Essays on the Economic Consequences of International Pension Accounting Standard IAS19

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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

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Abstract

This thesis examines the economic consequences of the adoption of international pension accounting standard IAS19 Revised (IAS19R) on pension asset allocation decisions by applying a difference-in-differences with propensity score matching method.

The publication of IAS19R in 2011 marked a fundamental change to pension reporting in financial statements. In particular, it had a significant impact on (1) how sponsor firms recognise net pension assets/liabilities on the balance sheet, (2) the calculation and recognition of pension expenses, (3) the presentation of re-measurement (actuarial gains and losses), treatment of which had been heavily debated by academics and practitioners, and (4) disclosure requirements for pension schemes, which had been criticised as "excessive" under IAS19.

This research examines the "real effect" of IAS19R adoption on management investment decisions. Using a difference-in-differences with propensity score matching method, the results suggest that, on average, UK sponsor firms affected by IAS19R have reduced their risk taking in pension investments post-IAS19R, both over time and compared with a control sample of unaffected US firms (matched by propensity score matching). The results of sensitivity analysis also suggest that UK sponsor firms tried to avoid the expensive liquidity costs of asset re-allocation by switching their pension plan asset allocations gradually during the period around the publication and adoption of IAS19R. Furthermore, the outcomes of sensitivity tests suggest a positive relationship between equity investment levels, and firms' leverage and cash flow risk, consistent with the "risk-shifting" hypothesis documented in the previous literature.

The thesis also applies a manual textual analysis on the comment letters sent by industrial firms to the IASB to provide their opinions on the IAS19R Exposure Draft. The analysis describes and tabulates the arguments raised by these firms on three main amendment areas of IAS19: recognition, presentation and disclosure. Based on this description, this part aims to motivate the empirical research mentioned previously and shed light on the other potential consequences of IAS19R adoption. These consequences include: the management of funding might be driven by accounting rules rather than management rules; the increasing volatility of balance sheet; de-risking in the pension plan portfolio following the adoption of IAS19R; the diminishing of financial statement "true and fair view" and its usefulness due to the abolition of expected rate of return and excessive requirements on pension disclosure. Furthermore, the study also suggests that the lobbying behaviour of these firms on the standard setting process is consistent with the predictions of Positive Accounting Theory.

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Abbreviations

AAA	American Academy of Actuaries
ABO	Accumulated benefit obligation
ACA	Association of Consulting Actuaries
ADRI	Anti-director rights index
AGL	Actuarial gains and losses
AMX	America Movil SAB de CV
ASB	Accounting Standards Board
BAT	British American Tobacco Holdings
BC	Basis for Conclusions
DB	Defined benefit
DBO	Defined benefit obligations
DC	Defined contribution
DID	Difference-in-differences
ED	Exposure draft
ERR	Expected rate of return
FASB	Financial Accounting Standards Board
FCAG	Financial Crisis Advocacy Group
FRC	Financial Reporting Council
FRS	Financial Reporting Standard
FVPA	Fair value of pension assets
IAS	International Accounting Standard
IASB	International Accounting Standards Board
IASC	International Accounting Standards Committee
IOPS	International Organisation of Pension Supervisors
OCI	Other comprehensive income
P&L	Profit and loss
PA	Pension assets
PBGC	Pension Benefit Guaranty Corporation
PBO	Projected benefit obligations
PPF	Pension Protection Fund
SBC	Stock-based compensation
SFAC	Statement of Financial Accounting Concepts
SFAS	Statement of Financial Accounting Standards
SSAP	Statement of Standard Accounting Practice
US GAAP	US Generally Accepted Accounting Principles

Chapter 1: Introduction

1.1 Motivation

"Pension accounting is a term that loosely describes a set of accounting problems affecting a range of measurement and reporting issues associated with contractual pension commitments made by employers to their employees" (Klumpes, 2001, pp.30). These issues may relate to costs borne by employers who sponsor (usually defined benefit funded) pension plans for their employees, which are disclosed in financial statements, or to financial reports prepared by those responsible for managing various types of pension plan arrangements. As a result of demographic changes, as the populations of most countries gradually age, the social, economic and political significance of pension contracts to the operation of both capital and labour markets is likely to grow. Their accounting implications should be of concern not only to employees and managers of affected organisations, but also more generally to accountants and public policy makers.

Nevertheless, pension accounting standards have been the subject of heated debate and have drawn the attention of both academics and practitioners. Pension accounting has caused controversy ever since standard setters began to regulate the recognition and valuation of pension-related liabilities, assets and costs. For instance, in the US, both the Committee on Accounting Procedures of the American Institute of Certified Public Accountants in the 1950s and its successor, the Accounting Principles Board, in the 1960s had to concede that "improvements in pension accounting were necessary beyond what was considered practical at those times" (FASB, 1985). In the 1970s and 1980s, attempts by the Financial Accounting Standards Board (FASB) to introduce an

accounting standard based entirely on the accrual principle again met with strong resistance from the corporate sector (Francis, 1987; Saemann, 1995; Klumpes, 2001). Similarly, the deliberations of the International Accounting Standards Committee (IASC) on a revised version of IAS19 in the 1990s also proved to be contentious (Camfferman and Zeff, 2007). Finally, in 2000, when the UK Accounting Standards Board (ASB) published a new pension accounting standard that enforced a strict requirement for companies to recognise their net pension liabilities on their balance sheets immediately and fully, this again sparked a heated debate, during which critics held the ASB's standard responsible for changes to or termination of corporate pension schemes (Chitty, 2002; Slater and Copeland, 2005).

One reason why accounting for corporate pension systems causes so much controversy is because changes to pension accounting standards may profoundly influence sponsors' balance sheets and reported earnings, which in turn has many economic consequences unforeseen by standard setters (Glaum, 2009).

The term "economic consequences", first used by Zeff (1978), is defined as the impact of accounting reports on the decision-making behaviour of businesses, governments, unions, investors and creditors (Zeff, 1978). It is argued that the resulting behaviour of such groups and individuals may be detrimental to the interests of other affected parties, and accounting standard setters must therefore take into consideration these allegedly detrimental consequences when deciding on accounting questions (Zeff, 1978).

In June 2011, the International Accounting Standards Board (IASB) published a revised version of International Accounting Standard No.19: *Employee Benefits*

(IAS19R), which was mandated in January 2013. IAS19R made significant changes to the recognition, presentation and disclosure requirements for pension accounting. In particular, IAS19R had a significant impact on (1) how sponsor firms recognise net pension assets/liabilities on the balance sheet, (2) the calculation and recognition of pension expenses, (3) the presentation of re-measurement (actuarial gains and losses- AGL), the various treatments of which under IAS19 had been heavily debated by academics and practitioners, and (4) the disclosure requirements for pension schemes, which had been criticised as "excessive" under IAS19.

In relation to the first change, the IAS19R requires the sponsor firm to fully recognize the net amount of pension assets/liabilities on balance sheet. According to Sun (2011) which studied the economic consequence of SFAS 158 adoption in the US in 2006, she argued that the SFAS 158 requires firms to move pension funding status from the footnotes to the balance sheet. This requirement would improve the transparency and understandability of pension accounting, however it at the same time increases the pension liability recognized and decreases the shareholder's equity reported for firms with underfunded pension plans. Sun (2011) then examined the effect of recognition versus disclosure of pension related information, looking at the economic consequences in terms of market responses. According to her study, analysts interpret disclosed and recognised information differently, and recognition increases the market's perceived equity risk and leads to a higher cost of capital.

The fully requirement of IAS19R is similar to the requirement under SFAS 158 and it was expected to have a significant one-time impact on the sponsor's balance sheet and subsequently increase the volatility of the balance sheet, especially for the firms that had previous applied the "corridor method" and had

invested their pension asset plans heavily in risky assets. These impacts, in turn, affected the perceptions of investors and therefore change the decision making of managers of sponsor firm (Amir, Guan and Oswald, 2010).

Secondly, the requirement of calculating the pension expense without the utilization of expected rate of return would have several implications. Firstly, the use of the discount rate instead of the expected rate of return (according to the requirement of IAS19R) would not reflect a "true and fair view" of asset allocation in the pension plan portfolio. Secondly, the discount rate is the spot rate that might be volatile in short period and thus, contribute to the volatility of pension expense in the income statement. Thirdly, this abolition of the ERR also removed the incentive for managers to "over-invest" in equities because under IAS19, the use of ERR in calculating pension expense would allow sponsor firms to recognize any premium returns in higher risk asset investments while shield reported net income from volatility in actual investment returns since the ERR is a long-term return estimated by sponsor firms. Previous literature identifies this as an asymmetric recognition of risk and return in the financial statement for risky investment in pension plan portfolios. The research of Zion and Carcache (2003, 2005) and Gold (2005) both documented that pension assets were invested much more in equities than predicted by modern financial theory due to this asymmetric recognition. Therefore, the removal of the ERR was predicted to have effect on investment decision making of sponsor firm.

Several comment letters sent by sponsor firms from all over the world, responding to the Exposure Draft of the IAS19R in 2011, raised some concerns in relation to the potential economic consequences of the adoption of IAS19R. For example, Air France – KLM feared that, as a consequence of IAS19R, management decisions would be driven by accounting rules rather than management rules.

Specifically, it argued that this situation would lead to solutions where managers would try to avoid fluctuations on the balance sheet and invest pension funds only in bonds. Additionally, the Association of Consulting Actuaries (ACA) predicted that the removal of the ERR would also remove the advantage for companies of taking greater risk with employee benefit plan assets without recognition of the corresponding increase to risk (ACA comment letter on Exposure Draft of IAS19, 2010). Furthermore, the American Academy of Actuaries also added that this removal would allow plan sponsors to base decisions about asset allocation purely on economic and risk management grounds, without adversely affecting profit and loss (AAA comment letter on Exposure Draft of IAS19, 2010).

Although the majority of comment letters sent by industrial firms raised similar concerns and arguments relating to the abolition of the ERR, previous literature has suggested that the motivation of sponsor firms participating in the accounting standard setting due process might relate to their self-interest to mitigate the adverse effects of accounting standard change on their financial statements, and those arguments raised by these firms might be regarded as lobbying behaviours. Based on the Positive Accounting Theory of Watts and Zimmerman (1986), these previous researches suggested that the perceived costs and benefits of proposed new accounting standards likely influence the likelihood of various stakeholders' participation in the standard-setting process by submitting a comment letter on the Exposure Draft.

Positive Accounting Theory tries to make predictions of real world events and translate them to accounting transactions. Based on neo-classical economic, Positive Accounting Theory suggested that managers of a firm would choose accounting procedures to maximize their utility. Specifically, there are three hypotheses of Positive Accounting Theory. These are (1) the bonus plan

hypothesis where managers choose accounting procedures to increase their bonuses for the current year by shifting reported earnings from future periods to the current period; (2) the debt covenant hypothesis, which states that the closer a firm is to violating accounting-based debt covenants, the more likely the firm manager is to select accounting procedures that shift reported earnings from future periods to the current period; and (3) the political cost hypothesis, which suggests that a manager tries to avoid the political "heat" by deferring reported earnings from current to future periods. This thesis focuses on examining the economic consequences of IAS19R adoption on the decision making of firms that sponsor defined benefit (DB) pension plans using both empirical analysis on UK and EU data as well as manual textual analysis on the comment letters sent by industrial firms in relation to the IAS19 exposure draft.

1.2 Summary of the Thesis and Main Findings

Chapter 2 discusses various pension accounting standards developed by the three most well-known standard setters: the IASB, the FASB in the USA and the Financial Reporting Council (FRC) in the UK. It also reviews the previous empirical literature on pension accounting, which has been dominated by research on the value relevance of pension accounting and earnings management relating to pension accounting. The literature review suggests that there is little research on the economic consequences of pension accounting standards. Some researchers claim that requiring firms to account for certain events and transactions in specific ways may alter their incentives to engage in such transactions in the first place, or alter the nature of such transactions, thereby affecting their underlying cash flows.

Chapter 3 examines 63 comment letters by industrial firms on the Exposure Draft (ED) of IAS19R. It aims to set the motivation for the empirical research in the chapter 4 and describe the other potential consequences of IAS19R adoption that have been documented by these respondents. In doing so, it aims to shed light on the common strands of argument presented by industrial sponsor firms, the comprehensive economic consequences of IAS19R, and any lobbying behaviours driven by the self-interests of senders, based on Watts and Zimmerman's (1986) Positive Accounting Theory. In particular, manual textual analysis focuses on three significant areas of IAS19: recognition, presentation and disclosure.

Most respondents supported the proposal to recognise all changes in defined benefit obligations (DBO) and in the fair value of pension assets (FVPA) when those changes occur. However, they reminded the IASB about the very long-term nature of pension items. Thus, pension plan accounting based on point-in-time market indicators may result in high short-term volatility, which will distort the representational faithfulness of the true economic conditions of pension plans and the ability to fulfil future benefit obligations. The respondents were also worried about the impact of this accounting proposal on the investment decisions of sponsor firms. In particular, they warned the IASB that this situation would lead to managers trying to avoid fluctuations and investing pension funds only in bonds in order to secure fund levels.

Besides the potential impact of the ED on financial statements, interim reporting was one of the most contentious issues raised by many respondents. Many respondents opposed the elimination of the ERR. The biggest issue raised by most respondents related to the "true and fair view" of pension accounting as a result of this proposal, as management policy would not be reflected in income

statements. Furthermore, many argued that the use of spot rates unlinked to plan assets to calculate long-term returns is inconsistent. These spot rates are believed to be very volatile, which is inconsistent for calculating very long-term expected returns.

In relation to presentation, the respondents chose to focus on two main principles in presenting their financial statements. Some believed that it is a sound principle that all management decisions should be reflected at some time in net results (income statements), and this continues to be the principal performance measure. In contrast, other respondents believed that income statements should only reflect recurring activities, and that other comprehensive income (OCI) should contain non-recurring activities.

Many respondents raised a concern that distinguishing between curtailments and settlements is sometimes very complex[1]. In practice, a transaction may have characteristics of both a non-routine settlement and a curtailment; therefore, it may be impossible or meaningless to allocate resulting gains or losses between profits and losses for curtailments and OCI for non-routine settlements.

In general, most respondents supported the objectives of disclosure suggested by the proposal. However, most were worried about the volume of disclosures for DB plans. They recommended that the IASB should review the level of mandated disclosures to reduce their volume.

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[1] A settlement is a transaction that eliminates all further legal or constructive obligations for part or all of the benefits provided under a defined benefit plan, other than a payment of benefits to, or on behalf of, employees that is set out in the terms of the plan and included in the actuarial assumptions while a curtailment is a significant reduction by the entity in the number of employees covered by a plan.

Chapter 4 examines the impact of IAS19R adoption on pension plan asset allocation strategies. The first part of the chapter investigates a sample that consists of 253 firms in 9 countries across the EU. In addition to the elimination of ERR, IAS19R also requires full recognition of net pension assets/liabilities on balance sheet. This requirement, in turn, led to more volatile balance sheet and the one time-time impact of this requirement would have significant effects on debt covenants and equity-based covenants. This part aims to examine the overall impact of IAS19R on asset allocation of pension plans through these channels (elimination of the ERR and full recognition of pension assets and liabilities). The study first applied a mean and median difference test to compare the equity investment levels of the years 2012 (one year before the adoption of IAS19R) and 2014 (one year after the adoption of IAS19R). Secondly, I applied a cross-sectional test developed in Amir et al. (2010) and introduce a new variable to capture the impact of IAS19R on the calculation of pension expense in the income statement to examine how the change in pension accounting would associate with pension plan asset allocation. Using a sample of 506 firm years from 9 European countries for the years 2012 and 2014, the results of the mean and median difference test suggest a reduction of equity investment levels throughout this period. Furthermore, the cross-sectional test suggests the change in pension assets and pension liabilities relative to shareholder equities and the change of pension expenses relative to net incomes were associated with the reduction of equity investment level between the years 2012 and 2014. These results also implied that this reduction was more pronounced for firms with large pension plans (in term of pension assets and pension liabilities) relative to

shareholder equity and for firms that had large pension expenses relative to net income.

The next part of the chapter focuses on the UK context by using a difference-in-differences (DID) method on a UK sample which consists of 123 DB sponsor firms (492 firm years) to shed light on how the adoption of IAS19R may have triggered the movement of pension plan investments from equities to bonds. Based on a sample of 123 UK firms for the period 2011 to 2013, matched with another 123 US firms using a propensity score-matching technique, the results suggest that, following the adoption of IAS19R, UK sponsor firms tended to reduce the level of equity investment in their pension plans more than the US sponsor firms in the control group. The reason for the choice of UK sponsor firms in this analysis is that most of the UK companies applied the full recognition of actuarial gains and losses before the adoption of IAS19R.Therefore the majority of UK sponsor firms (95% of them) in the sample were unaffected by the full recognition requirement under IAS19R since they had already chosen voluntarily to fully recognise changes in pension liabilities and assets on their balance sheets (Morais, 2008). This result firstly suggests that the adoption of IAS19R has effect on investment decision of sponsor firms. Secondly, in the comparison of pension reporting practice before and after the adoption of IAS19R, firms would have to use the discount rate under IAS19R irrespective of how they invest pension assets. This elimination of the ERR would also eliminate the benefit of reporting a higher return on net income if the pension plan invests in a risky asset class such as equity. In other words, this new requirement removed manager motivation related to boosting NI reporting by investing in a risky asset class. Thus, this outcome suggests that managers of sponsor firms take account of effects on reported income when deciding on pension plan investment strategies.

The final part of Chapter 4 examines whether pension board characteristics, including pension board member composition and competency, may explain the different movements from equities to bonds across the countries in the sample. It was expected that equity investment levels and decreases in equity investment levels following the adoption of IAS19R would be lower for firms in countries that require more member representatives or have more rigid pension plan licensing processes. The results of univariate and multivariate tests are consistent with the expectation in respect of equity investment levels following IAS19R adoption, but are insignificant regarding changes in levels owing to insufficient data for these tests. Further research would be necessary to extend the sample and revise the model identification.

1.3 Contributions

This paper contributes to two streams of literature. Firstly, it adds to the literature of "economic consequence" of accounting standards, suggesting the impact of accounting reports on the decision-making behaviour of business, government, unions, investors and creditors (Zeff, 1978). The empirical evidence on "economic consequences" has so far spanned a wide spectrum of accounting areas. The pension accounting area, in particular, has provided some prominent examples of "economic consequences" of accounting rules. For example, Mittelstaedt, Nichols and Regier (1995) showed that the introduction of SFAS 106, which required recognition of other post-employment benefits, reduced employers' willingness to provide these benefits. Similarly, Hamdallah and Ruland (1986) argued that accounting alternatives would impact on management behaviour through the operation of information inductance. However, their results did not suggest any adverse economic consequences from accounting or disclosure changes relating to accounting for pensions. Additionally, Kiosse and

Peasnell (2009) review the academic evidence on the extent to which changes in pension accounting rules have effected pension provision decisions. They documented that the termination of DB pension plans or the switch from DB to defined contribution (DC) plans would be the result of the gradual tightening of pension accounting rules.

Second, in demonstrating that the accounting regime may drive pension investment decisions, this study contributes to the literature on determinants of pension asset allocations. Many pension investment theories have been proposed, including the put option theory that Pension Benefit Guaranty Corporation (PBGC) insurance encourages plan sponsors to engage in excessive risk taking as they approach distress (Sharpe, 1976), and the tax arbitrage theory, which predicts that the tax-sheltered nature of pensions should induce tax-paying firms to invest pension assets in bonds (Black, 1980; Tepper, 1981) and that a desire to avoid contribution volatility will lead very under- and over-funded plans to invest more in bonds (Bader, 1991; Amir and Benartzi, 1999). Some commentators believe that pension plan assets are invested much more in equities than modern financial theory predicts (Gold, 2005).

This study provides empirical support for smoothing mechanisms in pension accounting rules as an explanation for why this may be so. These findings will be of interest to regulators and standard setters. Pension expense smoothing has long been debated in the US, which still relies on an ERR-based model of pension expenses. As the UK has a regime that is close to the US in terms of pension accounting standards (under both FRS17 and IAS19), the economic consequences of moving away from ERR-based smoothing in the UK may inform the debate on pension expense smoothing under US GAAP.

Third, this research using a DID design provides reliable inferences of the causal effects of IAS19R adoption on the asset allocations of DB pension plans. Furthermore, the outcomes of this research are robustly tested using EU and UK data with Amir et al.'s (2010) cross-sectional model. These results are consistent with those results reported previously.

This study also helps inform the IASB on the second phase of the project on "Accounting for employee benefits" which aims to improve the measurement of defined benefit plans and contribution-based promise plans by providing empirical evidence on the effect of pension accounting measurement on decision making of sponsor firms. Furthermore, in February 2016, FASB decided to add four new financial reporting issues in its agenda discussion paper, one of which was "Pension and Other Postretirement Employee Benefit Plans" (February 3, 2016 FASB Board Meeting). Given that the application of ERR still exists under SFAS 158, this research provides an early indicator on the costs and benefits from a standard-setting perspective. Finally, the research is extended to apply a qualitative technique to comprehensive analysis of the comment letters of industrial firms on the ED of IAS19R in 2010. This analysis provides a complete view of the potential effects of the proposals put forward in the ED on the reporting of sponsor firms and, in turn, how these effects drive the economic decisions of firms' management. The analysis adds to the literature on lobbying in the IASB standard-setting context.

Chapter 2: Institutional Background and Literature Review

2.1 Economic and Regulatory Context

2.1.1 Main features of DB and DC pension plans and distribution of risks

In many countries with mature pension systems, employer pension plans are typically voluntary, and workforce coverage may therefore be quite limited. Such plans may be sponsored by an employer, an industry association or a labour union or professional organisation. Employer pensions are generally governed by legislation and regulation intended to protect employee benefits, and they may offer tax advantages to the employer and/or employee to encourage sponsorship and participation respectively.[2]

Despite many common elements, there is considerable cross-country variation in the design of retirement income systems. Differences in tax policy, social security programmes, legislation, regulation and culture give rise to a wide array of approaches to pension systems and to the design of DB and DC pension plans, both within and across countries. This, in turn, influences the distribution of risks assumed by employers and employees in each type of plan, and may have implications for asset allocation. This section focuses on the most common features of traditional DB and DC plans.

2.1.1.1 DC pension plans

The DC arrangement is a conceptually simple retirement plan. Employers, and sometimes also employees, make regular contributions to employees' retirement

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[2] In some countries, such as Canada and the UK, employer pension plans have historically been structured as trusts, and hence are subject to trust law as well as pension legislation.

accounts. These contributions are usually specified as a predetermined fraction of salary, although that fraction need not be constant over the course of a career.

Contributions from both parties are tax-deductible, and investment income accrues tax-free. Employees are often given a choice as to how their accounts are invested. In principle, contributions may be invested in any security, although in practice most plans limit investment options to various bond, stock and money-market funds. At retirement, employees receive either a lump sum or an annuity, the size of which depends on the accumulated value of the funds in the retirement account. Employees thus bear all of the investment risk: the retirement account is by definition fully funded, and the firm has no obligation beyond making its periodic contributions.

Valuation of DC plans is straightforward, simply by measuring the market value of assets held in the retirement account. However, as a guide for personal financial planning, DC plan sponsors often provide workers with an indication of the size of a life annuity starting at retirement age that could be purchased now with the accumulation in their account under different scenarios. The actual size of the retirement annuity will, of course, depend on the realised investment performance of the retirement fund, the interest rate at retirement, and the ultimate wage path of the employee.

2.1.1.2 DB pension plans

In contrast to DC plans where employees bear all of the investment risk, the major drawback of DB schemes from the employer perspective is that they are exposed to the plan risks including longevity risk, interest rate risk, inflation risk and investment return risk (Kiosse and Peasnell, 2009). Among those, the two most important risk categories defined benefit pension plans take are investment and

longevity risk. Unlike DC pension funds, which re-distribute these risks to their participants, DB pension funds, which give the employee the security of a pre-defined pension benefit, perform their task of providing safe pension benefits by assuming and retaining risk.

Investment risk is the most familiar risk for all retirement plans and is particularly prominent given the volatility in investment markets over the past 15 or so years. It reflects the impact of fluctuating or lower-than-expected investment returns. In DB plans, it is borne by the employers through the need for higher negotiated contribution rates. In DC plans, participants bear investment risk in full.

Longevity risk is the risk that retirees may live longer than projected by a pension plan's actuary. And in turn, this increase the cost of a DB plan. For participants in DB plans, longevity risk is pooled or shared, and borne by plan sponsors. That means retirees can count on income in retirement no matter how long they live. In contrast, in a DC plan, longevity risk is not shared. As a result, each individual DC plan participant bears the responsibility for accumulating a sufficient account balance for retirement and for properly managing its drawing after retirement.

Inflation risk represents increases in the cost of living prior to and after retirement, which can reduce the purchasing power of a fixed DB pension. The effect of inflation on a DC account balance means that participants have to withdraw larger amounts to maintain a constant standard of living, thus increasing the likelihood they will outlive their account balances.

A low interest rate environment may dampen the overall investment return on DB plan assets. Low interest rates can also affect actuarial assumptions, like those often used to determine the PBO. In turn, this effect might increase the contributions of a DB sponsor firm in the future.

Additionally, whereas the DC framework focuses on the value of the assets currently endowing a retirement account, DB plans focus on the flow of benefits that individuals will receive on retirement.

A typical DB plan determines employees' benefits as a function of both years of service and wage history, for example one per cent of final salary times the number of years of service. Assuming workers are fully vested, at any point in time their claims are deferred nominal life annuities, insured up to certain limits by government corporations such as the Pension Protection Fund (PPF) in the UK and the PBGC in the USA. They are deferred annuities because employees cannot start to receive benefits until they reach the retirement age specified in plan rules. They may be nominal because the retirement benefits that employers are contractually bound to pay employees are fixed in currency amounts at any point in time up to and including retirement age, although, especially in the UK, deferred pensions and pensions in payment may be subject to inflation index-linking.

The present value of accrued liabilities may increase as a result of continued service because of three factors: (1) as years of service increase, so does the DB, (2) if wages increase, so will retirement benefits, and (3) as time passes, less time remains until the retirement benefits begin, so their present value increases due to the effect of discounting.

In sharp contrast to DC plans, which by their nature are fully funded, calculation of the funding status of DB plans is complex and controversial. If a plan's assets are invested in traded securities, its market value is relatively easy to ascertain. The source of difficulty is in measuring the sponsor's liability. From a strictly legal point of view the sponsor's liability is the present value of the accrued vested

benefits which would be payable if the plan were immediately terminated. However, many pension experts contend that sponsors have an implicit semi-contractual obligation which makes it more appropriate to take account of projected future salary growth in computing firms' pension liabilities.

2.1.2 Pension accounting standards under IASB, FASB and FRS

This section provides a general overview of pension accounting standards issued by various accounting bodies, including the IASB, FRC and FASB. In particular, it explains these accounting standard treatments under IAS19, FRS 17 and SFAS 158 respectively.

2.1.2.1 IAS19: Employee Benefits

IAS19 was first issued by the IASC in February 1998. The standard outlined the accounting requirements for employee benefits, including short-term benefits (e.g. wages and salaries, annual leave), post-employment benefits (e.g. retirement benefits), other long-term benefits (e.g. long service leave) and termination benefits. IAS19 established the principle that the cost of providing employee benefits should be recognised in the period in which the benefit is earned by the employee, rather than when it is paid or payable. It also provided detailed guidance on post-employment benefits. This thesis focuses on the accounting treatment of DB pension plans.

On the balance sheet, IAS19 required DB plan sponsors to recognise the net amount of DBO and the FVPA, adjusted for unrecognised actuarial gains and losses and unrecognised past service costs (IAS, 2009, para. 54):

> The amount recognised as a defined benefit liability shall be the net total of the following amounts:
>
> (a) The present value of the defined benefit obligation at the end of the reporting period (see paragraph 64);

(b) Plus any actuarial gains (less any actuarial losses) not recognised because of the treatment set out in paragraphs 92 and 93;

(c) Minus any past service cost not yet recognised (see paragraph 96);

(d) Minus the fair value at the end of the reporting period of plan assets (if any) out of which the obligations are to be settled directly (see paragraphs 102-104) (IAS, 2009, para. 54)

In turn, the present value of the DBO must be determined using the projected unit credit method (IAS, 2009, para. 63). Valuations should be carried out with sufficient regularity such that the amounts recognised in financial statements did not differ materially from those that would be determined at the end of the reporting period (IAS, 2009, para. 56). The standard also provided guidance on the assumptions used to calculate DBO, which must be "unbiased and mutually compatible" (IAS, 2009, para. 72). The rate used to discount estimated cash flows was determined with reference to market yields at the end of the reporting period on high-quality corporate bonds or, where there is no deep market in such bonds, with reference to market yields on government bonds (IAS, 2009, para. 78).

A choice of three options was available in adjusting actuarial gains and losses to determine the recognised numbers on the balance sheet. Sponsor firms could choose to (1) recognise the actuarial gains and losses (resulting from changes in actuarial assumptions or differences between expected and accrual returns on plan assets) in full in the OCI part of equity (OCI method), (2) recognise them in the income statement (IS method), or (3) use the "corridor method" to keep the recognition of actuarial gains and losses off the balance sheet and only recognise a portion of actuarial gains and losses (IAS, 2009, paras. 92-93):

In measuring its defined benefit liability in accordance with paragraph 54, an entity shall, subject to paragraph 58A, recognise a portion (as specified in paragraph 93) of its actuarial gains and losses as income or expense if the net cumulative unrecognised actuarial gains and losses at the end of the previous reporting period exceeded the greater of:

(a) 10% of the present value of the defined benefit obligation at that date (before deducting plan assets); and

(b) 10% of the fair value of any plan assets at that date

These limits shall be calculated and applied separately for each defined benefit plan (IAS, 2009, para. 92)

The portion of actuarial gains and losses to be recognised for each defined benefit plan is the excess determined in accordance with paragraph 92, divided by the expected average remaining working lives of the employees participating in that plan. However, an entity may adopt any systematic method that results in faster recognition of actuarial gains and losses, provided that the same basis is applied to both gains and losses and the basis is applied consistently from period to period. An entity may apply such systematic methods to actuarial gains and losses even if they are within the limits specified in paragraph 92 (IAS, 2009, para. 93).

If, as permitted by paragraph 93, an entity adopts a policy of recognising actuarial gains and losses in the period in which they occur, it may recognise them in other comprehensive income, in accordance with paragraphs 93B-93D, providing it does so for:

(a) All of its defined benefit plans; and

(b) All of its actuarial gains and losses (IAS, 2009, para. 93A).

In addition to actuarial gains and losses, sponsor firms were also required to make adjustments to past service costs on the balance sheet. Past service costs arise when an entity introduces a DB plan that attributes benefits to past service or changes the benefits payable for past service under an existing DB plan. If these amounts are vested,[3] sponsor firms had to recognise them in their income statements as they occurred. Otherwise, sponsor firms had to establish an amortisation schedule for past service costs until the benefits concerned were vested (IAS, 2009, para. 97):

In measuring its defined benefit liability under paragraph 54, an entity shall, subject to paragraph 58A, recognise past service cost as an expense on a straight-line basis over the average period until the benefits become

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[3] Pension arrangements often include clauses that specify that retirement benefits earned for past service become vested, i.e. become unconditional on further employment, only after a minimum period of employment. Conversely, if an employment contract is terminated before reaching the minimum vesting period, the employee will receive no pension benefits.

vested. To the extent that the benefits are already vested immediately following the introduction of, or changes to, a defined benefit plan, an entity shall recognise past service cost immediately (IAS, 2009, para. 96).

The fair value of any plan assets[4] was deducted in determining the amount recognised in the statement of financial position under paragraph 54. When no market price was available, the FVPA was estimated, for example by discounting expected future cash flows using a discount rate that reflected both the risk associated with the plan assets and the maturity or expected disposal date of those assets (or, if they had no maturity, the expected period until settlement of the related obligation).

In the profit or loss (P&L) statement, recognised net periodic pension expenses might differ depending on how sponsors chose to recognise AGL (OCI method, IS method or "corridor" method). Under the OCI method, the full AGL are recognised. The AGL of sponsor firms using this method are completely shielded from their P&L statements (which differs from SFAS 158 under US GAAP),[5] leaving their net periodic pension expenses with components of service costs, interest costs, expected returns on plan assets and amortisation of unvested past service costs. In addition, sponsor firms will recognise their AGL as a component of net periodic pension expenses in P&L statements if they choose the IS method.

In order to use the "corridor method" for AGL, sponsor firms may only recognise a portion of AGL as part of their net periodic pension expenses under "amortisation of actuarial gains and losses", rather than the full amount of AGL under the IS method:

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[4] IAS, 2009, para. 102
[5] Under US GAAP, these actuarial gains and losses are recognised in OCI in the period they occur but will also be recycled in the P&L statement for a subsequent period.

An entity shall recognise the net total of the following amounts in profit or loss, except to the extent that another Standard requires or permits their inclusion in the cost of an asset:

(a) Current service cost (see paragraphs 63-91)

(b) Interest cost (see paragraph 82)

(c) The expected return on any plan assets (see paragraphs 105-107) and on any reimbursement rights (see paragraph 104A);

(d) Actuarial gains and losses, as required in accordance with the entity's accounting policy (see paragraphs 92-93D);

(e) Past service cost (see paragraph 96);

(f) The effect of any curtailments or settlements (see paragraphs 109 and 110); and

(g) The effect of the limit in paragraph 58(b), unless it is recognised outside profit or loss in accordance with paragraph 93C (IAS, 2009, para. 61).

Overall, IAS19 offered managers of sponsor firms flexibility in reporting and accounting for pension items in their financial statements. The three options under IAS19, which might be categorised as "smoothing mechanisms" (corridor method) or "full recognition mechanisms" (OCI and IS methods), were subject to considerable debate over which method should be used.

In fluctuating financial markets, full recognition of actuarial gains and losses may cause substantial volatility in sponsor firm equity prices. In the mid-1980s, US sponsor firms opposed the FASB's initiative to mandate immediate recognition in SFAS 87 (Saemann, 1995) and, in response to intense lobbying, the FASB developed the corridor method. In the mid-1990s, the IASC faced a similar situation, and also incorporated the corridor method as an option in its 1998 revision of IAS19. However, comment letters to the IASB preceding the 2004 amendment of IAS19 claimed that "adding options to standards is not desirable and obstructs comparability" and that "deferred recognition is preferable to

immediate recognition".[6] Therefore, the expectation may have been that few European companies would voluntarily adopt full recognition under IAS19.

On the other hand, companies face pressure from regulators, politicians and the media to incorporate greater transparency into pension accounting, which may influence their decisions on pension accounting policies. For example, financial analysts strongly prefer immediate recognition (Zion and Carcache, 2005; JP Morgan, 2007).

2.1.2.2 FRS 17: Retirement Benefits

In the UK, Statement of Standard Accounting Practice (SSAP) 24 represented the first attempt to standardise both the calculation of pension costs and the disclosure of information relating to this calculation, particularly relating to DB pension schemes. It came into effect for periods ending on or after 1 July 1988 and remained in force until the introduction of FRS 17, which superseded SSAP 24 for all accounting years ending on or after 1 January 2005.

Although SSAP 24 introduced a degree of standardisation, it left considerable scope for discretion in the choice of assumptions, making like-for-like comparisons difficult. FRS 17, on the other hand, allows much less scope to omit important information or alter the actuarial basis used.

In particular, similar to the OCI method under IAS19, FRS 17 requires sponsor firms to recognise surpluses/deficits as excesses/shortfalls in the value of assets in their schemes over/below the present value of scheme liabilities[7] (no

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[6] IAS19, 2004, Basis for Conclusions, para. 48
[7] FRS 17, 2000, para. 37: "the employer should recognise an asset to the extent that it is able to recover a surplus either through reduced contributions in the future or through refunds from the scheme. The employer should recognise a liability to the extent that it reflects its legal or constructive obligation."

adjustment need be made to AGL except for unvested/unrecognised past service costs).[8] Consequently, AGL are recognised through statements of recognised gains and losses (FRS 17, 2000, para. 57), which are equivalent to OCI under IAS19:

> Actuarial gains and losses arising from any new valuation and from updating the latest actuarial valuation to reflect conditions at the balance sheet date should be recognised in the statement of total recognised gains and losses for the period (FRS 17, 2000, para. 57).

In addition, once AGL have been recognised in the statement of total recognised gains and losses, they are not recognised again in the P&L account in subsequent periods.[9] This statement marks a significant difference in DB pension accounting treatment between FRS 17 and SFAS 158 of US GAAP (SFAS 158 will be explained in detail in the next sub-section).

On the other hand, past service costs are recognised in the P&L account on a straight-line basis over the period in which the increases in benefit are vested. If benefits are vested immediately, past service costs should be recognised immediately.

2.1.2.3 SFAS 158: Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans

In the USA, accounting for DB plans has evolved over the past three decades. From 1987 until December 2006, pension information reported in financial statements was based on SFAS 87, which introduced a major change from previous DB plan accounting rules by requiring actuarial estimation of pension

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[8] FRS 17, 2000, para. 60: "Any unrecognised past service costs should be deducted from the scheme liabilities and the balance sheet asset or liability adjusted accordingly."
[9] FRS 17, 2000, para. 59.

liabilities (PBO), and fair value measurement of pension assets (PA). On the balance sheet, a net pre-paid pension asset or accrued pension liability was reported, representing only a portion of pension-related assets and liabilities. Specifically, the reported net pension amount was derived by netting several off-balance-sheet items: PBO and the FVPA, as well as deferred items such as AGL, prior service costs and transition amounts.[10] Off-balance-sheet items were a smoothing mechanism for pension expenses and pension liabilities/assets. They eliminated the income statement effects of short-term or one-off fluctuations in measuring pension assets and liabilities. This resulted in the balance sheet recognising net pension assets or liabilities, which were essentially the cumulative difference between amounts recognised as pension expenses incurred and contributions made by the company to the pension fund.

In 1998, the FASB issued SFAS 132: *Employers' Disclosures about Pensions and Other Postretirement Benefits* (FASB, 1998), which was amended by SFAS 132 Revised in 2003. SFAS 132 and SFAS 132(R) significantly increased pension information disclosure requirements. However, neither amended the measurement nor reporting requirements that existed under SFAS 87. In addition to reconciliation of PBO and FVPA, they required detailed measurement of pension expenses, as well as information on expected future benefit payments, cash contributions, and information about the composition of pension assets and plans' investment policies and strategies.

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[10] The pension accounting treatment under SFAS 87 used the "corridor method" (one of three options under IAS19) to report funded status net of PBO and PA, adjusted for unrecognised actuarial gains and losses and unvested past service costs.

A further significant shift in pension measurement and reporting occurred in 2006. With the issuing of SFAS 158 as the first phase of its pension accounting project (Hann et al., 2007), the FASB required full recognition of the under- or over-funded status of DB plans on firms' balance sheets. Since SFAS 87 allowed sponsor firms to keep part of their AGL and past service costs off their balance sheets, the new requirement under SFAS 158 resulted in a significant increase in net pension liability amounts compared with the amounts reported under SFAS 87:[11]

> A business entity that sponsors one or more single-employer defined benefit plan shall:
>
> (a) Recognize the funded status of a benefit plan – measured as the difference between the fair value of plan assets and the benefit obligation – in its statement of financial position. For a pension plan, the benefit obligation shall be the projected benefit obligation; for any other postretirement benefit plan, such as a retiree health care plan, the benefit obligation shall be the accumulated postretirement benefit obligation (SFAS 158, 2006, para. 4a).

The second major change was to recognise in OCI the financial effects of certain plan events when they occur, such as changes in actuarial assumptions (resulting in AGL) and amendments to benefit arrangements (resulting in past service costs). The FASB rejected the idea of allowing recognition of an additional asset (a deferred charge) or liability (a deferred credit) for these amounts, which would otherwise decrease or increase shareholders' equity. It stated that "it would not be representationally faithful to report losses and gains, such as those from the performance of plan assets, as deferred charges or credits because those items

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[11] In 2006, most US pension schemes were unfunded and had accumulated significant amounts of actuarial losses and past service costs off balance sheet.

do not meet the definition of an asset or a liability in Concepts Statement 6" (FASB 158, 2006, para. B35):

> A Business entity that sponsors one or more single- employer defined benefit plans shall:
>
> (c)   Recognize as a component of other comprehensive income the gains or losses and prior service costs or credits that arise during the period but are not recognized as components of net periodic benefit cost of the period pursuant to Statements 87 and 106 (SFAS 158, 2006, para. 4c).

In general, the accounting treatment under SFAS 158 was similar to the "OCI method" under IAS19, except for a "recycling" factor that required some off-balance-sheet items under SFAS 87 and 106 to be recognised as components of net periodic benefit costs (in the P&L statement) in subsequent periods:

> A Business entity that sponsors one or more single-employer defined benefit plans shall:
>
> (c)   Recognize corresponding adjustments in other comprehensive income when the gains or losses, prior service costs or credits, and transition assets or obligations remaining from the initial application of Statements 87 and 106 are subsequently recognized as components of net periodic benefit cost pursuant to the recognition and amortization provisions of Statements 87, 88, and 106 (SFAS 158, 2006, para. 4d).

2.1.3 Amendment to IAS19 (IAS19R)

2.1.3.1 Elimination of the corridor method and deferred recognition

Recent amendments to pension accounting (SFAS 158 and IAS19R) also require pension obligations to be transferred from footnotes into the body of companies' accounts. Fried (2012) provides empirical evidence of a negative stock price reaction around the release of the SFAS 158 ED, which proposed reallocation of already disclosed information from financial statement footnotes to balance sheets. He also identifies increased lobbying by managers of pension plan sponsoring companies against the implementation of SFAS 158, but did not investigate whether or not lobbying affected the neutrality of the standard.

Sun (2011) also examined the effect of recognition versus disclosure of pension-related information, looking at the economic consequences in terms of market responses. According to her study, analysts interpret disclosed and recognised information differently, and recognition increases the market's perceived equity risk and leads to a higher cost of capital.

Pension plan assets growth with expected returns determined from actuarial assumptions on long-term rates of return on government bonds and suitable risk premiums, taking into account historical and expected market trends. Any differences between expected and actual returns on assets are recognised in the statement of comprehensive income. Thus, actual returns are used under current pension accounting, but these impact on firm equity and not the P&L account. It should not matter if expected rather than actual returns are used when computing pension expenses; however, using actual rates of return in the P&L account is likely to impact on the performance of sponsoring companies, as users of accounting information filter P&L account and OCI information differently.

2.1.3.2 The finance cost component

IAS19R requires companies to use a single interest rate to obtain net interest costs. In other words, pension funds expect to make future payments, and these cash flows are discounted with an interest rate. However, pension funds also make investments and expect to receive cash flows that will grow, not with an ERR but with the same interest rate as that used to discount liabilities. This allows for a net cost to be determined by subtracting the earnings obtained on assets from the expenses incurred on liabilities.

Critics argue that the IASB did not follow a logical path in proposing such changes. First, there is a contract between a company and its employees that

dictates the worthiness of liabilities (likelihood that the liabilities will be paid), and after deciding on the liabilities, investments are chosen in order to sustain payments of those liabilities. Investments should be made such that they match liabilities; however, unless the assets completely mimic the liabilities, which is highly improbable, they should not be considered under the same interest rate regime. Imposing the same interest rate for assets and liabilities may remove management incentives to find optimal portfolios. In the latter chapter of this thesis (chapter 4, sub-section 4.2), the analysis of comment letters reply to ED of IAS19R shows that most of the respondents were opposed to the proposal to eliminate the ERR and require sponsor firms to apply the same rate to calculate the growth of pension assets and pension liabilities. Several respondents shared their concern that this requirement would alter asset allocation in pension asset portfolio (see table 2).

