS 87. The authors separate the discretionary component of PBO, attributable to flexibility allowed in actuarial assumption choices, from the non-discretionary PBO component. They find that the discretionary component is incrementally priced by the market in a similar manner to the nondiscretionary component.

A number of studies have also suggested that pension and postretirement benefits information is not fully impounded in share prices. Landsman and Ohlson (1990) examined whether the market fully values net pension assets (liabilities) disclosed in the notes under SFAS No. 36 from 1979 to 1982. Contrary to Barth's (1991) findings, Landsman and Ohlson suggest that the market under-reacts to the pension disclosures. Amir and Gordon (1996) examine the association between firm value and other post employment benefits (OPEB) liabilities. They conclude that equity values are consistent with the stock market taking reported OPEB liabilities at face value without adjusting for differences in assumptions.

Analytical research by Gold (2005) postulates that SFAS 87 overstates and smoothes earnings leading to upwardly biased equity valuation. Gold develops a model in which investors fail to adjust for plan asset risk and rely on recognised pension costs rather than the disclosed plan assets and liabilities. Consistent with Gold (2005), Coronado and Sharpe (2003) find supportive evidence that US capital market participants failed to interpret the pension expense correctly throughout the late 1990s leading to the over-valuation of firms.

Picconi (2006) investigates whether analysts and investors fully incorporate the information contained in pension footnote disclosures. His results indicate that analysts do not explicitly incorporate the information from changes in pension plan parameters into their initial forecasts so that these changes predict future earning surprises. In addition, Picconi finds that the off-balance-sheet portion of the pension plan's funded status and the projected benefit obligations (PBO) are predictive of future returns while the on-balance-sheet portion of the funded status is not. This implies that investors do not accurately assess the long-run cash flow and earnings implications of these off-balance-sheet pension disclosures.

Overall, prior research suggests that disclosed information (including pension-related) is value relevant. Some studies find that recognised information is more value relevant than disclosed information, but others find little difference in relevance. One experimental study provides a possible explanation for such conflicting results: the need for additional processing of disclosed information may actually enhance its value (Nelson and Tayler, 2007). While disclosed discretionary components of pension liabilities may be particularly helpful to users (Hann et al, 2007), there is other US evidence that disclosed pension information is not

accurately impounded in firm share price. The present study seeks to investigate such issues further, within the UK context, taking advantage of the within-firm design possibility enabled by the mandatory change from disclosure to recognition.

4. RESEARCH DESIGN AND METHOD

4.1. Development of hypotheses

The first research question we investigate is whether there is a differential market valuation impact between recognised and disclosed pension liability/asset values. Prior pension research has implicitly assumed that recognition or disclosure does not have a differential impact on value relevance. Indeed the empirical evidence from the US suggests that pension accounting information (recognised or disclosed) is significantly associated with share prices (e.g. Barth, 1991; Hann, Lu and Subramanyam, 2007). However, the somewhat opaque pension accounting practices permit UK firm management to engage in smoothing and spreading pension cost over time. Consequently, the UK capital market may not be able to weight the pension accounting information (disclosed or recognised) properly.

The ASB chairman explained that the premise underlying FRS 17 is that the “pension surplus or deficit should be shown in the balance sheet for investors and employees to see” (Tweedie, 2003: p. 722). Absent a theoretical framework underlying recognition versus disclosure in financial reporting, we expect that value relevance of pension accounting information depend on whether the change from the pre-IAS 19 disclosure regime to post-IAS 19 recognition regime conveys new information to investors who might perceive recognised/disclosed amounts to have different informational properties (e.g. greater decision usefulness). This prediction is consistent with the ‘rational differences’ view that the disclosed net pension liability/asset amounts may be viewed by investors as less value-relevant or less reliable (Schipper, 2007; Davis-Friday et al., 1999) because of their locations on the financial statements. This discussion leads the following hypotheses:

Hypothesis 1 (H1)

H1: Capital market assigns greater valuation weight to a recognised *net* pension liability/asset than a disclosed *net* pension liability/asset.

The second related research question we address is whether balance sheet pension liability/asset information (on a ‘net’ or ‘disaggregated’ basis), upon IAS 19 adoption is incrementally more value relevant than pension cost component. Glaum (2009:283) points out that examining whether the complementarities of balance sheet and income data underlying the Ohlson (1994) equity valuation model applies to pension accounting measures is at the very heart of the current pension accounting debate. Recent research finds that for the US market firm valuations continue to be unduly influenced by the recognised pension expenses in the income statement, with less weight attached to the incremental information in the net pension position disclosed in the financial statement footnotes (Coronado et al, 2008); this leads to significant market valuation errors in the price of companies with defined benefit pensions. Franzoni and Marin (2006) find that US firms sponsoring underfunded defined benefit pension plans appear to be undervalued relative to those sponsoring overfunded pension plans. By contrast, an earlier US-based study by Barth et al. (1993) finds that pension cost component information is largely redundant in explaining share price, once disclosed pension balance sheet information are incorporated into the valuation model. Fasshauer and Glaum (2009) find evidence consistent with Barth et al. (1993) in a German setting.

In the UK, under the traditional pension accounting rules (SSAP 24), any pension surplus or deficit arising from a UK firm’s past funding practices was not recognised on its balance sheet. Consequently, investors may have valued the firm on the basis of the (recognised) impact of pensions on reported earnings than on the (disclosed) underlying true economic measure of the firms’ pension exposure prior to IAS 19 adoption. Compliance with FRS 17/IAS 19 facilitated a shift away from the smoothing of pension expenses to the impact on the fair value of the firm’s pension exposure on the balance sheets. This discussion leads to the following hypotheses:

Hypothesis 2 (H2)

H2 (a): Net pension liabilities (assets) components are incrementally more value relevant than pension cost components upon IAS 19 adoption.

H2 (b): Pension assets and liabilities components on a “disaggregated” basis are more value relevant than pension cost components upon IAS19 adoption.

4.2. Empirical models

In earlier recognition versus disclosure studies, which have adopted the value relevance approach (e.g. Davis-Friday et al., 1999; Davis-Friday, Liu and Mittelstaedt, 2004), the choice of valuation model sometimes relies upon an equity valuation framework with potentially over-simplifying assumptions. Consistent with recent pension research (e.g. Coronado and Sharpe, 2003; Hann, Lu and Subramanyam, 2007), we use the Ohlson (1995) model to test the value-relevance of FRS17 pension footnote disclosures (H1). Market value of equity is regressed on the specific balance sheet accounting items under investigation (e.g., fair value of pension assets, projected benefit pension obligations), non-pension assets and liabilities, net income and a vector of control variables. Ohlson (1995) shows that firm value can be expressed as a linear function of equity book value, net income, dividends and other information with additional assumptions of linear information dynamics. When income is neither perfectly persistent nor transitory, the correct specification of the equity valuation model is the one includes both the book value of equity and income (Ohlson, 1995). The baseline regression models are specified as follows:

$$MVE_{it} = \alpha_0 + \alpha_1 BVE_{it} + \alpha_2 NPL_{it} + \alpha_3 NI_{it} + \alpha_4 PC_{it} + \alpha_5 SALEGRW_{it} + \alpha_6 R \& D_{it} + \alpha_7 EMP_{it} + v_{it} \quad (1)$$

$$MVE_{it} = \alpha_0 + \alpha_1 BVE_{it} + \alpha_2 FVPA_{it} + \alpha_3 PBO_{it} + \alpha_4 NI_{it} + \alpha_5 PC_{it} + \alpha_6 SALEGRW_{it} + \alpha_7 R \& D_{it} + \alpha_8 EMP_{it} + v_{it} \quad (2)$$

where MVE_{it} is the market value of equity of firm i at time t (closing price 3 months following the firm's fiscal year end); BVE_{it} is the book value of equity; NPL_{it} is the *recognised or disclosed* net pension liability (asset); $FVPA_{it}$ is the fair value of pension assets; PBO_{it} is the projected pension benefit obligations; NI_{it} is the net income before extraordinary items, PC_{it} is the net periodic pension expenses, $R \& D_{it}$ is the research and development expense; $SALEGRW_{it}$ is the average sales growth over the previous three years; $R \& D_{it}$ is the research and development expense; EMP_{it} is the number of employees in thousands.

We include sales growth ($SALEGRW$) as a control variable for growth opportunities that are not reflected in the financial statements. Research and development expenditure ($R \& D$)

and number of employees (*EMP*) are also included to control for unrecognised intangibles and values created by human capital.³

Eq. (1) only includes the net pension liability measured as the difference between the pension liability and the fair value of the plan assets. This approach effectively assumes that pension assets and liabilities are measured with equal precision and that the market capitalises both at the same rate. By contrast, Eq. (2) allows the pension plan assets and obligations to enter the regression individually. This approach takes into account prior research which suggests that pension assets and liabilities are priced differently and that both disaggregated pension assets and pension liabilities are individually important in explaining cross-sectional variation in equity values (Landsman, 1986; Barth, 1991). The advantage of Eq. (2) is that valuation coefficients of pension asset and liability component are allowed to vary; the disadvantage is that pension asset (FVPA) and pension liability (PBO) are typically highly correlated.

To detect possible differences in the relation between market prices and recognised net pension liabilities versus pre-IAS 19 disclosed pension liabilities, we modify the above baseline valuation models to allow for different coefficients in pre-IAS 19 and post-IAS 19 periods. Our research design focuses on those UK firms that complied with the immediate recognition of actuarial gains and losses (AG&L) in full in Statement of Recognised Income and Expenses (SORIE) under IAS 19, and which made a disclosure of the pension assets and liabilities amounts in the prior year. Given the great similarity between FRS 17 and IAS 19, pension disclosures made under FRS 17 can be considered an estimate of the pension liability/asset to be subsequently recognised under IAS 19. Both the disclosed and recognised items were measured by using the same valuation method, and were often similar in magnitude. We mitigate the potential effects of measurement error in the disclosed items by focusing on the difference between the coefficients of the disclosed and recognised items as opposed to their deviations from some theoretical value.

We refine the baseline models by introducing a dummy variable (*D*) to capture the transition from the disclosure to recognition regime (*D* is coded 1 indicating the post-IAS 19

³ Inclusion of *R&D* and *EMP* also helps to mitigate the service cost anomaly. More detailed discussion on this can be found in Hann, Lu and Subramanyam (2007).

mandatory recognition period; D is coded 0 indicating the pre-IAS 19 mandatory disclosure period) as follows:

$$\begin{aligned}
MVE_{it} = & \gamma_0 + \gamma_{02}D + \gamma_1 BVE_{it} + \gamma_{2*}NPL_{it} + \gamma_5 NI_{it} + \gamma_6 PC + \gamma_7 SALEGRW_{it} + \gamma_8 R \& D_{it} \\
& + \gamma_9 EMP_{it} + \gamma_{10}D * BVE_{it} + \gamma_{11*}D * NPL_{it} + \gamma_{12}D * NI_{it} + \gamma_{13}D * PC + \gamma_{14}D * SALEGRW_{it} \\
& + \gamma_{15}D * R \& D + \gamma_{16}D * EMP_{it} + v_{it}
\end{aligned}
\tag{3}$$

$$\begin{aligned}
MVE_{it} = & \gamma_0 + \gamma_{02}D + \gamma_1 BVE_{it} + \gamma_{3*}FVPA_{it} + \gamma_{4*}PBO_{it} + \gamma_5 NI_{it} + \gamma_6 PC + \gamma_7 SALEGRW_{it} \\
& + \gamma_8 R \& D_{it} + \gamma_9 EMP_{it} + \gamma_{10}D * BVE_{it} + \gamma_{11*}D * FVPA_{it} + \gamma_{12*}D * PBO_{it} \\
& + \gamma_{13}D * NI_{it} + \gamma_{14}D * PC_{it} + \gamma_{15}D * SALEGRW_{it} + \gamma_{16}D * R \& D_{it} + \gamma_{17}D * EMP_{it} + v_{it}
\end{aligned}
\tag{4}$$

We again have two equations: Eq. (3) includes the net pension plan liability/assets (NPL), whereas Eq. (4) allows the pension plan assets (FVPA) and obligations (PBO) to enter the regression individually. In Eq. (3), the coefficients corresponding to the disclosure regime are the intercept coefficient 0, together with the slope coefficients 1 through to 9. The valuation coefficient for the recognition period equals the valuation coefficient corresponding to the disclosure period plus the corresponding interaction term coefficient. For example in Eq. (3), the recognition valuation coefficient for NPL is $2^* + 11^*$. In Eq. (4), the recognition valuation coefficient for FVPA is $3^* + 11^*$, and for PBO is $4^* + 12^*$.