2.1.3.3 Full recognition of unvested past service costs, curtailment and settlement

Past service costs arise when an entity amends a benefit plan to provide additional benefits for services in prior periods. IAS19R changes the definition of past service costs to clarify the distinction between curtailments and past service costs. It also requires all past service costs to be recognised immediately in the P&L, regardless of vesting requirements (IASB, 2011). Plan amendments that reduce obligations to employees represent negative past service costs, so there will be symmetry between accounting for amendments that increase or reduce obligations for past service costs. A curtailment is the effect of a reduction in the number of employees participating in a plan.

As a result, IAS19R requires management to recognise all past service costs in the P&L in the period of the plan amendment. Unvested past service costs can

no longer be spread over future service periods. In addition, IAS19R removes the requirement to determine whether a benefit reduction is a curtailment or a negative past service cost. Changes to benefits that reduce DBO will be negative past service costs.

IAS19R also brings in a slight change in the accounting treatment of settlement amounts. A settlement arises when an entity makes a payment to employees covered by a plan or a third party which eliminates all further liability under the plan. IAS19R clarifies the definition of a settlement but makes no significant changes to accounting for gains and losses on settlement. Settlement gains and losses are defined as the difference between (a) the present value on the settlement date of the DBO being settled, and (b) the settlement price, including any plan assets transferred and any payments made directly by the entity. These are recognised in the P&L when the settlement occurs. Settlement gains and losses will no longer include unrecognised actuarial gains and losses, as these will have been recognised immediately in OCI (IASB, 2011). This change clarifies that payments of benefits provided under the terms of a plan and included in actuarial assumptions – for example, options at retirement for employees to take their benefits in the form of a lump sum, rather than a pension or routine pension payments – are not settlements (PwC, 2013).

2.1.3.4 Presentation of changes in net DB liabilities and assets

IAS19R introduces a new term: "re-measurement". This comprises actuarial gains and losses on DBO, the difference between actual investment returns and returns implied by net interest costs, and the effect of the asset ceiling[12]. Re-

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[12] A net defined benefit asset may arise where a defined benefit plan has been overfunded or where actuarial gains have arisen. In such case, asset ceiling is the present value of the future

measurements are recognised immediately in OCI and are not reclassified (IASB, 2011).

Thus, the corridor and spreading method and the immediate recognition of actuarial gains/losses in the P&L are no longer permitted. This reduces diversity in presentation and, subject to the asset ceiling, ensures that the balance sheet always reflects the extent to which a pension plan is funded. Amounts recognised in OCI are not reclassified through the P&L, but the standard no longer requires these items to be recognised immediately in retained earnings. This allows re-measurements to be presented as a separate category within equity (PwC, 2013).

In addition, interest expenses (or income) on net DB liabilities (assets) are now calculated by applying a discount rate, as mentioned above. However, this amendment has an implication for presentation. It separates and presents these net interest costs as part of finance costs in the P&L, while service costs are presented in the organisation part of the P&L.

This amendment increases comparability across entities. Under the previous version of IAS19, there was no specific requirement regarding presentation of service and interest costs; thus, there were various accounting treatments of the different components of pension expenses (PwC, 2013).

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benefits that are available to the entity in the form of a reduction in future contributions or cash refund, either directly to the entity or indirectly to another plan in deficit (IAS19, 2011, para. 65)

2.1.3.5 Disclosure

The amendment introduced additional disclosures. The IASB focused its disclosure objectives on matters most relevant to users of financial statements. The amendment requires disclosures to:

- Explain the characteristics of and risks associated with DB plans;

- Identify and explain the amounts in the entity's financial statements arising from DB plans; and

- Explain how DB plans may affect the entity's future cash flows regarding timing, amount and uncertainty.

As a result of these objectives, there are many new disclosure requirements, including:

- A narrative description of specific or unusual risks arising from a DB plan (IASB, 2011). Judgement is required to identify risks that should be explained, which may be challenging if there are many DB plans with different characteristics within a group (PwC, 2013).

- A breakdown of plans' assets into categories that distinguish risk and liquidity characteristics and whether or not they have a quoted market price in an active market (IASB, 2011).

- Disclosure of significant actuarial assumptions, together with a sensitivity analysis for reasonably possible variations in each significant actuarial assumption. Judgement is required to determine significant assumptions (PwC, 2013).

- Reconciliation of opening and closing balances for plan assets, DBO, balance sheet assets and liabilities, and the effect of the asset ceiling (IASB, 2011).

- Disclosure of significant information, in addition to the sensitivity analyses mentioned above, to help users understand the potential impact on cash flows, including:
  - A narrative description of any asset–liability matching strategies;
  - A description of the funding arrangements and funding policy;
  - The amount of expected contributions in the next year; and
  - The weighted-average duration of DBO (IASB, 2011).

According to PwC (2013), the amendment replaces a checklist of items with the objective of providing relevant information when plans are material to the entity. However, the new requirements are likely to require more extensive disclosures and more judgement to determine what disclosure is required. Management should also be aware that some of the new disclosures may require additional actuarial calculations, and should consider whether internal reporting procedures must be updated to collect the information required for new disclosures.

2.2 Empirical Research on Pension Accounting

2.2.1 Value relevance

This section examines the context of this study and reviews the related academic literature. In the process of reviewing the literature, it is important to consider its objectives, findings, and limitations such as inconclusive outcomes and methodological constraints.

Value-relevance research focuses on extending knowledge of the relevance and reliability of accounting amounts as reflected in equity values (Barth et al., 2001). Relevance and reliability are the two primary criteria used by accounting standards bodies to choose between accounting alternatives. For example, as specified in the FASB's (1984) conceptual framework, an accounting amount is

relevant if it is capable of making a difference to financial statement users' decisions, and reliable if it represents what it purports to represent. (SFAC No.5)

Value relevance, as defined in the academic literature, is not a stated criterion of accounting standards, but rather is one approach to operationalising the relevance and reliability criteria (Barth et al., 2001). For example, an accounting amount will be value-relevant if it has a predicted significant relationship with share prices, only if the amount reflects information relevant to investors in valuing the firm and is measured reliably enough to be reflected in share prices.[13] Under the latest Conceptual Framework for Financial Reporting of IASB (2010), the enhancing qualitative characteristics of Accounting Standard – "reliability" – is now replaced as "verifiability". Since the Framework defines that relevant financial information is capable of making a difference in the decisions made by users even if some users choose not to take advantage of it or are already aware of it from other sources, thus, information does not have to be new to a financial statement user to be relevant. An important role of accountants is to summarise or aggregate information that may be available from other sources. Barth et. al. (2001) also note that the concepts of value relevance and decision relevance differ. In particular, accounting information may be value-relevant but not decision-relevant if it is superseded by more timely information.

The value-relevance literature extends back over forty years, as marked by the research of Ball and Brown (1968) and Beaver and Dukes (1972). These studies tested the impact of earnings on firm value, and were influenced by earlier research evidence that the earnings term is the most important explanatory

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[13] This statement is subject to the power of empirical testing and conditional on the estimating equation being properly specified.

variable in predicting the value of the firm or the share price (Miller and Modigliani, 1966).

According to Holthausen and Watts (2001), the three main categories of value-relevance studies are relative association studies, incremental association studies and marginal information content studies. Relative association studies compare associations between stock market values or changes in values and alternative bottom-line measures. They examine differences in the coefficient of determination, or R-squared, of regressions using different bottom-line numbers, and the accounting number with the greater R-squared is assumed to be more value-relevant. Incremental association studies investigate whether particular accounting numbers help to explain value or returns (over a long window) given other specified variables. An accounting number is supposed to be value-relevant if its coefficient is significantly different from zero. Some other incremental association studies examine the relationship between accounting numbers and inputs to a market valuation model in order to compare predicted coefficient values and estimated coefficients to assess measurement errors in accounting numbers.

In contrast to the two types of association study, marginal information content studies investigate whether accounting numbers make any contribution to the information set available to investors. Thus, such studies usually use "event studies" or "short window return studies" to examine whether publication of accounting numbers (additional to and conditional on other accounting information released) are associated with value changes. Therefore, price reactions are considered as evidence for value relevance. Most pension accounting value-relevance studies are incremental association studies. In some

cases, they also incorporate relative association studies, and in a small number of cases use marginal input content analyses.

The following sub-sections perform a literature review on pension accounting value relevance studies that can be separated into association studies in 2.2.1.1 sub-section and marginal information content in 2.2.1.2 sub-section.

2.2.1.1 Association studies in Pension Accounting

In the field of empirical research, pension accounting value-relevance association studies have applied three types of model: earnings discount models, balance sheet models and variations of Ohlson's (1995) model. The three following subsection documents the previous empirical studies that are classified into three model respectively.

2.2.1.1.1 Earnings discount models

Based on research by Modigliani and Miller (1958, 1966), earlier value relevance studies using earnings discount models concluded that markets do take account of unfunded vested pension obligations when valuing firms' stock prices. In particular, they found that accounting measures for unfunded vested pension benefits (disclosed by US companies under ABP 8) are systematically reflected in share price valuations.

Daley (1984) examined associations between measures that US companies were required to disclose in the 1970s and stock market valuations. In this study, the earnings variables are disaggregated into earnings before pension costs, and pension costs themselves,[14] using a sample of US companies for the years 1975

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[14] The model has the following structure: MVE = α + β_1EbPC + β_2PC + ε

to 1979. Daley finds that estimations of the regression coefficient for pension expenses are significantly negative, and are thus "value-relevant". However, this conclusion must be treated with caution since the sample size was quite small (153 firms), with large intercept terms that suggest measurement error and an under-specified model (Glaum, 2009).

FAS 87, issued in 1987, marked a significant change to pension accounting under US GAAP. It required companies to use the projected credit unit method to estimate pension costs and liabilities, and to disclose several components of pension costs separately, such as service costs, interest costs and expected returns on plan assets.

The value relevance of pension costs under FAS 87 was investigated by Barth et al. (1992, 1993). Using a similar model to that of Daley (1984), they find that the coefficient of total pension costs is significantly larger than the estimated coefficient for income before pension costs, which contradicts Daley's (1984) finding. However, their findings are consistent with the market expectation that pension costs are more persistent than other income and expenses; in other words, a lower discount rate is applied to pension costs. In a further step, Barth et al. (1993) disaggregated pension cost components in order to examine whether different multiples are applied to different components of pension costs in determining security prices.[15] They find that the coefficient of interest costs is significantly negative, whereas the coefficient of returns on plan assets is significantly positive. However, the coefficient on service costs is unexpectedly positive and significant in some model specifications. They attribute this finding

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[15] Barth et al.'s (1993) full model: $MVE = \alpha + \beta_1 EbPC + \beta_2 SVC + \beta_3 INT + \beta_4\ RPLNA + \beta*Other\ PC\text{-}components + \varepsilon$.

to multi-collinearity between pension cost components, or to the possibility that service costs are not viewed by the market as a measure of pension liabilities. In more recent research, Hann et al. (2007) attribute this positive relationship between the security value and pension costs to service costs serving as a proxy for the value created by human capital, whereas the accounting standard fails to capitalise these values on the balance sheet. In their model, they add the number of employees and research and development costs (as intangible asset creation) as control variables and find that the coefficient of service costs then becomes negative. This finding suggests an interesting theory that corporate pension systems are not only financial in nature, but are also a system that provides incentives for increased productivity and general improvements to long-term relationships between employees and employers (Ippolito, 1985; Klumpes, 2001).

2.2.1.1.2 Balance sheet model

Landsman (1986) was the first to use a balance sheet model. He regressed the market value of companies' equity on accounting measures for assets and liabilities. In particular, he split companies' total assets between pension assets and non-pension assets, and companies' total liabilities into pension liabilities and non-pension liabilities.[16] Using a sample of US companies for the years 1979 to 1981, he concludes that information on pension assets and liabilities (ABO), which US companies at that time had to disclose according to FAS 36, is value-relevant in the same way as information on other corporate assets and liabilities. However, he also notes that the coefficients in his model are estimated with high standard error, and that their absolute values are often markedly lower or higher

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[16] Landsman's (1986) model is: $MVE = \alpha + \beta_1 NPA + \beta_2 NPL + \beta_3 PLA + \beta_4 PL + \varepsilon$

than their theoretical values of 1 or -1. Also, his intercept term is large and significantly different from zero. Theoretically, based on the simple balance sheet identity, the intercept should be zero.

Overall, he concludes that disclosed accounting measures for pension assets and liabilities are valued similarly to recognised assets and liabilities. This conclusion is further supported by Dhaliwal (1986). His research examined the impact of unfunded pension obligations on companies' systematic risk. Based on a sample of US companies for the years 1976 to 1979, he finds that investors take information on unfunded pension liabilities into consideration when assessing financial risk. A more recent study by Jin et al. (2006), with updated data (1993-1998), also concludes that equity betas appear accurately to reflect the betas of their pension assets and liabilities, "despite the practical difficulties of deciphering corporate pension accounts" (Jin et al., 2006, p.22).

The introduction of FRS 87 required US companies to either recognise or disclose several different measures of both pension assets and liabilities. Barth (1991) investigated which measures are most closely associated with share price valuations, that is, which are most consistent with those implicitly used by investors. Her research design allowed her to determine the error with which pension accounting amounts are measured, which she calls measurement error, being the difference between the book and market values of pension assets and liabilities. Based on a sample of US companies from 1985 to 1987, she finds that the FVPA and the PBO and ABO of pension liabilities, which are only disclosed in notes, are measured with less error than recognised net pension assets and liabilities. Also, when focusing on companies where pension benefit formulas depend strongly on salary progression, the PBO exhibits less measurement error than the ABO.

Based on Landsman's (1986) research, Gopalakrishnan and Sugrue (1993) extended the model and investigated whether the unvested part of pension obligations and the expected future salary progression (as the difference between ABO and PBO) are value-relevant.[17] Using a sample of US companies from 1987 to 1988, their estimates for β_4, β_5, and β_6 are all significantly negative. However, these estimations all differ from expected values. Also, β_5 and β_6 are considerably larger than β_4. An F-test rejected the hypothesis that the three estimates are equal to each other. Gopalakrishnan and Sugrue (1993) suggest that this may be because investors perceive the unvested and salary progression components of PBO to be inherently more noisy than the vested benefit obligations component.

2.2.1.1.3 Ohlson's model

Ohlson (1995) describes firm value as the sum of the book value of equity and the present value of expected future abnormal earnings (see Ohlson, 1995; Feltham and Ohlson, 1995). A firm's book value of total assets and liabilities will be equal to its market value if they are completely recognised and valued at their "true" economic value at the balance sheet date. However, accounting standards may not recognise large parts of companies' assets and liabilities, for example intangible assets (see Scott, 2009, Ch.2.). Thus, the book value of firms' assets and liabilities is often lower than their current market value. Ohlson (1995) shows that, under certain conditions, the portion of the value of a company not captured by the book value of equity is reflected in expected future abnormal earnings, i.e. in residual income.

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[17] Gopalakrishnan and Sugrue's (1993) model is: MVE = α + β_1NPA + β_2NPL + β_3PLA + β_4VBO + β_5UNVEST + β_6SALARY + ε.

Most recent studies on the value relevance of pension accounting information are based on empirical variants of Ohlson's (1995) model as it provides a direct link between accounting measures and firm value (Kothari, 2001; Beaver, 2002). In empirical research, expected future abnormal returns are usually approximated by analysts' earnings forecasts or, more simply, by realised earnings (see Barth et al., 1998a; Collins et al., 1999; Dechow et. al., 1999; Landsman et al., 2007; Lo and Lys, 2000). Thus the basic structure of Ohlson's model is as follows:

$$MVE = \alpha + \beta_1 NPE + \beta_2 EbPC + \beta_3 PLA + \beta_4 PL + \beta_5 PC + \varepsilon \qquad \text{(a)}$$

where NPE is company owners' equity plus net pension liabilities, EbPC is earnings before pension costs, PLA is plan assets, PL is pension liabilities and PC is pension costs. In taking into consideration balance sheet and income measures simultaneously, these models are thought to be generally better specified than pure balance sheet (or income) models (Glaum, 2009).

Applying this approach to data from 300 US companies for the years 1987 to 1990, Barth et al. (1993) find that the FVPA and the fair value of items such as PBO, which are disclosed in the notes under FRS 87, are significantly correlated with share price valuations, whereas the incremental explanatory value of pension cost components (also disclosed in footnotes) are not significantly different from zero. They conclude that "pension cost component information is largely redundant in explaining share prices, once pension balance sheet variables are included" (Barth, Beaver and Landsman, 1993, p.25). This suggests that Ohlson's model is over-specified, and perhaps that pension assets and liabilities are essentially financial in nature (Barth et al., 1993) if there are no synergies with other corporate assets and liabilities and no other intangibles attached to them, and if their fair values can be measured with sufficient reliability.

Coronado and Sharpe (2003) follow a very similar research design to compare the value relevance of the funding status of pension plans, i.e. the difference between the PBO and the FVPA (disclosed in the notes) and the value relevance of pension costs (recognised in the income statement, and smoothed by the "corridor method"). Interestingly, their results contradict those of Barth et al. (1993). Based on a sample of US companies comprising the S&P 500 index from 1993 to 2001, their results indicate that it is not the funding status of pension plans, but pension income and expenses that turn out to be relevant in explaining share prices. In their more recent research, Coronado et al. (2008) extend their sample to cover data for the years 2002 to 2005, with the same result. They conclude that the market pay more attention to the change of pension accruals recognized in the income statement than the marked-to-market value of pension assets and liabilities disclosed in the footnote.

Coronado and Sharpe (2003) and Coronado et al. (2008) attribute these results to investors' fixation on earnings. During the second half of the 1990s, the pension plans of S&P 500 companies were, on average, over-funded, and companies reported, on average, net pension income rather than net pension expenses because expected returns on plan assets exceeded pension costs. In fact, as a result of the income-smoothing mechanisms of FAS 87, companies continued to report net pension income even in the first years of the 2000s, although S&P 500 pension plans were by then under-funded following deterioration of the stock markets. Coronado and Sharpe (2003) argue that the smoothing mechanism under FAS 87 misled investors to overvalue companies sponsoring DB pension plans (see also Franzoni and Marin, 2006; Picconi, 2006).

Motivated by whether stock market investors treat net assets from over-funded pension plans and net liabilities from under-funded plans equivalently, Wiedman

and Wier (2004) conducted research based on data from 128 Canadian companies. They modified Ohlson's model to include an indicator variable denoting companies with over-funded plans. They find that funding status is more closely associated with stock prices for companies with under-funded plans than for those with over-funded plans. More precisely, the net pension assets of companies with over-funded plans appear not to be implicated in stock market valuations at all. They conclude that from the investors perception, deficits amount in under-funded plan are more likely similar to the liabilities of the sponsoring firm, but the surpluses arising from plan over-funding are not seen as assets of the firm.

Similar studies of the effect of pension assets and liabilities on bond ratings have produced the same asymmetric results. These credit relevance studies suggest that unfunded pension liabilities reduce debt ratings more strongly than pension assets increase them (Maher, 1987; Carroll and Niehaus, 1998). This may be attributed to the fact that, under the going concern assumption, companies are required to fund pension deficits over time, while they have little power to control net pension assets (Ippolito, 1985; Stone, 1987). Moreover, reversion (terminations by sponsoring companies with the intention of claiming plan surpluses) has been hard to achieve in other countries, and has also been made much more difficult in the US by new regulatory hurdles and tax disincentives (Ippolito, 2001; Fortune, 2005).

In investigating a similar research question to Barth et al. (1993) and Coronado and Sharpe (2003), Hann et al. (2007) compare the value relevance of recognised pension amounts smoothed according to FAS 87 with the value relevance of fair-value pension amounts disclosed in companies' footnotes. Based on a sample of more than 2000 US companies from 1991 to 2001, they

first take account of the fact that full recognition of actuarial gains and losses will greatly increase the volatility of pension costs, and hence decrease the persistency of earnings. Based on Ohlson's model, they modify the empirical model as follows:

$$MVE = \alpha + \beta_1 NPE + \beta_2 EbPC + \beta_3 NetPAL + \beta_4 RecPC + \beta_5 PGL + \varepsilon \quad (b)$$

where NetPAL is net pension assets and liabilities and pension expenses disaggregated into a recurring component (RecPC) equal to service costs plus interest costs less expected returns on plan assets, and a gains/losses component (PGL).

Hann et al. (2007) estimate the model twice, once with FAS 87 amounts and the other with fair-value amounts. They find that the explanatory power of the two estimations does not differ statistically, based on a Vuong (1989) test. However, pension cost components are less persistent, and hence less value-relevant under fair-value accounting.

Werner (2011) undertakes a combined relative and incremental association value-relevance study applied to pension accounting information in a more recent period. He examines both value relevance and credit relevance, or "credit rating-based value relevance". His analysis period covers the period 1998 to 2005, using a sample of Fortune 200 firms from Compustat to provide 1,189 firm-year observations for an Ohlson (2995) "equity model". The results show an adjusted R-squared of 0.343 for smoothing the SFAS 87 version of the equity model, and a virtually equal adjusted R-squared of 0.342 for the fair-value version.

Apart from *ex ante* research on SFAS 158 (Hann et al., 2007; Werner, 2011), a recent *ex post* study by Mitra and Hossain (2009) examines the value relevance of pension transition adjustments and other comprehensive income components

in the adoption year of SFAS 158. The term "pension transition adjustments" means the total unrecognised gains or losses, prior service costs or credits, and any transition assets or obligations as a direct adjustment (net of tax), reported as separate accumulated OCI in stockholders' equity. Using data from S&P large, mid-cap and small-cap firms in the year for which information about SFAS 158 pension transition adjustments in the financial statements was available produced a final sample of 696 firms comprising 283 S&P large, 212 S&P mid-cap and 202 S&P small-cap firms. By performing several cross-sectional regression analyses, they find a negative association between both the level of and change in stock returns and the magnitude of pension transition adjustments. When analysed separately, they find that the main results are confined mainly to the sample of large S&P 500 firms. There is no significant relationship between stock returns and pension transition adjustments for the S&P mid-cap and small-cap firms. These results suggest that the capital market reacted negatively to the adverse impact of pension transition adjustments following SFAS 158 on firms' net worth and potential future cash flows when that impact was of substantial magnitude in dollar terms. When the impact was not severe, the market did not respond to the adjustment amount. Hence, stock price changes occur to varying degrees, depending on the dollar effect of the transition adjustment amount.

Further value-relevance research on the impact of SFAS 158 has been carried out by Beaudoin, Chandar and Werner (2011), who investigate whether the recognition of pension information under SFAS 158 previously disclosed only in footnotes is incrementally value-relevant from both an equity and a credit rating perspective. They examine whether a particular, previously unrecognised funded status component was incrementally more significantly associated with firm value and credit ratings once its recognition was required on the balance sheet under

SFAS 158. They collected a US sample from Compustat consisting of 878 firms in 2005 (disclosure year) and 2006 (recognition year), providing 1,756 firm-year observations. Overall, the results are consistent with no incremental valuation effects for information that was recognised rather than disclosed, in both equity valuation and credit-rating contexts. The findings indicate that equity investors value the incremental portion of net pension assets or liabilities similarly, whether disclosed or recognised, suggesting that equity markets are efficient with respect to pension accounting information, regardless of the implementation of SFAS 158. The authors' credit-rating analysis, using a sample of 428 DB firms (856 firm years) for 2005 and 2006, also shows no differential impact of recognition over disclosure. In fact, credit-rating agencies do not appear to incorporate the portion of DB plan information in their decisions, whether recognised or disclosed. Furthermore, similarly to previous research by Mitra and Hossain (2009), their overall results were driven by larger firms and firms with greater liability impacts from the adoption of SFAS 158. Taken as a whole, they suggest that SFAS 158 made no significant difference with respect to how key market participants use pension-related financial statement information from both credit and equity valuation perspectives.

There appears to be no literature concerning the actual or perceived decision usefulness of pension accounting information. The literature focuses mainly on pension accounting from a technical point of view or from a value-relevance perspective. Gopalakrishnan (1994) refers to "usefulness", but only as part of a quantitative value-relevance study, with no specific analysis of "decision usefulness" or the perception of decision usefulness. Barth et al. (2001), in a general review of value relevance, refer to any test of value relevance being a joint test of relevance and reliability. They discuss the difference between the

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concepts of value relevance and "decision relevance", but this is merely a commentary and does not include an empirical study of decision usefulness or a link to value relevance.

Furthermore, most of the data used in the literature on pension accounting value relevance is now quite old, and even the more recent studies examine periods no later than 2006. Many of the major studies of pension accounting value relevance, such as those by Daley (1984), Landsman (1986), Dhaliwal (1986) and Barth et al. (1992, 1993), were undertaken in the 1980s and 1990s. Other studies after the year 2000 include Coronado and Sharpe (2003), who examine results for the period 1993 to 2001, Franzoni and Matin (2006) for the period 1980 to 2002, Picconi (2006) for the period 1988 to 2001, Hann et al. (2007) for the period 1991 to 2001, and Coronado et al. (2008) for the period 2002 to 2005, which extends earlier study by Coronado and Sharpe (2003).

Most pension accounting value-relevance research has been carried out on the US market, and has therefore used accounting information prepared under US GAAP. Since the institutional differences between the US market and elsewhere adds different contest on these research, the generalisability and applicability of such research to the other markets such as the UK and EU countries where the prevailing accounting regime is IFRS/IAS or a local GAAP is therefore questionable. It is important to conduct research in different markets and explore different perspectives that may be possible in some situations but not in others. Review of the wider value-relevance literature suggests that there are significant differences in associations between share prices and accounting data in different jurisdictions (Alford et al., 1993; Joos and Lang, 1994).

2.2.1.2 *Marginal information content value relevance studies in pension accounting*

This sub-section summaries the third value relevance category study – marginal information content – that is accounting number has effect on decision making of investors, managers and debtors.

2.2.1.2.1 Changes in earnings management behaviour following adoption of pension accounting standards

Accounting standards provide guidelines rather than regulations with respect to discount rates. For example, IAS19 provides an instruction that market yields on high-quality corporate bonds which have similar duration with plan liabilities can be used as discount rates (IAS19, 2009, para. 78). This allows for flexibility with respect to the choice of discount factor. Since there is variety in the market yields on fixed instruments, the choice between a high or low market yields, namely the choice between a higher or lower discount rate, may cause significant changes in pension liabilities and expenses. Earnings can be managed if high discount rates are chosen with the purpose of lowering service and interest costs (Adams et al., 2011). Fried (2010) documents the impact of SFAS 158 on the behaviour of sponsoring companies and identifies that, owing to increased SFAS 158-related pension liabilities, managers chose to use higher discount rates. Similarly, Houmes and Boylan (2010) identify the use of higher discount rates following the enactment of SFAS 158, especially by sponsoring companies with decreased liquidity and increased leverage.

Apart from the discount rate, companies have other ways to increase or decrease pension expenses and to manage earnings to their advantage. Previous research documents this behaviour. According to Adams et al. (2011), using high expected rates of return may unjustifiably decrease expenses and inflate earnings, showing

a better financial situation for the company. Moreover, there is doubt about how expectations relating to rates of return on pension assets are formed. Ramaswamy (2012) identifies that the median assumed return for US companies was 8.5 per cent, even though the yield on Treasury securities (i.e. the discount rate for pension liabilities) had been declining. SFAS 132 introduced requirements for the disclosure of the composition of pension assets in addition to reporting ERR. When both ERR and portfolio asset allocations are reported, it is harder for managers to justify unrealistic expected return assumptions given the asset portfolio composition (Komissarov, 2014). Komissarov (2014) shows that the degree of inconsistency between ERR and asset allocations declined following the adoption of SFAS 132(R).

A plethora of previous literature provides evidence that managers exercise discretion in responding to mandatory accounting changes. For instance, Balsam et al. (1995) document that when a timing option is provided, firms usually adopt income-increasing regulations in the year in which a change in their return on assets would have been the lowest and the increase in the tightness of their debt covenants is the greatest. Balsam et al. (1995) find that firms implemented SFAS No. 123 to reduce criticism of their compensation practices.

More recently, Beatty and Weber (2006) offer evidence that SFAS 142 adoption choices are associated with contracting and market incentives. Firms' debt contracting, bonuses, turnover and exchange delisting incentives affect their decisions to accelerate or delay expense recognition in income statements, and firms' equity market considerations affect their preference for above-the-line versus below-the-line accounting treatments. Balsam et al. (2008) and Choudhary et al. (2009) show that publicly-held companies accelerated the vesting of some or all of their employee stock options in advance of adopting

SFAS 123R. They conclude that accelerated vesting of options is a form of earnings management.

In 2011, IAS19R has not changed the guideline on discount rate assumption. It also forced full recognition of pension liabilities, with potentially significant effects for the equity of companies that previously used the corridor method to smooth the impact of changes in the value of pension assets and liabilities. As a result, in the year of IAS19R adoption, managers had an incentive to exploit the accounting standard to manipulate the firms' reported performance by choosing a discretionary discount rate.

Several studies examine the costs associated with debt covenant violations and provide evidence that such violations are costly (see Beneish and Press, 1993; Roberts and Sufi, 2009). Given the significant impact of IAS19R, with elimination of the "corridor method" on contracting-based accounting numbers, firms may manage discretionary accruals to reduce the cost of debt covenant violations. Sweeney (1994) finds that during the years minus five to plus two surrounding technical default, the cumulative effect of accounting changes made by 130 firms violating debt covenants were significantly more income-increasing than changes made by non-defaulting firms in a matched sample. DeFond and Jiambalvo (1994) support this finding, showing that in both the year of and the year prior to debt covenant violation, abnormal accruals are positive and significant. More recently, Beatty and Weber (2003) find that firms with debt covenants are more likely to adopt income-increasing accounting policies than their non-covenant counterparts.

In contrast, DeAngelo et al. (1994) find no statistical difference in the accounting choices made by firms facing potentially binding debt covenants and firms without

such binding debt covenants, and conclude that accounting choices reflect firms' financial difficulties rather than attempts to either avoid debt covenant violation or mask financial difficulties. Healy and Palepu (1990) find that firms cut dividends and do not appear to make accounting changes to avoid violating dividend constraints in debt covenants.

2.2.1.2.2 Capital market consequences

Previous research suggests that financial statement users' judgments may be affected by the location of items in certain contexts, for example in financial statements or in footnotes. Aboody (1996) finds that oil and gas firms that recognised a write-down in connection with a decrease in oil prices experienced a negative stock market reaction, while there was no significant stock market reaction for firms disclosing, but not recognising, an as-if write-down in the footnote[18]. Ahmed et al. (2006) find that stock prices are significantly associated with recognised derivatives but insignificantly associated with disclosed derivatives, while Libby et al. (2006) find that auditors require much greater correction of mis-statements in recognised amounts than they do for disclosed amounts.

In the context of pensions and post-retirement benefits, Landsman and Ohlson (1990) find that the market under-reacted to pension information disclosed in footnotes under SFAS No.36 (FASB 1980) from 1979 to 1982. Amir (1993) finds that investors reacted more to OPEB after the FASB began to require recognition of post-retirement benefit liabilities. Davis-Friday et al. (2004) find that investors

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[18] A firm recognize a write-down only if their net capitalized costs are higher than the net undiscounted value of their proved oil and gas reserves. In contrast to firms using full cost method, a "successful method" firms need only disclose the capitalized cost and ceiling in the supplementary unaudited part of the financial statements (Aboody, 1996, page 23).

assigned a larger valuation multiple to recognised OPEB liabilities under SFAS No. 106 than disclosed under SFAS No. 74.

Theoretically, Barth et al. (2003a) attribute the difference between disclosure and recognition to the cost of processing information. They argue that information disclosed in footnotes is technically complex; therefore, unsophisticated investors may be unable to recast financial statements using footnote disclosures, and will incur costs in acquiring such informational benefits.

In addition, Hirshleifer and Teoh (2003) suggest that systematic bias in how investors process information, such as limited attention or differences in the perceived reliability of recognised versus disclosed items, indicates why disclosed and recognised items are different. The intuition is that, owing to limits to investor attention, investors use information that is presented in a salient, easily-processed form (on the balance sheet) more readily than information that is less salient (e.g. disclosed in footnotes).

Besides information processing costs and systematic bias, an alternative explanation for why the market may not treat recognition and disclosure equally is differences in the reliability of recognised and disclosed items. Schipper (2007) concludes that disclosed amounts are less reliable than recognised amounts. She explains that these differences may be due to differences in the preparation and auditing of disclosed versus recognised amounts, as opposed to intrinsic differences (Libby et al., 2006)

While these studies provide both empirical and theoretical support for the difference between recognition and disclosure, some other studies nonetheless suggest opposite results. For example, Dhaliwal (1986) and Imhoff and Thomas (1988) find that footnote information on pension and lease obligations is

incorporated into market-risk assessments no differently from recognised debt. Landsman (1986) finds that disclosed accounting measures for pension assets and liabilities are valued similarly to recognised assets and liabilities. Jin et al. (2006) find that the capital market is able to incorporate available pension information without bias "despite the practical difficulties of deciphering corporate pension accounts". Shaw (2008) finds that there is no difference in the estimated effects of recognised and disclosed pension information on yield spreads. Theoretical support for the lack of difference between recognition and disclosure is provided by the efficient markets hypothesis (Fama, 1997), which suggests that recognition adds little when the information investors seek is disclosed. Therefore, the choice between recognition and disclosure has no effect on equity investors' perceptions.

In summary, research suggests that recognition versus disclosure matters at least in some contexts, but the research is inconclusive regarding the equivalence of disclosed and recognised amounts. Thus, market reactions to information changes in firms' financial statements are an interesting topic for study.

Moreover, in addition to full recognition of pension assets and liabilities on the balance sheet, IAS19R also requires firms using ERRs equal to the discount rate to report the performance of pension plan assets during the year. The difference between actual returns on plan assets and discount rate-based estimated returns is included in the gains and losses recognised through OCI. The new measure of net interest income or cost reflects the standard setter's view of unfunded benefit obligations as being debt or debt-like. As with debt, plan sponsors will accrue interest costs on the unpaid principal (the unfunded PBO) or on the principal surplus (the over-funded net pension assets). However, it cannot be concluded that the market will take the same view as the standard setter. Previous research

indicates an asymmetric market view between unfunded pension liabilities and over-funded pension assets. Cardinale (2007) documents that unfunded pension liabilities decrease ratings more than equivalent amounts of excess pension assets enhance debt ratings. In other words, the market views pension liabilities as debt or debt-like, but does not view all or part of pension assets as the property of the firm. Moreover, pension assets and liabilities have very different risks; thus, they should be discounted at different rates. Sophisticated investors view the net interest costs of pensions reported in financial statements as irrelevant and will go further to work out the true number based on allocations of pension assets reported in footnotes. Given the controversy over net pension interest expenses, it would be interesting to study how shareholders and debt-holders process this information.

2.2.1.2.3 Shift from DB to DC

Funded occupational pension systems were traditionally designed around DB pensions. DC plans accounted for a small fraction of employer-sponsored pensions and were typically offered by smaller firms or as supplementary plans for high income earners. Over the past three decades, there has been a gradual shift, predominantly in the private sector, toward employee-directed DC plans and hybrid arrangements that combine features of both DB and DC plans.[19] Research of Kiosse and Peasnell (2009) reveals that there have been many factors other than new accounting requirements that contribute to the shift of DB to DC. Nevertheless, the research suggested that there is clearly a widespread perception that changes in pension accounting standards that result in increased volatility in reported earnings and the incorporation of pension surpluses and

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[19] See Aaronson and Coronado (2005) for data indicating a shift from DB to DC.

deficits on the balance sheet will lead firms either to change pension investment strategy or to close or restrict their DB schemes.

2.2.2 Managerial discretion and earnings management in pension accounting

Estimating net pension obligations and periodic pension costs involves demographic and financial assumptions, such as expectations concerning employee turnover, mortality rates of pension beneficiaries, and future salary and benefit trends, as well as the interest rate used to discount future pension payments, and the ERR on plan assets. In addition, pension liabilities are highly sensitive to changes in actuarial assumptions. For instance, the value of pension liabilities will change by three to four per cent on average if employees' life expectancy changes by one year (Blake et al., 2008; Coughlan et al., 2007). Moreover, a one per cent change in the discount rate will on average decrease or increase the value of liabilities by 15 per cent (Gohdes and Baach, 2004; May et al., 2005.).

Furthermore, as accounting for pensions is tied to funding decisions, changes in actuarial assumptions may also have cash-flow consequences. Determining actuarial assumptions involves judgement. In other words, companies' management enjoys a certain degree of discretion in setting these parameters, thereby influencing key financial figures such as debt–equity ratios and earnings. This raises an obvious question of whether managers use, or even abuse, their discretion over pension accounting to influence earnings and other accounting figures.

In relation to pension accounting, two areas have been researched intensively, namely motives for the early adoption of FAS 87 in the US in the 1980s, and determinants of cross-sectional differences in actuarial assumptions. Although,

previous literature in this area is almost completely based on US data (Glaum, 2009), given the focus of this thesis on IAS19, the following sub-section performs a literature review on earnings management not only relate to adoption of FRS 87 but also relate to the IAS19.

2.2.2.1 Early adoption of FAS 87 and actuarial method changes

The introduction of FAS 87 fundamentally changed US GAAP pension accounting. With the adoption of accrual accounting for pension obligations, companies with under-funded pension plans had to recognise a (minimum) pension liability. FAS 87 introduced the application of the projected credit unit method. The FAS deliberated for more than a decade over its pension project, and even when FAS 87 was issued in 1985, it allowed for an extended adoption period. In general, the standard became effective in 1987, but the application of some provisions (such as the recognition of a minimum liability) became mandatory only in 1989. This extended adoption period gave companies a choice: they could adopt the regulation early, or postpone adoption until the mandatory date.

Before FAS 87, companies in the US applied "cost allocation methods". These methods typically arrived at conservative estimates of pension costs and contributions because they aimed for a high degree of security for pension beneficiaries. Thus, compared with the projected credit unit method, pension costs tended to be higher, resulting in the accumulation of plan assets larger than the present value of expected future benefits (Ghicas, 1990). In other words, for most companies, the adoption of FAS 87 led to lower pension costs, and therefore increased earnings.

Ghicas (1990) collected a sample of 45 companies between 1980 and 1983 (before FAS 87 was issued) that had switched from a cost allocation method to a benefit allocation method, an accounting policy change that anticipated FAS 87. He matched the "switch companies" with non-switching companies from the same industries and developed hypotheses predicting which companies would be more likely to switch. He expected that companies facing liquidity and financing constraints would be more likely to take advantage of the lower pension costs associated with a benefit allocation method. He also expected companies with high funding ratios to adopt the new method so as to lower future pension contributions, and that companies with low earnings growth and low cash flows from operations would attempt to benefit from lower pension expenses and contributions. According to other hypotheses, due to public and regulatory scrutiny, larger companies are more reluctant than smaller ones to switch. Finally, given that pension contributions may generate tax benefits, Ghicas predicted that switching companies would have lower effective tax rates than their non-switching counterparts. Applying a multivariate logit model, Ghicas finds support for several of his hypotheses. High funding ratios, high leverage and low working capital significantly predict a pension accounting method switch. He also finds that switching companies have lower rates of investment. These findings are consistent with financing constraints being a driver of method change. Company size, as a proxy for political and regulatory costs, is also significant, albeit only marginally. The effective tax rate, on the other hand, does not appear to influence switching decisions.

Subsequent studies on motives for the early adoption of FAS 87 also focus on the income effects of early adoption, since companies were permitted to delay recognition of a minimum liability even if they adopted other provisions of FAS

87. Scott (1991) refines some of Ghicas's (1990) theoretical arguments. He finds strong support for political determinants of early adoption (company size, regulated industries and legal proceedings). In addition, companies were more likely to adopt FAS 87 early if the absolute magnitude of the income effect was large and if they had experienced earnings decreases in prior years. If, on the other hand, a company's performance was negative, it was less likely to adopt FAS 87 early if it had bonus plans with management compensation tied to accounting income. In contrast to Ghicas (1990), Scott finds only weak evidence for debt constraints to explain companies' accounting choice.

Ali and Kumar (1994) demonstrate that the magnitude of the income effect was a strong moderator of other determinants of companies' choice to adopt FAS 87 early. In their basic model, debt constraints and political arguments do not appear to be linked significantly with companies' adoption choice. However, once the interaction of these variables with the magnitude of the income effect or early adoption are included in the models, these determinants turn out to be significant. The magnitude of the income effect also moderates other determinants, such as regulatory costs (regulated industries) and agency costs (earnings-linked management bonus plans).

Overall, research on the early adoption of pension accounting standards, primarily in the US, provides evidence consistent with companies exercising inherent accounting choices based on economic incentives. Important determinants appear to be the self-interests of managers whose remuneration is tied to key financial accounting indicators, debt constraints, and political and regulatory costs. The importance of these determinants appears to be moderated by the magnitude of the earnings effect of the accounting choice.

On the other hand, there are several researches that provide some opposite view from the researches above based on the sample other than the US sample.

Sweeting (2011), based on a sample of FTSE 100 non-financial firms, investigated the pension disclosures of sponsor firms in the context of SSAP 24. He found no association between funding ratio and choice of discount rate. In addition, he claimed that large firms offer more complete disclosure, however, they also have influence on their actuarial to use weaker assumptions such as high discount rate to value the pension liabilities.

In addition, Klumpes and Whittington (2003) examine the response of UK companies to a change in a regulatory requirement that was designed to restrict the ability of companies to under-fund defined benefit pension schemes. As with US companies in pre-FAS 87 times, until the introduction of IFRS and IAS19, UK companies could choose between different pension valuation methods. Building on Ghicas (1990), Klumpes and Whittington (2003) surveyed UK companies from 1994 to 1998 and identified 45 companies that had switched actuarial firms, deferred reporting of their funding status, or changed from cost-based to market-based valuation of pension assets. They matched these firms with companies that had not reported comparable accounting method changes and, like earlier US studies, applied logistic regression to explain companies' accounting policy changes. They reported that their findings are consistent with the traditional UK view that the decision to switch actuarial valuation methods is determined by the long-run characteristics of a company's pension fund. They also contend that their findings contradict the results in earlier US studies supporting a corporate finance perspective. However, the performance of their models is not very strong. As Forker (2003) points out, this may be attributable to conceptual and methodological problems inherent in the research design.

A more recent research based on UK sample was performed by Billings, O'Brien, Woods and Vencappa (2017). They collected a sample consisted of UK-listed companies over the period of 2005 through 2009 to examine the actuarial assumptions used to value pension plan liabilities in the context of IAS19. Specifically, based on data for a panel of FTSE 350 companies, they concluded that some companies appear to exercise discretion in order to reduce reported pension liabilities. In particular, their results indicate that firms with relatively poorly funded DB pension plans tend to make assumptions that lower their liability valuations. They also found a relationship between assumptions and the size of the pension plan relative to company's size. However, their result did not indicate any association between pension assumptions and company profitability, or debt ratio which are contrary to the finding of three US papers (Asthana 1999; Bodie et. al. 1987, and Godwin et. al. 1997[20]).