Our first test in Eq. (3) focuses on whether the coefficient on the net pension liability/asset (11^*) differs significantly from zero; if so, this suggests a differential market valuation impact between a disclosed and a recognised net pension liability/asset. A significant positive sign for the interaction valuation coefficient (11^*) would indicate that recognised amounts are weighted greater than disclosed amounts. This would be consistent with the ‘rational differences’ view that the disclosed net pension liability/asset amounts may be viewed by investors as less value-relevant (Schipper, 2007; Davis-Friday et al., 1999). Our second test in Eq. (3) focuses on whether valuation coefficient ($2^* + 11^*$) of recognised net pension liability (NPL) is significantly different from zero, while the coefficient on pension cost ($6 + 13$) is not. In Eq. (4), our test focuses on whether valuation coefficients of FVPA ($3^* + 11^*$) and PBO ($4^* + 12^*$) are significant, while the coefficient on pension cost component ($6 + 14$) is not.

5. SAMPLE AND DATA

Our sample selection began with the 350 UK companies listed on the London Stock Exchange, which were constituents of the FTSE 350 index in the year 2006. A significant number (142) of these firms did not sponsor defined benefit pension schemes. Exclusion of these firms, financial firms, firms following US GAAP, firms adopting the ‘corridor approach’, and early adopters of FRS 17 yields a sample of 132 companies. Table 1 summarises the sample selection process. In our regression analysis, we use firm-year observations with available data and delete the firm-year observations with negative book value of equity.

[INSERT TABLE 1 ABOUT HERE]

The 2004 to 2006 sample period is chosen because this period witnessed the transition from a disclosure to a recognition regime for pension accounting in the UK. First, the former UK pension GAAP (SSAP 24, ‘Accounting for Pension Costs’) was superseded by FRS 17 (‘Retirement Benefits’) issued on 30 November 2000. However, the full adoption of FRS 17 was phased in over an extended period from 2001 to 2004. During the transition to FRS 17, UK companies had a choice between voluntarily recognising the net pension liability/asset on balance sheet and disclosing the equivalent information in the notes to the financial statements. Second, the EU regulations required listed companies to prepare accounts in accordance with international financial reporting standards (IFRS) (including IAS 19 for pension accounting) for accounting periods beginning on or after 1st January 2005. Crucially, for the purpose of the proposed project, the recognition and disclosure requirements of FRS 17 and IAS 19 under investigation are more or less identical.

The area in which IAS 19 differs from FRS 17 is the treatment of actuarial gains and losses (AG&L). IAS 19 allows the ‘corridor’ option in addition to the FRS 17 approach which requires AG&L to be recognised in full in the Statement of Recognised Income and Expenses (SORIE) immediately they arise. Under the ‘corridor’ approach, gains and losses are permitted to remain unrecognised (i.e. kept off the balance sheet) until they breach the corridor, and even then recognition on the balance sheet is spread over a number of years. The five companies

which elected to adopt the IAS 19 ‘corridor’ approach are not comparable to the rest of the sample so had to be excluded, as indicated in Table 1.

All the accounting data pertinent to the project were manually extracted from the firms’ annual reports filed during the period from December 2004 to November 2006. The mandatory FRS 17 disclosure regime covers accounting year ending from 1 December 2004 to 30 November 2005, and the mandatory IAS 19 recognition regime covers accounting year ending from 1 December 2005 to 30 November 2006.

6. EMPIRICAL RESULTS

6.1. Descriptive Statistics

Table 2 presents descriptive statistics for sample firms, with Panels A and B reporting separately for the disclosure year and the recognition year, respectively. Liabilities appear as negative values in the table. In the year of disclosure, the mean (median) total market value of equity (MVE) is £3,667m (£914m) or £5.08 (£3.24) per share. The mean (median) values are much higher in the following recognition year at £5,013m (£1,334 million), part of which can be explained by the general rise in the stock market over the period. The mean (median) total net pension liability (NPL) in the disclosure year is £226m (£54m) falling to £216m (£46m) million in the recognition year. The negative amounts represent net liabilities and confirm that the sponsored pension schemes, on average, were underfunded during the period 2004–2006. This contrasts with the overfunded US pension plans in the earlier 1991-1993 period in the Davis-Friday et al. (1999) study. The decline in underfunding in the year of recognition reflects the overall net effect of typical increases in pension fund assets (FVPA), reflecting the stock market rise, and liabilities (PBO). Paired t-tests and Wilcoxon signed rank tests indicate that disclosed pension assets (FVPA) and pension liabilities (PBO) are not significantly different than the post-IAS 19 recognised amounts.

[INSERT TABLE 2 ABOUT HERE]

Table 3 provides Pearson and Spearman correlations for the full sample using per share data over the full sample period (2004-06). The correlations calculated separately for the years of disclosure and recognition are very similar to those reported. As expected, MVE is strongly positively correlated with BVE and NI. The SALEGRW, R&D and EMP are all positively

correlated with MVE. The correlations between pension fund assets (FVPA) and liabilities (PBO) are also extremely high, with Pearson (Spearman) correlation coefficients of -0.993 (-0.994).

[INSERT TABLE 3 ABOUT HERE]

6.2. Regression Results

Table 4 presents results from estimating baseline valuation equations (1) and (2) on price association of pension liability/asset values for the full sample over the entire sample period. The explanatory power of the models is relatively high, with adjusted-R squares of 56% and 60%, which is slightly higher but similar to prior U.S. studies (e.g. Hann et al. 2007). The coefficients for BVE are highly significant and approximately 1.0 across both equations, which is in line with Davis-Friday et al. (1999). Panel A shows that the combined recognised and disclosed net pension liability NPL coefficient (2*) is positive and significantly negative at the 0.03 level, suggesting that net pension liability/asset amounts (disclosed and recognised) contribute to explaining share price. Eq. (2) (Panel B) assesses the value relevance of the disaggregated measures of pension fund assets and liabilities. The coefficients of both disclosed pension fund assets FVPA (3*) and liabilities PBO (4*) are positive, are statistically significant at less than 0.01 level.

The pension cost coefficients are negative and significant at 0.01 levels in both models, which is consistent with theoretical considerations. It is interesting to note that the significance of the coefficients on pension costs (PC) is reduced when pension assets and liabilities are allowed to enter the regression separately. The magnitude of the coefficient of PBO (2.720) is smaller than that of FVPA (3.454) during the pre- and post-IAS 19 period, and the F-test suggests that the two coefficients are statistically different at less than 0.01 level of significance. This evidence suggests that the capital market assigns valuation weights to pension assets and liabilities (on a “disaggregated” basis) individually and differently. However, the evidence on the disaggregated assets and liabilities needs to be interpreted with caution, given the high collinearity between FVPA and PBO. Overall, these results show both

balance sheet pension asset/liability information and pension costs contribute to explaining share prices when research design does not control for disclosed and recognised items.