2.2.2.2 Determinants of actuarial assumptions

Earlier studies examined companies' assumptions and changes in assumptions over time, or compared companies' assumptions with benchmark variables. More recent studies attempt to explain cross-sectional variance in pension valuation assumptions with company characteristics relating to earnings management incentives.

Blankley and Swanson (1995) refer to allegations in the business press and to criticism raised by the SEC that company management in the US abused the discretion inherent in FAS 87 pension accounting rules. They compare US companies' pension discount rates and expected rates of return for the years

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[20] These researches will be discussed in the upcoming sections

1987 to 1993 with benchmark rates. They observe that companies do not change discount rates as often as might be expected on the basis of FAS 87 requirements. Overall, however, they find discount rates to be in line with benchmarks. Regarding expected rates of return, they conclude that these capture "to a surprising degree" the sample companies' actual returns. Godwin (1999) also examines trends in US companies' actuarial assumptions. He gathered data for 1987 to 1996 and, unlike Blankley and Swanson, finds some evidence that companies set assumptions to manipulate accounting measures. More precisely, in nine out of the ten sample years, companies with under-funded pension plans had, on average, higher discount rates than over-funded companies, consistent with the former choosing rates that would inflate their funding status.

Godwin et al. (1996) investigate whether company characteristics that proxy for earnings management motives may explain changes in actuarial pension assumptions over time. The data for this study related to US companies during the years 1981 to 1983. Based on note disclosures required by FAS 36, the authors categorise companies according to the earnings impact of actuarial rate changes. This categorical variable is then explained in a cross-sectional setting using ordered logit regression. They find that companies are more likely to change assumptions so as to increase earnings when they have experienced earnings decreases in previous years. Furthermore, earnings-increasing assumption changes are significantly related to higher leverage, dividend constraints, and declines in taxpayer status (resulting in lower tax benefits on pension expenses).

Amir and Gordon (1996) focus on the assumptions applied by US companies in estimating their post-employment benefits other than pensions (OPEB). Similar

to Godwin et al. (1996), they derive hypotheses for the determinants of cross-sectional differences in companies' healthcare trend assumptions and discount rates. Their study is based on data for the years 1991 to 1993. The results of the study are not entirely consistent, but the authors find some support for their hypothesis that actuarial assumptions are influenced by the relative size of OPEC obligations, leverage and the existence of extreme earnings.

Amir and Benartzi (1998) examine whether variation in cross-sectional companies' ERR may be attributable to differences in pension fund investment strategies (differences in levels of equity investment). They argue that, if managers' assumptions are unbiased, cross-sectional differences in expected rates of return can only be explained by differences in the riskiness of companies' portfolios. However, using a sample of US companies from 1988 to 1994, they find that a rather weak correlation between the ERR and the proportion of equities in pension funds. In contrast to Blankley and Swanson (1995), Amir and Benartzi's (1998) findings indicate that ERR is not correlated with future returns on pension portfolios, even though future returns may be predicted by the asset composition of funds.

While Amir and Benartzi (1999) suggest that managers use ERR on plan assets in a biased way, Bergstresser et al. (2006) take the investigation one step further and investigate possible incentives for opportunistic behaviour by focusing also on ERR on plan assets. Their comprehensive study is based on a total of 20,598 firm-year observations representing 3,350 US companies for the years 1991 to 2002. Unlike Amir and Benartzi (1999), they find assumed returns to be correlated with realised, or lagged realised, returns. However, this effect appears to be rather small. Controlling for actual returns, they partially explain cross-sectional variation in expected returns in terms of companies' sensitivities to pension

assumptions: companies with large amounts of pension assets (relative to operating earnings or operating assets) on average are found to have higher expected returns, all else being equal. The results also indicate that companies make more aggressive return assumptions in the years before and in which they engage in merger and acquisition (M&A) transactions. Moreover, companies appear to set higher ERRs on plan assets in periods in which seasoned equity offerings take place and in periods in which CEOs exercise stock options. Furthermore, Bergstresser et al.'s findings indicate that managers are more aggressive with return assumptions if their companies are close to failing to meet important earnings thresholds (positive earnings, previous years' earnings, median industry earnings). Finally, they find a negative correlation between a corporate governance index and companies' ERR on plan assets; that is, managers who are least constrained by their shareholders appear to set the highest return assumptions.

Consistent with the results of US studies, research by Li and Klumpes (2013) examines the determinants of UK companies' ERRs on plan assets, and find that the ERR is significantly associated with, *inter alia*, leverage and pension funding levels, suggesting that contracting and funding constraints systematically influence rates of return.

Asthana (1999) analyses the filings of US pension funds with the Internal Revenue Service. Her extensive study is based on 6,040 filings from 2,419 pension plans sponsored by 1,813 companies for 1990-1992. Her results are consistent with companies exercising discretion over actuarial choices in order to manage pension funding and maximise tax benefits. According to Asthana's findings, companies make more conservative (aggressive) choices when funds become over-funded (under-funded). As pension contributions increase

(decrease) and come close to maximum tax-deductible (minimum required) contributions, companies make more conservative (aggressive) choices. Funding-related actuarial choices are also determined by companies' profitability, cash flows from operations, leverage and taxpayer status.

2.3 Research Questions

The prior sub-sections provided a comprehensive review of empirical researches in pension area. They suggested a gap in previous literature relate to economic consequence of pension accounting standards. Furthermore, these researches were mainly conducted under US context and subjected to various limitation in methodology in drawing the causal effect of pension accounting standard impact on decision making of the firms and market.

One of the main research questions of this thesis is motivated by the change of IAS19R on the abolition of ERR and the elimination of the "corridor method" (discussed in sub-section 2.1.3), to study the change of asset allocation of pension plan portfolio as the result of the adoption of IAS19R.

According to sub-section 2.2.1.4.2 (Capital market consequences), there is a debate on whether market perceives disclosure items and recognition items in financial statement differently. In relation to pension accounting standard IAS19R, the elimination of the "corridor method" would require sponsor firms to bring the net pension assets/liabilities in the disclosure part to fully recognise them on balance sheet. This amendment would change perception of market about pension information received or provide marginal information to market (Barth et al., 2003a; Hirshleifer and Teoh, 2003; Libby et al., 2006 and Schipper 2007). The subsequent result of the elimination and full recognition of pension items on the balance sheet also has significant impact on debt and equity

covenants. According to Amir et al.'s (2010) argument, full recognition of pension items on the balance sheet will increase the volatility of total liabilities and shareholders' equity, and thus increase the likelihood of violating debt- and equity-based covenants. In order to mitigate the impact of this amendment, I predict that defined benefit pension plan sponsor would reduce the equity investment level following the year of IAS19R adoption in 2013.

Secondly, the literature review on earnings management relate to pension accounting shows some significant evidences and explanations on how and why managers exploit their discretion on pension assumption to manipulate earning. The elimination of the ERR effectively removes the incentive for managers to "over invest" in risky asset classes by prohibiting them from recognise the premium/return of pension asset portfolio in excess of the high quality bond rate on the income statement as described in sub-section 1.2 (and will be described in detail in chapter 4). Therefore, this amendment might also be another channel to drive manager decisions on shifting pension assets from equities to bonds following the adoption of IAS19R.

Furthermore, since the adoption of IAS19R was mandatory for all the listed firms among different countries within the EU, the effect of IAS19R is expected to be different due to the institutional difference across these countries. Therefore, in order to shed more light in how would the impact of IAS19R adoption on asset allocation of sponsor firm across EU countries, this thesis also takes into accounting institutional difference including regulation context, market context of different countries and examine how would these difference might be applied to explain the movement of pension asset allocation following the IAS19R.

In order to motivate the main research question of this thesis, another research question on how would the firm take part in the due process of IAS19R – pension accounting standard setting in order to lobbying against or support the adoption of IAS19R was also considered and conducted. This research question aims and set a big picture context to support and motivate the study on asset allocation of this thesis.

The main part of the thesis includes manual textual analysis is presented in the next chapter – chapter 3, and the empirical analysis is presented in chapter 4.

Chapter 3: Lobbying Activities of Sponsor Firms on IAS19 (Revised) Exposure Draft

3.1 Introduction

The IASB is the standard-setting body of the IFRS Foundation. The main objective of the organisation is to develop, in the public interest, a single set of high-quality, understandable and enforceable global accounting standards. In accordance with the IFRS Foundation's constitution, the IASB has full discretion to develop and pursue its technical agenda and to organise the conduct of its work. The Trustees' Due Process Oversight Committee has the task of regularly reviewing and, if necessary, amending the procedures for due process in light of experience and comments from the IASB and constituents. In order to gain a wide range of views from interested parties throughout all stages of project development, this committee and the IASB have established consultative procedures to govern the standard-setting process. The framework for, and the minimum requirements of, the IASB's due process are set out in its Constitution and in the preface to its Due Process Handbook (IFRS, 2010).

The IASB and FASB's joint FCAG states that due process procedures are

> intended to ensure that all voices in all geographical regions have an adequate opportunity to make their view known ... Wide consultation also promotes excellence, neutrality, the identification of unintended consequences, and ultimately, broad acceptance of the legitimacy of the standards that are adopted (FCAG, 2009, p.14).

Thus, constituent participation is seen not only as a key component for the standard setter to obtain legitimacy and success (Suchman, 1995), but also as an effective mechanism for the IASB to gauge the perceptions of various interest groups.

The IASB uses many steps in its consultation process to gain a better understanding of different accounting alternatives and the potential impact of proposals on affected parties. These steps include setting the agenda, project planning, development and publication of a discussion paper, an ED and an IFRS, and procedures once an IFRS has been issued (IFRS, 2010).

Publication of an ED is a mandatory step in due process. Irrespective of whether the IASB has published a discussion paper, the ED is its main vehicle for consulting the public. An ED sets out a specific proposal in the form of a proposed IFRS (or amendment to an IFRS).

Accounting for pensions had been on the IASB's agenda since the 1980s, given its importance for society, the economy and financial markets. However, pressures to revise the pension accounting standard were increasing due to factors such as increasing life expectancy, falling birth rates, and decreasing employment and economic growth. Therefore, in July 2006, the IASB, coordinating closely with the US FASB, added two projects to its technical agenda with the purpose of fundamentally reviewing all aspects of its current rules for post-employment benefit (pension) accounting (IASB meeting December 2006). The two projects represented: (a) a targeted series of improvements to IAS19, to be completed within a four-year period; and (b) a comprehensive review and revision of the existing pension accounting model, to be undertaken in conjunction with the FASB.

In compliance with the Due Process Handbook, in March 2008, the IASB published a discussion paper (IASB, 2008) that summarised the tentative decisions taken so far and considered further changes to IAS19: *Employee Benefits*. Following the discussion paper, in April 2010, the IASB issued an ED

proposing amendments to IAS19, which culminated in the introduction of IAS19R in June 2011. The draft proposed significant changes to recognition, presentation and disclosure with regard to employee benefit accounting in financial statements. One of the most significant proposals was the abolition of the "corridor method" and the smoothing of actuarial gains and losses, with the result that there would be immediate recognition of gains and losses through OCI and statements of financial position. A second major change was the introduction of a net interest approach to estimating the financial cost of DB pension obligations. Under the net interest method, financing costs are estimated as the net interest on DB assets/liabilities by applying to the net amount a discount rate equal to the yield on high-quality bonds.

In addition to these two major changes, the new standard sought to improve the presentation of income statements. Most importantly, re-measurements were taken out of the P&L and moved to OCI, thereby removing from the P&L account much of the market-driven volatility in pension schemes.

Research by Chircop and Kiosse (2015) focus on examine the driven factor that influence the lobbying behaviour of sponsor firms to agree (oppose) to the proposals to abolish the use of the "corridor method" and the replacement of the expected rate of return on pension plan assets with the discount rate. Based on a sample of 63 industrial firms, they examined responses to questions relating to full recognition and elimination of the ERR. They found that signalling, as captured by both pension plan size and the percentage of shares available for trading, influenced the decision to lobby. With regard to abolition of the "corridor method", the results suggest that firms with unrecognised net actuarial losses were less likely to agree with the removal of the corridor method. Furthermore, in analysing firms' responses to the replacement of ERR with a discount rate on

plan assets, they find evidence to support the hypothesis that firms with wider spreads between the ERR on plan assets and the discount rate were less likely to agree with the proposal.

Following the research of Chircop and Kiosse (2015), this chapter also examines the arguments submitted by industrial respondents to the ED of IAS19R. However, this chapter conducts a manual textual analysis on all the proposals of IAS19R in relation to recognition, measurement and presentation in the pension accounting standard. These include but are not limited to abolition of the ERR and "corridor method" (Questions 1 and 5 in the ED). The other proposals that will be considered in this chapter include: "recognition of unvested past service cost" (Question 2); Disaggregation of pension expense (Question 3); presentation of pension expense (Question 6); Settlements and curtailments (Question 7); Disclosure (question 8, 9 and 12). In doing so, it aims to shed light on the common themes of argument presented by industrial sponsor firms, and any lobbying behaviours driven by the self-interests of senders, based on Watts and Zimmerman's (1986) Positive Accounting Theory.

It is important to examine the comment letters of the 63 industrial firms because the proposed changes would have a significant impact on: (1) how sponsor firms recognise net pension assets/liabilities on the balance sheet; (2) the calculation and recognition of pension expenses; (3) the presentation of re-measurement (actuarial gains and losses), which had been heavily debated by academics and practitioners regarding their various treatments under the previous IAS19; and (4) disclosure of information on pension schemes, which had been criticised as "excessive" under the previous version of IAS19. This study extends the previous chapter and literature on the economic impact of pension accounting standard

adoption. It also adds to the relatively limited literature on lobbying in the IASB standard-setting context.

The remainder of this chapter is structured as follows. Section 3.2 reviews the previous literature on participation in the standard-setting process based on Positive Accounting Theory (Watts and Zimmerman, 1986). Section 3.3 reviews in detail the basis for conclusions relating to proposals in the ED, and Section 3.4 presents analysis of the comment letters submitted by 63 industrial sponsors. Finally, Section 3.5 draws conclusions.

3.2 Review of Literature on Participation in Standard-Setting Process

Economic consequences have been a serious issue for accounting standard setters since the mid-1970s. The case for considering them was set out by Zeff (1978). The argument is that changing how a corporation accounts for a particular transaction through the introduction of a new accounting standard may change that corporation's income statement or statement of financial position, which in turn will have an impact on relevant decision makers, such as investors, creditors and governments. Simply put, changing an accounting treatment may have economic consequences, as interested parties may behave differently as a result.

Specifically, the term "economic consequences" has been used to describe the "impact of accounting reports on the decision-making behaviour of business, government, unions, investors and creditors" (Zeff, 1978). Those who have a vested interest in how such decision-making behaviour is conducted may put pressure on the standard setter not to approve any standard containing an unwanted feature (Zeff, 2012). This is lobbying, which includes writing letters, as

well as giving oral testimony at hearings arranged by a standard setter to expose its tentative views to public comment.

Previous research on participation in the standard-setting process can be classified into three theoretical groups: Positive Accounting Theory, the economic theory of democracy, and the theory of coalition and influence. This research focuses on Positive Accounting Theory to analyse the arguments of industrial respondents to the ED of IAS19 and study the incentives of these entities to lobby against the amendment to IAS19.

Positive accounting theorists have studied the economic motivations underlying preparers' position on proposed accounting standards. The theory was first conceptualised by Watts and Zimmerman (1978), who developed a positive theory relating particularly to the determination of accounting standards. This aimed to aid understanding of the source of pressures driving the accounting standard-setting process, the effects of various accounting standards on different groups of individuals and the allocation of resources, and why various groups may be willing to expend resources on trying to affect the standard-setting process. Their analysis distinguishes between mechanisms that increase management's wealth, either by increasing share prices (making stock and stock options more valuable), or increase cash bonus incentives. Watts and Zimmerman (1978) argue that management's position on a proposed accounting standard is influenced by the likely effects of that standard on the firm's taxes, regulation, political costs, information production costs and management compensation plans. The first four factors increase managerial wealth by increasing cash flows, and hence the share price. The last factor may increase managerial wealth by altering the terms of incentive compensation. Watts and Zimmerman (1978) tested their theory empirically by examining corporate

responses to the proposed reporting requirement concerning the effects of general price-level changes in financial statements. Their findings indicate that a possible explanation for why firms may expend resources on trying to influence the determination of accounting standards is provided by the government intervention argument. That is, firms that have (actual or potential) contact with governments, directly through regulation (such as public utility commissions, the Interstate Commerce Commission or the Civil Aeronautics Board) or procurement, or indirectly though possible governmental intervention (antitrust, price controls, etc.) may affect their future cash flows by discouraging government action through the reporting of lower net income.

Dhaliwal (1982) extends Watts and Zimmerman's (1978) research by examining the impact of some additional variables on the lobbying behaviour of management. In particular, he hypothesises that a firm's capital structure is an important determinant of management's lobbying position on an accounting standard. Thus, he suggests that, because of the protective covenants that typically exist in loan agreements, firms with higher leverage will oppose accounting standards that decrease reported income and equity or increase the volatility of reported earnings. Dhaliwal's (1982) results are consistent with the hypothesised relationship between the capital structure of the firm and the lobbying behaviour of its management.

Furthermore, Hill et al. (2002) extend the previous research on lobbying behaviours by examining the direct link between lobbying behaviour and the effect of the proposed standard on net income. In particular, they examined whether economic self-interests affect corporate lobbying on disclosure, especially on (a) whether to disclose similar or identical information in proxy statements versus annual reports (i.e. a venue choice between proxy and annual

reports), and (b) the choice between disclosure via summary information in footnotes versus disclosure via pro forma income statements (i.e. a format choice within the annual report). The results of the study indicate that differences in corporate lobbying positions on disclosure relate to the value of corporate stock-based compensation (SBC). In particular, the more wealth management holds in the form of stock options, the more likely managers will be to oppose disclosing SBC information in annual reports, even though proxy statements already disclose SBC information for firms' top five executives.

The previous literature has also used Positive Accounting Theory to study the incentives influencing decisions to lobby accounting standard-setting bodies on specific issues. These studies examine how motivations for lobbying may affect respondents' inclinations for or against accounting standard adoption.

Kelly (1982, 1985) finds that lobbying positions in opposition to FAS No.8 occurred where firms held large proportions of remuneration as incentive compensation, greater leverage, larger asset size, and lower percentages of management stock ownership. She also documents that firms that both lobbied and changed financing or operating activities were characterised by greater leverage, larger asset size, and lower management stock ownership.

In addition, Deakin (1989) investigated the association between management lobbying on accounting for oil- and gas-producing activities and the effect that the method might have on firms' cash flows and on accounting numbers restricted by the terms of firms' contracts. The results of this study are consistent with the hypotheses proposed in the positive theory literature.

Dechow et al. (1996) employed complementary research approaches to evaluate the nature and extent of the predicted economic consequences of accounting for

stock-based compensation (FASB, 1993). They examined the characteristics of firms lobbying against the 1993 ED (FASB, 1993), the characteristics of firms using employee stock options under the original financial reporting rules, and stock price reactions to announcements concerning the new financial reporting rules. Their results are consistent with the hypothesis that opposition to expensing of stock options arose from concerns about potential costs stemming from reporting higher levels of top-executive compensation. They find strong evidence that the likelihood of submitting a comment letter opposing mandatory expensing was systematically related to the use of stock options in top-executive compensation. Relative to a size- and industry-matched control sample, top executives of firms submitting comment letters that opposed mandatory expensing received a greater proportion of their compensation from options and higher levels of total compensation, and their firms used options relatively more intensively for top-executive compensation than for other employees. Furthermore, they find no evidence to support the claim that expensing employee stock options increases the cost of raising new capital by reducing reported earnings.

Based on Watts and Zimmerman's (1978) Positive Accounting Theory, Saemann (1997) tested whether comment letters filed during the FASB's due process were indicative of overall corporate opinions or only of a specific interest group. The research also offers explanations for the relationship between filing choice and accounting preferences. The results confirm previous findings that filing choice relates inversely to positions taken on certain issues and, more importantly, that filers and non-filers have differing accounting concerns. Large companies, which tend to be more active filers than their smaller peers, are more likely to oppose

and comment on measurement issues that lead to increases in reported income levels and volatility.

Georgiou (2004) studied the potential importance of non-observable forms of lobbying that may be used by corporate managers to influence accounting standard-setting bodies. In particular, this study investigated other forms of lobbying in the context of the ASB standard-setting process. It examined the lobbying activity of a sample of UK listed companies over a six-year period from 1991 to 1996, which were the first six years of the ASB's tenure. Through a questionnaire survey, the research aimed to learn about the lobbying methods used by the sample companies, the stages of the process at which they employed these methods, and the perceived effectiveness of their lobbying. The results support the prediction that, in order to maximise the probability of influencing the standard setter, companies employ a number of lobbying methods which they rate differently in terms of their effectiveness. Importantly, however, companies that use these methods are more often those that also use comment letters than those that do not. These findings suggest that comment letters are likely to be a good proxy of at least the direct corporate lobbying activity to which the ASB is subject. The findings also suggest that companies do not consider lobbying at the early stages of the process to be more effective than belated lobbying, and thus do not appear to concentrate their lobbying activity on these early stages.

In addition, Georgiou (2010) documents evidence from a sample of UK investment management firms relating to perceptions of and participation in the IASB process. The findings indicate that the level of lobbying activity undertaken by investment management firms is lower than that of other interest groups such as financial statement preparers. Georgiou (2010) claims that this confirms that the use of comment letters is significantly associated with the use of other

lobbying methods. Importantly, however, the study also reveals that, rather than using comment letters, a substantial number of firms choose to lobby through indirect means, notably by appealing to a report users' representative organisation such as the Institute of Management Accountants. Another significant finding of this study relates to reasons for not participating in the process. Most respondents indicated that the most important reasons were the cost of lobbying and the belief that other users would represent their interests. Finally, the study also found that respondents to the questionnaire did not perceive report users' groups to be particularly influential in the IASB process.

A gap exists with regard to pension accounting standards, since very little research has focused on the potential consequences of and lobbying activities relating to pension accounting. Francis (1987) examines firms lobbying against the FASB's 1982 proposals on pension accounting which (a) required recognition of the funded status of pension plans on the balance sheet, (b) constrained flexibility when determining pension expenses, and (c) gave rise to volatility because of the way that pension expenses would be determined. His findings suggest that firm size as well as the adverse impact on reported numbers explain the decision to lobby.

In addition, Kreuze et al. (1993) examined relationships between the proposals included in the ED of Statement 106: *Employer's accounting for postretirement benefits other than pensions*, the final standard and the views expressed in comment letters submitted to the ED. They find that issues partly or wholly modified in the final standard were strongly opposed by the majority of comment letter submitters. In addition, they find that none of the issues with which respondents agreed was modified.

More recently, Fried (2012) examined the lobbying behaviour of firms in response to the ED for SFAS No. 158 on pensions in the US, which proposed recognition of the funded status disclosed under the accounting standard prevailing at the time on the balance sheet. The research suggests that firms that opposed recognition had large under-funded plans, and the magnitude of balance sheet adjustments under the proposed changes explained their opposition to the amendments in the ED.

With reference to IAS19R, recent research by Chircop and Kiosse (2015) focuses on explaining the drivers of lobbying behaviour regarding a pension accounting standard in an IASB context. They argue that different institutional settings and proposed amendments and different firm characteristics may drive submitters to lobby the IASB differently. This study also sought to shed light both on factors that drove firms to submit comment letters and on factors that influenced how submitters lobbied on two critical proposals in the 2010 ED – abolition of the corridor method when recognising actuarial gains or losses, and elimination of the ERR. Based on a sample of 63 industrial firms, they examined responses to questions relating to full recognition and elimination of the ERR. They found that signalling, as captured by both pension plan size and the percentage of shares available for trading, influenced the decision to lobby. With regard to abolition of the "corridor method", the results suggest that firms with unrecognised net actuarial losses were less likely to agree with the removal of the corridor method. Furthermore, in analysing firms' responses to the replacement of ERR with a discount rate on plan assets, they find evidence to support the hypothesis that firms with wider spreads between the ERR on plan assets and the discount rate were less likely to agree with the proposal.

Building on previous studies and research by Chircop and Kiosse (2015), this research conducts a comprehensive analysis of the lobbying behaviours of respondents to the ED of IAS19. In particular, it examines the comment letters of all industrial firms that responded to questions 1, 2 and 5 on the ED proposals relating to recognition, questions 3, 6, 7a and 7b on the proposals relating to presentation, and questions 8, 9 12 and 7c on the proposals relating to disclosure.

Following publication of the ED in April 2010, the IASB received 225 comment letters from around the world from various stakeholder groups, including academics, accounting firms, actuaries, financial institutions, industrial firms and accounting standard setters. Among these groups, the most comment letters were submitted by industrial firms (28%, N=63), while the least were submitted by academics (1%). Industrial respondents were chosen for analysis, not only because they represented the largest number of comment letters received by the IASB, but also because of the direct impacts of IAS19R on those entities.

The study first analysed the Basis for Conclusions (BC) set out by the IASB regarding the amendments in the ED. These were developed as the IASB considered issues based on staff research and recommendations, as well as comments received on the discussion paper and suggestions made by the IFRS Advisory Council, working groups and accounting standard setters and arising from public education sessions (IFRS, 2011). A BC is the main instrument through which the IASB defends the proposals in an ED and gains acceptance of and legitimacy for a new or amended accounting standard (Larson, 2007).

Second, the research built a descriptive analysis of the arguments used by industrial respondents to oppose and raise issues against the proposals in the ED. Manual textual analysis was conducted on these opposing opinions to

understand their incentives for lobbying against the ED. The analysis also aimed to paint a comprehensive picture of the economic consequences of IAS19R adoption from various angles relating to the recognition, presentation and disclosure amendments of IAS19R.

3.3 Main Proposals of the ED and the Basis for Conclusions

As discussed in Section 2.1.2 (Chapter 2), IAS19R and its ED proposed several significant changes regarding the recognition, presentation and disclosure of pension information in the financial statements of sponsor firms. This section details the BC as a background to all the important proposals in the ED.

This BC summarised the IASB's considerations in reaching its conclusions in the ED. The IASB developed it after considering all comment letters received on the discussion paper published in March 2008, as well as input obtained from meetings with the IASB's Employee Benefits Working Group, users, preparers, regulators and others interested in the financial reporting of employee benefits (IASB, 2010).

The table below classifies the proposal of ED draft into three main categories – Recognition, Presentation and Disclosure. It also summaries the questions sent out for comment and briefly basis for conclusion of the IASB. After that, the sub-sections following provide detail and describe these proposal as well as their basis.

Table 1: Summary of main proposals and Basis for Conclusions

	Question number		Question	Summary of Basis for Conclusions
Recognition	1.	Elimination of corridor method	The exposure draft proposes that entities should recognise all changes in the present value of the defined benefit obligation and in the fair value of plan assets when they occur. (Paragraphs 54,61 and BC9-BC12) Do you agree? Why or why not?	**BC10**: More useful information to users: More relevant to users and easier to understand Improves comparability
	2	Full recognition of unvested past service costs	Should entities recognise unvested past service cost when the related plan amendment occurs? (Paragraphs 54, 61 and BC13) Why or why not?	**BC13**:Because the attribution of unvested benefits to past service results in a liability as defined by IAS19 Most respondents to the discussion paper agreed with this view.
	5	Elimination of ERRs	The exposure draft proposes that the finance cost component should comprise net interest on the net defined benefit liability (asset) determined by applying the discount rate specified in paragraph 78 to the net defined benefit liability (asset). As a consequence, it eliminates from IAS19 the requirement to present an expected return on plan assets in profit or loss. Should net interest on the net defined benefit liability (asset) be determined by applying the discount rate specified in paragraph 78 to the net defined benefit liability (asset) Why or why not? If not, how would you define the finance cost component and why? Paragraphs 7, 119B, 119C and BC23-BC32)	**BC23**: Part of the change in plan assets arises from the passage of time, and this part offset the interest cost that arise from DB obligation **BC24**: in principle, the change in value of any asset can be divided into an amount that arises from the passage of time and other changes. **BC25**: the amount arising from the passage of time does not have the same implications for predicting the amounts, timing and uncertainty of future cash flows as the amount that represents all other changes **BC26**: More importantly, the IASB found it is difficult to find a practical method for identifying the change in the FC of PA as the result of passage of time→thus proposes the discount rate **BC26(a)**: The ERR could not be determined in an objective way

3			Should entities disaggregate defined benefit cost into three components: service cost, finance cost and remeasurements? (paragraphs 119A and BC14-BC18) Why or why not?	**BC14**: the components of pension expense have different predictive values. Also improve comparability **BC16**: growth in PA compensate the growth in PL overtime
4		Components of Pension Expense and Presentation of each components	Should the service cost component exclude changes in the defined benefit obligation resulting from changes in demographic assumptions? Paragraphs 7 and BC19-BC23) Why or why not?	**BC21**: changes in demographic assumptions cause a re-estimate of service costs and need to be treated in different way with service cost
6			Should entities present: Service cost in profit or loss? Net interest on the net defined benefit liabilities (asset) as part of finance costs in profit or loss? Remeasurements in other comprehensive income? (Paragraph 119A and BC35-BC45) Why or why not?	**BC37**: present all gains and losses in P&L would combine items of different predictive value Some components of pension expense are conceptually different from other items in P&L This presentation help reflect risk clearly Reporting all changes in P&L would result in volatile swings in P&L that are not related to the entity's underlying operations.
7		Settlements and curtailments	Do you agree that gains and losses on routine and non-routine settlement are actuarial gains and losses and should therefore be included in the remeasurement component? (Paragraphs 119D and BC47) Why or why not?	**BC47:** gains and losses arise on settlements is an experience adjustment arising in the period thus need to be treated as the same way with actuarial gains and losses
			Do you agree that curtailments should be treated in the same way as plan amendments, with gains and losses presented in profit or loss? (Paragraphs 98A, 119A(a) and BC48)	**BC48:** The IASB views that curtailment is similar to a plan amendment thus similar treatment with past service cost (plan amendments treatment

Disclosure	8	Disclosure Objectives and new disclosure requirements	The exposure draft states that the objectives of disclosing information about an entity's defined benefit plans are: To explain the characteristics of the entity's defined benefit plans; To identify and explain the amounts in the entity's financial statements arising from its defined benefit plans; and To describe how defined benefit plans affect the amount, timing and variability of the entity's future cash flows. (Paragraphs 125A and BC52-BC59) Are these objective appropriate? Why or why not? If not, how would you amend the objectives and why?	**BC52:** the IASB observed that: in some case DB plans are material to an entity's financial statements Many respondent to Discussion Papers that IAS19 do not provide adequate basis and information Also volume of disclosures about defined benefit plans risks reducing understandability and usefulness by obscuring information **BC55:** the IASB proposes not to provide guidance in IAS19 on materiality nor requirement disclosures but provide objectives for disclosures➔ give entities flexibility to decide on an appropriate level of disclosure **BC57:** the IASB consider it should require the same disclosure objective for DB plans as for long-term financial instruments and insurance contracts, However, the IASB conclude that some disclosure requirements are not match and suitable.
	9		To achieve the disclosure objectives, the exposure draft proposes new disclosure requirements, including:	**BC63:** Users of financial statements have consistently emphasised the fundamental importance of sensitivity analyses to their understanding of the risks underlying amounts included in the financial statement
			Information about risk, including sensitivity analyses (paragraph 125C(b), 125I, BC62(a) and BC63-BC66)	**BC62:** Actuarial risk is a significant risk for any entity with a DB plan
			Information about the process used to determine demographic actuarial assumptions (paragraphs 125G(b) and BC60(d) and (e));	**BC60d:** the IASB proposes not to require specific disclosures about mortality rates. Instead, entities will use judgment to determine whether assumptions about mortality rates require disclosure.
			The present value of the defined benefit obligation,	

			modified to exclude the effect of projected salary growth (paragraphs 125H and BC60(f));	**BC60(f):** ABO in some circumstances, this amount is similar to the amount of the entity's obligation if the plan were terminated, and some users believe that is relevant additional information.
			Information about asset-liability matching strategies (paragraphs 125J and BC62(b)); and	**BC62(b)**: the IASB believes that information about an entity's use of asset-liability matching investment strategies or the use of techniques, such as annuities or longevity swaps, to manage longevity risk, would be informative.
			Information about factors that could cause contributions to differ from service cost (paragraphs 125K and BC62(c)).	**BC62(c)**: the Board believes that it is useful to highlights possible differences between current service cost and cash contribution in the near future. This might be the case if a surplus or deficit affects the level and timing of an entity's contributions.
			Are the proposed new disclosure requirements appropriate? Why or why not? If not, what disclosures do you propose to achieve the disclosure objectives?	
	7c	Disclosure of settlements and curtailments	Should entities disclose (i) a narrative description of any plan amendments, curtailments and non-routine settlements, and (ii) their effect on the statement of comprehensive income? (Paragraphs 125C(c), 125E, BC49 and BC78) Why or why not?	**BC49:** the IASB propose the similar disclosure requirement to the previous IAS19
	12	Other comments	Do you have other comments about the proposed disclosure requirements? (Paragraphs 125A-125K and BC50-BC70)	

3.3.1 Proposal in Recognition of Defined Benefit Pension Items

3.3.1.1 Elimination of the corridor method and deferred recognition

The ED proposed that entities should recognise all changes in DBO and in the FVPA when those changes occur. Under the previous version of IAS19, sponsor firms had the option to recognise all gains and losses when they occur, but also permitted actuarial gains and losses to be left unrecognised if they were within a "corridor" and to defer recognition of actuarial gains and losses outside the corridor. The ED proposed to remove the latter option.

In the ED, the IASB invited comments relating to this issue in answer to Question 1 in the Invitation to Comment section of the ED:

> Question 1: The exposure draft proposes that entities should recognise all changes in the present value of the defined benefit obligation and in the fair value of plan assets when they occur. (Paragraphs 54, 61 and BC9-BC12). Do you agree? Why or why not?

In the BC, points 9 to 12, the IASB's view was that immediate recognition would provide the most useful information to users of financial statements because (a) the resulting amounts in the statements of financial position and comprehensive income would be relevant to financial statement users and easier for them to understand, and (b) it would improve comparability between entities by eliminating the options under the previous version of IAS19.

The IASB also documented responses to the discussion paper that had raised several concerns about the proposal for immediate recognition as follows:

- *Measurement model required further work*: The respondents argued that the measurement model needed substantial review, and that it would be disruptive to move to immediate recognition. Until that review was performed, some believed that the existing "corridor method" was needed to take account

of the long-term nature of DBO. The IASB agreed with the view that the measurement model was in need of review; however, it did not see the necessity for deferred recognition as part of the measurement model. Furthermore, the IASB aimed to improve the faithfulness of entities' obligations; thus, it believed that immediate recognition need not be delayed until further work on the measurement model was completed.

- *Relevance of information*: Some concerns related to the view that some changes to net DB liabilities occurring in a period are not relevant to the measurement of long-term liability. This is because past gains or losses may be offset by future losses or gains. However, the IASB argued that it is not inevitable that future gains or losses will occur and that they will offset past losses or gains. Indeed, if the actuarial assumptions at the end of the reporting period are valid, future fluctuations will offset each other and will not offset past fluctuations.

- *Volatility*: This was the most common concern raised by respondents. Their view was that volatility in reported profits or losses might result if an entity reported all changes in net DB liabilities (assets) in each period, and that this volatility would impede year-on-year comparability and would obscure the profitability of the entity's core business. Responding to this concern, the IASB stated that a measure should be volatile if it faithfully represents transactions and other events that are themselves volatile; thus, financial statements should not omit such information. On the other hand, the IASB also compromised with the view that financial statement reporting should aim to be most useful to users; thus, it also proposed to require a presentation that would permit financial statement users to isolate re-measurements of entities' net DB liabilities (assets).

- *Behavioural and social consequences*: Several respondents argued that full recognition might have adverse behavioural and social consequences. For example, entities might try to eliminate short-term volatility by making long-term, economically inefficient decisions about the allocation of plan assets, or by making socially undesirable amendments to plan terms. The IASB emphasised its responsibility for setting standards resulting in the provision of relevant information that faithfully represents an entity's financial positon, financial performance and cash flows so that users of that information can make well-informed decisions. Therefore, the IASB denied any intended consequences of the proposal.

- *Potential effect on debt covenants*: Other respondents raised a concern that immediate recognition might lead to difficulties with debt covenants based on earnings or net assets and impair entities' ability to pay dividends because of legal restrictions based on amounts in financial statements. However, according to the IASB, it is up to the entity and the holder of a covenant to determine whether to insulate a debt covenant from the effects of a future IFRS and to determine how they might renegotiate any existing covenant so that it reflects only changes in an underlying financial condition rather than those resulting from changes in reporting.

In summary, the IASB believed that financial reporting would be significantly improved if entities were to recognise all changes in the FVPA and in long-term employee benefit obligations in the period in which those changes occur.

3.3.1.2 Full recognition of unvested past service costs

The IASB believed that attribution of unvested benefits to past service results is a liability, as defined by IAS19; thus, entities should fully recognise unvested past

service costs when the related plan amendment occurs. The IASB set up Question 2 for comments:

> Question 2: Should entities recognise unvested past service cost when the related plan amendment occurs? (Paragraphs 54, 61 and BC13) Why or why not?

Most respondents to the discussion paper agreed with the IASB's view on unvested past service costs. As a result, the ED confirmed this preliminary view and proposed to implement it.

3.3.1.3 The finance cost component

The ED proposed that the finance cost component should comprise net interest on net DB liabilities (assets), determined by applying the discount rate specified for DBO to net DB liabilities (assets). This proposal would implicitly remove from IAS19 the requirement to present an expected return on plan assets in the P&L.

All respondents were asked to answer Question 5 of the ED to comment on this proposal:

> Question 5: The exposure draft proposes that the finance cost component should comprise net interest on the net defined benefit liability (asset) determined by applying the discount rate specified in paragraph 78 to the net defined benefit liability (asset). As a consequence, it eliminates from IAS19 the requirement to present an expected return on plan assets in profit or loss.
>
> Should net interest on the net defined benefit liability (asset) be determined by applying the discount rate specified in paragraph 78 to the net defined benefit liability (asset)? Why or why not? If not, how would you define the finance cost component and why? (Paragraphs 7, 119B, 119C and BC23–BC32)

The IASB argued that the ERR on plan assets might be subjective. Thus, it proposed to alter this return by separating the return on plan assets into two parts. The first part arises as the result of the passage of time, and offsets interest costs arising from DBO. The net amount would be recognised in the P&L under finance

cost components. The second part of the plan asset return would join the re-measurement amount and be recognised in OCI. In support of this proposal, the IASB also stated that the amount arising from the passage of time does not have the same implications for predicting the amounts, timing and uncertainty of future cash flows as the amount that represents all other changes in the FVPA. Therefore, to be consistent with the IASB's proposal that components of DB costs with different predictive implications should be presented separately (BC14-BC18), it proposed that the finance cost component should not include returns on plan assets that do not arise from the passage of time.

3.3.2 Proposals in Presentation of Define Benefit Pension Items

3.3.2.1 Components of Pension Expense and presentation of each components

> Question 3: Should entities disaggregate defined benefit cost into three components: service cost, finance cost and remeasurements? (Paragraphs 119A and BC14-BC18) Why or why not?

The ED proposed to disaggregate DB costs into three components: service costs, finance costs and re-measurement. The IASB stated that the components of DB costs have different predictive values; thus, disaggregation is essential for a proper understanding of changes in DBO and in plan assets during the period.

The IASB suggested the separation of re-measurement from service costs and interest costs. Unlike service costs and interest costs, re-measurement represents period-to-period fluctuations in the long-term value of DBO and plan assets, indicating the uncertainty of future cash flows. Thus, it conveys little information about their likely amount and timing.

Both service costs and interest costs convey information that helps users to assess the likely amount and timing of future cash flows. However, the IASB

believed that growth in plan assets compensates for growth in DBO over time. Specifically, growth in plan assets and DBO as a result of the passage of time is offset in each period; thus, the IASB proposed the separation of service costs and finance costs or DB expenses. In turn, finance costs should consist only of returns as a result of the passage of time from both plan assets and DBO.

> Question 6: Should entities present: Service cost in profit or loss? Net interest on the net defined benefit liability (asset) as part of finance costs in profit or loss? Remeasurements in other comprehensive income? (Paragraphs 119A and BC35-BC45) Why or why not?

In this proposal, the IASB considered how entities should present service costs, finance costs and re-measurement. While it acknowledged the limitation of IAS1: *Presentation of Financial Statements*, with a clear principle of identifying items that should be recognised in OCI rather than in P&L, based on preliminary views on this topic in the discussion paper, the IASB focused on three possible approaches to the presentation of information on these components. One approach proposed that entities should present all gains and losses in the P&L. The other two proposed that entities should present some gains and losses in OCI.

Based on responses to the discussion paper, the IASB was convinced to retain the presentation of some gains and losses in OCI. In particular, it stated that, although changes in DBO and plan assets which are part of the re-measurement component may provide information that helps with assessment of the uncertainty of future cash flows, many respondents regarded those changes as not providing useful information about the likely amount and timing of such cash flows. Thus, the IASB decided to present the re-measurement component as an item of OCI.

Relating to the finance cost component of pension expenses, both the IASB and respondents to the discussion paper agreed that there was no basis for presenting finance costs for long-term employee benefits in one section of the statement of comprehensive income and finance costs for other liabilities in a different section of that statement. Thus, the ED proposed that the finance cost component of pension expenses should be presented in the P&L statement.

3.3.2.2 Settlements and curtailments

The IASB proposed to treat gains and losses arising from settlements in the same way as actuarial gains and losses presented in the re-measurement component. It argued that these gains and losses arise from differences between a DBO, as re-measured at the transaction date, and the settlement price. Thus, these gains and losses experiences adjustment similar to AGL resulting from changes in assumptions.

In addition, the IASB viewed curtailments as similar to plan amendments because these occur when an entity takes an action that reduces the benefits provided by the plan to employees. Therefore, the ED proposed that curtailments should be treated in the same way as plan amendments, with gains and losses presented in the P&L. The IASB set up question 7 relating to these issues:

Question 7:

(a) Do you agree that gains and losses on routine and non-routine settlement are actuarial gains and losses and should therefore be included in the remeasurement component? (Paragraphs 119D and BC47) Why or why not?

(b) Do you agree that curtailments should be treated in the same way as plan amendments, with gains and losses presented in profit or loss? (Paragraphs 98A, 119A(a) and BC48)

(c) Should entities disclose (i) a narrative description of any plan amendments, curtailments and non-routine settlements, and (ii)

their effect on the statement of comprehensive income? (Paragraphs 125C(c), 125E, BC49 and BC78) Why or why not?

3.3.3 Proposals in Disclosure of Defined Benefit Pension Items

According to the IASB, the objectives of disclosing information about an entity's DB plans are: to explain the characteristics of the entity's DB plans; to identify and explain amounts in the entity's financial statements arising from its DB plans; and to describe how DB plans affect the amount, timing and variability of the entity's future cash flows. Based on these objectives, the ED proposed several additional disclosure requirements for DB plan sponsors.

3.3.3.1 Information about risk, including sensitivity analyses

The ED proposed that entities should provide a narrative description of exposure to risk arising from their involvement with the plan. Specifically, actuarial risk is a significant risk for any entity with a DB plan; thus, the ED proposed that entities should provide quantitative disclosures, including sensitivity analyses of actuarial assumptions used to determine DBO.

After considering all views and opinions from respondents to the discussion paper, the IASB decided to focus the application of sensitivity analysis on DBO and current service costs. In relation to sensitivity analyses of the effect of changes in actuarial assumptions on net DB liabilities (assets), the IASB concluded that this would be difficult to achieve. First, it was unclear how a change in market interest rates would apply to plan assets. If plan assets are invested in equities and bonds, analysis showing only the direct effects of changes in market interest rates will show the effect on bonds, but show no effects on equities. Thus, this may not provide meaningful information. Second, net DB liabilities (assets) include the effect of the asset ceiling, but it would be difficult to determine how changes in assumptions change the effect of this asset

ceiling. Therefore, because of these issues relating to plan assets, the ED required sensitivity analyses only for DBO.

The IASB also believed that it would be useful to financial statement users for sponsor firms to provide sensitivity analyses of service costs, since this test would give an indication of variability in service costs recognised in the statement of comprehensive income. However, service costs are determined at the beginning of the period; thus, it had been argued that there is no effect from changes in assumptions at the end of the period. Consequently, the ED proposed that entities should perform sensitivity analyses for service costs using changes in assumptions that were reasonably possible at the start of the reporting period.

3.3.3.2 Information about the process used to determine demographic actuarial assumptions

Since the IASB intended to keep the requirement under the previous version of IAS19 for entities to provide quantified disclosures on actuarial assumptions (para. 125G (a)), it believed that it was necessary to provide extensive supplementary information that would help to interpret the information disclosed. Specifically, the ED proposed that entities should explain how they had determined their actuarial assumptions. For example, if an entity had developed mortality assumptions using a standard table, it should disclose the source of that information and when it was compiled.

3.3.3.3 Present value of DBO, modified to exclude the effect of projected salary growth

The IASB proposed that entities should disclose DBO excluding projected growth in salaries (ABO). According to the IASB's view, this amount is similar to the amount of the entity's obligation if the plan were to be terminated, and it believed

that this information would provide relevant additional information to some users. Moreover, it did not think that this information would be costly to provide because it would use inputs that were needed to determine DBO.

3.3.3.4 Information about asset–liability matching strategies

The ED proposed that entities should disclose details of any asset–liability matching strategies used by the plan, including the use of annuities and other techniques such as longevity swaps to manage longevity risk.

Although the IASB initiated this disclosure requirement, it acknowledged that many entities would try to mitigate the risk arising from DB plans through their investment strategies; thus, such a requirement would result in generic disclosures that might not provide enough specific information to be useful to financial statement users.

3.3.3.5 Information about factors that might cause contributions to differ from service costs

The ED proposed that entities should provide a narrative discussion of factors that might cause contributions over the next five years to differ significantly from current service costs over that period. For example, entities should disclose how they expect any surplus or deficit to affect the level and timing of their contributions over the next five years, and the period over which they expect the surplus or deficit to disappear.

According to the IASB, the original objective of this requirement was to provide an indicator to predict the best estimate of the contributions expected to be paid to the plan in the future. However, the IASB also believed that such information would be useful if it were to highlight possible differences between current service costs and cash contributions in the near future. This might be the case if a surplus

or deficit were to affect the level and timing of an entity's contributions. The IASB believed that this would be more useful than merely disclosing expected payments in the next year, because those payments depend partly on estimated service costs, and also because mere disclosure of the amount would not indicate likely trends beyond the following year.

Question 8 of the ED summarised the objectives of disclosing information about entities' DB plans, and Question 9 asked respondents for their opinions on the specific new disclosure requirement in the ED.

Question 8: The exposure draft states that the objectives of disclosing information about an entity's defined benefit plans are:

(a) to explain the characteristics of the entity's defined benefit plans;

(b) to identify and explain the amounts in the entity's financial statements arising from its defined benefit plans; and

(c) to describe how defined benefit plans affect the amount, timing and variability of the entity's future cash flows. (Paragraphs 125A and BC52–BC59) Are these objectives appropriate? Why or why not? If not, how would you amend the objectives and why?

Question 9: To achieve the disclosure objectives, the exposure draft proposes new disclosure requirements, including:

(a) information about risk, including sensitivity analyses (paragraphs 125C(b), 125I, BC60(a), BC62(a) and BC63–BC66);

(b) information about the process used to determine demographic actuarial assumptions (paragraphs 125G(b) and BC60(d) and (e));

(c) the present value of the defined benefit obligation, modified to exclude the effect of projected salary growth (paragraphs 125H and BC60(f));

(d) information about asset-liability matching strategies (paragraphs 125J and BC62(b)); and

(e) information about factors that could cause contributions to differ from service cost (paragraphs 125K and BC62(c)).

3.4 Comment Letter Analysis

This part provides a manual textual analysis on 63 comment letters sent by industrial firms in response to the ED of IAS19R. The analysis looks at the

answers of these respondents on those questions relate to recognition (questions 1, 2 and 5), presentation (question 3,6, 7a and 7b) and disclosure (7c, 8, 9 and 12). The two most significant change of IAS19R, namely the full recognition of pension assets/liabilities and elimination of the ERR, will be discussed separately in sub-section 3.4.1 and sub-section 3.4.2 respectively. Following sub-sections of 3.4.3 and 3.4.4 provide the analysis of presentation and disclosure requirement, respectively, of ED

3.4.1 Recognition of all changes in present value of DBO and fair value of plan assets

The majority of respondents (83%) expressed their support for the proposal and agreed with the IASB's BC. Most acknowledged that application of the full recognition proposal would improve the comparability and transparency of financial statements. They also supported elimination of the corridor method, as the amount of changes recognised in the present value of DBO and the FVPA according to the "corridor method" is very arbitrary. Several respondents questioned why the corridor needed to be exactly 10 per cent, and why the amount outside the corridor should be recognised over the expected average remaining working lives of employees. Furthermore, they supported the proposal since it would support the alignment of IFRS with US GAAP which was in process at that time.

However, among these supportive respondents, a significant number viewed the proposal as a pragmatic solution. Together with respondents who opposed or partly agreed, they raised several concerns about the full recognition proposal. First, most opposing respondents reminded the IASB about the very long-term nature of pension plans. Thus, pension plan accounting based on point-in-time market indicators may result in a large amount of short-term volatility that distorts

the representational faithfulness of the true economic conditions of a pension plan and its ability to fulfil future benefit obligations (Altria comment letter, 2010).

Moreover, according to Air France–KLM (Calavia, 2010), applying full recognition to DBO would lead to volatility in this number on the face of the balance sheet, since the discount rate may be very volatile. For example, in the case of Air France–KLM, the average discount rate decreased by about 0.75 points between 31 March 2009 and 31 March 2010, which would increase DBO by 1.5 billion Euros. Company policy (strategy, management, etc.) has no impact on external factors such as the discount rate, which is more driven by the global economy (Calavia, 2010). This does not appear to be a particularly strong argument; all companies are impacted to some extent by developments in the global economy, airlines as much as any.

The comment letter from British American Tobacco Holdings (BAT) addressed the same concern that "point in time" valuations of pension assets and liabilities are extremely volatile, and this volatility does not reflect the underlying business impact nor the way in which items are managed (BAT comment letter, 2010).

Most respondents in the sample supported removal of the corridor method as they did not believe there was a "sound conceptual basis" for its application (AngloAmerican comment letter, 2010). Bayer's comment letter argued that "there is no specific reason why the corridor should be exactly 10% or why the amount outside the corridor should be recognized over the expected average remaining working lives of the employees" (Bayer comment letter, 2010).

However, removal of the corridor method would be equivalent to removing the smoothing mechanism from the balance sheet, as discussed in Chapter 2.

Entities that would experience a significant impact from this change had an incentive to resist this proposal. For example, British Airways claimed that:

> the abolition of the "corridor method" would add to the confusion surrounding accounting for defined benefit schemes since the use of the corridor approach takes into consideration that in the long term, actuarial gains and losses may offset one another. It allows a portion of the actuarial gains/losses outside of the corridor to be spread over the expected active life of the employees (British Airways comment letter, 2010).

However, British Airways, during the years of 2009 and 2010, had attempted to fix deficits in its DB pension schemes. According to Croft and Powley (2015), in 2010, British Airways agreed not to pay dividends for at least two years because, in December 2009, the company deficit had deepened from £1.9 to £3.7 billion. This suggests that the company used this opportunity to lobby the accounting standard setter and sought to avoid full recognition of pension deficits on its balance sheet, consistent with the Positive Accounting Theory argument. Additionally, their argument regard to the increase of confusion if the "corridor method" is eliminated is very disingenuous since it has been argued by academics that the "corridor method" was a source of confusion since it allowed sponsor to keep part of net pension assets/ liabilities off-balance sheet.

Second, the IASB itself admitted that there were still

> ... unresolved issues that relate to performance reporting including: (1) whether financial performance included those items that are recognised directly in equity; (2) the conceptual basis for determining whether items are recognised in the income statement or direct in equity; (3) whether net cumulative actuarial losses should be recognised in the income statement, rather than directly in equity; and (4) Whether certain items reported initially in equity should subsequently be reported in the income statement (recycling) (BC 41, IAS19 Exposure Draft, 2010).

Thus, some opposing respondents urged the IASB to review the concept of "presentation of financial statements" (IAS1) prior to revising IAS19. Air France–KLM suggested that a clear definition of net income and OCI would enable easier

discussion of revisions to other standards. It emphasised that this clear definition should be a prerequisite for revision of IAS19. It also believed that the wide range of existing regulations, markets and legal forms in the definition of pension plans should be taken into consideration prior to applying the concept of fair value to long-term employee benefit reporting. Similarly, BAT raised a concern about the need for a fundamental review of pension accounting and, in particular, the linked issues of measurement and performance reporting.

In some other comment letters, respondents suggested that the IASB should consider differences between and uses of net income and OCI by proposing a presentation model that would generally reflect recurring activities in net income and non-recurring activities in OCI (Constellation Energy comment letter, 2010).

Third, many respondents shared concerns about the impact of the ED on their financial statements and, ultimately, on their firms' management activities. Air France–KLM feared that, as a consequence of the ED, management of funding would be driven by accounting rules rather than management rules (decisions led by economic factors). In relation to pension assets being valued at fair value, all variation is immediately recognised. Thus, according to Air France–KLM, when a company chooses to manage its pension funds dynamically (for example, to align with the age of participants), varying levels of funds are invested in stocks. Stock returns are rarely in line with the "expected return on assets" rate on a yearly basis but, on average over a long period, the return on assets is close to the expected return on assets. Thus, if the assets were required to be recorded at their fair value, major impacts would be recorded on the balance sheet each year. For example, Air France–KLM's pension fund amounted to €13,487 million as of 31 March 2010. The difference between the actual and expected return on assets amounted to €2,788 million for the year ending 31 March 2010 and €1,854 million

for the year ending 31 March 2009. Respondents from Air France–KLM argued that this situation would lead to solutions where managers would try to avoid such "up and down" movements and invest pension funds only in bonds in order to secure the level of funds. It is easy to understand why managers may prefer not to have to recognise such significant divergences between actual and expected returns on their balance sheets. But it is hard to believe that investors could not consider such divergences to be relevant, regardless of accounting treatment.

Similarly, Altria raised a concern about short-term volatility, which might distort the representational faithfulness of the true economic conditions of a pension plan and its ability to fulfil future benefit obligations. In addition, it believed that accounting for such long-term benefit arrangements should not result in the unintended consequence of plan sponsors trying to manage the effects of short-term volatility, thereby sub-optimising long-term investment returns and cash contribution policies. However, its 2010 financial statement showed that 58 per cent of its pension plan investment was in equities, with only 20 per cent in corporate bonds. This may therefore have been a disingenuous comment, as the company seemed to want to have the flexibility to invest heavily in equities with no obligation to report the inevitable short-term volatility in asset values.

AMX highlighted the impact of the proposal on entities' financial statements. According to its response, entities would be expected to report lower net income, have lower net income volatility but higher OCI and retained earnings volatility, and recognise larger liabilities or smaller assets in their statements of financial position. It also feared that the proposals might cause entities to become more conservative in their investment strategies relating to DB plans, which might lead to higher costs of providing the associated benefits.

Beside the potential impact of ED on financial statements, interim reporting was one of the most contentious issues raised by many respondents. Specifically, IBM was concerned because plan re-measurements (including demographic updates, determining liability assumptions, and obtaining asset valuations for illiquid plan assets) may take several months to complete for large plans. Under US GAAP, companies that comply with US SEC requirements for quarterly filings do not perform quarterly re-measurements of pension costs unless a material change to the plan has occurred. According to IBM, these re-measurements are performed annually and are used as a basis for the following year's pension costs. Also, given the very tight deadlines for quarterly reporting with the SEC in the US (40 days for large, accelerated filers) and the fact that many companies release key financial data within weeks of the quarter close, they did not believe that full quarterly re-measurement would be practical, especially for multinational companies with numerous plans worldwide and in countries that may not have the actuarial infrastructure to support this increase in workload (IBM comment letter, 2010).

Chevron Corporation viewed the requirement for such interim re-measurement as representing a significant change from current measurement practices, particularly for entities using the "corridor method". It suggested that the IASB should consider clarifying this issue, either in IAS19 or in paragraph C4 of IAS34: *Interim Financial Reporting*, to identify the types of events that an entity should consider as triggers for re-measurement of benefit obligations and plan assets (Chevron comment letter, 2010).

Moreover, many respondents doubted the relevance of quarterly re-measurement and whether the benefits would be worth the additional costs, given the long-term nature of net obligations and net assets. All of them suggested that

the IASB should limit re-measurement to an annual requirement. They believed that this would reduce the cost of complying with IFRS (and US GAAP), while at the same time significantly improving the benefits to both the company and investors (CIGNA, Entergy, Exxon Mobil, Goodyear, IBM, PepsiCo, Pfizer, PPL, Rayonier, Raytheon, Telefonos de Mexico, US Steel Corporation, United Technologies and Verizon Communications comment letters, 2010).

3.4.2 Recognition of financial costs and elimination of ERR

Most respondents (81%) were opposed to the proposal to recognise financial costs and eliminate ERR, and argued that the BC was insufficiently convincing. In particular, in opposing the IASB's opinion that ERR is susceptible to management manipulation, many respondents argued that it involves no more or less judgment than any other pension assumption. Thus, elimination and replacement of ERR with the discount rate would essentially swap one estimate for another, while judgement would be involved in either case (Alcoa, Nestlé and Progress Energy comment letters, 2010). Such comments can be criticised; bond yields provide a clear basis for the discount rate assumption, and other assumptions can be appropriately benchmarked, for example mortality assumptions to mortality tables and salary growth rates to published data.

In addition, many respondents shared their confidence in the process of determining the ERR. For example, Eli Lilly stated that its assumptions were reviewed and approved by various internal and third-party organisations, including actuaries and internal and external auditors. Similarly, to other public companies, it was also subject to oversight by the SEC (Eli Lilly comment letter, 2010).

Some respondents also added that changes to ERR assumptions should not occur often. They agreed that assumptions about ERR on plan assets are principles-based assessments that should be encouraged, as opposed to being prescriptive. Moreover, accounting for pensions involves more subjectivity than virtually any other area of accounting, so the expected return should not be singled out as something different (BAT comment letter, 2010).

Several respondents oppose to the IASB basis of conclusion used to address the issue of "anti-abuse clauses", that is the elimination of the ERR is a solution to fix the opportunistic assumption of this rate. They argued that this issue should be a problem for regulators and auditors. Thus, this should not be a basis for standard setting (Nestlé and Siemens comment letters, 2010).

Although these comments had the merit of addressing the reliability of the ERR, previous empirical evidence reveals that managers of sponsor firms do behave opportunistically when determining the ERR on pension assets (Amir and Benartzi, 1998; Li and Klumpes, 2007). Most sponsor firms have ERRs higher than the discount rate; thus, elimination of the ERR would lead to increases in pension expenses recognised in the P&L. These factors may have influenced their lobbying against the proposal.

Some respondents shared opinions that differed from the IASB's view that changes in the value of any asset may be split between an amount that arises from the passage of time and other changes. Alcoa believed that the concept of a return due to the "passage of time" is vastly different when looking at bonds versus equities. It argued that the current yield on bonds is clearly achievable simply by holding the bonds until maturity, whatever that maturity may be. The expected return on equities, on the other hand, has no equivalent fixed "passage

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of time" component, as dividend payments are not contractual to equities as interest payments are to bonds. Thus, this lack of a true "passage of time" return component in equities is, in fact, the basis for the higher returns that are achievable and observable in that asset class versus bonds (Alcoa comment letter, 2010). This was an effective counter argument to the IASB's view that "the change in value of any asset can be divided into an amount that arises from the passage of time and other changes" (BC24, IAS19 Exposure Draft, 2010).

In addition, BAT stated that the liability charge reflects the unwinding of the discount (a true time value of money), while the asset effect should be different as it should reflect returns on various assets, i.e. the investment strategy. Thus, it did not see matching the "time value of money" for assets as being an improvement on use of the "expected return" in the previous version of IAS19 (BAT comment letter, 2010).

In addition, an argument raised in relation to the pension obligations part of net interest cost calculations was that the use of high-quality corporate bonds reflects not only the time value of money, but also a credit risk element above government bonds (Norsk Hydro comment letter, 2010). Thus, respondents believed that the IASB would not achieve its goal of reflecting only the net effect of the passage of time. According to the IASB's argument, a risk-free rate would be more appropriate.

The most significant issue raised by respondents generally related to the "true and fair view" of pension accounting as a result of this proposal. Air France–KLM argued that management policy would not be reflected in income statements. For example, whether funds were allocated 100 per cent to stocks or 100 per cent to bonds, the same rate would be used to record the impact in the income

statement. Many other respondents claimed that this method would ignore the economic realities of their plans and permanently exclude from the determination of pension expenses the excess returns that have historically been shown to be achieved by equities as opposed to bonds (see Table 2, Panel A). Specifically, AngloAmerican worried that this change would result in a net interest calculation that would not reflect actual circumstances, and would therefore be of less value to financial statement users. It also believed that this change would not support the IASB's aim of increasing comparability across companies. These entities implicitly emphasise management perceptions of the important role of net income over OCI and comprehensive income numbers. The IASB's view was that, although it acknowledged that this accounting treatment would not present a "true and fair view" of pension expenses represented in P&L statements, the economic substance of transactions would still be recognised in comprehensive income numbers. These arguments suggested the incentive for boosting net income through higher ERRs, as previously discussed.

Furthermore, the use of a very volatile "spot rate", not linked to plan assets, to calculate a long-term return is inconsistent with the need to calculate a very long-term expected return (Calavia, 2010). But this argument appears to ignore the requirement that the discount rate is supposed to be based on the yield on bonds which match the duration of pension obligations.

Some respondents used this opportunity to raise concerns about the practical issue of discount rates in countries where there is no deep market for high-quality corporate bonds. For example, in New Zealand there is no deep market, so Fletcher Building would have to use the government bond rate to represent the high-quality bond rate (Fletcher Building comment letter, 2010). The strong opposition expressed in its comment letter may have been because the earnings

rate in its pension plan is much higher than the government bond rate; thus, the impact of the new proposal would significantly under-state income and over-state expenses.

Finally, some respondents warned the IASB that elimination of the requirement to incorporate an ERR on plan assets in the P&L might lead entities to alter their investment strategies to manage actual performance to the discount rate. In turn, investment strategies limited to discount-rate performance might inhibit plan sponsors' ability to manage pension assets in the most financially disciplined manner, and might become detrimental to companies' shareholders. As such, strategies would be likely to require additional benefit plan funding in excess of that required when investing for the long term in a mix of equities and fixed-income securities (See Table 2, Panel A). This argument appears to imply that companies lack confidence in the governance procedures around their own pension funds to determine appropriate investment strategies. Some respondents also raised concerns about potentially broader capital market considerations if pension plans were to begin to move out of investments in equity securities.

3.4.3 Presentation

3.4.3.1 Disaggregation and presentation of pension expense components

Sixty-five per cent of respondents from industrial companies supported the proposal to require disaggregation of pension expenses into three components. Most of those opposed to the proposal argued that DB costs are a component of total compensation and should be displayed consistently with other employee compensation costs. Interest and service costs are direct costs of providing these compensation benefits and should be reported as operating expenses in the current period. Air France–KLM believed that presenting these several cost

components as an aggregated item under a single heading would allow financial statement users to identify the impact of pension costs in one line (Calavia, 2010). Nevertheless, many supporters of the proposal disagreed with this argument since they believed that the disaggregated presentation of pension expenses would improve rather than diminish financial statement users' understanding.

In its comment letter, Nestlé also lobbied against this proposal and explained that its income statement is presented by function, where readers expect treasury-related activities to be shown within finance costs rather than pension-related interest costs. However, this argument was quite specific to Nestlé.

Progress Energy also opposed the proposal and suggested that the components of DB costs should be disclosed in notes. It believed that this would be sufficient to enable financial statement users to unravel the complexity of pension expenses.

Many other respondents agreed with the IASB about the presentation of re-measurement in OCI, but they still suggested that the service and interest cost components of pension expenses should not be separated. For example, Jardine Matheson raised a concern that the proposed form of presentation might distort users' understanding of a company's financial performance. For example, it would affect certain performance indicators, such as interest cover. Interest cover takes into account the net interest expenses/income on net pension plans (which bears no direct relationship to companies' financing structure), distorting assessment of companies' ability to pay interest on outstanding debts. This argument would not be approved by many academics or practitioners, since several previous studies have found that pension plans should be viewed as part

of a company's capital structure (Klumpes, 2001; Glaum, 2009; Kiosse et al., 2007; Klumpes and Whittington, 2003.

Many other respondents expressed the opinion that presenting service and interest costs together would allow financial statement users to identify the full cost of pension programmes (AMX, Canada Poster Corporation and Infosys Technologies comment letters, 2010).

With regard to the principle of presentation, many respondents questioned the IASB's rationale for determining what to present within or outside net income, and when and on what basis to recycle items in order to ensure that users are provided with useful net income figures.

Although, the IASB stated that development of these principles was still in progress, respondents said that they chose to base the presentation of their financial statements on two main principles. Most believed that it is a sound principle that all management decisions should be reflected at some time in the net result (income statement), which continues to be the principal performance measure (See Table 2, Panel B). Therefore, the provision of additional benefits to employees and choices to invest in different kinds of plan assets are management decisions, the effects of which should all ultimately be reflected in net income. These respondents appreciated the importance of "recycling". They argued that a change in an asset or liability may not be relevant to performance analysis in one period, but may be relevant to such analysis in a later period. Recycling is the only way to guarantee the relevance of net income in a context where values recognised in statements of financial position do not always represent an entity's business model.

In its comment letter, Altria argued that failure to recognise the impact of re-measurement through the P&L in subsequent periods might be misleading to financial statement users with regard to the true cost of DB plans. For example, if an entity's benefit plan were to lose a significant portion of its asset value in a particular period, the change in asset value, net of amounts in net interest costs, would be reflected in OCI in the period of occurrence. However, if the entity funded the asset losses within the same period to return the benefit plan to its original funded position, the future net interest costs in the P&L would remain unchanged, and therefore the true cost of the asset losses would never be reflected through the P&L (Altria comment letter, 2010).

The "recycling" method applied to re-measurement amounts does not strictly uphold the principle of recognising all management decisions in income statements. Re-measurement amounts may be divided into actuarial gains and losses associated with plan obligations and the difference between expected and actual returns on plan assets. The actual return on plan assets may reflect at some level the performance of managers. However, actuarial gains and losses relating to pension obligations are the result of changes in macro assumptions; therefore, only amounts relating to the performance of management should be recycled back to the P&L statement in subsequent periods. Some respondents tried to persuade the IASB that "actuarial gains and losses associated with the plan obligation should be treated similarly to actual returns on plan assets" (Entergy Corporation comment letter, 2010). Thus, they suggested that the "recycling" method should be applied to the whole amount of re-measurement.

In contrast, some other respondents believed that income statements should only reflect recurring activities, while OCI should contain non-recurring activities. These respondents supported the presentation of re-measurement in OCI. They

argued that, by including all recurring items in OCI, presentation of the net amount of profits or losses would avoid volatility arising from economic events and offer financial statement users more relevant information. Also, some effects of such events may be expected to be reversed over time (Bayer, Constellation Energy, Larsen and Toubro comment letters, 2010). However, Bayer still emphasised that "a clear policy on the recycling … should be developed in the long term" (Bayer comment letter, 2010).

Other respondents exploited their answers to these questions to lobby against abolition of the corridor method and elimination of the ERR. Altria argued that the "corridor method" for recognition of re-measurement amounts in the P&L through a systematic and rational method of amortisation more faithfully represents the long-term economic impact of DB plans which, by their nature, are long-term arrangements. Also, it stated that the "corridor method" is similar to other long-term arrangements such as debt, which require amortisation of premiums and discounts. However, it did not suggest that the corridor method has different accounting implications. That is, it would allow managers to keep part of the net amount of pension liabilities/assets off the balance sheet and smooth the pension accounting numbers.

Other respondents used this opportunity to re-emphasise their opposition to the elimination of the ERR. Canada Poster Corporation raised a concern that the predictive value of finance costs shown on a standalone basis would be further reduced by the use of a discount rate rather than the ERR if the IASB required sponsor firms to present service and interest costs separately in P&L statements.

3.4.3.2 Settlements and curtailments

The IASB defines a curtailment as either:

(a) A significant reduction in the number of employees covered by a plan; or

(b) An amendment to the terms of a DB plan so that a significant element of future service by current employees will no longer qualify for benefits, or will qualify only for reduced benefits. (IAS19, 2011, para. 105)

A non-routine settlement is a transaction (other than routine payment of benefits to or on behalf of employees) that eliminates all further legal or constructive obligations for part or all of the benefits provided under a DB plan.

Thirty-five per cent of respondents in the sample did not entirely agree with the IASB's proposal on routine and non-routine settlements. Some of these respondents argued that differences between the settlement price and DBO are not entirely the result of re-measurement, since part of such differences will reflect a transfer of the risk of the obligations (premium payments, etc.). Specifically, they agreed with the IASB about the treatment of routine settlement gains and losses as part of re-measurement. However, they considered non-routine settlements to be more likely to arise from the direct action of reporting entities, with many similarities to curtailments (AstraZeneca, Deutsche Post DHL and Eli Lilly comment letters, 2010).

Nestlé suggested that if management were to decide to close a plant for strategic or other reasons, then the impact of this event on pension obligations should be recorded in the income statement since it would reflect an event relating to management actions. Again, it claimed that it would be premature to decide on whether this should flow through OCI and not the income statement because "performance" had not been properly defined by the IASB.

In addition, BASF stated that neither plan participants nor third parties would carry out settlement transactions that provided neither a risk premium nor a profit

margin. Therefore, the difference between the settlement price and the DBO at the settlement date, as if the plan were continued and paid out by the plan sponsor, is not entirely the result of re-measurement. Similarly, to Nestlé, it argued that at least part of the difference reflects compensation for the transfer of the risk of uncertain future cash flows.

Other respondents raised a concern that distinguishing between curtailments and settlements is sometimes very complex. Both curtailments and non-routine settlements are likely to arise from actions of the company (rather than actions of an individual pension scheme member), and they believed that it would be more appropriate to record such corporate actions in the P&L. Many other firms (e.g. Bayer, BT, Deutsche Post DHL, ING, PPL and Shell) also noted that, in practice, a transaction may have characteristics of both non-routine settlement and curtailment. They therefore argued that it might not be possible or meaningful to allocate resulting gains or losses between P&L for curtailments and OCI for non-routine settlements. They suggested that curtailments and non-routine settlements should be treated similarly and reported in OCI. Nevertheless, in their comment letters, they failed to illustrate their arguments with any examples.

Regarding the accounting treatment of curtailments, most respondents agreed with the IASB's proposal. They agreed that curtailments should be treated in the same way as plan amendments, with gains and losses presented in the P&L. According to their comment letters, curtailments are very similar to past service costs in that they reflect decisions made by management, which should be reflected in the P&L.

On the other hand, Ford offered a different view, stating that plan amendments are different from curtailment transactions. It argued that plan amendments are

often initiated through employee/employer negotiations, and change employees' expectations of the level of future benefit payments from the employer. Plan amendments may be positive or negative. In contrast, curtailments, like settlements, are triggered by actions taken by the plan sponsor, and permanently reduce or eliminate benefits.

Although some other respondents agreed with the IASB that curtailments should be treated in the same way as plan amendments, they believed that amounts relating to curtailment, prior service costs and other plan amendments are significant events requiring re-measurement; therefore, these amounts should be components of OCI rather than P&L (URS and PepsiCo comment letters, 2010). In addition, FirstEnergy argued that, owing to the long-term nature of pension obligations, they will not be satisfied for many years. Therefore, it believed that reporting the effects of settlements and curtailments in current earnings would not reflect the economics of long-term pension obligations (FirstEnergy comment letter, 2010). These arguments appear to represent lobbying activities, since the respondents were trying to convince the IASB to recognise all curtailments and settlements together in the OCI, without providing any underlying justification for their arguments.

3.4.4 Disclosure

In general, most respondents supported the objectives of disclosure as suggested by the proposal. However, many raised concerns about the volume of new disclosures on DB plans proposed in the ED. AstraZeneca warned the IASB that such a volume of disclosures would reduce the understandability and usefulness of financial statements by obscuring important information. Although it recognised that certain current disclosure requirements were removed in the ED, it believed that the level of proposed additional disclosure requirements more

than outweighed the volume of disclosures no longer required. It recommended that the IASB should review the level of mandated disclosures to further reduce their excessive volume (AstraZeneca comment letter, 2010).

Similarly, BAT accused the IASB of supporting excessive disclosure. Relating to the IASB's argument that the new disclosure requirement would not be costly to produce and would therefore pose no problems (paras 125H and BC60f), it argued that if the logic used by the IASB in deciding to include disclosure was deemed acceptable, then a whole series of further requirements could be justified in many different standards (BAT comment letter, 2010).

Some other respondents considered the new disclosure requirements to be highly technical and difficult to understand for most financial statement users. Of the five new disclosure requirements in the ED, the requirement on risk, including sensitivity analyses, attracted the highest rate of support (40%), although respondents raised several concerns. Most of those opposed were worried that sensitivity analysis might be impractical. For example, Altria argued that sensitivity analyses might not be warranted because the necessary information could not be extrapolated due to the non-linear nature of some factors relating to the PBO and service costs, and that such information might mislead financial statement users who do not understand relationships between significant assumptions (Altria comment letter, 2010).

Similarly, BASF argued that interrelationships between various parameters of actuarial assumptions would negatively impact on the validity and predictive value of the proposed sensitivity analyses. Due to these interrelationships, actuarial assumptions should be defined as mutually compatible, and consistency

is particularly important for assumptions about inflation, discount rates and salary growth (BASF comment letter, 2010).

In line with BASF, Chevron believed that the proposed analysis would be difficult to apply in practice, as it would require entities to identify "reasonable possible" changes in actuarial assumptions. It suggested that, rather than focusing on selecting the types of changes to present, the analysis should focus on providing users with an understanding of the impact of specific changes in assumptions and allowing users to use this information to model their own "reasonably possible" scenarios. Sensitivity information should be provided on changes in the discount rate using a consistent parameter, for example one per cent for changes to benefit costs and a quarter per cent for changes to benefit obligations. It believed that this would provide users with comparable information between periods, as well as providing users with information to model their own scenarios.

Other respondents suggested that the analysis should be limited to the most significant sensitivity, i.e. discount rates on DBO (see Table 2, Panel C). Hydro-Québec suggested that sensitivity analysis should be used for net amounts recognised on balance sheets, not for benefit obligations or service costs (Hydro-Québec comment letter, 2010).

Fletcher Building stated that sensitivity analysis would be extremely complex for groups that have many plans across a number of countries. As they all have different discount rates, different salary growth projects and different mortality rates, it did not see how any meaningful sensitivity analysis could be conducted across these plans (Fletcher Building comment letter, 2010).

Most respondents commented negatively on the other proposed disclosure requirements, including the process used to determine actuarial assumptions,

ABO disclosure, asset–liability matching strategy and factors that cause contributions to differ from service costs. In its comment letter, AngloAmerican argued that a significant element of the process used to determine actuarial assumptions would be generic across many companies, and this disclosure requirement would be unlikely to present any beneficial information. Furthermore, its inclusion might result in significant generic information being included, making key information more difficult to identify (AngloAmerican comment letter, 2010). Chevron added that actuaries use relatively standard processes to develop most of these assumptions. Therefore, this information might not be relevant to investors as it would not provide any entity-specific information and would add to the already extensive disclosures on DB plans (Chevron comment letter, 2010).

The requirement to disclose the present value of DBO, modified to exclude the effect of projected salary growth (ABO), received extensive and negative comments. Balfour Beatty stated that the disclosure of ABO would not provide any decision-useful information. In addition, it argued that disclosure of two figures for the present value of DBO, one of which excludes a factor that is almost certain to occur, would be confusing to many readers of financial statements (Balfour Beatty comment letter, 2010). Other respondents also stated that, in many countries, legal or practical reasons make a plan settlement or freezing impossible or impracticable; therefore, this sort of disclosure requirement might be misleading at a group level.

Few respondents agreed with the IASB regarding the requirement to disclose asset–liability matching strategies. First, they argued that such disclosures are highly technical and might mislead financial statement users. AngloAmerican also believed that this requirement would be likely to result in generic information

across companies and would be of limited value (AngloAmerican comment letter, 2010).

In addition, British Airways commented that decisions about asset–liability matching strategies are the responsibility of pension fund trustees, whereas financial statements are the responsibility of company directors. Thus, disclosing information about matching strategies within financial statements would overlap with trustees' responsibilities and would therefore be inappropriate.

Similarly, AstraZeneca argued that the investment strategies of many DB schemes are not determined by the sponsoring company but by the trustees of the pension scheme. Thus, disclosure of asset–liability matching strategies would create a misleading impression to financial statement users that the preparing company had a greater influence over the pension fund investment strategy than might in reality be the case. AstraZeneca claimed that such disclosures would be excessive and not in accordance with the stated aim of the IASB in publishing the ED to simplify information for financial statement users. Therefore, other respondents suggested that such information should be disclosed only if material (AstraZeneca comment letter, 2010), although it is difficult to believe that they could not be. Responses of this type are arguably disingenuous, as for most schemes in the UK sponsoring companies have the power to nominate the majority of trustees (see table 3). Therefore, these sponsor firms would have significant power to influence trustee boards and the strategies adopted by trustees, so users would find such disclosures valuable.

Regarding the disclosure requirement for factors that might cause contributions to differ from service costs, many respondents raised a concern that this proposal was too wide and would lead to a boilerplate list of risks. They also worried about

the practical application of this proposal. In particular, BASF argued that multinational entities usually have many different plans in many jurisdictions. Therefore, on a consolidated basis, adequacy of funding could not be judged by using the proposed funding ratio. Reliable conclusions regarding the adequacy of funding and future funding ability should be derived from the overall financing situation of the reporting entity, which is described in cash flow statements and in the discussion and analysis of management reports. BASF believed that disclosures on future benefit payments would also be more useful than the proposed narrative discussion. It further argued that comparison is only meaningful for fully-funded plans. For pension plans operating in the US or the UK, where the objective of full funding dominates, the requested narrative discussion might help to draw useful conclusions. However, many companies outside these regions, particularly in Europe, apply different funding approaches (BASF comment letter, 2010).

Several respondents disagreed with the IASB on the requirement to combine disclosure under the "old" IAS19 post-employment benefits (e.g. pensions) with other employee benefits (e.g. jubilee payments) under the "new" (i.e. ED) long-term employee benefits, which would cause significant additional work and costs for companies. Since typical liabilities and provisions for such "other long-term employee benefits" are much smaller than those for pensions, they did not believe that this would justify the additional costs, work and disclosure pages required. (Deutsche Post DHL comment letter, 2010).

In general, most respondents opposed the IASB's proposals for disclosure and claimed that the level of disclosure relating to pension plans at that time were sufficient. Adding any additional requirements would be very costly for

companies, and these costs would exceed the benefits of the new disclosure requirements, which many entities failed to recognise in these new proposals.

3.5 Conclusion

In June 2011, the IASB published IAS19R, which implemented significant changes to the recognition, presentation and disclosure of employee benefit accounting in financial statements.

These changes had a significant impact on (1) how sponsor firms recognise net pension assets/liabilities on the balance sheet, (2) the calculation and recognition of pension expenses, (3) the presentation of re-measurement (actuarial gains and losses), the various treatments of which under the previous IAS19 had been heavily debated by academics and practitioners on their various treatments under the previous IAS19, and (4) the level and volume of disclosures on pension schemes, which had been criticised as "excessive" under the previous version of IAS19.

Relating to the first and third points, full recognition of all changes in the present value of DBO and in the FVPA when they occur effectively removed application of the corridor method, which was a smoothing mechanism for net pension assets/liabilities and pension expenses under the previous IAS19. This had a significant impact on companies who used the corridor method to keep actuarial gains and losses off the balance sheet. These entities must recognise actuarial gains and losses in full on their balance sheets under OCI.

The second point addressed the requirement regarding how sponsor firms calculate and recognise pension expenses. That is, it had an impact on the

calculation of expected returns on pension plan assets, as it replaced the ERR with a discount rate, and thus had an impact on reported profits.

The ED also added significant new requirements for sponsor firms' disclosure on pension schemes. These new disclosures included: (1) information about risk, including sensitivity analyses; (2) information about the process used to determine demographic actuarial assumptions; (3) the present value of DBO modified to exclude the effect of projected salary growth; (4) information about asset–liability matching strategies; and (5) information about factors that might cause contributions to differ from service costs.

This study has conducted analysis of comment letters sent by 63 industrial firms on the ED preceding IAS19R. It aimed to shed light on the common arguments presented by industrial sponsor firms, the comprehensive economic consequences of IAS19R, and whether lobbying behaviours were driven by the self-interests of senders based on Watts and Zimmerman's (1986) Positive Accounting Theory.

Most respondents supported the proposal to recognise all changes in DBO and in the FVPA when those changes occur. However, they raised several issues relating to the proposal. First, they reminded the IASB about the very long-term nature of pension liabilities. Thus, pension plan accounting based on point-in-time market indicators might result in a large amount of short-term volatility that would distort the representational faithfulness of the true economic conditions of pension plans and the financial and economic impact on sponsoring employers and their ability to fulfil future benefit obligations. Second, respondents also worried about the impact of this accounting proposal on the investment decisions of sponsor firms. In particular, they warned the IASB that this situation would lead

to a solution whereby sponsoring employers would try to avoid fluctuations and invest pension funds only in bonds in order to secure the level of funds.

In addition to the potential impact of the ED on financial statements, interim reporting was one of the most controversial issues raised by many respondents. The proposal would lead to re-measurement of pension items every three months, rather than annual interim reporting. This would quadruple the cost of preparing pension items. Thus, the respondents urged the Board to revise the proposal and suggested that requirement for interim reports on an annual basis would be more appropriate.

Another issue raised by both supporters and opposers related to revision of the concept in IAS1: *Financial Statements* and performance reporting. In particular, they urged the Board to revise and develop the basis on which items should be reported in either net income or OCI as a long-term development of pension accounting.

In relation to elimination of the ERR, many respondents opposed the proposal. The biggest issue raised by most respondents related to the implications for the "true and fair view" of pension accounting, as management policy would not be reflected in income statements. Specifically, reporting of interest income using a discount rate, typically based on market yields on high-quality bonds, on a mix of assets that might be heavily weighted toward equities, for example, would not provide clarity to financial statement users.

Furthermore, the use of a "spot" rate, unlinked to plan assets, would represent only a snapshot of a rate at a single point in time to calculate a long-term return, which would be inconsistent. Respondents believed this spot rate to be very volatile and therefore unsuitable for calculating a very long-term expected return.

In addition, the spot rate also raised debate because according to standard requirement, a yield on bond with duration similar to the one of pension liability should be used as discount rate, although, in practice, such bonds might not exist. Determination of discount rates relies mainly on the respective interpretations of management and various audit and actuarial firms. Moreover, it seriously affects comparability between pension plans operating in countries where there is or is not a deep market for high-quality bonds. For example, pension plans in deep markets for bonds, such as the UK, the US, Japan and part of the EU, would report materially lower pension liabilities than companies in much of Asia for reasons that are impossible to explain to most financial statement users.

Third, many respondents opposed the Board's BC in relation to the argument that ERR is susceptible to management manipulation. Based on their own experience, they stated that the process of estimating this rate was subject to many stages of verification and supervision. Therefore, they believed in the reliability of the ERR, regardless of many previous studies documenting the issue of opportunistic selection of ERR by sponsor firms (Amir and Benartzi, 1998; Li and Klumpes, 2007).

The Board's BC on separating returns on assets into value relating to the "passage of time" and "other" value also attracted many comments. Respondents argued that the "passage of time" values of equities and bonds are different in nature; thus, it is inappropriate to use a discount rate for pension plan assets which have components of both equities and bonds.

In relation to the issue of presentation in financial statements, respondents focused on two main principles. Some believed that it is a sound principle that all management decisions should be reflected at some time in net results (income

statements), which continues to be the principal performance measure. In particular, the ED proposal to present re-measurement in OCI was inappropriate without the application of "recycling". Re-measurement also includes actual returns on plan assets, which respondents believed are the result of management performance. Therefore, this re-measurement should be recognised at least once in net income.

In contrast, some other respondents believed that income statements should only reflect recurring activities, and OCI should contain non-recurring activities. These respondents supported the presentation of re-measurement in OCI. However, they also urged the Board to develop the principle of "recycling" as a long-term plan for pension accounting.

With regard to the proposal on settlements and curtailments, many respondents raised a concern that distinguishing between curtailments and non-routine settlements is sometimes very complex. In practice, a transaction may have characteristics of both a non-routine settlement and a curtailment, and therefore it may not be possible or meaningful to allocate resulting gains or losses between P&L for a curtailment and OCI for a non-routine settlement.

In general, most respondents supported the objectives of disclosure as suggested by the ED proposals. However, most were worried about the volume of the proposed new disclosures in relation to DB plans. They recommended that the Board review the level of mandated disclosures to reduce their excessive volume. In particular, they recommended that sensitivity analysis should be narrowed to key assumptions, such as interest rates, and should not be applied to PBO and service costs. Rather, they suggested that sensitivity analysis should be conducted on net pension assets/liabilities.

Most respondents voted against the new disclosure requirements on the process of determining actuarial assumptions, ABO, asset–liability matching strategy, and factors that might cause contributions to differ from service costs.

Overall, analysis of the arguments made by industrial entities suggests that the lobbying behaviour of this group against the IAS19 ED proposals related to elimination of the corridor method, abolition of ERR, and the new disclosure requirements. This is consistent with Positive Accounting Theory and the previous literature on participation in due process for accounting standard setting.