[INSERT TABLE 4 ABOUT HERE]

Table 5 presents the results from the tests of value relevance of recognised versus disclosed pension liability/asset values on a ‘net’ basis for the pre- versus post- IAS 19 periods from estimating Eq. (3). The intercept and slope adjustment variables, indicated with a D prefix, are included to detect differences in the market pricing of disclosed versus recognised net pension liabilities (assets). Dummy variable D is coded 1 for the post-IAS 19 recognition period. Estimating Eq. (3) yields the recognition valuation coefficient ($\beta_2 + \beta_{11}$) of 1.553, which is positive and statistically significant at the 0.01 level. The magnitude of this recognition coefficient is significantly greater than the disclosed coefficient ($\beta_2 = 0.358$). Consistent with H1 (a), the coefficient on $D \cdot \text{NPL}$, β_{11} , is positive and statistically highly significant at less than 0.01 level (t-statistic = 2.84). This evidence suggests that the market places significantly greater weight on the recognised net pension liability/asset information over the equivalent disclosed information.

Comparing the estimation result for Eq. (1) for the full sample to those for Eq. (3) shows that the coefficient on pension costs ($\beta_6 + \beta_{13}$) during post-IAS 19 recognition period lost its significance (t-statistic=0.66). This is consistent with our H2 (a), indicating that balance sheet net pension liability information is incrementally more value relevant when recognised than pension cost information. This finding is in line with the results of Fasshauer and Glaum (2009) in a German setting, suggesting pension balance sheet components when recognised appear to be more important for stock market valuation than pension costs. Another interesting finding is that the result from estimating Eq. (3) also shows that coefficient on disclosed net pension liability (β_2) is not statistically significant at conventional level (t-statistics=0.72), but the coefficient on pension cost component is negative and significant at 0.10 level (t-statistics = -1.79). This evidence suggests those pension cost components are more closely associated with share price than pension balance sheet components (on a ‘net’ basis) under the pre-IAS 19 disclosure regime.

[INSERT TABLE 5 ABOUT HERE]

Table 6 reports the results from estimating Eq. (4), which allows pension assets and liabilities to have different coefficients in the valuation equation. The results show significant recognition valuation coefficients for pension assets $FVPA$ ($\beta_3^* + \beta_{11}^*$) and for pension liabilities PBO ($\beta_4^* + \beta_{12}^*$), both highly significant at less than 0.01 level. The incremental difference between recognition and disclosure valuation coefficients of pension assets, the coefficient on $D*FVPA$ ($\beta_{11}^* = 0.411$) are not statistically significant, though of expected positive sign. The coefficient on $D*PBO$ (indicated by $\beta_{12}^*=0.750$), the incremental difference between recognition and disclosure valuation coefficients of pension liabilities, is of expected positive sign, and is only very weakly significant at the 0.10 level based on a one-tail test (t-statistic = 1.544). Furthermore, the disclosure valuation coefficients for pension assets $FVPA$ (β_3^*) and pension liabilities PBO (β_4^*) are positive and highly significant at 0.01 level. Overall this evidence suggests that the incremental value relevance between disclosed and recognised disaggregated pension assets and liability information is relatively small, and such increase is insufficient for the market to assign greater weights to this disaggregated information when recognised on balance sheet. Table 6 also shows that the coefficient on pension costs ($\beta_6 + \beta_{14}$) under recognition regime is not statistically significant (t-statistics=0.66), comparing with the estimation result for Eq. (2) for the full sample which allows pension assets and liabilities to have different coefficients. This is consistent with our H2 (b), suggesting “disaggregated” pension balance sheet components when recognised appear to be more important for stock market valuation than pension costs. This finding is also in line with the results obtained in Table 5.

Taken together, the results from estimating Eq. (3) to Eq. (4) show that while the valuation coefficients on the disclosed net pension liability/asset are not significant, the valuation coefficient on recognised net pension liability/asset are significant. There is model-sensitive evidence suggesting that recognised balance sheet pension components receive more weight than the equivalent disclosed information in market value association tests. This evidence is consistent with prior research findings on recognised versus disclosed post-retirement benefit liabilities and derivative financial instruments (e.g. Davis-Friday et al. 1999; Ahmed et al.,

2006). In addition, we present evidence that disaggregated amounts for pension liabilities and assets are separately value relevant, under both disclosure and recognition regimes. This evidence further supports the notion that the market views pension fund property rights (ownership of pension assets and liabilities) as lying fully with the firm, consistent with Landsman (1986). Finally, our tests on incremental value relevance of pension asset and liability versus pension cost component provide evidence that recognition and disclosure have a differential impact on the complementarities of balance sheet and income statement pension measures. More specifically, recognition of pension balance sheet components appears to have reduced the explanatory power of pension costs in explaining share prices.

[INSERT TABLE 6 ABOUT HERE]

6.3. Robustness checks

We perform a number of sensitivity analyses. First, it is possible that our results are driven by factors other than the differences in recognition and disclosure per se. In order to mitigate the omitted variables problems, we follow Amhed et al. (2006) to employ change specifications of equations (3) and (4). The un-tabulated estimation results for the changes models are qualitatively consistent with the results for the level models. Second, we repeat our tests using annual year-by-year regressions; again we find consistent results as in our fixed effect panel regressions. Third, we examine the sensitivity of our results to the choice of deflators by repeating levels estimations using variables scaled by beginning sales as in Hann et al. (2007). We obtain similar results. Overall, these additional tests confirm the primary finding concerning the value relevance of recognised net pension liability (asset) information.

7. SUMMARY AND CONCLUSION

The question of whether the capital market considers that a firm's pension asset and liability information (on a 'net' or 'disaggregated' basis) conveys incremental information is of critical importance for accounting standard setters, investors and auditors. This study contributes to the recognition versus disclosure debate by estimating cross-sectional equity valuation regressions to assess whether investors value pension liability/asset information differently depending on whether reported items are disclosed or recognised. We examine this issue in the

context of employers' pension cost accounting, exploiting a financial reporting setting in which UK firms disclosed pension asset and liability amounts under mandatory requirement of FRS 17, which then were subsequently required to be recognised on balance sheet upon mandatory adoption of IAS 19. This unique experimental setting enables the avoidance of self-selection bias issues by using a within-firm research design. It also helps to mitigate the potential problem of differences in reliability between recognised and disclosed amounts, since both FRS 17 and IAS 19 adopt identical valuation methods for the measurement of pension assets and liabilities.

The primary objective of the study is to examine whether capital markets implicitly assign different valuation coefficients to disclosed and recognised pension assets and liability amounts. We find that while valuation coefficients on disclosed net pension liabilities (assets) are not significant, the valuation coefficients on recognised net pension liabilities (assets) are significant. We also find model-sensitive evidence that recognised balance sheet pension components receive more weight than the equivalent disclosed information in market value association tests. Our findings thereby lend support to the 'rational differences' view of the non-substitutability of recognition versus disclosure held by accounting regulators. Our results are also of interest to accounting standard setters who are seeking to enhance the transparency and improve the decision usefulness of employers' pension cost accounting. Recently the Accounting Standards Board (IASB) in conjunction with the European Financial Reporting Advisory Group (EFRAG) issued a discussion paper as part of its long-term review of pension accounting. The discussion paper recommended that normal consolidation principles be applied such that pension assets and liabilities should be included in the sponsoring firm's balance sheet on a 'disaggregated' rather than on a 'net' basis. We present evidence that investors appear to price *disaggregated* pension liability and assets information under the pre-IAS 19 recognition regime, but did not price the *net* pension liability (asset) information over the same period. Thus, our findings could be interpreted as providing support for the full recognition of companies' pension assets and liabilities on a disaggregated basis. An interesting avenue for future research would be to investigate whether the market treats

recognised pension accounting information as if it is more *reliable* than the equivalent disclosed information.

REFERENCES

- Abodiy, D., M. E. Barth, and R. Kasznik. 2004. Firms' Voluntary Recognition of Stock-Based Compensation Expense. *Journal of Accounting Research* 42 (2): 123-150.
- Accounting Standards Board. 2000. *FRS 17, Retirement Benefits*. London: ASB.
- Accounting Standards Board. 2008. *Discussion Paper: The Financial Reporting of Pensions*. London: ASB.
- Ahmed, A. S., E. Kilic, and G. J. Lobo. 2006. Does Recognition versus Disclosure Matter? Evidence from Value-Relevance of Banks' Recognised and Disclosed Derivative Financial Instruments. *The Accounting Review* 81 (3): 567-588.
- Al Jifri, K., and D. Citron. 2009. The Value-Relevance of Financial Statement Recognition versus Note Disclosure: Evidence from Goodwill Accounting. *European Accounting Review* 18 (1): 123-140.
- Amir, E., and E. A. Gordon. 1996. Firms' Choice of Estimation Parameters: Empirical Evidence from SFAS No.106. *Journal of Accounting, Auditing & Finance* 11 (3): 427-448.
- Barth, M. E. 1991. Relative Measurement Errors among Alternative Pension Asset and Liability Measures. *The Accounting Review* 66 (3): 433-463.
- Barth, M. E., W. H. Beaver, and W. R. Landsman. 1992. The Market Valuation Implications of Net Periodic Pension Cost Components. *Journal of Accounting & Economics* 15 (1): 27-62.
- Barth, M. E., W. H. Beaver, and W. R. Landsman. 2001. The Relevance of the Value Relevance Literature for Financial Accounting Standard Setting: Another View. *Journal of Accounting & Economics* 31 (1-3): 77-104.
- Barth, M. E., G. Clinch, and T. Shibano. 2003. Market Effects of Recognition and Disclosure. *Journal of Accounting Research* 41 (4): 581-609.
- Beattie, V., A. Goodacre, and S. Thomson. 2000. Recognition versus Disclosure: An Investigation of the Impact on Equity Risk Using UK Operating Lease Disclosures. *Journal of Business Finance & Accounting* 27 (9/10): 1185-1224.
- Bernard, V., and K. Schipper. 1994. Recognition and Disclosure in Financial Reporting. Working Paper. *University of Michigan and University of Chicago*.

- Bratten, B., A. Choudhary, and K. Schipper. 2013. Evidence that Market Participants Assess Recognized and Disclosed Items Similarly When Reliability Is Not an Issue. *The Accounting Review* 88 (4): 1179-1210.
- Coronado, J. L., and S. A. Sharpe. 2003. Did Pension Plan Accounting Contribute to a Stock Market Bubble? *Brookings Papers on Economic Activity* (1): 323-359.
- Coronado, J. L., O.S. Mitchell, S. A. Sharpe, and S.B. Nesbitt. 2008. Footnotes Aren't Enough: the Impact of Pension Accounting on Stock Values. *Journal of Pension Economics and Finance* 7 (3): 257-276.
- Daley, L. A. 1984. The Valuation of Reported Pension Measures for Firms Sponsoring Defined Benefit Plans. *The Accounting Review* 59 (2): 177-198.
- Davis-Friday, P. Y., L. B. Folami, C. S. Liu, and H. F. Mittelstaedt. 1999. The Value Relevance of Financial Statement Recognition vs. Disclosure: Evidence from SFAS No. 106. *The Accounting Review* 74 (4): 403-423.
- Davis-Friday, P. Y., C. S. Liu, and H. F. Mittelstaedt. 2004. Recognition and Disclosure Reliability: Evidence from SFAS No. 106. *Contemporary Accounting Research* 21 (2): 399-430.
- Ely, K. M. 1995. Operating Lease Accounting and the Market's Assessment of Equity Risk. *Journal of Accounting Research* 33 (2): 397-415.
- Fasshauer, J, and M. Glaum. 2009. Value Relevance of Level-3 Fair Values: The Case of German Companies Pension Accounting Information. *University of Giessen Working Paper*.
- Feldstein, M, and R. Morck. 1983. Pension Funds and the Value of Equities. *Financial Analysts Journal* 39 (5): 29-39.
- Financial Accounting Standards Board.1985. SFAS 87 *Employers' Accounting for Pensions*. Stamford, CT: FASB.
- Financial Accounting Standards Board. 1990. SFAS 106 *Employers' Accounting for Postretirement Benefits other than Pensions*. Norwalk, CT: FASB.
- Financial Accounting Standards Board. 2006. SFAS 158 *Employers' Accounting for Defined Benefit Pension and Other Retirement Plans (an amendment of FASB statements No. 87, 88, 106 and 132)*. Norwalk, CT: FASB.
- Franzoni, F. and Marin, J.M. 2006. Pension Plan Funding and Stock Market Efficiency. *Journal of Finance* 61 (2): 921-952.
- Glaum, M. 2009. Pension Accounting and Research: A Review. *Accounting and Business Research* 39 (3):273-311.