Table 2: Summary of arguments

General Themes	Responding Firms
Panel A: Recognition	
Question 1: Full recognition of all changes in PA and PBO	
Long-term nature of pension plans would not be faithfully reported using point-in-time reporting principle. This would cause volatility on balance sheets and in income statements.	Altria Group, Air France-KLM, AngloAmerican, British Airways, BAT, Hoffmann–La Roche, Shell, Telefonos de Mexico
Revision of the concept in IAS1: *Financial Statements* on performance reporting before revision of IAS19: *Employee Benefits*.	Air France–KLM, BAT, Constellation Energy, ING
Impact of proposals in ED: management of funding driven by accounting rules rather than management rules.	Air France–KLM, Altria Group, AMX, BAT, Deutsche Post DHL
Concerns about interim reporting.	Chevron, CIGNA, Entergy, Exxon Mobil, Goodyear, IBM, PepsiCo, Pfizer, PPL, Rayonier, Raytheon, Telefonos de Mexico, US Steel, United Technologies, Verizon
Question 5: Elimination of the ERR	
Opposition to the Board's argument that ERR is susceptible to management manipulation.	Alcoa, AngloAmerican, BP, BAT, Canada Poster Corporation, CIGNA, Deutsche Post DHL, Eli Lilly, Exxon Mobil, Ford, Hydro-Québec, Jardine Matheson, Kesa Electricals, Pfizer, Nestlé, PPL, Progress Energy, Sanofi–Aventis, Shell, Siemens
Opposition to the Board's view that changes in the value of any assets can be divided between amounts arising from the passage of time and other changes.	Alcoa, Altria, BAT, Canada Poster Corporation, CIGNA, Entergy, Norsk Hydro, Raytheon, Sanofi–Aventis, Shell
Concerns about the "true and fair view" of pension accounting.	Alcoa, Altria, AMX, AngloAmerican, Balfour Beatty, BASF, British Airways, BP, BAT, BT, Canada Poster Corporation, CIGNA, Eli Lilly, Entergy, Exxon Mobil, FirstEnergy, Fletcher Building, Ford, Hydro-Québec, Infosys, ING, Jardine Matheson, Kesa Electricals, Nestlé, Norsk Hydro, PepsiCo, Pfizer, PPL, Progress Energy, Rayonier, Raytheon, Sanofi–Aventis, Shell, Siemens
Concerns about using a "spot" discount rate for long-term items such as pension plans.	Altria, Balfour Beatty, British Airways, Eli Lilly, Entergy, Fletcher Building, Ford, Infosys, Jardine Matheson, Kesa Electricals, Norsk Hydro, Pfizer, Progress Energy, Raytheon, Sanofi–Aventis, Siemens
Concerns about the economic consequences of ERR elimination.	Altria, AMX, BASF (counter view), BAT, Deutsche Post DHL, Jardine Matheson, Nestlé, PPL, Shell
Panel B: Presentation	
Question 6: Presentation of pension expense components	
Presentation of net interest costs together with service costs.	AMX, Canada Poster Corporation, Fletcher Building, Hydro-Québec, Infosys, Jardine Matheson, Shell, SKF
Re-measurement amounts should be recycled back to P&L statements since part of these amounts reflect management operational decisions. The proposal also does not reflect the "true and fair view" of the cost of DB plans.	Altria, Canada Poster Corporation, Bayer, BAT, Entergy, Exxon Mobil, Progress Energy
Recurring activities should be presented in net income and non-recurring activities in OCI.	Bayer, Constellation Energy, Larsen & Toubro

General Themes	Responding Firms
Lobbying activities against abolition of the "corridor method" and ERR.	Altria, AMX, Canada Poster Corporation, FirstEnergy
Question 3: Disaggregation of pension expenses	
Simplify accounting for pensions by presenting net periodic pension costs as a global item under a single caption.	Air France–KLM, ING, Nestlé, Progress Energy, Rayonier, Sappi, Stagecoach
Settlements and curtailments	
Settlement transaction outcomes are not necessarily the result of re-measurement; non-routine settlements are more likely to arise from direct action of the reporting entity, and share many similarities with curtailment.	AstraZeneca, BASF, Deutsche Post DHL, Eli Lilly, Hoffmann–La Roche, Nestlé, PPL
Distinguishing between curtailments and settlements is sometimes very complex.	BASF, BT, Deutsche Post DHL, Ford, Shell
Are curtailment transactions decisions made by management or significant events requiring re-measurement?	British Airways
Both curtailment and settlement should be taken out of P&L since they are significant events that require re-measurement.	FirstEnergy, Ford, PepsiCo, Stagecoach, URS
Panel C: Disclosure	
Sensitivity analysis might be impractical due to the non-linear nature of some factors, and extremely complex for groups with several plans in different countries.	Altria, BASF, Fletcher Building, Nestlé, PepsiCo, Shell, Telstra
Sensitivity analysis should be limited to key assumptions.	Air France–KLM, AngloAmerican, Chevron, Deutsche Post DHL, FirstEnergy, Unilever
Sensitivity tests for PBO and service costs are inappropriate.	Goodyear, Hydro-Québec
Disclosure relating to processes used to determine actuarial assumptions are impractical, and would lead to boilerplate lists in financial statements because the process would be generic across many entities.	AngloAmerican, BASF, BP, Chevron, Hoffmann–La Roche, Pfizer, PPL, Shell, Telstra, Unilever
Disclosure of ABO would not provide any decision-useful information and might cause confusion.	AngloAmerican, AstraZeneca, Balfour Beatty, Deutsche Post DHL, BASF, BP, E.ON, Hoffmann–La Roche, Hydro-Québec, Kesa Electricals, National Grid, Shell, Telstra
Disclosures of asset liability matching strategies might be highly technical and might mislead financial statement users. Such disclosures might also be generic.	AngloAmerican, AstraZeneca, E.ON, Eli Lilly, FirstEnergy, Goodyear, Hydro-Québec, Shell, Telstra
Disclosure requirements for factors that might cause contributions to differ from service costs are too broad and might lead to a boilerplate list of risks.	AstraZeneca, Balfour Beatty, BASF, BP, Deutsche Post DHL, E.ON, Eli Lilly, Exxon Mobil, Goodyear, Hydro-Québec, Nestlé, PPL, Shell, Telstra, Unilever
Concern about requirement to combine disclosures under "old" post-employment benefits (pensions) and other employee benefits (jubilee payments).	Deutsche Post DHL, E.ON, Hoffmann–La Roche, Nestlé

Chapter 4: Impact of Adoption of IAS19 (Revised) on Pension Plan Asset Allocations

4.1 Introduction

Following chapter 3 that documents and summaries the potential economic consequence of pension accounting standard IAS19R adoption, this chapter focuses on studying and providing the empirical evidence on those economic consequence. Specifically, it studies the impact of proposals on "full recognition" of net pension asset/liability and the abolition of ERR on asset allocation of pension plan portfolio. Additionally, this chapter also annualizes how the pension Board characteristic would contribute to the impact of IAS19R adoption on pension plan asset allocation.

In June 2011, the IASB published an amendment to IAS19 (IAS19R), which was mandated in January 2013. IAS19R made significant changes to the disclosure and recognition requirements for pension surpluses/deficits and pension expenses.

In particular, IAS19R fundamentally changed the measurement of pension expenses by requiring plan sponsors to apply a discount rate to calculate expected returns on pension asset portfolios. Expected returns on pension assets are the offset part of pension expenses, estimated by multiplying the long-term ERR by the FVPA. Under IAS19, this ERR was estimated by the sponsor firm in accordance with the risk characteristics of the pension asset portfolio.

However, use of this ERR rather than the actual return rate has two main consequences. First, plan sponsors are able to anticipate and recognise in net income the benefits of investing in higher-risk versus lower-risk assets (equities

versus bonds), thus reducing pension expenses and boosting net income. Secondly, use of an ERR shields net income from the costs of investing in high-risk asset classes since the higher volatility of that investment is not reflected in pension expenses. In other words, IAS19 allowed companies' financial statements to recognise the benefits of investing in equity (or high risk taking), while not fully reflecting its costs. This asymmetry encouraged plan sponsors to engage in more risk taking than the optimal level, guided solely by economic and risk management considerations (Gold, 2005).

The passage of IAS19R effectively removed this asymmetry by requiring plan sponsors to use a single interest rate to obtain net interest costs. Pension schemes have liabilities to make payments in the future, and these cash flows are discounted with an interest rate. However, these pension schemes also make investments and expect to receive cash flows that will grow, not with an ERR but with the same interest rate as that used to discount liabilities. This allows for pension expenses to be determined by subtracting the earnings obtained on pension assets from the expenses incurred by liabilities. Therefore, IAS19R, amongst other provisions (see Appendix A), mandated a fundamental change in the way pension expenses are determined. First, it eliminates ERR as a separate assumption determined by managerial judgment: managers no longer have to determine a long-term ERR assumption. Second, it effectively replaces ERR with a discount-rate assumption, which has historically been suggested as the yield of high-quality corporate bonds that have currency and term matching the currency and estimated term of post-employment benefit obligations (IASB, 2009). Hence, by eliminating estimated ERR, IAS19R no longer allows firms to recognise in net income the benefits of investing in risky assets with high expected returns without bearing the cost. Therefore, to the extent to which boosting net income through

higher ERR is an important factor in allocating pension plan assets, this removal of ERR also removes the incentive for plan sponsors to invest in high-risk assets. Following the adoption of IAS19R, sponsor firms were expected to reduce their investments in high-risk securities such as equity.

In addition to the abolition of ERR, the IASB has also eliminated the options under IAS19 for recognising and presenting actuarial gains and losses. In particular, sponsor firms are no longer allowed to use the corridor method or income statement method to record actuarial gains and losses. Instead, entities must recognise all changes in the present value of DBO and in the FVPA when they occur, with the re-measurement (also known as actuarial gains and losses) being recognised in OCI (similar to the OCI method).

According to PwC (2011), companies that were previously using the "corridor method" are likely to have a more volatile balance sheet as a result, especially if their pension plans are invested mainly in equity securities. In particular, reporting actual returns on pension assets injects volatility into shareholders' equity, while recognised net pension assets/liabilities may form a significant portion of a company's book value and market capitalisation (Amir et al., 2010). Moreover, full pension recognition may have contractual implications. For contracts based on balance sheet figures, higher recognised debt increases the likelihood of violating existing debt covenants. Also, greater volatility in shareholders' equity increases the probability of violating equity-based covenants. Finally, a recognised pension deficit with a corresponding decrease in distributable retained earnings will decrease the ability to pay dividends (Amir et al., 2010).

Several respondents to the IAS19R ED shared their concerns about the impact of IAS19R on their financial statements and, ultimately, on their firms'

management activities. Air France–KLM feared that, as a consequence of IAS19R, management decisions would be driven by accounting rules rather than management rules. Specifically, it argued that this situation would lead to solutions where managers would try to avoid fluctuations on the balance sheet and invest pension funds only in bonds in order to secure levels of funding. Such movements from stock to bonds might create a crisis for financial markets. Similarly, America Movil SAB de CV (AMX) feared that the proposals might cause entities to become more conservative in their investment strategies relating to DB plans, which might lead to higher costs in providing associated benefits.

In addition, many respondents were opposed to the elimination of the ERR and raised a problem relating to the "true and fair view" of pension accounting as a result of this proposal. They warned the IASB that elimination of the requirement to incorporate an ERR in plan assets in the P&L might lead entities to alter their investment strategies to manage actual performance to the discount rate (e.g. IAS19R ED comment letters from AngloAmerican, Air France–KLM and CIGNA, 2010).

In order to examine the research question, this study applies a DID research design which compares shifts in asset allocations between the pre- and post-IAS19R periods of UK-listed firms with a matched control sample of US firms. There are two reasons for using this pre-treatment approach with one-on-one matching without replacement, using US sponsor firms as a control sample for UK sponsor firms. First, before international accounting standards were adopted in the UK in 2005, UK sponsor firms had been following FRS 17: *Retirement Benefits* to report on their DB pension plans. In general, FRS 17 and SFAS 158 under US GAAP are quite similar, suggesting similarity of institutional setting between UK and US sponsor firms. Second, prior to the adoption of IAS19R,

most US and UK sponsor firms chose to fully recognise pension surpluses/deficits on their balance sheets (as described in the section 2.1, sub-section 2.1.1, chapter 2); therefore, studying UK firms, will enable the income-driven incentive for sponsor firms' pension asset allocations to be distinguished from the balance sheet-driven incentive described in the previous literature (Amir et. al., 2010).

Based on a sample of 123 UK sponsor firms matched with 123 US control sponsor firms for a four-year window between 2010 and 2013 (984 firm years in total), after controlling comprehensively for determinants of equity investment, the results reveal that, relative to US sponsor firms, UK sponsor firms significantly decreased their level of equity investment in DB pension plans following the implementation of IAS19R.

In addition to the main test, several sensitivity analyses were conducted. First, the sample size was reduced to 88 UK sponsor firms by eliminating 35 firms that had more than 20 per cent investment in opaque asset categories (categorised as "Other" in the Capital IQ database), since no information is provided about the risk and return characteristics of these assets. The matching and DID examination process was then repeated (Sensitivity Test 1). Second, DID analysis was tried with alternative treatment events (the publication of IAS19R in 2011 and the adoption of IAS19R in 2013), retaining the same four-year time window (Sensitivity Test 2). Finally, the DID test was repeated for the two alternative treatment events (Years 2011 and 2013) and the main treatment event of the Year 2012, but with a narrower, two-year time window of one year before and one year after the treatment event (Sensitivity Test 3) (see Appendix B).

The results of the tests on the new sample of 88 UK sponsor firms support the hypothesis. However, the results of the later sensitivity tests suggest that UK

sponsor firms did not respond to IAS19R immediately. Since they had two years to prepare (from the publication of IAS19R in 2011 until IAS19R became mandatory in 2013), they gradually reallocated their DB pension plan assets in order to manage liquidity costs.

In addition to DID tests, the impact of IAS19R adoption across sponsor firms was also examined for European data using cross-sectional analysis similar to that of Amir et. al. (2010). This model was applied to test associations between changes in equity investment levels between the year prior to adoption of IAS19R (2012) and one year after adoption (2014), with measurement of the potential impact of IAS19R adoption on those firms. Similar to Amir et. al. (2010), the impact of the new pension accounting standard on sponsor firms was measured as: (1) the FVPA deflated by the book value of shareholders' equity in Year t, capturing the exposure of shareholders' equity to volatility in the market value of pension assets; and (2) PBO deflated by the book value of shareholders' equity in year t, capturing the exposure of shareholders' equity to volatility in discount rates. Since the amendment of IAS19R will also have had a significant impact on pension expenses reported in income statements, a third measurement was introduced to capture this impact on firms' financial reporting as pension expenses deflated by net income before pension expenses of firms in year t to capture the exposure of firms' net income to volatility in pension expenses, and thus asset allocations in pension asset plans. The model was first run using all firms in the sample, and then separately for each country.

Based on the sample of 253 sponsor firms across 9 countries, the results of tests on the entire sample reveal that reductions in equity investment levels following the adoption of IAS19R were more pronounced in companies with pension plans that were larger relative to shareholders' equity. On the other hand, the tests

separated by country provide mixed results. In particular, the results are only significant and have the expected sign in countries with historically high average equity investment levels, such as the UK. The outcome is less clear in other countries with historically low average equity investment levels.

This study contributes to two streams of literature. First, it contributes to the burgeoning literature on the "real effects" of accounting standards, postulating that how accountants measure and report economic transactions may impact on firms' real decisions (Kanodia, 2007). The empirical evidence on real effects has so far spanned a wide spectrum of accounting areas. The pensions area, in particular, has provided some prominent examples of accounting rules inducing real effects. For example, Mittelstaedt et al. (1995) show that the introduction of SFAS 106 (which required recognition of other post-employment benefits) reduced employers' willingness to provide these benefits in the first place. Similar effects are purported to have arisen from the gradual tightening of pension accounting rules that has brought pension assets and liabilities fully onto corporate balance sheets. Kiosse and Peasnell (2009) review the academic evidence on the extent to which changes in pension accounting rules have affected pension provision decisions.

Second, by demonstrating that the accounting regime may drive pension investment decisions, this study contributes to the literature on determinants of pension asset allocations. Over the years, many pension investment theories have been proposed, including the put option theory that PBGC insurance encourages plan sponsors to engage in excessive risk taking as they approach distress (Sharpe, 1976), and the tax arbitrage theory which predicts that the tax-sheltered nature of pensions should induce tax-paying firms to invest pension assets in bonds (Black, 1980; Tepper, 1981), and that a desire to avoid

contribution volatility will lead very under- and over-funded plans to invest more in bonds (Bader, 1991; Amir and Benartzi, 1999). Some commentators believe that pension plans are invested much more in equities than is predicted by modern financial theory (Gold, 2005).

This study provides empirical support for the explanation that this may be due to smoothing mechanisms in pension accounting rules. These findings will be of interest to regulators and standard setters. Pension-expense smoothing has long been debated in the US, which still relies on an ERR-based model for pension expenses. As the UK had a regime that was close to the US in terms of pension accounting standards, under both FRS17 and IAS19, the economic consequences of moving away from ERR-based smoothing in the UK may inform the debate on pension-expense smoothing under US GAAP.

Third, this research using a DID design provides reliable inferences for the causal effect of IAS19R adoption on asset allocations in DB pension plans.

This chapter is organised as follows. Section 4.2.1 describes the background to international pension accounting amendments and hypothesis development. This section conceptualizes the impact of the proposals of full recognition and abolition of ERR as well as the pension board characteristic on asset allocation of pension asset portfolio. The next section 4.3 includes separated subsections that describe the research designs and data selection tailored to each set of hypotheses. Section 4.4 provides descriptive statistics and section 4.5 discusses the empirical results. Section 4.6 presents sensitivity analyses. Section 4.7 discusses opportunities for further research, and Section 4.8 draws some conclusions.

4.2 Background and Hypothesis

4.2.1 The impact of full recognition of pension assets and pension liabilities on asset allocations of pension plans

Following Amir et al.'s (2010) argument, full recognition of pension items on the balance sheet will increase the volatility of total liabilities and shareholders' equity, and thus increase the likelihood of violating debt- and equity-based covenants. Moreover, a recognised pension deficit with a corresponding decrease in distributable retained earnings will decrease the ability to pay dividends. For instance, for Euronext Amsterdam-listed PostNL, with DB schemes covering 95,000 people including retirees, it was estimated in 2012 that the IAS19R change would force it to take a net loss of €1.08 billion. This would have wiped out its consolidated shareholders' equity, which stood at €1.03 billion. Jan Bos, PostNL's chief financial officer, said that the group would not be able to pay cash dividends if it had negative consolidated equity (Jones, 2012). Thus, in addition to the income-driven incentive discussed previously, the impact of the full recognition requirement might also shift pension assets from equities to debt securities to mitigate the effect of IAS19R on existing contracts.

Following the argument above, I predict that defined benefit pension plan sponsors would reduce the equity investment level following the year of IAS19R adoption in 2013

> **Hypothesis 1a**: Defined benefit pension plan sponsors in European countries would reduce risk taking in pension asset allocation following the adoption of IAS19R

However, it is conceivable that not all firms sponsoring pension plans were equally affected by the shift in the determination of pension expenses and full

recognition of changes in the value of pension assets and liabilities in IAS19R. Following Amir et al. (2010), the impact of the new pension standard was expected to be more significant when pension plans were larger relative to shareholders' equity. For example, Charter plc, a UK-based engineering company, reported 2003 pension assets with a market value of £462.2 million and shareholders' equity of £24.9 million. It was argued that a 5.4 per cent decline in the market value of pension assets, while holding pension liabilities constant, would eliminate the company's shareholders' equity. Furthermore, companies with larger pension plans would also experience larger actuarial gains/losses if more pension assets were invested in equity securities. To reduce the volatility effects of actuarial gains/losses on shareholders' equity, such companies would be motivated to shift pension assets from equities to bonds. This led to the next sub-hypothesis:

> **Hypothesis 1b**: The reduction in equity levels of DB pension plans following the mandatory introduction of IAS19R was more pronounced in firms with large pension plans relative to total shareholder equity, and with large pension expenses relative to net income.

4.2.2 The impact of ERR abolition on asset allocation of pension asset portfolio

This section first describes the relation of expense smoothing mechanism and risk taking in pension investment under the IAS19. Then, the following sub-section conceptualize how the proposal of ERR abolition would have impact on decision making and risk taking of pension asset portfolio

4.2.2.1 Implications of expense smoothing for risk taking in pension investments

The use of a long-term ERR rather than the actual return on plan assets is a fundamental feature of extant accounting regimes for pensions, in both current US GAAP and under the former IFRS regime. The consequences of this feature can be viewed in two closely-related ways. First, since ERRs are intended to be estimates of the long-term earning potential of assets in the pension trust, these rates do not fluctuate in the short term, resulting in an expected return component of pension expenses that is very sticky and smooth. Actual returns, on the other hand, may fluctuate significantly from year to year, especially when plan portfolios are heavily invested in equities or other high-risk asset classes. Therefore, the use of ERR protects net income from period-to-period volatility in actual returns. Second, the use of ERR allows benefits from higher risk investments in net income to be included in financial statements, as a higher-risk asset allocation strategy justifies the use of a higher ERR, which in turn reduces pension expenses.

In addition, investing in equities versus bonds (or, more broadly, in higher-risk versus lower-risk assets) brings both risks and rewards. Investing in equities is likely to yield higher returns over the long term, which should reduce sponsors' future contributions. However, returns are more volatile from period to period, and sponsors must bear the burden of that volatility, which may move plans from being well-funded in one period to substantially under-funded in a subsequent period, necessitating unpredictable cash contributions.

Under the IAS19, sponsors' net income did not reflect these costs and benefits symmetrically. Since pension expenses were calculated based on ERR, the accounting regime allowed plan sponsors to recognise the benefits of investing

in equities (or higher-risk assets) immediately. However, the fact that actual returns were only reflected in net income much later, or not at all, implies that the income statement was, at least for the foreseeable future, shielded from any correspondingly greater volatility as a result of investing in those higher-risk assets. Therefore, the former pension accounting standard recognised the costs and benefits of equity investment asymmetrically.

Thus, it is possible that this accounting regime may have induced plan sponsors to engage in more risk taking in pension investments than they would otherwise have undertaken under a more "neutral" accounting regime. For instance, Zion and Carcache (2003, 2005) and Gold (2005) document that pension assets were invested much more in equities than predicted by modern financial theory

4.2.2.2 The effect of ERR abolition and pension plan asset allocation

In most of the extant literature, firms are exogenously endowed with liquidating dividends that are independent of the accounting regime, and the role of accounting disclosures is to provide information about these dividends (Kanodia, 2007). For example, in relation to pension accounting, much research focuses on the value relevance of pension accounting items in financial statements (e.g. Barth, 1991; Gopalakrishnan and Sugrue, 1993; Barth et al, 1993; Coronado and Sharpe, 2003; Franzoni and Matin, 2006; Picconi, 2006; Hann et al., 2007; Werner, 2011). These studies suggest that the pension accounting regimes under IFRS and US GAAP accurately reflect market perceptions of sponsor firms' pension schemes. However, none of these studies provides evidence on how financial statement information is used (Holthausen and Watts, 2001).

Several more recent studies provide indirect evidence of the real effect of pension accounting by studying changes in decision making after exogenous shocks such

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as a change to an accounting rule. For instance, Kiosse and Peasnell (2009) review the academic evidence on the extent to which changes in pension accounting rules affect pension provisions. In addition, Amir et al. (2010) study the impact on pension asset allocations of new pension disclosures and full pension recognition under FRS 17 and IAS19 in the UK and SFAS 158 in the US. Both studies reveal that pension accounting changes have a significant influence on the allocation of pension plan assets. This suggests that how sponsor firms report their pension scheme information plays a critical role in investment decisions on pension plan assets. In particular, Amir et al. (2010) conceptualise this driver of pension plan asset allocations in terms of its effect on the contractual efficiency of pension accounting rules. In their view, contracts between economic agents with conflicting interests are often based on accounting data, and better information makes these contracts more efficient. Adoption of IAS19 in the UK and SFAS 158 in the US both require full pension recognition, which, in turn, has contractual implications, such as basing contracts on balance sheet figures, since higher recognised pension liabilities increase the likelihood of violating existing debt covenants. They argue that, in order to mitigate the effect of adoption on existing contracts, sponsor companies will shift pension assets from equity to debt securities during the adoption of full pension recognition.

Following a similar argument, this research focuses on one of the most controversial requirements of IAS19R, the new measurement of pension expenses with limitations on ERR. Several commentators on the IAS19R ED made similar predictions about this modification. For example, the Association of Consulting Actuaries (ACA) emphasised that:

> "The removal of the expected return on plan assets (to be replaced with effectively, the discount rate applied to plan assets) also removes the current advantage for companies of taking greater risk with employee

benefit plan assets without recognition of the corresponding increase to risk" (ACA comment letter on Exposure Draft of IAS19, 2010).

The American Academy of Actuaries posited that the new regime:

> "... may allow plan sponsors to base decisions about asset allocation purely on economic and risk management grounds, without adversely affecting profit and loss. In fact, removing the immediate benefit of risk-taking from the income statement may reduce the willingness of plan sponsors to take that risk. At the very least, removing the immediate accounting impact from the income statement refines the focus to the true economics of the decision" (AAA, 2010).

The effective capping of the ERR at the prevailing yield on high-quality corporate bonds of similar duration to pension outflows implies two related consequences for plan sponsors. First, they can no longer build the expected risk premium on equities (or any asset class that is higher risk for higher returns than high-quality corporate bonds) into the ERR, and thus cannot anticipate or immediately recognise in net income the expected rewards from risk-seeking investment strategies. Second, while ERR was a smooth, long-term estimate that changed only infrequently, the discount rate is derived from spot rates at a particular moment in time, resulting in greater volatility than previously because the spot rate reflects macroeconomic factors that cause fluctuations in high-quality bond yields.

Therefore, whereas the smoothing-based accounting regime recognised the expected benefits to risk taking in income while shielding it from any correspondingly greater volatility, the new accounting regime under IAS19R has removed this particular asymmetry. To the extent to which boosting net income through higher ERRs is a driving factor in plan sponsors' investment decisions, the income statement benefits available under the smoothing regime may have encouraged a higher level of risk taking than plan sponsors would otherwise have

engaged in. If this is indeed the case, risk taking in pension investments would be expected to have decreased following the implementation of IAS19R.

Based on the argument above, it is expected that IAS19R adoption will lead to a decrease in risk taking in asset allocations.

Hypothesis 2a: UK sponsor firms will reduce risk taking in pension asset allocation following the adoption of IAS19R.

There are several reasons to believe that the results of empirical tests may not support the hypothesis. First, if there was no link between the ERRs and actual asset allocation (for example manager selects high ERRs without investing in risky assets) prior to IAS19R, then the manager did not build the expected risk premium on equities investment into ERR and had no incentive to recognize in the net income the expected reward from risky investment at the first place. Therefore, the fact that IAS19R no longer allows the use of ERR need not lead to any realignments in asset allocation. The previous literature provides mixed evidence on the extent to which ERR reflects asset allocations in pension plans. For example, Amir and Benartzi (1999) document a weak link between ERR and asset allocation. However, more recent work by Bergstresser et al. (2006) shows that, although managers choose their ERR opportunistically, they also increase equity levels to rationalise their higher ERR. Similarly, Chuk (2013) indicates that firms have increased equity allocations to justify a high ERR since the requirement for asset allocations to be disclosed in financial statements was introduced. This again suggests that the ERR must be supported by actual allocations, at least to some degree.

Second, it is crucial that managers believe that external financial statement users make no adjustments to pension expenses to account for asymmetric recognition

of the benefits of high-risk pension assets without corresponding recognition of the costs prior to IAS19R. However, if managers consider that reported net income does not matter because financial statement users can "unravel" ERR-based pension accounting and replace expected with actual returns, then an ERR-based accounting regime will not affect the asset allocation decisions of sponsor firms. In addition, if both the costs and benefits of a riskier asset allocation strategy can be internalised by financial statement users, then managers of sponsor firms will have had no accounting incentive to adopt such riskier strategies under the pre-IAS19R regime. Again, evidence in the previous literature on whether investors are able to "see through" pension accounting rules is quite mixed. Several studies documents that the market perceives pension obligations as firm liabilities, even when they are not required to be recognised on the balance sheet (Dhaliwal, 1986; Landsman, 1986; Gopalakrishnan and Sugrue, 1993). In another research stream, Picconi (2006) claims that equity analysis fails to understand the implications of disclosed pension numbers for future earnings.

Finally, asset allocations may take time to adjust; thus, responses to IAS19R will not be observed immediately. Plan sponsors typically do not change asset allocation policies very frequently. Furthermore, asset re-allocation is costly, especially in the short term; thus, the immediate impact of IAS19R may not be stark enough to justify the transaction costs.

For all these reasons, whether firms indeed reduced investments in risky pension assets following the adoption of IAS19R is an open empirical question.

Furthermore, given the baseline of Hypothesis 1a relies on the assumption that income statement consideration affected asset allocation strategies, it is

reasonable to expect that the effect on asset allocation would be different depend on how large the pension plan relative to net income. In particular, for a firm that has large pension plan would has the large offset part of pension expense equal to "*ERR * fair value of plan asset*" relative to net income, therefore, the accounting-based incentives to boost ERRs embedded in IAS 19 would be stronger for that firm and thus would invest more in risky asset. The removal of the accounting-based incentives (abolition of ERRs) could in turn lead to larger drops in pension risk for this sponsor. This argument thus lead to the following sub-hypothesis:

> **Hypothesis 2b:** The reduction in risk-taking in pension asset plan resulting from IAS19R would be more pronounced for firms whose pension plans are large relative to income.

4.2.3 Pension Board Characteristic as an indicator to predict the magnitude impact of IAS19R on asset allocation of pension plan asset

4.2.3.1 Composition of pension plans boards

In nearly all OECD countries, members of occupational pension funds' governing boards must be selected by sponsoring employers and employees, often in equal numbers[21]. In some other countries, such as Austria and the UK, member representation is required, but not necessarily in equal numbers to sponsor representation.

Employee or member representation may ensure better alignment of the interests of the governing board with those of the fund's beneficiaries. They also act as an

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[21] The main exceptions are Canada, Ireland, Mexico and the US, where there is no requirement for employee or member representation in single employer plans. However, US legislation calls for paritarian representation for multi-employer plans.

effective channel to deliver information to plan members, strengthening the accountability of the governing board. For instance, a study by the Irish Pensions Board (2006) found that funds that did not have member representatives on the board would welcome them: "In fact, several employer-nominated interviewees suggested that the presence of member trustees provided protection against the emergence of such conflicts." It also stated that, although the skill levels of member trustees varied, most saw member trustees as often offering valuable perspectives beyond those provided by company management, although they might need help, particularly with investment issues:

> It was evident from the research that the principle of member trustees had been accepted by all trustees interviewed, with many outlining the positive contribution that such trustees can bring to the trustee board. Of those schemes without member trustees, all of those respondents stated that the member trustees would be welcomed to the trustee board if there were sufficient interest amongst scheme members ... Member trustees play an active and unique role in pension scheme governance ... member trustees particularly act as intermediaries in the interface between service provider and employee, channelling information to scheme members in a role which has the flexible capacity to serve in members' best interests in varied and changing circumstances (Pension Board, Ireland, 2006).

However, there are questions over the contribution of member representatives to decision making on complex matters relating to pension fund orientation. For instance, member representatives may not have the necessary knowledge and understanding of investment matters and may not feel comfortable challenging investment advisors or the plan sponsor's senior executives sitting on the board. There is also concern on the part of employers that, because member representatives do not directly bear plan costs, they may have an incentive to add special benefits to DB plans without regard to cost, or to avoid under-funding without a counterbalancing incentive to minimise costs. This may include overly conservative distortion of investments, unnecessarily driving up employer contributions. Another concern is that plans heavily influenced by the interests of

member representatives tend to have features that favour the specific categories into which such representatives fall, even though it may not be in the interests of plan members more broadly.

Based on the argument above, it is expected that regulation of the number of employee representatives on pension plan boards will affect the equity investment levels of sponsor firms, and would thus reduce equity investments in those companies following the adoption of IAS19R. In particular, it is hypothesised that equity levels and decreases in equity levels following the adoption of IAS19R would be lower for firms in countries that require more member representatives on pension plan boards.

Hypothesis 3a: Equity investment levels and decreases in equity investment levels following the adoption of IAS19R were lower for firms in countries requiring more member representatives on pension plan boards.

Table 3 documents the regulations of each country in the sample regarding the composition of pension plan board representatives. In general, the rigidity of these regulations can be divided into two categories. The first has the most rigid requirement to protect pension plan beneficiaries by requiring the number of sponsor representatives to be equal to the number of beneficiary representatives. Countries in the second category allow the number of beneficiary representatives to be less than or equal to the number of sponsors representatives.

Table 3: Regulation across EU countries on the composition of pension plan boards

Austria	The board of supervisors of the pension fund may have two seats fewer for employee representatives than for the sponsoring employer or other shareholders of the pension fund.
Belgium	The board of directors of a pension fund must have equal representation of employers and employees.
Germany	Supervisory board: employee representation depends on the number of employees in the pension fund, with a maximum of equal representation.[22] The managing board is appointed by the supervisory board.
Italy	The general assembly and the board of directors must each have equal representation of employers and employees.
Netherlands	The pension fund board must have equal representation of employers and employees.
Spain	The majority of the control commission must be selected by plan members and beneficiaries. No requirement for member representation on the boards of pension fund management companies.
Sweden	The board of the foundation must have equal representation of employers and employees.
United Kingdom	At least one third of trustees must be member-nominated.

Source: OECD/ISSA/IOPS (2008)

4.2.3.2 Pension plan board member competence

Although a greater number of employee representatives on pension boards may ensure better alignment of the interests of the governing board with those of pension plan beneficiaries, Clark (2006, 2007) questions their involvement in the pension plan decision-making process due to their lack of competence. Using UK pension fund governance and US mutual fund industries as examples, his evidence suggests that very few trustees have the competence and consistency of judgment to challenge the experts who are responsible for executing complex financial decisions. There is a clear association between trustee boards' understanding across key topics and their confidence levels in managing their

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[22] In Germany, the supervisory board is elected by the general assembly or, if stated in the statutes, appointed by the general assembly directly. The board therefore reflects the proportions of the general assembly. According to the size of the joint stock company or mutual association, representation of employees may be required. There is no legal requirement for representation of plan members or beneficiaries in the administration of pension plans. It is possible for sponsors to be represented on the supervisory board, subject to legal conditions.

schemes. The importance of guidance is evident, and The Pensions Regulator continues to use education as a means of changing behaviour across schemes.

Most countries in the sample for this study had introduced criteria disqualifying certain individuals from pension fund boards. In general, the basic disqualifying conditions include insolvency under administration, criminal records and other evidence of "improper" behaviour[23].

In addition, a few OECD countries (e.g. Austria, Finland, Germany and Poland) require pension fund board members to have specific qualifications and professional experience to allow them to carry out their duties more effectively. However, some other countries (e.g. Australia, Belgium, Denmark, Hungary, Portugal and the Netherlands) have introduced general suitability ("fitness") requirements for members of the governing board beyond the basic disqualifying conditions. On the other hand, some countries (e.g. France) have no legal fit and proper requirements for board members.

The competency of pension plan board members may also be reflected in the process of licensing pension plans. Licensing is defined as the process by which an authority grants permission to a pension entity to operate and/or to have the right to benefit from specific tax treatments. This includes a range of actions involving assessment of compliance with specific requirements prior to granting permission to operate or granting tax benefits, or relating to the status of compliance with such requirements. The more rigid the steps that firms must

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[23] For example, in the US, conviction for criminal acts and prior breaches of fiduciary duty may disqualify one from service.

satisfy to qualify for pension plans, the better the quality and competence of pension plan board members.

Following the argument above, it was expected that the licensing process will have a significant impact on equity investment levels of sponsor firms, and thus on their changes in equity investment levels following adoption of IAS19R. This leads to the following sub-hypothesis:

> **Hypothesis 3b:** Equity investment levels and decreases in equity investment levels following adoption of IAS19R were lower for firms in countries with more rigid pension plan licensing processes.

In order to proxy for the rigidity of the licensing process in each country, data were drawn from the OECD-International Organisation of Pension Supervisors (IOPS) project on licensing requirements for pension entities. This project focuses on six criteria that a firm should meet if it wishes to be licensed as a pension entity and gain the tax benefits for this type of institution: (1) is there a licensing process in addition to the procedure for beneficial tax treatment; (2) is a statement of investment policy required; (3) are there "fit and proper" requirements for pension entity management; (4) is reinsurance or a guarantee fund required; (5) is there a licence application fee; and (6) is on-site inspection part of the application assessment process?

The information was collected through questionnaires sent out to OECD and IOPS delegates and through consultation of information published on supervisory authorities' websites. Information for the project was collected from 35 countries

(OECD report, July 2007).[24] Details of the proxies built are described in Section 4.3.3. Table 4 shows the results of the questionnaires.

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[24] Australia, Austria, Belgium, Bulgaria, Canada, Denmark, Finland, Germany, Greece, Hungary, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Korea, Kosovo, Luxembourg, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Poland, Portugal, Slovakia, South Africa, Spain, Thailand, Turkey, United Kingdom, United States and Zambia.

Table 4: Licensing processes across EU countries

Country	Is there a licensing process in addition to a procedure for beneficial tax treatment?	Statement of investment policy required?	"Fit and proper" requirements for pension entity management?	Reinsurance or guarantee or fund required?	Licence application fee?	On-site inspection part of application assessment process?
Austria	Yes	No	Yes	No	Yes	No
Belgium	Yes	No	Yes	Yes	No	No
Germany	Yes	Yes	Yes	Yes (Intended reinsurance arrangements)	Yes	No
Spain	Yes	Yes	Yes	No	No	No
Finland	Yes	Yes (pension funds only)	Yes (pension insurance companies only)	No	Yes (both pension funds and pension insurance companies)	No
United Kingdom	No	No	No	No	No	No
Greece	Yes	Yes	NIA	No	NIA	NIA
Italy	Yes	Yes	Yes	No	No	No
Netherlands	Yes	Yes	Yes	Yes (reinsurance) but exemption possible	No	No

Source: OECD-IOPS (2007)

4.3 Research Design and Data Collection

4.3.1 Research design and data collection for hypothesis 1a and 1b

4.3.1.1 Research design

To test hypothesis 1a, I investigate the equity investment level of pension plan in the sample for the period from 2005 through 2014. In particular, the pairwise comparison of means using the Tukey method is applied to test whether the means of equity investment in three periods were statistically different with the period 1 is from 2005 to 2009, period 2 is from 2010 to 2012 and period 3 is from 2013 to 2014. These periods are separated based on the development of IAS19R through time. In March 2008, IASB published a Discussion Paper that shows preliminary views on amendment to IAS19. This publication of Discussion Paper aimed on receiving comments from publish. After that, on April 2010, the Exposure Draft of IAS19R was published. The Exposure Draft included all the proposals developed by the Board, having considered responses to the discussion paper. The publication of IAS19R was made in June 2011. However, it is not effective until January 2013. Based on this timeline, I identify two important events. The first event is when the proposals of IAS19R was made to publish in the Exposure Draft in April 2010. And the second event is when the IAS19R was mandatory in January 2013. I then separate my sample in three different periods and test their mean difference of equity investment level.

The univariate test is also conducted for the sample of cross sectional test described in the next paragraph. This test compared the mean difference of equity investment level of the year 2012 and the one in the year 2014.

In order to examine hypothesis 1b and directly test the impact of pension accounting numbers on pension plan asset allocations, the model specification developed by Amir et al. (2010) was used as follows:

$$ADOPT_i = \beta_0 + \beta_1 \Delta IMPACT_i + \beta_2 \Delta FUND_i + \beta_3 \Delta FUND_i^2 + \beta_4 \Delta HOR_i +$$

$$\beta_5 \Delta LEV_i + \beta_6 \Delta DIVIDEND_i + \beta_7 \Delta TAXR_i + \beta_8 \Delta SDCF_i + \beta_9 \Delta SIZE_i + \varepsilon_i$$

(1)

where

ADOPT = EQUITY (Pre-mandatory Year) – EQUITY (Post-mandatory Year)

with EQUITY= percentage of equity invested in pension plan

IMPACT measures the potential impact of the new accounting standards on company financial statements. In addition to two measures of the size of pension plans relative to shareholders' equity, a third measure was introduced to capture the effect of IAS19R on income statements:

EXPOS1: fair value of pension assets deflated by the book value of shareholders' equity in year t

EXPOS2: projected benefit obligations (PBO) deflated by the book value of shareholders' equity in year t

EXPOS3: pension expenses deflated by net income in year t.

The other control variables were defined as in Model 2 above.

Model 5 was estimated using country fixed effects across all firms that has data available for the period from 2012 through 2014 (this sample consists of 333 firms, see the next section for the detail of sample selection). Each independent variable in the model was the difference between the level of the variable after adoption (2014 fiscal year end) and its level before adoption (2012 fiscal year

end). The table following shows the description of all the variable in the cross-sectional test on EU sample

Table 5: Description of Variables for Cross-Sectional model on EU sample

Variable	Definition
Equity	The percentage of pension assets invested in equity securities
ADOPT	Equal to equity investment level of the year 2012 minus the equity investment of the year 2014
EXPOS1	Fair value of pension assets deflated by the book value of shareholders' equity
EXPOS2	Projected benefit obligation deflated by the book value of shareholders' equity
EXPOS3	Pension expenses deflated by net income
SIZE	Natural log of firm market capitalization
LEV	Financial leverage, measured as long-term debt divided by the sum of log-term debt and market capitalization
DIVIDEND	Dividends pay-out ratio
FUND	Funding ratio, measured as fair value of pension assets divided by the projected benefit obligation
FUND2	Funding ratio squared
HOR	Investment horizon, measured as the natural log of the ratio of PBO to current service cost
TAXR	Effective tax rate measured as tax expense divided by pre-tax income.
SDCF	Operating risk, measured as the standard deviation of the ratio of operating cash-flow to book value of equity for 5 years, ending in current year.

4.3.1.2 Data Collection

First, a list was compiled of all active firms in EU countries (26 countries in total). This resulted in a list of 6,810 firms classified by Industry Classification Benchmark (ICB), including oil and gas, basic materials, industrial, consumer goods, healthcare, consumer services, telecommunications, utilities, financials and technology. Next, PBO data were collected from the Worldscope database for the period 2005 to 2014. Firms that did not have PBOs for the entire period were then eliminated. It was assumed that firms did not sponsor DB plans if they did not have PBOs for the entire period in the database. This process produced 1,953 firms with at least one PBO available during the examination period. This

sample contained 21 countries. Table 6, Panel A records the sample selection for mean difference test

The sample of 1953 firms is subjected to survivorship bias since the sponsor firms report PBO each year changed significantly. To avoid survivorship bias, the mean difference test is also performed for the sample that include only firms that report PBOs for the entire period from 2005 through 2014, although there were only 102 firms meet this criterion.

In relation to cross sectional model (model 1), among the 1953 firms, there were only 333 firms that had sufficient data for the model during the period from 2012 through 2014. Panel B and C of table 6 record the number of firms for cross section model and number of firms separated by countries (only 14 countries left). Among those 14 countries, the sample is further reduced to include only those firms from which their country has highest number of scheme. Moreover, by eliminating those countries, this sample is also used in testing hypotheses 3a and 3b because these countries also have available data for the tests which will be explained in sub-section 4.3.3

Table 6: Sample selection for univariate test and cross-sectional tests

Panel A: Sample selection for mean difference test for the EU sample

Selection criterion		Number of observation
All firms in Thomson One Banker database across 26 EU countries		6810
Less		
Firms with no PBOs in the database for entire period from 2005 through 2014	(4857)	
Firms that report at least one year PBO during the period from 2005 through 2014		1953
Number of firms that report PBO for entire period from 2005 through 2014		102

Panel B: Sample selection for cross-sectional test (Model 1)

Selection Criterion		Number of observations
All sponsor firms across 21 countries in the EU		1,953
Less		
Firms with insufficient data for Model 4	(1620)	
Number of firms that have sufficient data for model 1		333
Less		
Firms in countries that has small number of schemes and insufficient data for examining hypothesis 3a and 3b	(80)	
Final sample for cross-sectional test (Model 4)		253

Panel C: Number of firms for 9 countries

Country	Number of Observations
Austria	5
Belgium	9
Germany	56
Spain	2
Finland	13
United Kingdom	127
Italy	4
Netherlands	18
Sweden	19
Total	253

Note: Panel A shows the number of firms for mean difference test (1953 firms that reported at least one year PBO during the period from 2005 to 2014 and 102 firms that reported PBO for entire period from 2005 to 2014) and number of firms in each country for each year.
Panel B and C report the number of firms for cross sectional model (Model 1) and number of firms in this sample separated by country.