- Gold, J. 2005. Accounting/actuarial Bias Enables Equity Investment by Defined Benefit Pension Plans. *North American Actuarial Journal* 9 (3):1-25.
- Hann, R. N., Y. Y. Lu, and K. R. Subramanyam. 2007. Uniformity versus Flexibility: Evidence from Pricing of the Pension Obligation. *The Accounting Review* 82 (1): 107-13
- Imhoff Jr., E. A., R. Lipe, and D. W. Wright. 1993. The Effects of Recognition Versus Disclosure on Shareholder Risk and Executive Compensation. *Journal of Accounting, Auditing & Finance* 8 (4): 335-368.
- International Accounting Standards Board. 1998. IAS 19 *Employee Benefits (revised)*. London: IASB.
- Landsman, W. 1986. An Empirical-Investigation of Pension Fund Property-Rights. *The Accounting Review* 61 (4): 662-691.
- Landsman, W., and J. A. Ohlson. 1990. Evaluation of Market Efficiency for Supplementary Accounting Disclosures: The Case of Pension Assets and Liabilities. *Contemporary Accounting Research* 7 (1): 185-198.
- Nelson, M. W., and W.B. Tayler. 2007. Information Pursuit in Financial Statement Analysis: Effects of Choice, Effort and Reconciliation. *The Accounting Review* 82 (3): 731-758.
- Ohlson, J. 1995. Earnings, Book values, and Dividends in Security Valuation. *Contemporary Accounting Research* 11 (2): 661-688.
- Picconi, M. 2006. The Perils of Pensions: Does Pension Accounting Lead Investors and Analysts Astray? *The Accounting Review* 81 (4): 925-955.
- Schipper, K. 2007. Required Disclosures in Financial Reports. *The Accounting Review* 82 (2): 301-326.
- Tweedie, D. 2003. Facing up to Reality: Accounting that Tells It As It Is. *British Actuarial Journal*, 9 (4): 719-23.

Table 1: Sample Selection

Panel A: Selection of sample of firms

| | No. of firms |
|---|--------------|
| London Stock Exchange FTSE 350 Index Constituents as of December 31, 2006: | 350 |
| - not sponsoring defined benefit pension plans | -142 |
| - financial service sector firms | -31 |
| - US GAAP | -1 |
| - adopting 'corridor approach' to account for actuarial gains/losses | -5 |
| - early adopters of FRS 17 in 2004 | -39 |
| Sample firms as per Dec. 31, 2006: | 132 |

Panel B: Selection of firm-year observations

| Year | 2004 | 2005 | 2006 | Total |
|---|------|------|------|-------|
| Number of sample firms | 132 | 132 | 132 | 396 |
| Missing values for firm and pension related data | 14 | 14 | 13 | 41 |
| Book value of equity <0 | 1 | 0 | 1 | 2 |
| Firm-years | 117 | 118 | 118 | 353 |

Table 2: Descriptive Statistics

| Variables | Panel A: Period of Disclosure | | | | Panel B: Period of Recognition | | | |
|-----------|-------------------------------|-----------------------------|-----------|-----------------------------|--------------------------------|----------|-----------|---------|
| | N | Mean | Std. Dev. | Median | N | Mean | Std. Dev. | Median |
| MVE | 195 | 3666.61 | 10858.80 | 914.00 | 195 | 5013.16 | 11558.88 | 1334.44 |
| MVE/NOSH | 195 | 5.08 (0.00) ^a | 4.63 | 3.24 (0.00) ^b | 195 | 7.28 | 7.22 | 4.49 |
| BE | 193 | 2393.72 | 10800.00 | 410.00 | 192 | 2006.81 | 6550.72 | 573.94 |
| BVE/NOSH | 193 | 2.75 (0.11) | 2.82 | 1.65 (0.26) | 192 | 2.84 | 2.98 | 1.77 |
| NPL | 193 | -225.82 | 639.12 | -54.00 | 192 | -216.05 | 572.02 | -46.16 |
| NPL/NOSH | 193 | -0.34 (0.19) | 0.44 | -0.20 (0.35) | 192 | -0.30 | 0.41 | -0.17 |
| FVPA | 194 | 1079.77 | 3300.98 | 227.92 | 193 | 1387.68 | 3509.26 | 368.80 |
| FVPA/NOSH | 194 | 1.65 (0.20) | 2.21 | 0.78 (0.05) | 193 | 1.95 | 2.50 | 1.03 |
| PBO | 193 | -1308.34 | 3916.64 | -288.40 | 192 | -1601.96 | 3963.74 | -444.20 |
| PBO/NOSH | 193 | -2.02 (0.15) | 2.63 | -1.09 (0.36) | 192 | -2.26 | 2.83 | -1.27 |
| NI | 194 | 169.61 | 1039.57 | 62.85 | 195 | 357.21 | 1968.69 | 96.57 |
| NI/NOSH | 194 | 0.43 (0.00) | 0.47 | 0.28 (0.01) | 195 | 0.63 | 0.79 | 0.35 |
| PC | 197 | 169.61 | 62.53 | 8.50 | 198 | 25.20 | 56.02 | 6.00 |
| PC/NOSH | 196 | 0.05 (0.03) | 0.08 | 0.03 (0.06) | 195 | 0.04 | 0.06 | 0.02 |
| SALEGRW | 192 | 0.08 (0.63) | 0.14 | 0.06 (0.29) | 192 | 0.09 | 0.13 | 0.07 |
| R&D | 195 | 42.84 | 265.22 | 0.00 | 195 | 81.09 | 408.24 | 0.00 |
| R&D/NOSH | 195 | 0.03 (0.65) | 0.12 | 0.00 (0.48) | 195 | 0.04 | 0.15 | 0.00 |
| EMP | 195 | 27.72 | 58.84 | 8.68 | 195 | 28.49 | 60.64 | 11.65 |
| EMP/NOSH | 195 | 0.06 (0.93) | 0.13 | 0.03 (0.78) | 195 | 0.07 | 0.17 | 0.03 |

Notes:

This table presents the summary descriptive statistics for the sub-samples during the period of disclosure (Panel A) and for the sub-sample during the period of recognition (Panel B). N indicates the number of firm-year observations. *MVE* is the market value of equity (closing price 3 months following the firm's fiscal year end). *BVE* is the book value of equity (excluding the net pension liability/asset). *NPL* is the net pension liability/asset. *FVPA* is the fair value of pension assets. *PBO* is the projected pension benefit obligations. *NI* is the net income before extraordinary items, R&D and pension expenses. *PC* is the net periodic pension expenses. *SALEGRW* is the average sales growth over the previous three years. *R&D* is the research and development expense. *EMP* is the number of employees (in thousands). Variable amounts are £million totals and negative values represent liabilities or net liabilities. *NOSH* is the number of shares issued at the accounting year end. All variables with deflator *NOSH* are measured on a per-share basis. ^{a,b} Values reported in parentheses below the means (medians) for disclosure sub-sample are p-values from two-tailed paired t-tests (Wilcoxon sign rank tests) of the null hypothesis that the mean (median) for that sample equals the mean (median) of the recognition sub-sample.