4.3.2 Research design and data collection for hypothesis 2a and 2b

4.3.2.1 Research design

The elimination of the "corridor method" would require the sponsor firm to fully

recognize the net pension asset/liability on balance sheet. Thus, for companies

that were using the "corridor method" to keep part of their pension asset/liability off balance sheet, they would experience a significant change on their balance sheet. This, in turn, endured the sponsor firm to change their asset allocation on their pension plan portfolio (Amir et. al. 2010)

In addition to the elimination of the "corridor method", the abolition of ERRs on pension expense calculation would also cause the asset allocation in pension plan portfolio since it removed the manager incentive to over invest to high risk asset class (as explained in previous part)

Although the significant changes of IAS19R affect sponsor firms' pension reporting both in income statements (requiring ERR equal to the discount rate) and on the balance sheet (by eliminating the corridor method), the objective of this study is to test whether the smoothing-based pension accounting regime in income statements tilted plan sponsors toward greater risk taking. For this purpose, a decision was made to test the hypothesis on UK data. In UK, most sponsor firms (89.57 per cent according to Morais, 2010) were using the OCI method to fully recognize the actuarial gains and losses on balance sheet; therefore, adoption of IAS19R would have affected them mainly by changing the requirement of reporting the pension expenses in income statements. Therefore, by focusing on the UK sample, this research could contribute to previous literature by highlighting the income statement channel between the pension accounting standard change to the asset allocation of sponsor companies.

 4.3.2.1.1 Treatment event

IAS19R was first brought to public attention as a discussion paper in March 2008. An ED was issued in April 2010, and on 16 June 2011, IAS19R was officially published by the IASB, effective for fiscal years beginning on or after 1 January

2013. Sponsor firms affected by IAS19R had two years (from 2011 to 2013) to make preparations for the impact of IAS19R, for example through asset reallocations. Therefore, it was assumed that any impact of IAS19R on asset allocations would have begun to be visible in 2012. This assumption is consistent with previous research by Agrawal (2013), in which a DID research design was applied to test the impact of changes in regulations and laws.

An examining window was selected centred on IAS19R adoption, with fiscal years 2010 and 2011 as the pre-treatment period, and 2012 and 2013 as the post-treatment period. This length of window allowed firms sufficient time to adjust their pension asset allocations, but might be risky since longer windows might capture confounding factors that might also explain different levels of equity investment across treatment and control groups (Roberts and Whited, 2012; see Appendix B).

4.3.2.1.2 Multivariate tests

The first step was to examine whether UK sponsor firms reduced their levels of equity investment following the publication/adoption of IAS19R, using the following model for UK sponsor firms only:

$$Equity = \beta_0 + \beta_1 POST12 + \Sigma Controls + \varepsilon \quad (2)$$

where POST12 is an indicator variable equal to one for 2012 and 2013 fiscal year ends. The coefficient of POST12 provides an estimate of the effect of IAS19R, after controlling for other known determinant factors. However, this analysis may not separate the overall effects of IAS19R from the effects of macroeconomic or other time trends, because it may omit unobserved control variable.

In order to make reliable inferences about the effects of IAS19R, and separate these effects from other macroeconomic or time influences, a DID test was conducted using UK sponsor firms (firms affected by IAS19R) and US sponsor firms (firms not affected by IAS19R). US firms were used as a control sample due to the similarity of institutional settings between the UK and the US in terms of pension accounting treatments (as described in chapter 2 section 2.2, sub-section 2.1.2) . Before the UK adopted IAS19 in 2005, UK sponsor firms followed FRS17: *Retirement Benefits* in reporting their DB pension plans. FRS17 and SFAS 158 are similar in terms of full recognition of pension surpluses/deficits on the balance sheet and smoothing pension expenses using long-term expected returns rather than real returns on pension plans. Moreover, according to Morais (2010), prior to the adoption of IAS19R in 2013, most UK sponsor firms chose to apply the OCI method (see Appendix A), fully recognising pension surpluses/deficits on the balance sheet and actuarial gains and losses in OCI. This practice implies the similarity of UK and US sponsor firms in reporting their DB pension plans prior to the adoption of IAS19R.

The control sample of US listed firms was selected using a propensity score-matching procedure. First, a probit model of differences in plan and sponsor characteristics was run across US and UK pension plan sponsors:

$$UK = \beta_0 + \beta_1 SIZE + \beta_2 LEV + \beta_3 SDCF + \beta_4 NOL + \beta_5 DIVP + \beta_6 PBO + \beta_7 FVPA$$
$$+ \beta_8 FUND + \beta_9 FUND2 + \beta_{10} IND + \varepsilon \qquad (3)$$

UK is an indicator variable set to one for UK firms and zero for US firms. Several variables were included in the model to reflect plan characteristics, including the size of the pension (PBO and FVPA), the plan's funding ratio (FUND, measured by FVPA/PBO), and the square of the funding ratio, to accommodate potential

non-linear relationships between funding ratios and asset allocations (Amir et al., 2010; Bader, 1991). Also included in the model were variables that the previous literature suggests may affect pension funding and investing behaviour, including firm size (the log of market capitalisation, SIZE), leverage (long-term debt divided by the sum of long-term debt and total shareholder equity, LEV), operating risk (measured using the five-year standard deviation of the ratio of operating cash flows to book value of equity, SDCF), firms' tax-paying status (an indicator variable set at one for firms with a tax loss carry-forward and zero otherwise, NOL), the dividend pay-out ratio (DIVP), and industry matching between two countries (IND). These variables were chosen as matching criteria following previous research on factors that affect sponsor firms' funding and investment decisions (see Amir et al., 2010; Black, 1980; Tepper, 1981; Harrison and Sharpe, 1983; Bader, 1991; Friedman, 1983; Bodie et. al., 1984).

This probit model was run on data for all the UK sponsor firms and the universe of all US sponsor firms for the fiscal year ending 2010 in order to match US and UK firms using pre-treatment characteristics. Each UK firm was then matched, without replacement, to a US firm that had the closest predicted value from the model, but within a maximum distance of three per cent.

After selecting the control group firms using the propensity score-matching process, a DID test was conducted to examine more rigorously the impact of IAS19R. This DID test compared pre- and post-IAS19R shifts in the asset allocations of UK firms affected by IAS19R in relation to US firms that were not affected by IAS19R. This test was used with the following specification (Anantharaman and Chuck, 2015):

$$EQUITY = \beta_0 + \beta_1 POST12 + \beta_2 UK + \beta_3 POST12*UK + \Sigma Controls + \varepsilon \quad (4)$$

The main variable of interest was POST12*UK. Its coefficient was expected to be negative and significant in order to conclude that UK sponsor firms reduced their equity investment levels following the adoption of IAS19R relative to similar US sponsor firms. The control variables were drawn from Amir et al. (2010). The model controlled for plan sponsor size (SIZE), as larger sponsors may have different or wider investment opportunities. LEV was included because firms with more rigorous debt covenants may have greater incentives to mitigate volatility in pension returns, and thus contributions. In addition, firms with different dividend policies may have different incentives to mitigate volatility in pension asset returns and pension contributions; thus, dividend-paying status (DIVIDEND) was included as a control. Furthermore, as firms with higher operating risks may prefer to minimise risk in pension plan assets, operating risk was controlled for by including the standard deviation of operating cash flow deflated by total shareholder equity over five years (the current year and four previous years, SDCF). According to Black (1980) and Tepper (1981), tax-paying firms have an incentive to borrow on the corporate balance sheet, fund their plans and invest plan assets in the most highly-taxed securities – bonds. Thus, high tax-paying firms invest more in bonds. This "tax arbitrage" was controlled for by including an indicator variable equal to one if the firm carried forward a net operating loss (NOL) and zero otherwise. Following the previous literature suggesting a non-linear relationship between funding levels and asset allocations (see Bader, 1991; Amir and Benartzi, 1999), the model controlled for both funding ratio (FUND) and its square (FUND2). It also controlled for plan horizon (HOR, the natural logarithm of PBO/service costs), as longer-horizon plans (with younger beneficiaries) invest more in equities because these offer a more effective hedge

against salary increases, which are of greater concern for plans with younger beneficiaries.

In order to examine the hypothesis 1b, I separated the treatment sample of UK firms into those expected to be less affected by IAS19R adoption versus to the other that would be more affected by the adoption. I identified two groups by using the ratio of fair value of plan assets to net income, and alternatively the ratio of PBO to net income, and apply the following specifications:

$$Equity = \beta_0 + \beta_1 POST12 + \beta_2 HIGH\_FVPA + \beta_3 POST12*HIGH\_FVPA + \Sigma Controls + \varepsilon \qquad (5a)$$

$$Equity = \beta_0 + \beta_1 POST12 + \beta_2 HIGH\_PBO + \beta_3 POST12*HIGH\_PBO + \Sigma Controls + \varepsilon \qquad (5b)$$

HIGH_FVPA (HIGH_PBO) is an indicator equal to one if that firm has ratio of FVPA (PBO) to net income higher than median ratio of the whole sample.

The following table shows the Description of Variables in the Difference-in-Differences research.

Table 7: Description of Variables

Variable	Definition
UK	An indicator variable equal to one for UK sponsor firms, zero for US sponsor firms
Equity	The percentage of pension assets invested in equity securities
Bonds	The percentage of pension assets invested in fixed income securities
RealEstate	The percentage of pension assets invested in real estate
Other	The percentage of pension assets invested in opaque securities (unknown risk characteristics, such as mutual funds, registered investment companies, common and collective trusts)
POST12	Is an indicator variable equal to 1 for the year 2012 and after 2012, equal to zero for the year before 2012
POST11	Is an indicator variable equal to 1 for the year 2011 and after 2011, equal to zero for the year before 2011
POST13	Is an indicator variable equal to 1 for the year 2013 and after 2013, equal to zero for the year before 2013
FVPA	The fair value of pension plan assets
PBO	The projected benefit obligation
SIZE	Natural log of firm market capitalization
LEV	Financial leverage, measured as long-term debt divided by the sum of log-term debt and market capitalization
DIVIDEND	Dividends pay-out ratio
FUND	Funding ratio, measured as fair value of pension plan assets divided by the projected benefit obligation
FUND2	Funding ratio squared
HOR	Investment horizon, measured as the natural log of the ratio of PBO to current service cost
NOL	An indicator variable set equal to one for firms with a tax loss carry-forward, zero otherwise
SDCF	Operating risk, measured as the standard deviation of the ratio of operating cash-flow to book value of equity for 5 years, ending in current year.
HIGH_FVPA	An indicator variable equal to one for firms with a high ratio of FVPA to net income in the year 2010 and 2011 before IAS19R, where a high ratio of FVPA to net income is defined as a ratio of FVPA to net income above the median ratio of FVPA to net income calculated for the year 2010 and 2011. I defined the median ratio of FVPA to net income separately for UK and US firms.
HIGH_PBO	An indicator variable equal to one for firms with a high ratio of PBO to net income in the year 2010 before IAS19R, where a high ratio of PBO to net income is defined as a ratio of PBO to net income above the median ratio of PBO to net income calculated for the year 2010 and 2011. I defined the median ratio of PBO to net income separately for UK and US firms.

4.3.2.1.3 Correcting for potential outliers in DID models

In a single regression similar to univariate test, it is easy to spot outliers from scatterplot. However, in multi-variate regressions such as that in Equation 4, some observations may be "outliers" even though they do not show up on scatterplot. Moreover, observations that show up as outliers on scatterplot may actually be normal once other factors are controlled for in multiple regressions. For example, a small company may pay a high audit fee because other characteristics of that company make it a complex audit. For these reasons, rather than winsorizing variables that might alter some observations, as in previous research, Cook's (1977) method was followed to exclude outlier observations from multiple regressions. Specifically, Cook's distance (Cook's D) was calculated for each firm in the sample of UK and US firms. Values of Cook's D higher than $4/N$ were considered large, where N was the number of observations used in the regression. Eleven observations with large Cook's D were excluded from the sample prior to running the DID model (Equation 4).

4.3.2.2 Data Collection

First, data were collected on all UK firms that sponsored DB plans in the year ending 2010. The initial sample had 356 UK sponsor firms. Six firms were eliminated that did not have exchange tickers and could therefore not be identified in the Capital IQ database. Pension plan asset allocations of each sponsor firms were then collected. The Capital IQ database classifies plan asset allocations into equity, fixed income, real estate and other. A further 96 firms were deleted for which insufficient data were available for sample matching and DID models. This resulted in 254 UK firms for matching with US firms. The matching process removed a further 92 firms where US firms could not be found to match with UK

firms within three per cent of the closest predicted value of the propensity score.[25] Two more UK firms were eliminated that cross-listed in the US market. This process gave a sample of 160 UK sponsor firms and 160 matched US sponsor firms.

This sample was then used to collect data for the DID model (Equation 4) for the period from 2010 through 2013. The data collection of DID model remove further 37 UK firms due to insufficient of data for the model (the insufficient data in both treatment UK firms and control US firms). The final sample for DID test consist of 123 UK firms and 123 US firms with the total of 984 firm years. Table 8 summarises the sample selection process.

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[25] An alternative threshold at 5% has been applied, it offers 3 more firms to the sample. However, given the benefit of 3 more firms added in the sample, I decided to choose 3% to be consistent with previous literature and improve the quality of the matched sample (US sample)

Table 8: Sample selection

Selection Criterion	Number of Firms	Number of Firm Year Observations
UK public firms that sponsored DB pension plans in fiscal year ending 2010	356	1424
Less: UK firms with no exchange ticker in Capital IQ database	(6)	(24)
Less: UK firms with insufficient data available for matching probit model	(96)	(384)
Less: UK firms for which US matched could not be found using propensity scores	(92)	(368)
Less: UK firms that cross-listed with the US market	(2)	(8)
Number of UK firms in treatment group after matching process	160	640
Less: UK firms with insufficient data for DID model in period from 2010 through 2013	37	148
Number of UK firms in treatment group for DID model	123	492
Plus: US firms (control group) matched by propensity score	123	492
Total firms in the sample	246	984

4.3.3 Research design and data collection for hypothesis 3a and 3b

4.3.3.1 Proxies for employee representative regulation and licensing index

Information presented in Table 3 (sub-section 4.2.3.1) was used to build a proxy for employee representative regulation. Variable BENEFICIARYREP is an indicator variable that one if the firm is in a country that only requires the appearance of a beneficiary representative on the pension plan board without specifying equality between the number of sponsor and beneficiary representatives and equals two if the firm is in a country that requires an equal number of sponsor and beneficiary (employee) representatives.

The LICENSING variable represents the rigidity of the licensing process in each country. Based on information provided in Table 4 (sub-section 4.2.3.2), in each country, for every "Yes" that a country has, it gains one point for the LICENSING variable. Greece and France were eliminated from the sample since information was unavailable for some criteria.

Table 9 shows the values of the BENEFICIARYREP and LICENSING variables in each country in the sample. The availability of these variables for each country depended on information collected from the OECD's (2007, 2008) research.

Table 9: Proxy for number of employee representatives, regulation and licensing index

	Austria	Belgium	German	Spain	Finland	UK	Italy	Netherlands	Sweden
BENEFICIARYREP	1	2	1	2		1	2	2	2
LICENSING	3	3	5	3	4	0	3	4	

4.3.3.2 Empirical tests

In order to test hypothesis 3a, mean difference tests were conducted between two groups of firms classified according to the BENEFICIARYREP variable. Group 3 included Austria, Germany and the UK, and Group 4 consisted of Belgium, Spain, Italy, the Netherlands and Sweden.

With regard to hypothesis 3b, the following model was used:

$$ADOPT_i = \beta_0 + \beta_1 \, LICENSING_i + \Sigma Controls_i + \varepsilon_i \qquad (6a)$$

$$EQUITY_{it} = \beta_0 + \beta_1 \, LICENSING_{it} + \Sigma Controls_{it} + \varepsilon_{it} \qquad (6b)$$

where:

ADOPT = EQUITY (Pre-mandatory Year) – EQUITY (Post-mandatory Year)

with EQUITY= percentage of equity invested in pension plan.

LICENSING is an index constructed based on data from Table 4 (sub-section 4.2.3.2) for each country: every "Yes" in the table leads to one extra point for the LICENSING index.

Model 6a was run as a cross-sectional model since the ADOPT variable was the change in equity investment levels between 2012 and 2014, while Model 6b was estimated as panel data. Both models were estimated using OLS because the number of countries in the sample was very small (eight countries), which was insufficient to run a country fixed-effect model.

A list of control variables for the model was drawn from previous research, controlling for differences in country-level governance environment and investment barriers between countries. Sections 4.3.3.3 and 4.3.3.4 define and describe the effects of these control variables on pension plan asset allocations.

4.3.3.3 Country-level governance environment and pension plan equity investment

The macro corporate governance environment may affect country-level pension plan investment because of its role in facilitating corporate monitoring. Li et al. (2007) argue that broader environmental factors that facilitate effective monitoring may also affect the decisions of institutions to become large

shareholders. Their study was based on the theoretical framework of large shareholder monitoring, which posits that the willingness of institutions to become or remain large shareholders may vary with external conditions that affect potential monitoring costs and benefits. In particular, a favourable monitoring environment may encourage existing large shareholders to maintain their stakes, while also enticing the formation of new large shareholding as a way of partially capturing monitoring gains (Admati et al., 1994; Kahn and Winton, 1998; Maug, 1998; Noe, 2002). Therefore, a strong macro governance environment influences institutional ownership decisions (and thus institutional investment strategy) by providing the necessary infrastructure to increase monitoring effectiveness and efficiency. Nevertheless, the above arguments do not suggest that institutions are the only investor class with incentives to monitor, nor that they are superior monitors.

This research focuses on institutions, and in particular private pension funds, because they are perhaps the most prevalent and identifiable representatives of outside minority shareholders, and hence provide a channel through which to examine links between pension fund investment decisions and the country-level governance environment across EU countries.

Since the relationship between pension plan investment decisions and country-level governance environment is based on the theory of large shareholder monitoring, measurement of the country-level governance environment was based on three key aspects of the macro governance environment. In order to monitor management effectively, institutions must be able to: (1) voice their opinions (or exert influence); (2) enforce their rights; and (3) obtain information necessary for monitoring purposes. The ability of institutions to voice opinions depends on the degree to which the macro governance environment protects the

voting rights of minority shareholders and offers them avenues to challenge insiders in the corporate decision-making process. In order to measure shareholder protection, La Porta et al. (1997, 1998) construct an anti-director rights index (ADRI), which quantifies the presence of six important provisions relating to shareholder rights in a country's company law or commercial code. These components of ADRI are as follows: (1) pre-emptive rights to new issues; (2) cumulative voting or proportional representation; (3) shares not blocked before meeting; (4) proxy by mail allowed; (5) percentage of share capital to call an extraordinary shareholders' meeting; and (6) oppressed minorities mechanism. Since this index was constructed in 1993, it was likely to be out of date for the purposes of this study, as many countries have since improved their corporate laws. Thus, a modified ADRI index constructed by Spamann (2010) was used. Compared with La Porta et al.'s (1997, 1998) original ADRI, Spamann's (2010) ADRI index consists of the following components: (1) proxy by mail allowed; (2) shares not deposited before meeting; (3) cumulative voting or proportional representation; (4) oppressed minorities mechanism; (5) pre-emptive right to new issues; (6) percentage of share capital to call an extraordinary shareholder meeting and two additional variables (1) one share, one vote; and (2) mandatory dividend.

While shareholder rights are an important feature of the governance environment, their effect is weakened if they are not effectively enforced. In order to compute enforcement at country level, research by Kaufmann et al. (2003) was followed to construct an enforcement index based on the following factors:

(1)   Rule of Law: This captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well

as the likelihood of crime and violence. Estimation gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

(2)   Regulatory Quality: This captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private-sector development. Estimation gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

(3)   Control of Corruption: This captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Estimation gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

An enforcement index (ENFORCE) was calculated as an average of these three factors. Data on these factors were downloaded from the World Bank database.[26]

Ability to access information relevant to monitoring decisions depends on the extent to which regulations mandate sufficient, accurate and timely corporate disclosure. Several alternative measures were used for the extensiveness of reporting requirements. One variable (corporate disclosure) used Bushman et al.'s (2004) corporate disclosure index (CORDIS), created by rating companies' annual reports based on their inclusion or omission of 90 items in seven

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[26] http://databank.worldbank.org/data/reports.aspx?source=worldwide-governance-indicator.

categories (general information, income statements, balance sheets, funds flow statements, accounting standards, stock data and special items). Another variable, governance disclosure (GOVDIS), also from Bushman et al. (2004), measured the extent of governance-related disclosure (e.g. remuneration and share ownership of managers, board members, etc.). In order to overcome the problem of outdated data, a measurement of corporate transparency built by Francis et al. (2009) was used. This also applies Bushman et al.'s (2004) framework, but Francis et al. measure corporate transparency according to three factors: information environment, earnings opacity and synchronicity.

4.3.3.4 Investment barriers for pension plans

Regulations limiting investments by pension plans may have a significant impact on pension plan investment decision making. In general, investment barrier regulations on pension plans can be divided into: (1) portfolio limits on pension plan investments in selected domestic asset categories; (2) portfolio limits on pension fund investments in selected foreign asset categories; and (3) investment limits on pension fund investments in a single issuer/issue. This research focuses on limitations on equity investments by pension plans. The EQUITYLIMIT variable is an indicator variable equal to one if a country regulates investments in both domestic and foreign equities, and zero otherwise. Another indicator variable, SINGLEISSUELIMIT, equals one if a country regulates limits on investments in a single issuer/issue, and zero otherwise.

Table 10: Control variables for cross-country tests

	Austria	Belgium	Germany	Spain	Finland	UK	Italy	Netherlands	Sweden
ADRI	4	2	4	5	4	4	2	4	4
ENFORCE	1.605	1.441	1.648	0.914	1.989	1.707	0.363	1.874	2.043
CORDIS	70.29	92.75	100	92.75	100	100	100	100	100
GOVDIS	78.99	76.45	72.83	79.71	89.49	94.57	65.58	85.87	96.74
EQUITYLIMIT	1	0	1	0	1	0	0	0	1
SINGLEISSUELIMIT	1	0	1	1	1	0	1	0	1

4.3.4.5 Sample selection and empirical results

A univariate test was applied to the sample of 1,953 firms, as shown in Table 6 (sub-section 4.3.1.2).

Regarding the multivariate test, Model 6a with the dependent variable ADOPT included only 316 firms across eight countries (two countries were omitted because the LICENSING variable was missing). There were 5,008 firm-years available for Model 6b (panel data).

4.4 Descriptive Statistics

4.4.1 Descriptive statistics for EU sample

Table 11 shows descriptive statistics for the sample of cross sectional model (Model 1). Panel A presents the descriptive statistic for the sample in the year 2012, before the mandatory of IAS19R in January 2013. The equity investment level was on average at 33.31 % with the range from 0.8% to 83.60%. Additionally, the funding ratio had mean at 73 %, this suggests that on average, pension plans in the sample were under funded. Therefore, the pension asset relative to equity were less than the pension liability relative to equity (EXPOS1 is less than EXPOS2, on average). Furthermore, the descriptive statistic of EXPOS3 shows that the pension expense amount is on average at 11.4% of net income with median is at about 4.9%. This suggests that the pension expense could significantly affect the reporting net income number. Panel B reports the descriptive statistic of the sample in the Year 2014, after the mandatory of IAS19R in 2013. In comparison, the equity investment level was lower for the year 2014, on average, but the range of this number increased (between 0.011% and 92.80%). The funding level of this period was quite similar to the year 2012. However, both the amount of pension asset and pension liability relative to equity were increase on average. Moreover, the mean and volatility of pension expense relative to net income was significantly increase (mean of EXPOS3 increased from 0.114 to 3.321 and the standard deviation of EXPOS3 increased from 0.322 to 2.669). This change suggests that the reporting of pension expense relative to net income would be significant effected by the new pension accounting standard.

Table 11: Descriptive statistics for cross-sectional tests

Panel A: Descriptive statistics of the cross-sectional sample for the year 2012

VARIABLES	N	mean	sd	min	p25	p50	p75	max
Equity	253	33.31	17.50	0.800	22.70	34.29	46.40	83.60
EXPOS1	253	0.568	1.127	0.001	0.083	0.220	0.626	15.00
EXPOS2	253	0.710	1.253	0.013	0.122	0.342	0.749	17.86
EXPOS3	253	0.114	0.322	-0.551	0.019	0.148	0.089	1.852
FUND	253	0.726	0.390	0.021	0.586	0.759	0.880	2.822
FUND2	253	0.526	0.845	0.000	0.344	0.562	0.775	7.964
HOR	253	4.371	1.059	1.614	3.729	4.131	4.655	12.29
LEV	253	0.243	0.161	0.000	0.110	0.126	0.326	0.926
DIVP	253	0.639	1.321	0.000	0.300	0.444	0.635	13.51
TAXR	253	0.267	0.236	0.004	0.201	0.243	0.305	4.078
SIZE	253	21.77	1.864	16.01	20.66	21.79	23.15	24.25
SDCF	253	0.172	0.488	0.007	0.046	0.067	0.143	7.722

Panel B: Descriptive statistics of the cross-sectional sample for the year 2014

VARIABLES	N	mean	sd	min	p25	p50	p75	max
Equity	253	29.28	17.29	0.007	20.00	29.10	40.26	92.80
EXPOS1	253	0.623	1.246	0.011	0.084	0.220	0.656	13.85
EXPOS2	253	0.755	1.458	0.004	0.125	0.339	0.840	15.56
EXPOS3	253	3.321	2.669	-6.463	0.024	0.049	0.133	6.528
FUND	253	0.634	0.257	0.014	0.584	0.763	0.902	1.609
FUND2	253	0.631	0.328	0.000	0.341	0.623	0.814	2.327
HOR	253	4.405	1.016	1.983	3.802	4.270	4.835	8.565
LEV	253	0.226	0.161	0.000	0.104	0.167	0.285	0.803
DIVP	253	0.721	0.830	0.000	0.353	0.531	0.735	8.039
TAXR	253	0.266	0.226	0.004	0.201	0.233	0.305	4.078
SIZE	253	22.23	1.835	16.53	20.94	22.19	23.42	26.73
SDCF	253	0.120	0.164	0.009	0.033	0.047	0.112	1.547

Note: The table presents the descriptive statistic for the cross-sectional sample consist of 333 firms. Panel A is the descriptive statistic of the sample for the year 2012 and Panel B is for the year 2014

All variables are defined in Table 5

The table 12 provides the mean and median difference test to compare the mean and median of all the variable between two periods. The results show that the equity investment level in the year 2014 was significantly lower than the one in the year 2012 (significant at 0.01 level). The median test shows the similar result. In addition, the tests show negative sign for all EXPOS1, EXPOS2 and EXPOS3 suggest the increase of these variable between 2012 and 2014. However, these differences are not significant, except for the median of EXPOS3 (significant at 0.05 level). The dividend pay-out ratio was not different on average, however, the median test shows that the dividend pay-out ratio was significant lower for the year 2014 compare to the one in year 2012. The variable SIZE indicates the market capitalization for the sponsor firm, had significant lower for the year 2012 compare to the year 2014 both for the mean test and median test at 0.1 level. Vice versa, the operation risk measured by variable SDCF were significantly lower for the year 2014 compared to the year 2012 at 0.1 level for the mean test and 0.01 level for the median test.

Table 12: Mean and Median different test between pre and post adoption of IAS19R

Variable	EU sample (2012)			EU sample (2014)			Mean t-test (p value)	Median w-test (p value)
	mean	median	sd	Mean	Median	sd		
Equity	33.31	34.29	17.50	29.28	29.10	17.29	2.7802(0.0056)***	2.889(0.0039)***
EXPOS1	0.568	0.220	1.127	0.623	0.220	1.246	-0.6706(0.5027)	-0.830(0.4066)
EXPOS2	0.710	0.342	1.253	0.755	0.339	1.458	-0.8906(0.3735)	-0.939(0.3479)
EXPOS3	0.114	0.148	0.322	3.321	0.049	2.669	-1.0651(0.2872)	-2.495(0.0126)**
FUND	0.726	0.759	0.390	0.634	0.763	0.257	0.1053(0.9162)	-0.773(0.4394)
FUND2	0.526	0.562	0.845	0.631	0.623	0.328	0.5312(0.5955)	-0.773(0.4394)
HOR	4.371	4.131	1.059	4.405	4.270	1.016	-1.7093(0.0879)*	-2.150(0.0315)**
LEV	0.243	0.126	0.161	0.226	0.167	0.161	1.2069(0.2279)	1.242(0.2142)
DIVP	0.639	0.444	1.321	0.721	0.531	0.830	-0.1459(0.8840)	-2.454(0.0141)**
TAXR	0.267	0.243	0.236	0.266	0.233	0.226	0.156(0.5671)	0.1184(0.6247)
SIZE	21.77	21.79	1.864	22.23	22.19	1.835	-1.7847(0.0748)*	-1.735(0.0827)*
SDCF	0.172	0.067	0.488	0.120	0.047	0.164	1.9280(0.0543)*	4.258(0.0000)***

Note: This table provides mean and median difference test to compare the mean and median difference of the EU sample before and after the adoption of IAS19R (between the year 2012 and 2014).

The mean difference test column record the t-statistic and p-value in the bracket. The median difference test column records the Wilcoxon statistic and p-value in the bracket

*, **, *** indicates significance at $p<0.10$, $p<0.05$, and $p<0.01$, respectively

Table 13 records the correlation matrix. This table shows a highly significant correlation coefficient between EXPOS1, EXPOS2 and EXPOS3. This suggests these three variables are reliable proxy for the size of pension plan in each firm. Moreover, HOR variable show significant positive relationship with EXPOS1 and EXPOS2, suggest that the bigger the pension plan size the longer the investment horizon of the pension plan. In the other words, there are more active member in these pension plans (the pension plan with bigger size). In addition, the funding level has significant positive sign with EXPOS1 and EXPOS2 suggests that the bigger of the pension plan the better funding. Finally, the operation risk of the firm (SDCF) is positive significant with EXPOS1 and EXPOS2. This indicates that the bigger their pension plan has, the more operating risk they were bearing.

Table 13 shows a correlation matrix for these independent variables.

	EXPOS1	EXPOS2	EXPOS3	FUND	FUND2	HOR	LEV	DIVP	TAXR	SIZE	SDCF
EXPOS1	1										
EXPOS2	0.977***	1									
EXPOS3	0.147***	0.165***	1								
FUND	0.054***	0.035**	0.004	1							
FUND2	0.022	0.014	0.000	0.686***	1						
HOR	0.070***	0.067***	-0.010	0.182***	0.047***	1					
LEV	-0.013	-0.009	-0.017	-0.017	-0.014	0.051***	1				
DIVP	-0.001	-0.001	-0.001	-0.023	-0.009	-0.004	0.042**	1			
TAXR	0.013	0.011	0.015	-0.003	-0.001	-0.021	0.045***	-0.003	1		
SIZE	-0.026*	-0.024	-0.030*	0.057***	-0.003	-0.072***	0.009	-0.028*	-0.026*	1	
SDCF	0.067***	0.058***	0.001	0.047***	0.021	-0.003	0.089***	-0.001	-0.011	-0.008	1

Note: This table records the correlation matrix of the cross-sectional sample for the entire period include year 2012 and Year 2014

All variables are defined in Table 5

*, **, *** indicates significance at $p<0.10$, $p<0.05$, and $p<0.01$, respectively

4.4.2 Descriptive statistics for UK sample

Table 14, Panels A and B show the descriptive statistics for UK sponsor firms pre- and post-IAS19R respectively. During the pre-IAS19R period, UK sponsor firms invested more in equities, with an interquartile range from 34 to 58 per cent, and a mean and median of 45.58 and 47.11 per cent respectively. In the post-IAS19R period, UK sponsor firms showed a decrease in risky asset investments, with reductions in both mean and median, down to 40.17 and 39.00 per cent respectively. The FVPA was less than the PBO in both pre- and post-treatment periods. This indicates a deficit funding status in the UK during the period under examination (2010 to 2013). Between the two periods the deficit level increased, on average, by 47 per cent (from 287 to 422 million). However, the funded status, defined as the ratio of FVPA to PBO, did not change much between the two periods (from 86.3 to 86.6 per cent). The descriptive statistics for both periods show that, on average, pension plans in the UK have investment horizons longer than pension plans in the USA.

Panels C and D of Table 14 show the descriptive statistics for the control group of US sponsor firms. The mean and median equity investment of these firms decreased slightly between pre- and post-IAS19R periods, from 53.56 to 52.53 per cent and from 55.27 to 55.52 per cent respectively. The interquartile ranges of their equity investment levels were 46.78 to 64.00 per cent in the pre-adoption period and 42.96 to 64.00 per cent in the post-adoption period. Pension deficits for DB pension plans in the USA increased slightly over the two periods, from 740 to 891 million dollars (an increase of about 20 per cent). However, their funded status remained the same between the two periods.

Table 14: Descriptive statistics

Panel A: UK sample – Pre-treatment period (2010, 2011)

VARIABLE	N	mean	sd	min	p25	p50	p75	max
Equity	246	45.68	16.89	0.782	34.00	47.11	58.00	94.76
FVPA	246	2,333	5,237	1.579	143.0	405.5	2,256	34,223
PBO	246	2,620	5,899	5.787	158.3	484.3	2,638	38,755
SIZE	246	21.39	1.877	16.63	20.09	21.41	22.51	26.12
LEV	246	0.242	0.168	0.001	0.116	0.217	0.326	0.949
DIVIDEND	246	0.022	0.015	0.001	0.012	0.021	0.028	0.087
FUND	246	0.863	0.138	0.028	0.797	0.874	0.933	1.190
FUND2	246	0.764	0.214	0.000	0.635	0.764	0.871	1.417
HOR	246	4.717	1.103	0.635	4.039	4.548	5.244	11.09
NOL	246	0.0075	0.087	0.000	0.000	0.000	0.000	1.000
SDCF	246	0.445	1.845	0.006	0.047	0.087	0.187	17.49

Panel B: UK sample – Post-treatment period (2012, 2013)

VARIABLE	N	mean	sd	min	p25	p50	p75	Max
Equity	246	40.17	16.57	3.054	28.12	39.00	51.28	87.10
FVPA	246	2,918	6,364	2.473	166.6	514.0	2,750	43,131
PBO	246	3,340	7,462	9.456	186.2	622.0	3,291	49,436
SIZE	246	21.84	1.738	16.68	20.76	22.02	22.81	25.97
LEV	246	0.218	0.152	0.000	0.114	0.188	0.284	0.922
DIVIDEND	246	0.026	0.016	0.000	0.015	0.024	0.033	0.097
FUND	246	0.866	0.149	0.047	0.805	0.875	0.953	1.169
FUND2	246	0.772	0.225	0.002	0.647	0.765	0.909	1.367
HOR	246	4.890	1.212	1.163	4.192	4.715	5.507	11.29
NOL	246	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SDCF	246	0.562	3.339	0.004	0.041	0.071	0.134	33.22

Panel C: US sample – Pre-treatment period (2010, 2011)

VARIABLE	N	mean	sd	min	p25	p50	p75	max
Equity	246	53.56	15.58	1.491	46.78	55.27	64.00	90.00
FVPA	246	2,993	7,693	1.794	26.08	215.5	1,652	51,051
PBO	246	3,733	9,751	3.059	37.26	266.5	1,949	67,651
SIZE	246	21.26	2.382	15.96	19.37	21.53	23.05	26.73
LEV	246	0.238	0.176	0.000	0.109	0.190	0.327	0.901
DIVIDEND	246	0.022	0.023	0.000	0.005	0.016	0.029	0.135
FUND	246	0.824	0.198	0.504	0.702	0.786	0.898	2.345
FUND2	246	0.718	0.445	0.254	0.492	0.618	0.807	5.500
HOR	246	3.907	0.909	2.286	3.306	3.739	4.235	7.667
NOL	246	0.004	0.061	0.000	0.000	0.000	0.000	1.000
SDCF	246	0.367	3.508	0.013	0.043	0.070	0.119	56.91

Panel D: Us sample – Post-treatment period (2012, 2013)

VARIABLE	N	mean	sd	min	p25	p50	p75	max
Equity	246	52.53	16.13	6.938	42.96	55.52	64.00	88.84
FVPA	246	3,872	9,137	3.366	55.39	291.7	2,285	58,131
PBO	246	4,763	11,594	5.798	72.93	377.1	2,714	75,895
SIZE	246	21.74	2.262	16.78	20.16	21.87	23.36	26.81
LEV	246	0.209	0.145	0.004	0.103	0.166	0.300	0.727
DIVIDEND	246	0.025	0.025	0.000	0.008	0.018	0.033	0.150
FUND	246	0.864	0.226	0.481	0.726	0.829	0.950	2.368
FUND2	246	0.797	0.534	0.231	0.528	0.687	0.902	5.608
HOR	246	3.943	0.880	2.192	3.382	3.781	4.299	6.878
NOL	246	0.008	0.091	0.000	0.000	0.000	0.000	1.000
SDCF	246	0.285	1.594	0.012	0.044	0.068	0.113	17.17

Panel E: UK sample – Entire period (From 2010 to 2013)

VARIABLE	N	mean	sd	min	p25	p50	p75	max
Equity	492	43.19	16.95	0.782	30.90	42.69	54.95	94.76
FVPA	492	2,597	5,774	1.579	149.1	452.8	2,471	43,131
PBO	492	2,945	6,653	5.787	171.6	539.7	2,841	49,436
SIZE	492	21.59	1.828	16.63	20.40	21.65	22.73	26.12
LEV	492	0.231	0.161	0.000	0.116	0.203	0.298	0.949
DIVIDEND	492	0.024	0.016	0.000	0.013	0.022	0.031	0.097
FUND	492	0.865	0.143	0.028	0.803	0.874	0.942	1.190
FUND2	492	0.768	0.219	0.001	0.645	0.765	0.888	1.417
HOR	492	4.795	1.156	0.635	4.101	4.608	5.354	11.29
NOL	492	0.004	0.064	0.000	0.000	0.000	0.000	1.000
SDCF	492	0.498	2.625	0.004	0.044	0.0788	0.158	33.22

Panel F: US Sample – Entire period (From 2010 to 2013)

VARIABLES	N	mean	sd	min	p25	p50	p75	max
Equity	492	53.07	15.84	1.491	44.72	55.27	64.00	90.00
FVPA	492	3,409	8,411	1.794	38.33	261.9	1,861	58,131
PBO	492	4,221	10,665	3.059	48.15	332.8	2,275	75,895
SIZE	492	21.49	2.336	15.96	19.75	21.68	23.19	26.81
LEV	492	0.224	0.163	0.000	0.107	0.179	0.314	0.901
DIVIDEND	492	0.0235	0.0237	0.000	0.005	0.016	0.031	0.150
FUND	492	0.843	0.213	0.481	0.711	0.810	0.924	2.368
FUND2	492	0.755	0.490	0.231	0.505	0.656	0.854	5.608
HOR	492	3.924	0.895	2.192	3.343	3.760	4.268	7.667
NOL	492	0.006	0.077	0.000	0.000	0.000	0.000	1.000
SDCF	492	0.328	2.770	0.012	0.043	0.069	0.115	56.91

Note: The table presents descriptive statistics for sample of UK firms (492 firm/year observations) and US firms (492 firm/year observations) with defined benefit pension plans for which financial and pension asset allocation data are available during 2010 through 2013. Panel A and B record the descriptive statistic for UK firms in pre-treatment period (2010 and 2011) and in post-treatment period (2012 and 2013) respectively. Panel C and D record the descriptive statistic for US firms in pre-treatment period (2010 and 2011) and in post-treatment period (2012 and 2013) respectively. Panel E and F show the descriptive statistic for entire period of UK firms and US firms respectively.
All variables are defined in Table 7.

The table following (table 15) records the mean and median difference tests to compare all variable between two sub-samples as following. Panel A is between UK pre-treatment and UK post treatment. Panel B is between US pre-treatment and US post-treatment. Panel C is between UK pre-treatment and US pre-treatment. And finally, Panel D is between UK post-treatment and US post-treatment. The results of these tests suggest the following implication.

Firstly, both the mean and median test in the UK sample show that the equity investment level was significantly lower for the post-treatment event compared to the pre-treatment event. However, the result does not the same for the US sample. Following the year 2012, the US sponsor firms had similar equity investment level (not significant). Furthermore, in the US sample, the funding ratio mean and median test indicate that after year 2012, the funding ratio for these pension plan had been improved (negative and significant at 0.01 level). The UK sample only shows the improvement of the funding ratio in median test and only significant at 0.1 level.