TABLE 3
Pearson and Spearman Correlations of Full Sample

| Variable | MVE | BVE | NPL | FVPA | PBO | NI | PC | SALEGRW | R&D | EMP |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| MVE | 1 | 0.7370* | -0.1619* | 0.2430* | -0.2357* | 0.8210* | 0.2422* | 0.2453* | -0.077 | 0.2254* |
| BVE | 0.7384* | 1 | -0.4306* | 0.4647* | -0.4805* | 0.7141* | 0.4207* | 0.057 | -0.016 | 0.3793* |
| NPL | -0.130 | -0.3077* | 1 | -0.6969* | 0.7562* | -0.2656* | -0.7783* | 0.1342* | -0.1545* | -0.5005* |
| FVPA | 0.2537* | 0.3696* | -0.6793* | 1 | -0.9937* | 0.3126* | 0.7217* | -0.1388* | 0.2401* | 0.5592* |
| PBO | -0.2437* | -0.3737* | 0.7579* | -0.9930* | 1 | -0.3128* | -0.7571* | 0.1343* | -0.2384* | -0.5823* |
| NI | 0.8033* | 0.7299* | -0.1496* | 0.2524* | -0.2461* | 1 | 0.3268* | 0.1322* | 0.026 | 0.2141* |
| PC | 0.2111* | 0.3167* | -0.7020* | 0.7305* | -0.7633* | 0.2503* | 1 | -0.081 | 0.128 | 0.5294* |
| SALEGRW | 0.1752* | 0.128 | 0.093 | -0.069 | 0.077 | 0.112 | -0.055 | 1 | -0.062 | 0.022 |
| R&D | 0.2343* | 0.049 | -0.129 | 0.052 | -0.064 | 0.3336* | 0.040 | -0.046 | 1 | -0.090 |
| EMP | 0.5420* | 0.4821* | -0.2564* | 0.3725* | -0.3759* | 0.3458* | 0.3799* | 0.003 | -0.046 | 1 |

Notes:

Upper (Lower) Diagonal: Pearson (Spearman) Correlation Coefficients. All correlations are based on variables scaled by the number of shares outstanding at the end of the accounting year (*NOSH*). *MVE* is the market value of equity (closing price 3 months following the firm's fiscal year end). *BVE* is the book value of equity (excluding the net pension liability/asset). *NPL* is the disclosed (recognized) net pension liability/asset. *FVPA* is the fair value of pension assets. *PBO* is the projected pension benefit obligations. *NI* is the net income before extraordinary items, R&D and pension expenses. *PC* is the net periodic pension expense. *SALEGRW* is the average sales growth over the previous three years. *R&D* is the research and development expense. *EMP* is the number of employees (in thousands). * represents significant at the 1% level (2-tail).

TABLE 4
Tests of Value Relevance of Pension Liability/Asset Values
of the Full Sample

Panel A: Equation 1

| Variable | Coeff. | Predicted Sign | Coefficient Estimates | t-statistic | p-value |
|-----------------------|--------|----------------|-----------------------|-------------|---------|
| Intercept | 0 | + | 2.429 | 3.20 | 0.002 |
| <i>BVE</i> | 1 | + | 1.351 | 4.53 | 0.000 |
| <i>NPL</i> | 2* | + | 2.081 | 2.22 | 0.029 |
| <i>NI</i> | 5 | + | 3.389 | 3.59 | 0.000 |
| <i>PC</i> | 6 | - | -7.054 | -2.80 | 0.006 |
| <i>SALEGRW</i> | 7 | + | 3.363 | 1.68 | 0.095 |
| <i>R&D</i> | 8 | ? | -13.064 | -1.94 | 0.054 |
| <i>EMP</i> | 9 | ? | -13.604 | -1.12 | 0.263 |
| Adj. R ² | | 0.557 | | | |
| No. of firm-year Obs. | | 353 | | | |

Panel B: Equation 2

| Variable | Coeff. | Predicted Sign | Coefficient Estimates | t-statistic | p-value |
|-----------------------|--------|----------------|-----------------------|-------------|---------|
| Intercept | 0 | + | 2.453 | 4.04 | 0.000 |
| <i>BVE</i> | 1 | + | 1.231 | 4.24 | 0.000 |
| <i>FVPA</i> | 3* | + | 3.454 | 4.43 | 0.000 |
| <i>PBO</i> | 4* | + | 2.720 | 3.45 | 0.001 |
| <i>NI</i> | 5 | + | 2.846 | 3.12 | 0.002 |
| <i>PC</i> | 6 | - | -6.181 | -2.33 | 0.022 |
| <i>SALEGRW</i> | 7 | + | 3.660 | 1.78 | 0.078 |
| <i>R&D</i> | 8 | ? | -12.488 | -1.96 | 0.053 |
| <i>EMP</i> | 9 | ? | -22.212 | -2.09 | 0.039 |
| Adj. R ² | | 0.602 | F-test | 3* = 4* | 0.000 |
| No. of firm-year Obs. | | 353 | | | |

Notes:

This table presents results from estimating equations (1) and (2) on value relevance of pension liability/asset values during the entire sample period. *MVE* is the market value of equity (closing price 3 months following the firm's fiscal year end); *BVE* is the book value of equity (excluding the net pension liability/asset); *NPL* is the disclosed net pension liability/asset. *FVPA* is the fair value of pension assets. *PBO* is the projected pension benefit obligations. *PC* is periodic pension expense. *NI* is the net income before extraordinary items, R&D and pension expenses; *SALEGRW* is the average sales growth over the previous three years; *R&D* is the research and development expense; *EMP* is the number of employees in thousands. All regression variables are scaled by the number of shares outstanding at the end of the accounting year. Coefficients on *NPL* (2*) and *PBO* (4*) are expected to be positive as liabilities are measured as negative amounts. Huber-White heteroskedasticity robust t-statistics are reported in parentheses next to the coefficient estimates. All p-values are based on two-tailed t-tests.