Secondly, in comparison between UK sample and US sample, the tests show that compare to US, the UK sponsor firms invest less in equity for the pre-treatment period and post-treatment period. However, the magnitude of both mean difference and median difference is extended after the treatment event (after the year 2012). However, the size of pension plan in UK sample were significantly bigger than the one in US sample that indicated by the variable FVPA and PBO. However, this is consistent with the other variable of the UK sample firms are also larger the one of the US sample firms (SIZE, LEV, etc)

Table 15: Mean and median difference test between sub-sample

Panel A: Mean and Median difference test of UK sample pre-treatment vs post-treatment

	UK pre-treatment			UK-post treatment			Mean	Median
Variable	mean	median	sd	Mean	Median	sd	t-test (p value)	w-test (p value)
Equity	45.68	47.11	16.89	40.17	39	16.57	2.9318(0.0036)***	2.813(0.0049)***
FVPA	2,333	405.5	5,237	2,918	514	6,364	-0.7240(0.4697)	-1.072(0.2835)
PBO	2,620	484.3	5,899	3,340	622	7,462	-0.6017(0.5478)	-1.002(0.3161)
SIZE	21.39	21.41	1.877	21.84	22.02	1.738	-1.6526(0.0995)*	-1.800(0.0719)*
LEV	0.242	0.217	0.168	0.218	0.188	0.152	1.0691(0.2859)	1.364(0.1725)
DIVIDEND	0.022	0.021	0.015	0.026	0.024	0.016	-1.6226(0.1058)	-1.670 (0.0950)*
FUND	0.863	0.874	0.138	0.866	0.875	0.149	-0.8919(0.3732)	-1.860(0.0628)*
FUND2	0.764	0.764	0.214	0.772	0.765	0.225	-1.1121(0.2670)	-1.860(0.0628)*
HOR	4.717	4.548	1.103	4.89	4.715	1.212	-1.5227(0.1290)	-1.672(0.0945)*
NOL	0.0075	0	0.087	0	0	0		
SDCF	0.445	0.087	1.845	0.562	0.071	3.339	-0.0580(0.9538)	1.385(0.1659)

Panel B: Mean and Median difference test of US sample pre-treatment vs post-treatment

	US pre-treatment			US post-treatment			Mean	Median
Variable	mean	median	sd	Mean	Median	sd	t-test (p value)	w-test (p value)
Equity	53.56	55.27	15.58	52.53	55.52	16.13	0.7318(0.4649)	0.425(0.6705)
FVPA	2,993	215.5	7,693	3,872	291.7	9,137	-0.5387(0.5905)	-0.829(0.4069)
PBO	3,733	266.5	9,751	4,763	377.1	11,594	-0.2443(0.8072)	-0.262(0.7935)
SIZE	21.26	21.53	2.382	21.74	21.87	2.262	-1.7572(0.0800)*	-1.960(0.0500)**
LEV	0.238	0.19	0.176	0.209	0.166	0.145	1.9189(0.0560)*	2.026(0.0427)**
DIVIDEND	0.022	0.016	0.023	0.025	0.018	0.025	-0.5073(0.6123)	-0.508(0.6116)
FUND	0.824	0.786	0.198	0.864	0.829	0.226	-3.7297(0.0002)***	-4.723(0.0000)***
FUND2	0.718	0.618	0.445	0.797	0.687	0.534	-3.1149(0.0020)***	-4.723(0.0000)***
HOR	3.907	3.739	0.909	3.943	3.781	0.88	-0.1435(0.8860)	-0.070(0.9441)
NOL	0.004	0	0.061	0.008	0	0.091	1.0000(0.3182)	1.000(0.3173)
SDCF	0.367	0.07	3.508	0.285	0.068	1.594	1.1962(0.2326)	1.703(0.0886)*

Panel C: Mean and Median difference test of UK sample pre-treatment vs US sample pre-treatment

Variable	UK pre-treatment			US pre-treatment			Mean	Median
	mean	median	sd	Mean	Median	sd	t-test (p value)	w-test (p value)
Equity	45.68	47.11	16.89	53.56	55.27	15.58	-4.9598(0.0000)***	-5.284(0.0000)***
FVPA	2,333	405.5	5,237	2,993	215.5	7,693	1.9932(0.0472)**	2.815(0.0049)***
PBO	2,620	484.3	5,899	3,733	266.5	9,751	1.6917(0.0918)*	2.652(0.0080)***
SIZE	21.39	21.41	1.877	21.26	21.53	2.382	1.7778(0.0765)*	1.814(0.0697)*
LEV	0.242	0.217	0.168	0.238	0.19	0.176	0.9530(0.3414)	0.918(0.3584)
DIVIDEND	0.022	0.021	0.015	0.022	0.016	0.023	4.9672(0.0000)***	4.998(0.0000)***
FUND	0.863	0.874	0.138	0.824	0.786	0.198	1.7837(0.0755)*	4.361(0.0000)***
FUND2	0.764	0.764	0.214	0.718	0.618	0.445	1.2301(0.2197)	4.361(0.0000)***
HOR	4.717	4.548	1.103	3.907	3.739	0.909	5.0929(0.0000)***	6.041(0.0000)***
NOL	0.0075	0	0.087	0.004	0	0.061	-1.0000(0.3182)	-1.000(0.3173)
SDCF	0.445	0.087	1.845	0.367	0.07	3.508	1.4531(0.1473)	1.975(0.0482)**

Panel D: Mean and Median difference test of UK sample post-treatment vs US sample post-treatment

Variable	UK post-treatment			US post-treatment			Mean	Median
	mean	median	sd	Mean	Median	sd	t-test (p value)	w-test (p value)
Equity	40.17	39	16.57	52.53	55.52	16.13	-6.6610(0.0000)***	-6.691(0.0000)***
FVPA	2,918	514	6,364	3,872	291.7	9,137	2.0643(0.0399)**	2.944(0.0032)***
PBO	3,340	622	7,462	4,763	377.1	11,594	1.9459(0.0527)*	3.172(0.0015)***
SIZE	21.84	22.02	1.738	21.74	21.87	2.262	1.5842(0.1143)	1.673(0.0944)*
LEV	0.218	0.188	0.152	0.209	0.166	0.145	1.6360(0.1029)	1.312(0.1896)
DIVIDEND	0.026	0.024	0.016	0.025	0.018	0.025	4.4768(0.0000)***	6.009(0.0000)***
FUND	0.866	0.875	0.149	0.864	0.829	0.226	-1.9056(0.0577)*	0.529(0.5968)
FUND2	0.772	0.765	0.225	0.797	0.687	0.534	-2.1728(0.0306)**	0.530(0.5963)
HOR	4.89	4.715	1.212	3.943	3.781	0.88	6.1963(0.0000)***	6.968(0.0000)***
NOL	0	0	0	0.008	0	0.091		
SDCF	0.562	0.071	3.339	0.285	0.068	1.594	1.4789(0.1403)	2.276(0.0228)**

Note: Table provide the mean and median difference test between sub-samples. Panel A: between UK pre-treatment and UK post –treatment event. Panel B: between US pre-treatment and US-post treatment event. Panel C: between UK pre-treatment and US pre-treatment. Panel D: between UK post-treatment and US post-treatment.

The mean difference test column record the t-statistic and p-value in the bracket. The median difference test column records the Wicoxon statistic and p-value in the bracket

*, **, *** indicates significance at p<0.10, p<0.05, and p<0.01, respectively

Table 16 shows a correlation matrix between model variables, with Panel A for UK sponsor firms and Panel B for US sponsor firms. In the UK sample, the table shows that the bigger the company's market capitalisation (SIZE) and pension plans (FVPA and PBO), the less they invested in equities.

In addition, there is a positive relationship between entities' equity investment levels and cash flow risk levels (SDCF). This suggests that firms with more cash flow volatility tended to invest more in equity (SDCF versus Equity). This implication is similar to that of research by Sharpe (1976) and Treynor (1977). Sharpe (1976) argues that, while a firm sponsoring a plan is required to set aside assets to fund pension obligations as they fall due, beneficiaries are bound to accept whatever payments they can get if the firm goes bankrupt with an under-funded plan. Hence, the firm sponsoring the plan essentially owns the right to sell pension assets to beneficiaries at a price equal to the value of pension liabilities. Sharpe (1976) characterises this contract as a put option on pension assets, written by the beneficiaries, at a strike price equal to the value of the pension liabilities. Sharpe (1976) and Treynor (1977) show that it is value-maximising for stockholders to increase pension risk to maximise the value of this option, transferring wealth from beneficiaries to stockholders.

Interestingly, both in the Panel A and Panel B show the negative significant correlation between the HOR and Equity investment level at 95% and 90% of confident interval respectively. According to Amir et al (2010), they argued that pension obligation to retirees are relatively short term and primarily affected by interest rates. Vice versa, obligations to active employees are relatively long-term and are primarily affected by salary increases. In addition, value changes for bonds are more correlated with interest rate changes, and value changes for stocks are more correlated with salary increases. Thus, companies with relatively

young (mature) workforces should invest more in stocks (bonds). Consequently, there should be a positive correlation between investment horizon, HOR, and equity investment level. The negative significant sign at 0.05 and 0.1 level might be due to measurement error of the variable HOR as it might not be a perfect proxy for the investment horizon of a defined benefit pension plan.

Similarly, the correlation matrix for the US sample (Table 16, Panel B) shows a significantly negative relationship between size of pension plan (FVPA and PBO) and level of equity investment.

Table 16: Correlation matrix

Panel A: UK sample

Variable	Equity	FVPA	PBO	SIZE	LEV	DIVIDEND	FUND	FUND2	HOR	NOL	SDCF
Equity	1										
FVPA	-0.102*	1									
PBO	-0.0753	0.994***	1								
SIZE	-0.205***	0.515***	0.510***	1							
LEV	0.038	0.126**	0.120**	-0.129**	1						
DIVIDEND	-0.046	-0.004	-0.002	0.295***	-0.387***	1					
FUND	-0.120**	0.092*	0.054	0.070	-0.012	0.130**	1				
FUND2	-0.174***	0.084	0.041	0.083	-0.007	0.131**	0.968***	1			
HOR	-0.124**	-0.066	-0.071	-0.298***	0.018	-0.168***	0.061	0.013	1		
NOL	-0.067	0.302***	0.293***	0.129**	0.170***	-0.092*	0.013	0.009	-0.037	1	
SDCF	0.099*	-0.030	-0.027	-0.103*	0.145**	-0.030	-0.122**	-0.127**	-0.060	0.014	1

Panel B: US sample

Variable	Equity	FVPA	PBO	SIZE	LEV	DIVIDEND	FUND	FUND2	HOR	NOL	SDCF
Equity	1										
FVPA	-0.108*	1									
PBO	-0.112*	0.993***	1								
SIZE	-0.0587	0.563***	0.553***	1							
LEV	0.065	-0.162***	-0.157***	-0.330***	1						
DIVIDEND	0.086	0.189***	0.177***	0.566***	-0.306***	1					
FUND	0.062	-0.040	-0.065	-0.063	0.002	-0.113*	1				
FUND2	0.089*	-0.056	-0.074	-0.079	-0.014	-0.127**	0.966***	1			
HOR	-0.099*	-0.001	-0.009	0.121**	-0.081	0.026	-0.088*	-0.114*	1		
NOL	-0.108*	-0.030	-0.029	0.012	0.035	-0.062	0.088*	0.076	0.169***	1	
SDCF	0.025	0.083	0.092*	0.067	-0.062	0.046	-0.033	-0.031	-0.010	-0.008	1

Note: The table records Pearson coefficients with all variables are defined in Table 7. Panel A records the correlation matrix for UK sample consist of 492 firm years and the Panel B records the correlation matrix for US sample consist of 492 firm years.
*, **, *** indicates significance at $p<0.10$, $p<0.05$, and $p<0.01$, respectively.

4.5 Empirical results

4.5.1 Empirical results for EU sample

4.5.1.1 Univariate test results

Table 17, Panel A and Figure 1 provide analyses of changes in EU firms' pension asset allocations during the period 2005 to 2014. In general, investment levels in equities by DB sponsor firms in the EU decreased over time, while investments in bonds increased over time. On average, equity investments decreased from 56.48 to 32.49 per cent in 2014, and bond investment levels increased by about 10 per cent, from 32.67 to 42.70 per cent, in the same period. The levels of investment in property did not change much during the period under examination, while investments in the opaque category labelled "Other" increased significantly, from 8.19 to 22.18 per cent for the 10-year period from 2005 to 2014.

Table 17: Equity levels across time and univariate test results for the sample of 1953 firms that at least report one year of PBO during the period from 2005 through 2014

Panel A: Equity investment level of whole sample across time on average

Asset category	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
%Equity	56.48	52.95	48.93	41.36	40.69	39.78	36.56	34.86	33.64	32.49
%Bonds	32.67	34.68	37.87	42.29	43.29	43.06	44.69	44.37	43.23	42.70
%Property	5.89	6.40	7.12	7.22	6.57	6.83	7.14	6.77	6.57	6.31
%Other	8.19	8.67	9.94	12.78	13.40	13.78	14.84	17.73	20.54	22.18

Panel B: Univariate tests of changes in pension asset allocation

	Period1	Period2	Period3	t-test 1 vs. 2	t-test 2 vs. 3
%Equity	47.27	37.07	33.07	10.2***	4.00***

Note: Panel A presents asset allocation in each year for the sample consist of 1953 firms that report at least one year of PBO during the period from 2005 through 2014. Panel B records the mean difference test of this sample among three period (period1 from 2005 to 2009, period2 from 2010 to 2012 and period3 from 2013 to 2014) using Tukey method
*, **, *** indicates significance at p<0.10, p<0.05, and p<0.01, respectively

Figure 1 shows the decrease in equity investment levels in the period from 2005 to 2014 across EU countries. In addition, Table 17, Panel B provides the results of mean difference test equity investment level in three periods (Period 1: 2005 to 2009; Period 2: 2010 to 2012; Period 3: 2013-2014). Between Periods 1 and 2, equity investment levels decreased by 10 per cent, on average, and had means

were significantly different from 0 at the 0.01 level. Between Periods 2 and 3, equity levels continued to decrease, by 4.00 per cent on average and also had means were significantly different from 0 at 0.01 level. Both the table and graph show a trend to reduce equity investment level that begin from the year 2005, especially there were two significant decrease of equity investment level in the year of 2007-2008 and 2010 and 2011. These reductions were at the height of financial crisis in 2008 and the publication of IAS19R Exposure Draft in 2010. This suggests the impact of IAS19R ED on equity investment level. However, it might also be an effect of financial crisis drift since 2008. Furthermore, in figure 1, the movement of equity level and bond level show a shift from equity to bond investment overtime. The opaque investment asset class (as a percentage of %Other) also increased during this period. Therefore, the reduction of equity was not entirely shifted to bond investment, but also opaque asset class that is not specified in term of risk profile.

Figure 1: Asset allocations of DB plans of EU sponsor firms across time
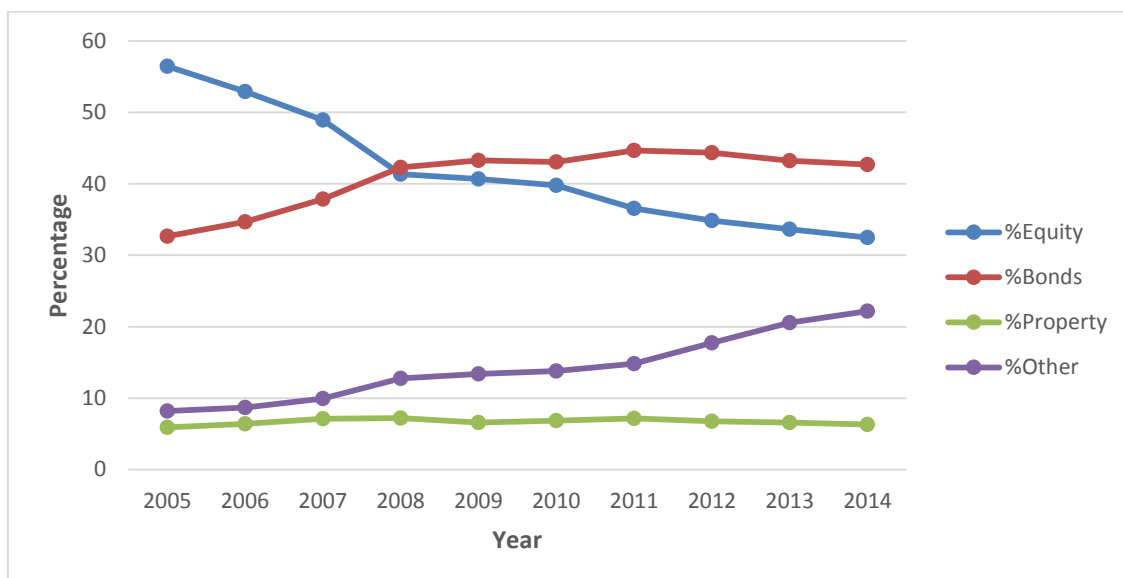
As described above, the sample of 1953 firms is highly subjected to survivorship bias due to missing value from data base or pension plan termination. The

following table (table 18) panel A and B present the asset allocation in each year of the sample consist of 102 firms that report PBO for entire period from 2005 to 2014 and the mean difference test using Tukey method, respectively. The result is still consistent with the result of the bigger sample (consist of 1953 firms). It suggests that the equity investment level was gradually decreased over time during the period from 2005 through 2014.

Table 18: Mean difference test using sample of 102 that reported PBO for the entire period from 2005 through 2014

Panel A: Equity investment level of whole sample across time on average

Asset category	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
%Equity	52.35	52.74	49.56	42.18	41.42	42.14	39.69	38.68	33.89	33.89
%Bonds	35.47	35.19	36.75	39.72	43.81	41.91	43.15	43.68	43.26	42.19
%Property	5.23	6.30	6.04	5.77	5.01	5.09	5.34	5.21	4.40	4.32
%Other	6.95	5.78	7.65	12.33	9.76	10.86	11.82	12.43	18.45	19.60

Panel B: Univariate tests of changes in pension asset allocation

	Period1	Period2	Period3	t-test 1 vs. 2	t-test 2 vs. 3
%Equity	49.40	39.79	34.01	9.62***	5.77***

Note: Panel A presents asset allocation in each year for the sample consist of 102 firms that report PBO for entire period from 2005 through 2014. Panel B records the mean difference test of this sample among three period (period1 from 2005 to 2009, period2 from 2010 to 2012 and period3 from 2013 to 2014) using Tukey method

*, **, *** indicates significance at $p<0.10$, $p<0.05$, and $p<0.01$, respectively

The following table reports the results of univariate test on the sample of 253 firms to compare the equity investment level of the year 2012 and the year 2014. The result shows that on average, sponsor firms in the sample invested 33.31 per cent of their asset in pension plan in equity in the year 2012. This level was 4.03 per cent higher than the one in the year 2014. The t-test outcomes show the p-value equal to 0.0056, indicates that, on average, the equity investment level of the year 2012 was significant higher than the equity investment level of the year 2014. It suggests there was a decrease in equity investment level following the adoption of IAS19R in 2013 which supports the hypothesis 1a.

Table 19: Univariate Test compare the means of equity investment level between the year 2012 and 2014

	Observation	Year 2012		Year 2014		t- test 2012 minus 2014	W-test (p-value)
		Mean	Median	Mean	Median		
Equity	253	33.31	34.29	29.28	29.10	2.7802(0.0056)	2.889(0.0039)

Note: The table shows the test result of mean and median difference in equity investment level between the year 2012 and 2014. The t-test column records the t-statistic and the p-value in bracket. The median test column records the Wilcoxon statistic and p-value in bracket.

While the results shown in Table 17, 18 and 19 support the hypothesis 1a that equity investment levels decreased over time and follow the adoption of IAS19R, the outcomes do not indicate the effects of IAS19R on pension plan asset allocations. In order to separate these effects from other macroeconomic or time influences, a cross-sectional test was conducted using the model specified above (Model 1). The next section reports the results of this test.

4.5.1.2 Result of cross-sectional test

Table 20 shows the country fixed-effect Model 1 across EU countries in the sample. This shows that, across countries, the decrease in equity investment levels between 2012 and 2014 was significantly positive in relation to EXPOS1, which captures the exposure of shareholders' equity to volatility in the market

value of pension assets, and EXPOS2, which captures the exposure of shareholders' equity to volatility in the discount rate. This outcome supports Hypothesis 1b and indicates that EU sponsor firms with larger pension plans relative to shareholders' equity shifted more funds from equities to bonds following the adoption of IAS19R. This is consistent with the argument that companies with larger pension plans would have larger actuarial gains/losses. And in turn, compare to companies with smaller pension plans, these firms have more incentive to move investment from equity to bond in order to mitigate the volatility effect of actuarial gains/losses on shareholders' equity (Fernandez, 2002; Amir et al, 2010)

Moreover, this result also supports hypothesis 1a, that is, the decrease in equity investment between 2012 and 2014 was significantly associated with the change of shareholders' equity exposed to the volatility of pension asset and pension liability. These associations suggest that the way a firm report pension accounting information might have impact on investment strategy of pension plan. Therefore, the change in pension accounting standard would also have effect on asset allocation of pension plan. This finding is consistent with research of Amir et al (2010) that suggest the requirement of full recognition of pension items on balance sheet would have driven asset allocation of pension plan from equity to bond in order to mitigate the effect of accounting standard on financial statement of sponsor firm.

In addition, the results for Model 1 show a significant positive relationship between changes in equity investment and changes in pension expenses relative to net income. This result also support hypothesis 1b and indicates that the larger the pension expense in relation with net income, the more equity investment decrease from year 2012 thought the year 2014. In the other words, the bigger

the pension plan, the more sponsor firm reduce the risk in pension plan portfolio following the adoption of IAS19R.

This also supports the argument specified in hypotheses 2a and 2b that managers under the IAS19 had incentives to over-invest in risky assets due to asymmetric recognition of the risks and benefits of risky investment strategies under IAS19, and that adoption of IAS19R removed that asymmetric recognition, thereby removing managers' incentives to over-invest in high-risk securities such as equities. This illustrates that boosting net income was indeed a driver of sponsors' investment decisions and confirms previous research in this area (see Bergstresser et al., 2006; Chuk, 2013; Comprix and Muller, 2006).

Table 20: Cross-sectional test results for whole sample

$ADOPT_i = \beta_0 + \beta_1\Delta IMPACT_i + \beta_2\Delta FUND_i + \beta_3\Delta FUND_i^2 + \beta_4\Delta HOR_i + \beta_5\Delta LEV_i + \beta_6\Delta DIVIDEND_i + \beta_7\Delta TAXR_i + \beta_8\Delta SDCF_i + \beta_9\Delta SIZE_i + \varepsilon_i$

VARIABLES	(1) Model 1a	(2) Model 1b	(3) Model 1c
Constant	4.121***	4.102***	4.352***
	(0.658)	(0.662)	(0.278)
EXPOS1CHN2014	3.119***		
	(1.066)		
EXPOS2CHN2014		2.226***	
		(0.873)	
EXPOS3CHN2014			0.036**
			(0.023)
FUNDCHN2014	8.573	12.31	9.641
	(10.43)	(10.25)	(10.72)
FUND2CHN2014	-1.675	-2.216	-1.834
	(2.834)	(2.862)	(2.913)
HORCHN2014	-0.337	-0.283	-0.068
	(1.214)	(1.221)	(1.235)
LEVCHN2014	-4.384	-4.416	-5.234
	(7.853)	(7.767)	(7.977)
DIVPCHN2014	0.844*	0.849*	0.843*
	(0.455)	(0.446)	(0.464)
TAXRCHN2014	0.156	0.146	0.335
	(1.543)	(1.449)	(1.823)
SDCFCHN2014	2.134	2.131	2.124
	(1.763)	(1.765)	(1.819)
SIZECHN2014	-2.323	-2.339	-3.364
	(2.171)	(2.169)	(2.181)
Observations	253	253	253
R-squared	0.048	0.045	0.037
Number of contries	9	9	9
Country FE	YES	YES	YES

Note: the table shows the regression result of change in Equity (ADOPT) on the changing of EXPOS1, EXPOS2 and EXPOS3 separately in column (1), (2) and (3) respectively. All of three models are controlled by the change of variable that are defined by table 5.
*, **, *** indicates significance at p<0.10, p<0.05, and p<0.01, respectively

4.5.2 Empirical results for UK sample

4.5.2.1 Within-country analysis

Table 21 presents the results of Equation 2, examining the responses of UK sponsor firms following the adoption of IAS19R. The coefficient of POST12 is negative and strongly significant at the one per cent level, suggesting that, following the publication and adoption of IAS19R, UK sponsor firms reduced their levels of equity investment in pension plan assets.

For comparison, the same test was run on the US sample. The results show that, in contrast to the UK sample, US sponsor firms did not reduce their levels of equity investment following the publication and adoption of IAS19R. The coefficient of the POST12 variable for the US sample is negative but not significant.

Moreover, regressions for both the UK and the US samples show a significantly negative relationship between equity levels and tax-paying status (NOL). This confirms Amir et al.'s (2010) argument that companies subject to higher tax rates have greater incentives to allocate pension assets to bonds, as bonds are more heavily taxed.

Both regressions indicate a significantly negative relationship between equity investment levels and firm size, suggesting that sponsors with smaller pension plans tended to invest more in equity securities than those with larger plans.

Table 21: Within-country test: Regression of Equity on Post12 and Other Determinants of Asset Allocation

Equity = β_0 + β_1POST12 + ΣControls + ε

VARIABLE	UK sample	US sample
POST12	-0.0425***	-0.0051
	(0.0119)	(0.0087)
SIZE	-0.0208***	-0.0109**
	(0.0060)	(0.0051)
LEV	0.0434	0.0936
	(0.0726)	(0.0592)
DIVIDEND	0.584	1.675***
	(0.810)	(0.558)
FUND	0.316	-0.236
	(0.563)	(0.152)
FUND2	-0.352	0.107*
	(0.325)	(0.0590)
HOR	-0.0274***	-0.0223*
	(0.0098)	(0.0133)
NOL	-0.141***	-0.135***
	(0.0491)	(0.0343)
SDCF	0.0019	-0.0027
	(0.0027)	(0.0026)
Constant	1.005***	0.922***
	(0.297)	(0.133)
Observations	492	492
R-squared	0.161	0.094

Notes: Table shows the result of Linear Regression with first column for UK data and the second column is for US data. Standard errors are clustered by firm. All variables are defined in Table 7.

*, **, *** indicates significance at $p<0.10$, $p<0.05$, and $p<0.01$, respectively.

For the UK data, I predict that POST12<0 and for the US data, I predict that POST12 is not different from zero.

I tabulate results of equation (5a) and (5b) in Panel A and Panel B of table 22 respectively. For the UK sample, POST12 continues to remain negative and significant, similar to table 21, when partitioning on both HIGH_FVPA and HIGH_PBO. Although the effects of HIGH_FVPA and HIGH_PBO are insignificant, the coefficients on the interaction terms POST12*HIGH_FVPA and POST12*HIGH_PBO are negative and significant at <0.05 level, suggesting that UK firms tends to reduce equity investment level following the adoption of IAS19R more when ERR assumptions have an economically significant impact on the net income. Thus, these results support hypothesis 2b. In contrast, for US sample, the results show insignificant coefficient on POST12, HIGH_FVPA*POST12 and HIGH_PBO*POST12, as it is expected in a sample that not affected by IAS19R.

Table 22 result suggests that the reduction in equity investment level is predictably stronger for firms expected to experience a stronger impact from IAS19R. That is, for firms with larger pension plan would experience a stronger impact from accounting standards. These impacts include "one time impact" on the firms' financial statement as the disclosure items are fully recognized on balance sheet. And for the subsequence period, the full recognition would increase the volatility of balance sheet inherited from the volatility of actuarial gains and losses (Amit et al 2010).

Table 22: Within Country Test

Panel A: Regression of Equity on POST12, HIGH_FVPA and POST12*HIGH_FVPA

Equity = β_0 + β_1POST12 + β_2HIGH_FVPA + β_3POST12*HIGH_FVPA + ΣControls + ε

VARIABLES	UK	US
POST12	-0.0456**	-0.0098
	(0.0177)	(0.0129)
HIGH_FVPA	-0.0433	-0.0861
	(0.0374)	(0.0406)
POST12intHIGH_FVPA	-0.0118**	0.0014
	(0.0217)	(0.0149)
SIZE	-0.0130	0.0082
	(0.0100)	(0.0085)
LEV	0.0369	0.129*
	(0.0800)	(0.0678)
DIVIDEND	0.141	0.997
	(0.870)	(0.641)
FUND	1.071***	-0.168
	(0.145)	(0.209)
FUND2	-0.784***	0.107
	(0.124)	(0.0903)
HOR	-0.0306***	-0.00501
	(0.0113)	(0.0144)
NOL	-0.168***	-0.200***
	(0.0546)	(0.0382)
SDCF	0.0025	0.0008
	(0.0031)	(0.0008)
Constant	0.563**	0.430**
	(0.222)	(0.203)
Observations	492	492
R-squared	0.173	0.090

Panel B: Regression of Equity on POST12, HIGH_PBO and POST12*HIGH_PBO

Equity = β_0 + β_1POST12 + β_2HIGH_PBO + β_3POST12*HIGH_PBO + ΣControls + ε

VARIABLES	UK	US
POST12	-0.0402**	-0.00650
	(0.0180)	(0.0135)
HIGH_PBO	-0.0304	-0.0972
	(0.0396)	(0.0407)
POST12intHIGH_PBO	0.0021**	-0.0006
	(0.0213)	(0.0165)
SIZE	-0.0148	0.0107
	(0.0102)	(0.0085)
LEV	0.0314	0.133*
	(0.0813)	(0.0679)
DIVIDEND	0.137	0.920
	(0.873)	(0.639)
FUND	1.070***	-0.178
	(0.144)	(0.208)
FUND2	-0.787***	0.109
	(0.124)	(0.0897)
HOR	-0.0311***	-0.0033
	(0.0114)	(0.0143)
NOL	-0.165***	-0.203***
	(0.0550)	(0.0378)
SDCF	0.0025	0.0007
	(0.0032)	(0.0008)
Constant	0.604***	0.383*
	(0.229)	(0.203)
Observations	492	492
R-squared	0.170	0.097

Notes: Table shows the result of Linear Regression with first column for UK data and the second column is for US data. Panel A shows the result of regression of Equity with POST12, HIGH_FVPA and POST12*HIGH_FVPA. Panel B shows the result of regression of Equity with POST12, HIGH_PBO and POST12*HIGH_PBO. Standard errors are clustered by firm. All variables are defined in Table 7.

*, **, *** indicates significance at p<0.10, p<0.05, and p<0.01, respectively.

4.5.2.2 Difference-in-differences test

Table 23 shows the results of the DID specification test with UK and US firms, pre- and post-IAS19R. Column 1 shows the original model as presented in Equation 4. The main variable of interest is POST12intUK. As shown, the coefficient of POST12intUK is negative and significant at the one per cent level. This result suggests that UK sponsor firms, on average, reduced their equity investment levels post IAS19R more than US sponsor firms, which were not affected by IAS19R. This result provides more direct evidence supporting hypothesis 2a. A coefficient of POST12intUK equal to -0.0528 indicates that UK sponsor firms reduced their equity investment by 5.2 per cent more than the US control firms, after controlling for other determinants of asset allocation.

In addition, the coefficient of the SDCF variable is positive and significant, indicating that firms with higher cash flow risks also invested more in equities. These results are interesting since they are consistent with the "risk-shifting theorem" documented in previous literature (Jensen and Meckling, 1976; Myers 1977), empirical evidence for which has been scarce. For example, Cocco and Volpin (2007), who examined 90 firms in the UK, find a positive relationship between firm leverage and allocation to risky assets, consistent with risk shifting. However, more recent research tends to provide results consistent with "risk management" (Rauh, 2009). Based on the US sample, the results of this study suggest that risk management incentives to avoid costly financial distress tend to dominate risk shifting in pension fund investment. These results contrast with Cocco and Volpin's (2007) findings. However, this is probably because the institutions governing the UK system are different from those of the US system. In particular, Rauh (2009) argues that the system of mandatory contributions may not be as punishing if a pension becomes under-funded, allowing firms in the UK

system more leeway to take risk. The results of this research support the "risk shifting" theory based on examination of both UK and US sponsor firms, with US firms chosen as the best matches with UK firms. This suggests that the difference from the results of previous research may be due to differences between firm and plan characteristics.

Table 23, Column 2 presents the results of a modified version of Equation 4 into which more interaction variables are added between POST12 and other control variables. While the original model (Equation 3) constrains the coefficients of control variables to being identical pre- and post-IAS19R, this version allows these coefficients to vary. This is because, since IAS19R reduced the importance of accounting-based asset allocation incentives, the relative importance of other driving factors of asset allocation may also have changed. Similarly, Table 23, Column 3 includes an interaction term between UK and other control variables to account for the possibility that the drivers of asset allocation may vary in importance between the UK and US.

Table 23, Column 4 presents the results of a model that includes all the control variables, interaction terms between POST12 and controls and interaction terms between the UK and control samples.

Across all four columns, the coefficient of POST12intUK remains negative and significant, supporting hypothesis 2a. The coefficient of variable SDCF is also significant and remains positive across all four columns.

Table 23: DID test with four-year window surrounding event year 2012: Regression of Equity using UK and US Firms

EQUITY = β_0 + β_1POST12 + β_2UK + β_3POST12*UK + ΣControls + ε

VARIABLE	Diff-in-Diff	Diff-in-Diff with POST12 * Controls	Diff-in-Diff with UK*Controls	Diff-in-Diff with POST12* Controls, UK*Controls
POST12	-0.0003	-0.0128	-0.0031	-0.0166
	(0.0083)	(0.1170)	(0.0085)	(0.1040)
UK	-0.0611***	-0.0638***	-0.0811	-0.0957
	(0.0204)	(0.0208)	(0.2300)	(0.2320)
POST12intUK	-0.0528***	-0.0456***	-0.0388***	-0.0292**
	(0.0129)	(0.0139)	(0.0138)	(0.0146)
SIZE	-0.0128***	-0.0133***	-0.0089	-0.0087
	(0.0044)	(0.0045)	(0.0058)	(0.0060)
LEV	0.0591	0.0570	0.0915	0.0942
	(0.0513)	(0.0502)	(0.0632)	(0.0632)
FUND	-0.1380	-0.1390	-0.2040	-0.2640
	(0.1870)	(0.2370)	(0.1890)	(0.2090)
FUND2	0.0586	0.0447	0.1130	0.1290
	(0.0769)	(0.1020)	(0.0738)	(0.0864)
DIVIDEND	1.1200**	1.2000**	1.4480**	1.4820**
	(0.4990)	(0.5290)	(0.6330)	(0.6670)
HOR	-0.0154*	-0.0110	-0.0114	-0.0054
	(0.0085)	(0.0089)	(0.0145)	(0.0147)
NOL	-0.1870***	-0.1980***	-0.2240***	-0.3040***
	(0.0307)	(0.0473)	(0.0383)	(0.0462)
SDCF	0.0028***	0.0030***	0.0017*	0.0021***
	(0.0010)	(0.0010)	(0.0009)	(0.0006)
POST12intSIZE		0.0011		-0.0007
		(0.0035)		(0.0035)
POST12intLEV		0.0087		0.0020
		(0.0531)		(0.0519)
POST12intFUND		0.0139		0.1280
		(0.1500)		(0.1080)
POST12intFUND2		0.0211		-0.0375
		(0.0635)		(0.0478)
POST12intDIV		-0.1500		-0.0128
		(0.3290)		(0.3360)
POST12intHOR		-0.0092		-0.0130*
		(0.0066)		(0.0066)
POST12intSDCF		-0.0004		-0.0027
		(0.0011)		(0.0019)
POST12intNOL		0.0427		0.1440***
		(0.0515)		(0.0373)
UKintSIZE			-0.0110	-0.0109
			(0.0087)	(0.0088)
UKintLEV			-0.0704	-0.0752
			(0.0989)	(0.0997)
UKintFUND			1.1860***	1.2060***
			(0.2420)	(0.2470)
UKintFUND2			-0.8450***	-0.8570***
			(0.1430)	(0.1450)
UKintDIV			-1.2360	-1.2660
			(1.0730)	(1.0780)
UKintHOR			-0.0175	-0.0172
			(0.0180)	(0.0180)
UKintNOL			0.0725	0.1560**
			(0.0641)	(0.0692)
UKintSDCF			0.00068	0.0023
			(0.0028)	(0.0035)
Constant	0.9000***	0.9030***	0.8040***	0.8120***

	(0.1430)	(0.1600)	(0.1610)	(0.1690)
Observations	984	984	984	984
R-squared	0.148	0.150	0.191	0.194

Note: The table shows the regression results of difference-in-differences test using treatment group of the 123 UK sponsor firms and control group of the 123 US sponsor firms for the period from 2010 through 2013. The first column shows the regression result of original DID model (equation 4). The second column shows the regression result of original DID model but include interaction terms between POST12 and control variables. The third column shows the regression result of original DID model but include interaction terms between UK and control variables. And finally, the fourth column shows the regression result of original DID model but include interaction terms between POST12 and UK with control variables. Standard errors are clustered by firms.

All variables are defined in Table 7

*, **, *** indicates significance at p<0.10, p<0.05, and p<0.01, respectively.

In this table, I predict that UK*POST12 <0

4.5.3 Empirical Result for Hypothesis 3a and 3b

Table 24, Panel A documents univariate tests on two groups of BENEFICIARYREP. The test compares the mean difference in equity levels and changes in equity investment between 2012 and 2014 (variable ADOPT) between these groups. The outcomes suggest that the equity investment levels of Group 2 were less significant than for Group 1. A value of 2 means that regulation is more rigid on employee protection. This suggests that regulation of the number of beneficiary representatives on a pension plan board may prevent managers from over-investing in high-risk securities, thus shifting the risk from shareholders to employees. Unfortunately, the results of the univariate test to compare changes in equity investment levels for 2012 and 2014 between Groups 1 and 2 are unclear. The difference has a positive sign but is insignificant.

Table 24, Panel B shows the results of multivariate tests between equity investment levels and licensing regulations (LICENSING), as well as changes in equity investment levels in 2012 and 2014 with licensing regulations. With equity investment level as the dependent variable, the results suggest that the more rigid the licensing process, the less equity was invested. Again, this outcome suggests that more rigid licensing processes may improve pension plan governance, and thus prevent managers from shifting risk from shareholders to employees.

The results for the test using changes in equity investment levels between 2012 and 2014 (variable ADOPT) as a dependent variable is insignificant and unclear. One reason for this outcome may be that the available data on institutional factors and regulation were sticky over time and missing for some countries. This led to insufficient variation in the variables to provide reliable inferences. This problem might be solved if country samples were enlarged or data on pension plan

governance were collected at firm level. Therefore, further research is proposed

to collect additional data in order to run reliable tests for Hypotheses 3a and 3b.

Table 24: Univariate test of BENEFICIARY and multivariate test of LICENSING

Panel A: Univariate test of variable BENEFICIARYREP

VARIABLE	BENEFICIARYREP=1			BENEFICIARYREP=2			Mean t-test mean (1) - mean (2)
	mean	median	sd	mean	median	sd	
Equity	44.71	45.39	21.07	33.81	33.00	18.70	10.89***
ADOP2014	3.469	1.336	13.37	2.110	0.421	11.22	1.359

Panel B: Multivariate test of main independent variable LICENSING

$ADOPT_i = \beta_0 + \beta_1 \, LICENSING_i + \Sigma Controls_i + \varepsilon_i$

$EQUITY_{it} = \beta_0 + \beta_1 \, LICENSING_{it} + \Sigma Controls_{it} + \varepsilon_{it}$

VARIABLE	Model 5a With ADOPT as dependent variable	Model 5b With Equity as dependent variable
LICENSING	-0.338	-4.115***
	(1.519)	(0.922)
ADRI	-1.527	-5.831***
	(1.273)	(1.497)
ENFORCE	-0.929	15.85***
	(3.266)	(5.124)
CORDIS	0.299***	0.316***
	(0.107)	(0.0996)
GOVDIS	0.197	0.360
	(0.129)	(0.231)
EQUITYLIMIT	-0.392	-7.557***
	(2.583)	(2.843)
SINGLEISSUELIMIT	2.498	13.72***
	(2.392)	(2.895)
Constant	-35.35***	-19.78
	(10.26)	(15.65)
Observations	316	5,008
R-squared	0.025	0.206

Note: Panel A record the result of t-test between two groups BENEFICIARYREP. The test compares the mean difference in equity levels and changes in equity investment between 2012 and 2014 between these groups.

Panel B shows the results of multivariate tests between changes in equity investment levels in 2012 and 2014 with licensing regulations (LICENSING) in the first column, and equity investment levels and licensing regulations in the second column.

4.6 Sensitivity Analysis

4.6.1 Opaque asset class

Both IAS19R and US GAAP require plan sponsors to disaggregate the FVPA into classes that distinguish the nature and risks of those assets. The data collected from the Capital IQ database consisted of four asset categories; equity, fixed income, real estate and "other".

The "other" asset category is defined as the percentage of investment in any other asset classes apart from equities, fixed income and real estate. These assets differ from other asset categories since they include descriptions of the legal structure of the investments that are uninformative about their risk-return profiles, for example "mutual funds", "registered investment companies" and "common and collective trusts". For this reason, in order to robustly test the main results, I follow the research of Anatharaman and Chuck (2015) to exclude the UK sponsor firms with more than 20 per cent invested in opaque asset categories according to the Capital IQ database from the sample.

This reduced the sample from 123 to 88 UK sponsor firms. The matching process was then repeated to find 88 US sponsor firms as a control group.

Table 25 shows the results of the DID specification test for the new sample. As for the main tests, Column 1 shows the original model as presented in Equation 4 and the other columns present the results of the modified versions. Across all four columns, the coefficient of POST12intUK remains negative and significant, supporting hypothesis 2a.

In addition, the coefficient of the LEV variable is positive and significant, indicating that firms with higher leverage tended to invest more in equities. Once again, the results show that firms with higher cash flow risks also invest more in equities.

Table 25: DID test with four-year examining window surrounding event year 2012 (sample without opaque sponsors)

EQUITY = β_0 + β_1POST12 + β_2UK + β_3POST12*UK + ΣControls + ε

VARIABLE	(1)	(2)	(3)	(4)
POST12	-0.00854	0.151	-0.00940	0.142
	(0.0101)	(0.123)	(0.0102)	(0.115)
UK	-0.0468**	-0.0496**	-0.302	-0.297
	(0.0218)	(0.0221)	(0.274)	(0.277)
POST12intUK	-0.0440***	-0.0375**	-0.0421***	-0.0351**
	(0.0149)	(0.0155)	(0.0159)	(0.0160)
SIZE	-0.0168***	-0.0148***	-0.00970*	-0.00713
	(0.00428)	(0.00445)	(0.00562)	(0.00590)
LEV	0.123**	0.101*	0.183***	0.158**
	(0.0560)	(0.0548)	(0.0665)	(0.0692)
FUND	0.171	0.238	-0.510	-0.487
	(0.296)	(0.320)	(0.521)	(0.518)
FUND2	-0.112	-0.166	0.303	0.277
	(0.175)	(0.204)	(0.280)	(0.284)
DIVIDEND	0.870	0.869	0.491	0.419
	(0.572)	(0.595)	(0.716)	(0.738)
HOR	-0.00694	-0.00304	-0.00699	-0.00169
	(0.00786)	(0.00854)	(0.0116)	(0.0124)
NOL	-0.0943*	-0.0955*	-0.0346	-0.0425
	(0.0497)	(0.0498)	(0.0572)	(0.0588)
SDCF	0.00229**	0.00265***	0.00189	0.00225***
	(0.00101)	(0.000806)	(0.00118)	(0.000833)
POST12intSIZE		-0.00439		-0.00550
		(0.00381)		(0.00397)
POST12intLEV		0.0663		0.0747
		(0.0601)		(0.0585)
POST12intFUND		-0.169		-0.0689
		(0.224)		(0.181)
POST12intFUND2		0.130		0.0661
		(0.150)		(0.116)
POST12intDIV		0.0450		0.209
		(0.387)		(0.395)
POST12intHOR		-0.00781		-0.0102
		(0.00880)		(0.00880)
POST12intSDCF		-0.00104		-0.00268
		(0.000999)		(0.00254)
UKintSIZE			-0.0107	-0.0111
			(0.00824)	(0.00831)
UKintLEV			-0.0951	-0.101
			(0.111)	(0.112)
UKintFUND			1.524***	1.530***
			(0.550)	(0.557)
UKintFUND2			-1.050***	-1.053***
			(0.319)	(0.323)
UKintDIV			0.671	0.663
			(1.000)	(1.008)
UKintHOR			-0.00432	-0.00484
			(0.0155)	(0.0157)
UKintNOL			-0.122	-0.108
			(0.0738)	(0.0753)
UKintSDCF			0.000221	0.00175
			(0.00286)	(0.00391)
Constant	0.796***	0.727***	0.905***	0.835***
	(0.149)	(0.152)	(0.228)	(0.225)
Observations	704	704	704	704
R-squared	0.137	0.145	0.182	0.189

Note: The table shows the regression results of difference-in-differences test using treatment group of the 88 UK sponsor firms that have opaque asset class less than 20% and matched control group of the 88 US sponsor firms for the period from 2010 through 2013. The first column shows the regression result of original DID model (equation 4). The second column shows the regression result of original DID model but include interaction terms between POST12 and control variables. The third column shows the regression result of original DID model but include interaction terms between UK and control variables. And finally, the fourth column shows the regression result of original DID model but include interaction terms between POST12 and UK with control variables. Standard errors are clustered by firms.