TABLE 5
Tests of Value Relevance of Recognised versus Disclosed Net Pension Liability/Asset Values
For the Pre- versus Post- IAS 19 periods

Equation 3 (n=353)

| Variable | Coeff. | Predicted Sign | Coefficient Estimates | t-statistic | p-value |
|---------------------|---------------|-----------------------|------------------------------|--------------------|----------------|
| Intercept | 0 | + | 2.360 | 4.96 | 0.000 |
| <i>D</i> | 02 | ? | -0.007 | -0.037 | 0.970 |
| <i>BVE</i> | 1 | + | 1.102 | 4.76 | 0.000 |
| <i>D*BVE</i> | 10 | ? | 0.196 | 2.11 | 0.037 |
| <i>NPL</i> | 2* | + | 0.358 | 0.72 | 0.474 |
| <i>D*NPL</i> | 11* | + | 1.195 | 2.84 | 0.005 |
| <i>NI</i> | 5 | + | 0.722 | 0.87 | 0.387 |
| <i>D*NI</i> | 13 | ? | 1.548 | 2.29 | 0.024 |
| <i>PC</i> | 6 | - | -3.122 | -1.79 | 0.075 |
| <i>D*PC</i> | 13 | + | 5.418 | 1.59 | 0.114 |
| <i>SALEGRW</i> | 7 | + | 2.072 | 1.43 | 0.154 |
| <i>D*SALEGRW</i> | 14 | ? | 0.835 | 0.71 | 0.477 |
| <i>R&D</i> | 8 | ? | -5.445 | -0.83 | 0.408 |
| <i>D*R&D</i> | 15 | ? | 1.137 | 0.73 | 0.467 |
| <i>EMP</i> | 9 | ? | -7.545 | -1.36 | 0.175 |
| <i>D*EMP</i> | 16 | ? | 0.884 | 0.82 | 0.412 |
| Adj. R ² | | 0.735 | | | |
| | 2*+ 11* | + | 1.553 | 2.72 | 0.008 |
| | 6+ 13 | + | 2.296 | 0.66 | 0.509 |

TABLE 5 (Cont'd)

Notes:

^aThis table presents results from the tests of value relevance of recognised versus disclosed pension liability/asset values on a 'net' basis for the pre- and post-IAS 19 periods by estimating equations (3). The dummy variable D is coded 1 for the period of recognition (post-IAS 19), and 0 for the period of disclosure (pre-IAS 19). *MVE* is the market value of equity (closing price 3 months following the firm's fiscal year end); *BVE* is the book value of equity (excluding the net pension liability/asset); *NPL* is the disclosed net pension liability/asset. *FVPA* is the fair value of pension assets. *PBO* is the projected pension benefit obligations. *PC* is periodic pension expense. *NI* is the net income before extraordinary items, R&D and pension expenses; *SALEGRW* is the average sales growth over the previous three years; *R&D* is the research and development expense; *EMP* is the number of employees in thousands. All regression variables are scaled by the number of shares outstanding at the end of the accounting year.

^bCoefficients on *NPL* (_{2*}) and *PBO* (_{4*}) are expected to be positive as liabilities are measured as negative amounts.

^cVariables with prefix D* are interaction variables with the dummy variable (D) which capture the transition from the disclosure to the recognition pension accounting regime.

^dHuber-White heteroskedasticity robust t-statistics are reported in parentheses next to the coefficient estimates. All regressions control for fixed year and industry effect.

^eAll p-values are based on two-tailed t-tests.

TABLE 6
Tests of Value Relevance of Recognised versus Disclosed Pension Liability and Pension Asset Values
over the Pre- and Post- IAS 19 periods

| Equation 4 (n=349) | | | | | |
|---------------------------|---------------|-----------------------|------------------------------|--------------------|----------------|
| Variable | Coeff. | Predicted Sign | Coefficient Estimates | t-statistic | p-value |
| Intercept | 0 | + | 2.376 | 6.10 | 0.000 |
| <i>D</i> | 02 | ? | 0.074 | 0.41 | 0.684 |
| <i>BVE</i> | 1 | + | 1.012 | 5.25 | 0.000 |
| <i>D*BVE</i> | 10 | ? | 0.173 | 1.81 | 0.073 |
| <i>FVPA</i> | 3* | + | 2.514 | 3.28 | 0.001 |
| <i>D*FVPA</i> | 11* | + | 0.411 | 0.80 | 0.424 |
| <i>PBO</i> | 4* | + | 1.533 | 2.63 | 0.010 |
| <i>D*PBO</i> | 12* | + | 0.750 | 1.54 | 0.125 |
| <i>NI</i> | 5 | ? | 0.216 | 0.30 | 0.765 |
| <i>D*NI</i> | 13 | ? | 1.875 | 3.08 | 0.003 |
| <i>PC</i> | 6 | - | -2.362 | -1.29 | 0.201 |
| <i>D*PC</i> | 14 | ? | 4.548 | 0.96 | 0.338 |
| <i>SALEGRW</i> | 7 | + | 2.415 | 1.75 | 0.082 |
| <i>D*SALEGRW</i> | 15 | ? | 1.347 | 1.16 | 0.248 |
| <i>R&D</i> | 8 | ? | -5.515 | -0.84 | 0.404 |
| <i>D*R&D</i> | 16 | ? | 0.709 | 0.48 | 0.630 |
| <i>EMP</i> | 9 | ? | -19.039 | -2.95 | 0.004 |
| <i>D*EMP</i> | 17 | ? | 1.187 | 1.32 | 0.190 |
| Adj. R² | | 0.755 | F-test | 3* = 4* | 0.010 |
| | 3*+ 11* | + | 2.925 | 3.84 | 0.000 |
| | 4*+ 12* | + | 2.283 | 3.47 | 0.001 |

TABLE 6 (cont'd)

Notes:

^aThis table presents results from the tests of value relevance of recognised versus disclosed pension liability/asset values on an 'aggregate' basis for the pre- and post-IAS 19 periods by estimating equations (4). The dummy variable *D* is coded 1 for the period of recognition (post-IAS 19), and 0 for the period of disclosure (pre-IAS 19). *MVE* is the market value of equity (closing price 3 months following the firm's fiscal year end); *BVE* is the book value of equity (excluding the net pension liability/asset); *NPL* is the disclosed net pension liability/asset. *FVPA* is the fair value of pension assets. *PBO* is the projected pension benefit obligations. *PC* is periodic pension expense. *NI* is the net income before extraordinary items, R&D and pension expenses; *SALEGRW* is the average sales growth over the previous three years; *R&D* is the research and development expense; *EMP* is the number of employees in thousands. All regression variables are scaled by the number of shares outstanding at the end of the accounting year.

^bCoefficients on *NPL* (_{-2*}) and *PBO* (_{-4*}) are expected to be positive as liabilities are measured as negative amounts.

^cVariables with prefix *D** are interaction variables with the dummy variable (*D*) which capture the transition from the disclosure to the recognition pension accounting regime.

^dHuber-White heteroskedasticity robust t-statistics are reported in parentheses next to the coefficient estimates. All regressions control for fixed year and industry effect.

^eAll p-values are based on two-tailed t-tests.