All variables are defined in Table 7

*, **, *** indicates significance at $p<0.10$, $p<0.05$, and $p<0.01$, respectively.

In this table, I predict that UK*POST12 <0

4.6.2 Alternative treatment events

This section describes several additional tests conducted to examine the impact of IAS19R on asset allocations, but with different treatment events. Since IAS19R was published in June 2011 and became mandatory on 1 January 2013, the test was re-run with two different window periods: (1) four years centred around 2011, the year of publication; and (2) four years centred around 2013, the year of adoption (Sensitivity Tests 2A and 2B in Appendix B).

Table 26 shows the results of DID tests. Column 1 presents the outcome of the Equation 3 model but with a POST11 variable for the four-year period surrounding Year 2011. Column 2 shows the outcomes of the Equation 3 model but with a POST13 variable for the four-year period surrounding Year 2013.

For the period surrounding the year of publication (2011), there was a significant decrease in both UK and US sponsor firms following publication. However, the variable of interest, POST11intUK, has an insignificant coefficient, suggesting that, following the publication of IAS19R in 2011, UK sponsor firms, on average, did not reduce their equity investment levels compared with US sponsor firms. Similarly, no reduction is observed in equity investments by UK sponsor firms relative to US sponsor firms following the year of adoption, since the coefficient of the POST13intUK variable is not significant.

Across the different period analyses, positive coefficients are still seen for the SDCF variables, which remain significant at the one per cent and ten per cent levels respectively.

Table 26: DID test with four-year window surrounding event years 2011 and 2013

EQUITY = β_0 + β_1POST11 + β_2UK + β_3POST11*UK + ΣControls + ε

EQUITY = β_0 + β_1POST13 + β_2UK + β_3POST13*UK + ΣControls + ε

VARIABLE	Eent Year 2011	Event Year 2013
POST11	-0.0295***	
	(0.0081)	
POST11intUK	-0.0218	
	(0.0133)	
POST13		0.0254**
		(0.0122)
POST13intUK		-0.0586***
		(0.0154)
UK	-0.0547***	-0.0735***
	(0.0191)	(0.0234)
SIZE	-0.0118***	-0.0137***
	(0.0041)	(0.0046)
LEV	0.0613	0.0322
	(0.0443)	(0.0598)
FUND	-0.170	-0.185
	(0.267)	(0.201)
FUND2	0.0470	0.0882
	(0.125)	(0.0836)
DIVIDEND	1.310***	0.832*
	(0.424)	(0.491)
HOR	-0.0176**	-0.0208**
	(0.0083)	(0.0087)
NOL	-0.191***	-0.120***
	(0.0260)	(0.0324)
SDCF	0.0022***	0.0043*
	(0.0008)	(0.0022)
Constant	0.930***	0.952***
	(0.163)	(0.154)
Observations	980	980
R-squared	0.127	0.155

Notes: The table shows the result of DID test with different treatment even of the Year 2011 and Year 2013. The first column shows the regression result of DID test using the treatment event of the Year 2011 (POST11) with the data of 123 UK sponsor firms and 123 US firms for the period from 2009 through 2012. And the second column shows the regression result of DID test using the treatment event of the Year 2013 (POST13) with the data of 123 UK sponsor firms and 123 US firms for the period from 2011 through 2014. Standard errors are clustered by firm.
All variables are defined in Table 7
*, **, *** indicates significance at p<0.10, p<0.05, and p<0.01, respectively.

4.6.3 Narrower examining window

For both the main test and the tests with different treatment events, the examining window was four years. This section describes the results of a DID test using a narrower window of two years surrounding the event for 2011, 2012 and 2013 (Sensitivity Tests 3A, 3B and 3C in Appendix B). It was hoped that using a narrower window would strengthen the results by ruling out other confounding factors that might explain changes in equity investment levels. However, it might be difficult to capture changes in equity levels with the narrower window since asset reallocations take time due to liquidity costs. Also, if the immediate impact of IAS19R was not stark enough to justify the transaction costs, the results might not show any significance.

Table 27 records the outcomes of DID tests for three separate two-year periods surrounding the years 2011, 2012 and 2013.

In each version of the model across the three separate periods, the coefficients of the POST11intUK, POST12intUK and POST13intUK variables are not significant. These outcomes may be because UK sponsor firms had two years to prepare for the adoption of IAS19R (from June 2011 to 1 January 2013); thus, they may have gradually changed the asset allocations in their pension plans to avoid liquidity costs.

EQUITY = $\beta_0 + \beta_1$POST11 + β_2UK + β_3POST11*UK + ΣControls + ε
EQUITY = $\beta_0 + \beta_1$POST12 + β_2UK + β_3POST12*UK + ΣControls + ε
EQUITY = $\beta_0 + \beta_1$POST13 + β_2UK + β_3POST13*UK + ΣControls + ε

VARIABLE	Event Year 2011	Event Year 2012	Event Year 2013
POST12	0.0088		
	(0.0098)		
POST12intUK	-0.0330**		
	(0.0163)		
POST11		-0.0374***	
		(0.0106)	
POST11intUK		-0.0094	
		(0.0158)	
POST13			0.0353**
			(0.0159)
POST13intUK			-0.0463**
			(0.0186)
UK	-0.0601**	-0.0591***	-0.0868***
	(0.0244)	(0.0202)	(0.0246)
SIZE	-0.0150***	-0.0132***	-0.0127**
	(0.0046)	(0.0042)	(0.0051)
LEV	0.0492	0.0796*	0.0699
	(0.0566)	(0.0456)	(0.0692)
FUND	-0.377	-0.199	-0.165
	(0.446)	(0.195)	(0.173)
FUND2	0.169	0.0435	0.0757
	(0.252)	(0.0804)	(0.0655)
DIVIDEND	1.493***	1.395***	1.084**
	(0.513)	(0.467)	(0.528)
HOR	-0.0165*	-0.0133	-0.0201**
	(0.00851)	(0.00823)	(0.00944)
NOL	-0.122***	-0.222***	-0.132***
	(0.0379)	(0.0446)	(0.0359)
SDCF	0.00363	0.00250***	0.00237*
	(0.00306)	(0.000897)	(0.00134)
Constant	1.042***	0.971***	0.907***
	(0.207)	(0.141)	(0.159)
Observations	492	492	492
R-squared	0.110	0.137	0.167

Notes: This table shows the DID test with narrower examining windows (only 1 year before and 1 year after the treatment event). The first column shows the regression results using the sample of 123 UK sponsor firm and 123 US sponsor firms for the period from 2011through 2012. The second column shows the regression results using the sample of 123 UK sponsor firm and 123 US sponsor firms for the period from 2012through 2013. The third column shows the regression results using the sample of 160 UK sponsor firm and 123 US sponsor firms for the period from 2013through 2014. Standard errors are clustered by firm.
All variables are defined in Table 7
*, **, *** indicates significance at p<0.10, p<0.05, and p<0.01, respectively.

4.6.4 Using Vector of Control to conduct Difference-in-Differences Test

This part provide the difference-in-differences test similar to the main test in section 4.5.2.2 with the full sample of 123 UK treatment firms and 123 US control firms and treatment event is in 2012. However, in order to improve the control of the model, instead of using the control variables similar to the test in table 23, the test is conducted as 2 stage regression (2SLS) by using a vector of control to include in the model as an independent variable.

The following table shows the test for the regression. The result confirms the difference-in-differences test as the variable of interest POST12intUK is negative and significant at 0.01 level, indicate that, compare to the US control sample, on average, the UK sponsor firms reduce their equity investment level following the adoption of IAS19R in 2012.

Table 28:Difference in-Differences Test using vector of control

VARIABLES	(1) Model 1
POST12	-0.00617
	(0.00925)
UK	-0.0350*
	(0.0200)
POST12intUK	-0.0478***
	(0.0143)
VectorControl	0.867***
	(0.188)
Constant	0.0925
	(0.0926)
Observations	984
R-squared	0.126

4.7 Discussion of Further Research Opportunities

4.7.1 Risk shifting from shareholders to pension plan beneficiaries

The previous literature shows that DB pension plans create obligations similar to long-term debt (Oldfield, 1977; Feldstein and Seligman, 1981). While sponsor firms must set aside assets to fund these obligations as they fall due, beneficiaries are bound to accept whatever payments they can get if a firm goes bankrupt with an under-funded plan. Therefore, according to Sharpe (1976), sponsor firms essentially own put options on pension assets as a right to sell pension assets to beneficiaries at a price equal to the value of pension liabilities.

Sharpe (1976) and Treynor (1977) show that it is value-maximising for stockholders to increase pension risk to maximise the value of put options, thus transferring wealth from beneficiaries to stockholders. Pension risk may be increased by either increasing the plan's leverage (under-funding the plan) or investing the plan's assets in risky securities (increasing the plan's underlying asset risk). In both cases, risk is shifted from stockholders to employees.

Moreover, according to Sharpe (1976), in countries where there are pension guarantees, such as the PBGC in the US and the PPF in the UK, stockholders also have incentives to transfer risk to pension guarantees. The PBGC (or similar institutions in other countries) guarantees pension payments from DB pension plans (often subject to some limits) if they terminate with insufficient funds and sponsors fail to meet their obligations. Thus, effectively, the PBGC sells a put option to the companies' owners (Sharpe, 1976). In situations of extreme financial distress where PBGC insurance premiums are not fully risk-adjusted, it becomes value-maximising for stockholders to increase plan risk, so as to maximise the difference between the value and the cost of the PBGC put option (Sharpe, 1976).

The pension guarantee thus intensifies stockholders' ability and incentive to engage in risk shifting with pension plans.

Despite the strong theoretical prediction of risk shifting, previous empirical evidence supporting this prediction is quite weak and mixed. Bodie et al. (1985) and Coronado and Liang (2005) find that firms close to distress have lower pension funding, consistent with risk shifting, while Friedman (1983), Francis and Reiter (1987) and Petersen (1996) find the opposite. In addition, Friedman (1983), Amir and Benartzi (1999) and Rauh (2009) find strong evidence indicating an association between firm risk and pension asset allocation. This suggests that plan sponsors under poor financial conditions reduce allocations to riskier asset classes such as equities, consistent with risk management rather than risk-shifting behaviour. As risk-shifting theory is often cited as a main driver of pension risk taking, the lack of empirical evidence to support it is puzzling.

Recent research by Anantharaman and Lee (2014) provides one explanation: managerial risk aversion. They argue that, while diversified stockholders have incentives to increase firm risk at the expense of debt-holders, most corporate decision making is in the hands of managers, who prefer less risk than stockholders, out of concern for their reputation, undiversifiable human capital, or the private benefits of control. Stockholder–manager conflict on risk may thus offset the risk-shifting incentives arising from stockholder–debt-holder conflict. In order to solve the puzzle, Anantharaman and Lee (2014) examine compensation contracting as a primary means of altering managerial incentives. They propose that equity-based compensation increases the sensitivity of managers' wealth to stock price performance (delta), and so aligns managers closer with stockholders, but may also lead managers who are under-diversified in firm-specific wealth to avoid risk. On the other hand, options add convexity to managers' payoffs and,

by increasing the sensitivity of managerial wealth to firm risk (vega), may offset the risk-avoidance tendencies introduced by delta and by reputation or human capital concerns. Therefore, they hypothesise that risk shifting may be more pronounced in firms in which top managers have high vega. They examine pension funding (asset allocation) for a sample of 5,748 (4,398) firm-years spanning 1999 to 2010. Cross-sectional tests show that firms approaching distress tend to under-fund plans, after controlling for operating cash flows. In addition, they find that the association between firm risk and under-funding is stronger for firms whose CFOs have high vega and low option delta, suggesting that risk-shifting behaviour is more intense when compensation structures provide risk-taking incentives for managers. The findings are stronger throughout for CFO than for CEO incentives. Furthermore, tests of asset allocations show that allocations to risky assets increase when firms are not only close to distress but also have poorly funded plans, suggesting risk-shifting behaviour. Examination of the effect of managerial incentives in cross-sectional tests reveals that the association between firm risk and allocation to risky asset classes is again more pronounced for CFOs (but not CEOs) with high vega and low option delta. These effects persist but are only marginally significant within firms and within managers over time. These findings are also robustly tested using instrumental variables to establish the causal effect of compensation incentives on pension risk shifting. However, in using the accounting rule mandating stock option expensing on income statements as an exogenous shock on delta and vega, the asset allocation results are inconclusive. The test only supports the causal effect of CFO equity incentives on pension under-funding. Overall, the results indicate that CFO vega incentives strongly intensify risk shifting through pension under-funding. They also intensify risk shifting through pension asset

allocation to risky assets, but these effects are modest and less consistently robust.

In addition to Anantharaman and Lee's (2014) recent research, Cocco and Volpin (2005) also provide evidence of manager incentives for involvement in risk-shifting activities. From examination of DB plans in the UK, they find that the pension plans of indebted companies with more "insiders" (i.e. who were also executive directors of the sponsoring company) on the trustee board invested more in equities, contributed less to the pension fund and had a higher dividend pay-out ratio. They conclude that when finances get tough, conflicts of interest may arise and impartial trustees are needed on the board to make governance work. They suggest a governance system of pension plan boards where the power to make decisions is balanced between representatives of both the sponsoring firm and beneficiaries of the pension plan. The next section will describe in more detail the role of beneficiary representatives in investment decision making for DB pension plans.

4.8 Conclusion

In 2011, the IASB published an amendment of IAS19 (IAS19R) that significantly changed the accounting and reporting of DB plans across EU-listed companies by eliminating the "corridor method" and the application of ERR in the income statement.

The elimination of the "corridor method" had substantial impact on a large number of EU companies' financial statement that used to apply this method to recognize their pension AGL[27]. In particular, it had severe one-time effect on these firms' equity and significantly increase their balance sheet volatility in subsequent period (PWC, 2011). As a result, it raised the likelihood of debt- and equity-based covenant violations. In order to mitigate the effect of IAS19R adoption, the sponsor firms were expected to shift pension assets from high risk asset class to lower risk asset class (Amit et. al. 2010).

The first part of the chapter focus on the sample of the EU data to examine the overall effect of IAS19R adoption on EU-listed firms. Firstly, a sample of 1,953 firms from 21 European countries was collected for the period 2005 to 2014 and test for the mean and median difference on equity investment levels between three different periods: (1) from 2005 to 2009 when IAS19R was not draft, (2) from 2010 to 2012 when the ED of IAS19R was made to publish and IAS19R was published and (3) from 2013 to 2014 when IAS19R was mandatory. The outcome shows that there was a reduction in equity investment levels over time and following the adoption of IAS19R in 2013.

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[27] According to Morais (2008), the "corridor method" was popular across EU-listed companies compared to the other two methods: the OCI method and the IS method.

Furthermore, using Amir et al.'s (2010) cross-sectional model for the periods 2012 and 2014, with 253 firms across 9 EU countries, the outcomes reveal that the decrease in equity investment between 2012 and 2014 was significantly associated with the change of shareholders' equity exposed to the volatility of pension asset and pension liability. These associations suggest that the way a firm report pension accounting information might have impact on investment strategy of pension plan. Therefore, the change in pension accounting standard would also have effect on asset allocation of pension plan.

In addition, the results also show a significant positive relationship between changes in equity investment and changes in pension expenses relative to net income. This result indicates that the larger the pension expense in relation with net income, the more equity investment decrease from year 2012 thought the year 2014. In the other words, the bigger the pension plan, the more sponsor firm reduce the risk in pension plan portfolio following the adoption of IAS19R.

In addition to the elimination of "corridor method", the abolition of ERR in income statement removed the asymmetric recognition of benefits and risks in risk-taking investment strategies for pension asset plan. That is, a sponsor firm is no longer allowed to recognise the high premium of return in their income statement when they invest their pension plan portfolio in high-risk asset class such as equity. Thus, by removing this asymmetry, IAS19R also removed managerial incentives over invest on high-risk asset class than the optimal level in their pension plan assets. Therefore, both the amendments of IAS19 on balance sheet and income statement were expected to drive the asset allocation of pension asset portfolio toward lower risk asset class such as bonds.

Prior to the adoption of IAS19R, the majority of UK sponsor firms applied the OCI method to recognize their AGL on the balance sheet (Morais, 2008). Therefore, in the context of the UK firms, the elimination of the "corridor method" had little impact on their balance sheets. However, the elimination of the ERR has led to a situation where UK sponsor firms are no longer able to take credit for anticipated equity investments out-performing AA corporate bonds. As a result, nearly all UK companies have seen an increase in pension expenses reported in their P&L accounts (PwC, 2011). The second part of the chapter focuses on the UK context to shed light on the impact of IAS19R on asset allocation via the "income statement channel". Although, this part aims to highlight the "income statement channel" by relying on the UK sample in which majority of the firms used the OCI method, there are still small number of firms in the sample that might apply the "corridor method" in the period before the adoption of IAS19R. Due to the limitation of data base, this limitation is currently not fixed and might affect the conclusion of this research.

Using a sample of 123 UK firms for the period 2010 to 2013, a DID research design was used to compare UK sponsor firms' levels of equity investment with a group of US firms matched using propensity score matching. The matching process is performed by running a probit model to calculate the propensity score of the UK and US firms using both their pension plan characteristic, firm characteristic and their industries. Then, for each of the UK firms in the sample, a US firm is appointed as a control firm if that firm has closest value of propensity score to the one of the UK firm, but not outside the range of plus and minus 3% of the UK firm's score.

The findings of DID test reveal that, following the adoption of IAS19R, UK sponsor firms, on average, reduced the levels of equity investment in their pension plans

more than the US sponsor firms in the control group. These results suggest that the abolition of ERR would have impact on asset allocation of sponsor pension plans. In turn, this implies the incentive of manager to boost net income using the pension plan asset to invest in high-risk asset class such as equity.

In addition to the main test, this outcome is robustly examined by conducting the sensitivity analysis with different treatment events, including the publication of IAS19R in 2011 and the mandatory of IAS19R in 2013, with the 4 years' length of examining window surrounding the chosen events date. The study also sought to rule out any confounding factors that might explain deviations in equity investment levels by narrowing the window of examination from four years to two years (one year before and one year after the events). The results of 4 years' examining window tests show no significant on variable of interest in the year of event in 2011 but significant for the year of event 2013. The IAS19R was made to publish in June 2011 but was not mandated until January 2013. This outcome might due to the time lag that manager response to the publication of IAS19R since the sponsor firms had almost 2 years to prepare for the IAS19R mandatory in 2013. Additionally, the results of the 2 years' examining window tests report no significant on variable of interest. One reason that might explain these outcomes. That is, manager might reallocate their asset in pension plan gradually in order to avoid the expensive transaction costs.

Furthermore, on these tests, a positive relationship was also found between equity investment levels and firms' leverage and cash flow risk. This supports the "risk-shifting" hypotheses documented in the previous literature (Jensen and Meckling, 1976; Myers, 1977; Leland, 1998; Cocco and Volpin, 2007). However, any direct tests of this hypothesis are outside the scope of this research, leaving opportunities for further research.

In addition to examining the impact of IAS19R adoption, the research also sought to shed light on how the regulation of pension plans may affect equity investment levels, and thus changes in equity investment levels, follow adoption of the new accounting standard.

In particular, the study focused on two aspects of pension regulation. The first was regulation of the number of employee representatives on pension plan boards. This may ensure better alignment of the interests of the governing board with those of pension plan beneficiaries, thus mitigating conflicts of interest and preventing sponsor firms from over-investing in high-risk securities in order to shift the risk from shareholders to employees. The second was regulation of the licensing process. Licensing may be defined as the process by which an authority grants permission to a pension entity to operate and/or to have the right to benefit from a specific tax treatment. It includes a range of actions, involving assessment of compliance with specific requirements prior to granting permission to operate or granting tax benefits, as well as the status of compliance with such requirements. The more rigid the steps that firms must satisfy in order to qualify for pension plans, the better the quality and competence of pension plan board members.

Based on the argument above, it was expected that equity investment levels and decreases in equity investment levels as a result of adoption of IAS19R would be lower for firms in countries that require more member representatives and for firms in countries with more rigid pension plan licensing processes.

The results of univariate and multivariate tests suggest that firms in countries that require more employee representatives and have more rigid pension licensing

invest less in equities. However, the results for changes in equity investment levels following IAS19R adoption using these variables were insignificant and less clear owing to insufficient data. Further research might extend the sample and collect more data in other countries in order to enhance the tests.

Chapter 5: Conclusion

5.1 Key findings and Discussion

In June 2011, the IASB published an amendment of IAS19 that marked some significant requirement changes in recognitions, presentations and disclosures of defined benefit pension plan. Arguably, these changes have had effects on investment strategies of pension plan portfolio. Collectively, this thesis extends the previous literature on the "economic consequences" of accounting standards in the context of pension accounting and provide evidence on the causal effects of IAS19R adoption on asset allocation of pension plans.

The chapter 2 of the thesis discusses the economic and regulatory context of the research in which it focuses on international accounting standard IAS19 and provide comparison among three most popular accounting standards for pension: IAS19, FRS 17 and SFAS 158. This chapter also provides a comprehensive literature reviews on previous empirical research relate to pension accounting. Firstly, this literature review shows that the majority of previous research focused on value relevance and earnings management relate to pension accounting. Secondly, most of these researches were performed using US data and in the context of US market. Since there is institutional different between US market and non-US market, this study is motivated to examine the economic consequence of the international accounting standard in the context of the UK market and EU companies.

In the light of Positive Accounting Theory developed by Watts and Zimmerman (1986), the chapter 3 of the thesis provides a comprehensive analysis on how firms would lobby in relation to the proposals for IAS19R. By carefully examine the comment letters sent by the respondents to the IASB's Exposure Draft, this

chapter provides the suggested implication of lobbying behaviour during the due process in the development of the revised pension accounting standard. The findings suggest that industry firms would use some dubious arguments and information to persuade the IASB to abandon or change its proposals in the final version of IAS19R. In this respect. The sponsor firms that have negative effect by the new pension accounting standard, decided to submit a comment letter with the consideration of the impact of the proposal changes on reported accounting numbers. And in turn, how these change in accounting numbers would influence the decision making of various stakeholders. The manual analysis of the comment letters as the instrument for the sponsor firms to take part in the due process of accounting standard, documents several argument raised by these firms. Most of the opposed arguments were cluster around the elimination of the "corridor method", abolition of ERR and new disclosure requirement in the ED. Interestingly, these proposals were arguable as the one which have the most significant impact on the sponsor firms financial reporting. Furthermore, when compared to the firm characteristic and economic context of the firms, these arguments were quite disingenuous. This finding suggests the lobbying effort of the sponsor firms to prevent the negative impact of new proposal adoption to the firms which is consistent with "Positive Accounting Theory" (Watts and Zimmerman, 1986)

The next chapter performs an empirical research that focus on the causal effect of IAS19R adoption on asset allocation of pension plan using both UK data and EU data. The amendment of IAS19 had two significant changes. The first change related to elimination of the "corridor method" that has significant effect on the balance sheets of sponsor firms ("balance sheet channel") and the second one regarded to the abolition of ERR that has significant effect on income statement

of sponsor firms ("income statement channel"). The first part of this chapter examines the change of asset allocation of EU-listed firm following the adoption of IAS19R through both "income statement channel" and "balance sheet channel". This part is based on the data of 253 EU-listed firms in 9 countries and examines the association between the equity investment level changes and the changes in pension accounting number reported in financial statements. The study applies a cross-sectional model developed by Amir et al. (2010). The regression results reveal that the decrease in equity investment between 2012 and 2014 was significantly associated with the change of shareholders' equity exposed to the volatility of pension asset and pension liability. These associations suggest that the way a firm reports pension accounting information might impact on the investment strategy of its pension plan(s). Therefore, the change in the pension accounting standard would also have affect pension plan asset allocation. Additionally, the results also show a significant positive relationship between changes in equity investment and changes in pension expenses relative to net income. This result indicates that the larger the pension expense in relation to net income, the more equity investment decreased from 2012 through 2014. In the other words, the bigger the pension plan in relative terms, the more the sponsor firm seeks to reduce the risk in the pension plan portfolio following the adoption of IAS19R.

Furthermore, the evidence shows a positive relationship between equity investment levels and firms' leverage and cash flow risk. This supports the "risk-shifting" hypotheses documented in the previous literature (Jensen and Meckling, 1976; Myers, 1977; Leland, 1998; Cocco and Volpin, 2007).

The next section of the chapter focuses on isolating the impact of IAS19R adoption through the "income statement channel" on pension plan asset allocation by studying UK sponsor firms. The UK setting provides a unique opportunity to highlight the "income statement channel" since the majority of UK sponsor firms were not affected by the elimination of the "corridor method" requirement. Based on a sample consisting of 123 UK firms and 123 US firms, this part provides evidence on the causal effects of IAS 19R adoption on asset allocation of pension plan by applying difference-in-differences research design with propensity score matching. The results suggest that, on average, UK sponsor firms reduced the equity investment level in responding to the IAS19R adoption, relative to the US sponsor firms. Although the UK sample is selected to highlight the effect of ERR abolition, among 123 UK sponsor firms, there might be small number of firms that used the "corridor method" to recognise AGL before the adoption of IAS19R. Due to the limitation of database, these firms were unable to separate from the sample. This limitation might affect the reliability of the conclusion in this test.

The findings of chapter 4 offers rational explanations on how reporting the accounting information might have significant effects on management behaviours and decisions. In particular, pension expense calculation and thus net income reporting is an important driving factor for managers to alter investment strategies for their pension plan assets, changes which are not necessarily for the best interest of beneficiaries. The outcomes suggest these investment strategies are consistent with the hypothesis of "risk shifting" from the shareholders to the beneficiaries of firm pension plan. However, any direct tests of this hypothesis are outside the scope of this research, leaving opportunities for further research.

The final part of the chapter examine how macro-institutional context would drive the asset allocation of pension plan. In particular, whether the number of member represented for the beneficiaries in the pension Board and the competency of these member measured by the licencing factor, would improve the governance of the Board. The results show a negative association between these factors and equity investment level but there are no significant association between these factors with the change of equity investment level following the adoption of IAS19R. These outcomes might contribute to the limitation of data collected and the misspecification regression model used to examine this research. This suggests an opportunity for future research.

This study provides evidence that may be beneficial to standard setters, investors, and regulatory agencies. It provides reliable evidence on the causal effect of IAS19R adoption on asset allocation of pension plans, as well as a comprehensive view on the "economic effects" of this adoption, and the lobbying efforts of impacted entities. This study would be useful for standard setters and regulatory agencies for their future projects related to pension accounting and other standards.

5.2 Limitation and further research suggestion

The manual content analysis in chapter 3 is subject to certain limitations related to the content analysis methodology used. According to Krippendorf (1980), the potential unreliability of self-applied investigator-developed recording instructions must be considered and controlled in content analysis, especially manual textual analysis.

Furthermore, the process of comparing arguments raised in comment letters with firms' specific characteristics and their business context would only suggest the

suspected lobbying attempts of the sponsor firms. It offers little insight on the perception of the respondent on making the decision to take part in the due process of accounting standard making (e.g. whether respondents believe they would affect the final versions of accounting standards).

Additionally, at the conceptual level, this analysis is based on "positive accounting theory" and other theories, such as "the economic theory of democracy" and the "theory of coalition and influence", have not provided a basis for the analysis. Finally, the analysis is based solely on a sample of 63 industrial firms, all of them sponsors of defined benefit pension scheme at that time, and constituting the majority group among preparers of financial statements. However, these are not necessarily representative of financial statement preparers more widely. Following this limitation, another potentially interesting area to investigate is the motivation and behaviour of financial statement users in the due process stage of accounting standard setting.

Further research might be conducted to extend and improve on the current research in chapter 3. Interview-based research could improve and strengthen understanding of the lobbying efforts of sponsor firms, and also shed light on their motivations and perceptions when taking part in the due process. The sample of interviews could be extended to other stakeholders, especially to users, given that there is very little research focused on this group in the standard setting due process participation literature and standard lobbying literature. Moreover, the conceptual level of the research would be extended to look into different angles by considering different set of literature. Apart from "positive accounting theory", the other two set of the theories mentioned above might be interesting to apply.

Chapter 4 has attempted to identify the causal effects of IAS19R adoption on the asset allocation of pension plans. Firstly, a cross sectional model directly examined the association between the change of equity investment level and the change of pension accounting numbers in the period of one year before and one year after the mandatory of IAS19R. Although the results show the expected significant sign of their association and several control variable have been included in the model, the results need to be viewed with caution. There was a trending decrease in equity investment levels from the year 2005 to 2014, and the effects of financial crisis might be a particularly significant factor in driving this shift in asset allocation. The decrease in equity investment levels following the adoption of IAS19R could therefore simply be a drifting effect arising from financial crisis and other macro-economic events.

In order to isolate the impact of the new requirements of IAS19R a sample of UK sponsor firms was examined, since the full recognition requirement of IAS19R did not have a severe impact on this sample (as explained in sub-section 4.3.2.1). The DID design incorporating sensitivity analysis has provided a reliable conclusion on the causal effect of IAS19R adoption on the asset allocation of sponsor firms through the "income statement" channel. However, there are several limitations that need to be addressed in future research. Firstly, the interpretation of the result as a causal effect of IAS19R on asset allocation due to the income statement incentive relies heavily on the quality of the sample examined. The sample is defined as high quality if all of the firms in the sample had voluntarily adopted "full recognition" before IAS19R was published and mandated. However, in this sample only the majority of the firms met this definition. This limitation would reduce the reliability of the outcome and its conclusion.

Furthermore, the sample size of 123 firms is relatively small compared to the population of more than 300 sponsor firms in the database (Capital IQ). This reduces the generalized interpretation of the test results.

In order to strengthen the outcome of this research, it is necessary to take additional step to extend the sample and improve the quality of the sample. Alternatively, it might be interesting to apply an interview-based analysis to directly investigate the impact of IAS19R adoption on decision making of sponsoring firms.

In regard to the analysis of Pension Board Characteristics on asset allocation and impact of IAS19R on the asset allocation of DB pension plans, the complexity of governance factors needs to be re-emphasized and more work needs to be done in analysing the deeper governance context at firm level (or even at the plan level). This would add several benefits to the research. Firstly, this would extend the sample size and improve the sample data (at the moment, the data are very sticky in regard to governance factors because they are collected and measured at the country level). Secondly, this would add to our understanding of the mechanisms which affect pension plan decision making and how the corporate governance of pension plans contributes to these decision-making processes.
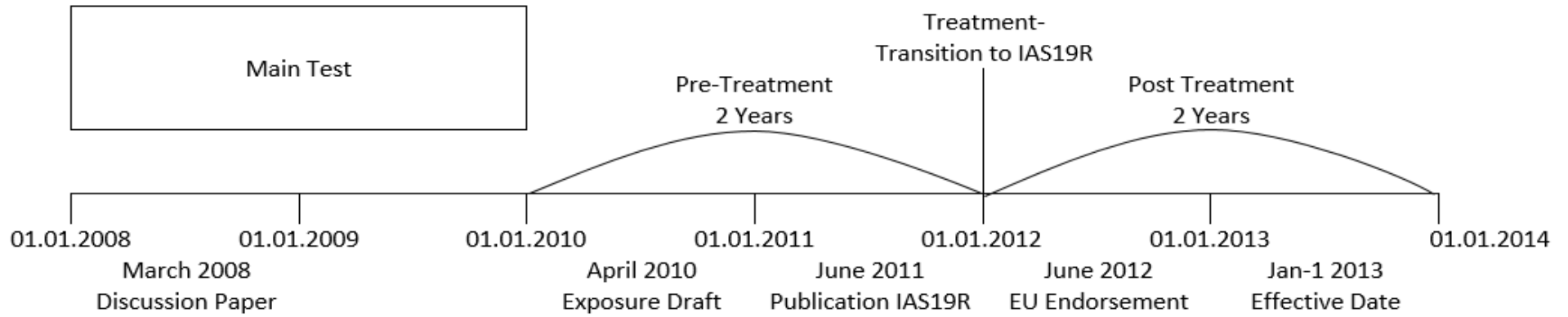
The study of defined benefit pension plans in relation to accounting standard setting and corporate governance of pension boards across countries is very complicated research that needs to take more precautions in choosing research designs and interpreting the results, especially when one focuses on causal relationships and economic consequences. Taking into account the limitations above, the suggested further research has the potential to significantly improve on the outcomes of this study.
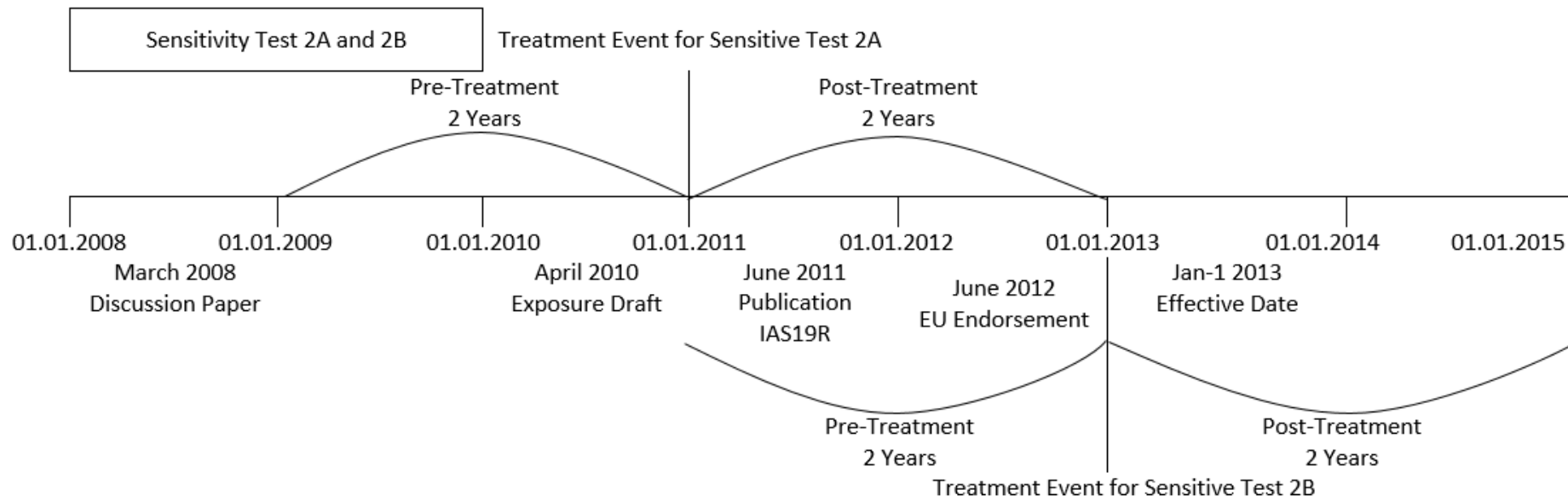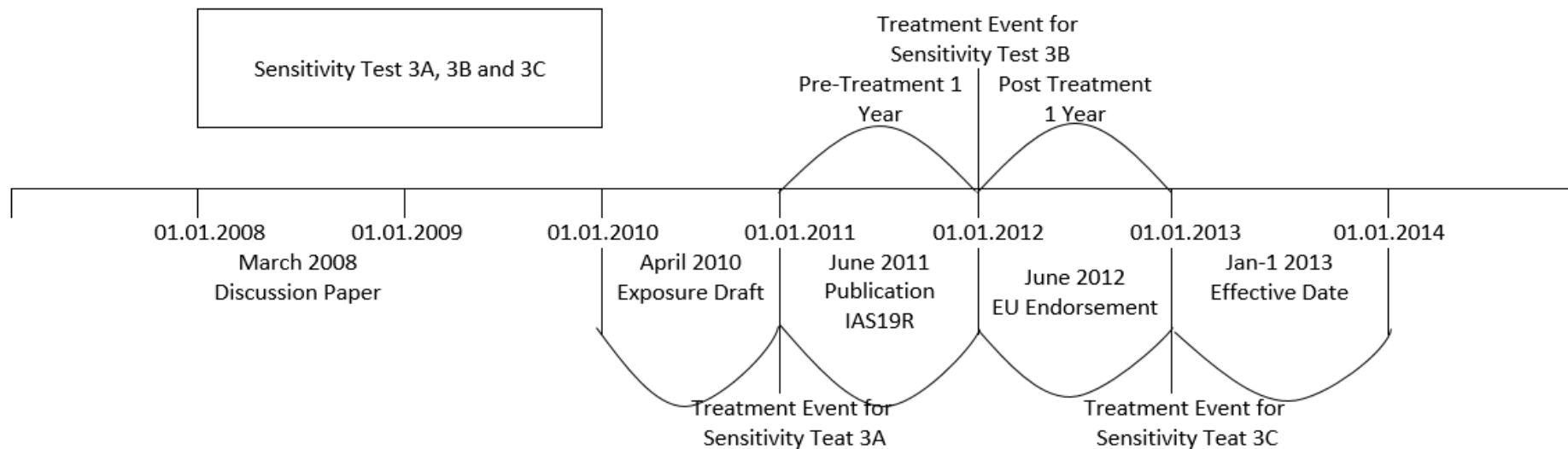
Appendix A

Pension Accounting between IFRS and US. GAAP

	IFRS pension accounting in pre-IAS19R (based on IAS19, revised December 2004)			Current US. GAAP (SFAS 158)
	Option 1 (OCI method) which is similar under FRS 17.	Option2 (Corridor method)	Option 3 (Income Statement method)	
Pension Accounting Treatment	Recognize all actuarial gains and losses as they occur in each period through OCI	Recognize actuarial gains and losses in the Income Statement when they exceed 10% of the larger of PBO and fair value of pension assets, by amortizing over remaining expected service life of beneficiaries.	Recognize actuarial gains and losses as they occur in each period through Income Statement	Recognize all actuarial gains and losses as they occur, in each period through OCI, but using corridor to recycle these amounts through Income Statement subsequence period)
What does it imply for the balance sheet	Balance sheet reflects the true funded status of the plan	Balance sheet does not reflect the true funded status of the plan as the accumulated unrecognized actuarial gains and losses are off-balance sheet	Balance sheet reflects the true funded status of the plan	Balance sheet reflects the true funded status of the plan
What does it imply for the income statement?	Income statement only reflects smoothed pension expense. Pension expense calculation requires expected rate of return on plan assets.	Income Statement only reflects smoothed pension expense. Pension expense calculation requires expected rate of return on plan assets.	Income statement is "unsmoothed" with respect to actual returns on plan assets. Pension expense calculation does not require expected rate of return on plan assets.	Income statement only reflects smoothed pension expense. Pension expense calculation requires expected rate of return on plan assets.

Appendix B

Main Test

Treatment-
Transition to IAS19R

Pre-Treatment
2 Years

Post Treatment
2 Years

01.01.2008   01.01.2009   01.01.2010   01.01.2011   01.01.2012   01.01.2013   01.01.2014

March 2008   April 2010   June 2011   June 2012   Jan-1 2013
Discussion Paper   Exposure Draft   Publication IAS19R   EU Endorsement   Effective Date

Sensitivity Test 2A and 2B

Treatment Event for Sensitive Test 2A

Pre-Treatment
2 Years

Post-Treatment
2 Years

01.01.2008 01.01.2009 01.01.2010 01.01.2011 01.01.2012 01.01.2013 01.01.2014 01.01.2015

March 2008
Discussion Paper

April 2010
Exposure Draft

June 2011
Publication
IAS19R

June 2012
EU Endorsement

Jan-1 2013
Effective Date

Pre-Treatment
2 Years

Post-Treatment
2 Years

Treatment Event for Sensitive Test 2B

Appendix C

Motivation	General Themes	Responding Firms	IASB response
Based on Positive Accounting Theory by Watts and Zimmerman (1978): when decide to submit the comment letter, submitter consider the impact of the proposed changes on reported accounting numbers. In turn, this impact on accounting number would have effect on decision-making behaviour of business, government, union, investors and creditors. Thus those who have a vested interest in how this decision-making behaviour is conducted will place pressure on the standard-setter not to approve the standard containing an objectionable feature (Zeff, 1978, 2012			
Example	Panel A: Recognition		
	Question 1: Full recognition of all changes in PA and PBO		The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.
Air France KLM: in between 2009 and 2010, the average discount rate decreased by about 0.75 point involved an increase of the DBO amounting to €1.5 billion **British Airway:** claimed that the abolition of the "corridor method" would add to the confusion surrounding accounting for defined benefit scheme, contradict with what reported by academic.	Long-term nature of pension plans would not be faithfully reported using point-in-time reporting principle. This would cause volatility on balance sheets and in income statements.	Altria Group, Air France-KLM, AngloAmerican, British Airways, BAT, Hoffmann–La Roche, Shell, Telefonos de Mexico	
	Revision of the concept in IAS1: *Financial Statements* on performance reporting before	Air France–KLM, BAT, Constellation Energy, ING	

Motivation	General Themes	Responding Firms	IASB response
	revision of IAS19: *Employee Benefits.*		
Altria Group: their investment strategy has been invested in well diversified mix of equities, fixed income and other securities that is claimed to be optimal according to market context	Impact of proposals in ED: management of funding driven by accounting rules rather than management rules.	Air France–KLM, Altria Group, AMX, BAT, Deutsche Post DHL	
	Concerns about interim reporting.	Chevron, CIGNA, Entergy, Exxon Mobil, Goodyear, IBM, PepsiCo, Pfizer, PPL, Rayonier, Raytheon, Telefonos de Mexico, US Steel, United Technologies, Verizon	
	Question 5: Elimination of the ERR		The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.
CIGNA: the ERR on plan assets has changed twice since the implementation of the DB pension plan.	Opposition to the Board's argument that ERR is susceptible to management manipulation.	Alcoa, AngloAmerican, BP, BAT, Canada Poster Corporation, CIGNA, Deutsche Post DHL, Eli Lilly, Exxon Mobil, Ford, Hydro-Québec, Jardine Matheson, Kesa Electricals, Pfizer, Nestlé, PPL, Progress Energy, Sanofi–Aventis, Shell, Siemens	
Norsk Hydro: Company is based in Norway where they have to use government bonds as basis for determining the discount rate, this will result in a lower value of the effect of passage of time than for entities that can determine the discount rate with reference to the market yield on high quality corporate bonds	Opposition to the Board's view that changes in the value of any assets can be divided between amounts arising from the passage of time and other changes.	Alcoa, Altria, BAT, Canada Poster Corporation, CIGNA, Entergy, Norsk Hydro, Raytheon, Sanofi–Aventis, Shell	
Altria Group: their long –term rate of return on plan assets historically exceeds bonds discount rates and is targeted to	Concerns about the "true and fair view" of pension accounting.	Alcoa, Altria, AMX, AngloAmerican, Balfour Beatty, BASF, British Airways, BP, BAT, BT, Canada Poster Corporation,	

Motivation	General Themes	Responding Firms	IASB response
achieve long-term management of cash funding requirement. **Entergy Corporation:** the company's pension plan assets at that time comprised of approximately 68% equity and 32% fixed income securities with long term ERR of approximately 8% to 9%. The discount rate they applied was much lower than the ERR (3-4%)		CIGNA, Eli Lilly, Entergy, Exxon Mobil, FirstEnergy, Fletcher Building, Ford, Hydro-Québec, Infosys, ING, Jardine Matheson, Kesa Electricals, Nestlé, Norsk Hydro, PepsiCo, Pfizer, PPL, Progress Energy, Rayonier, Raytheon, Sanofi–Aventis, Shell, Siemens	
Ford: allocate and invest plan assets based on a long-term performance and risk-oriented approach. The ERR assumption is developed by considering various inputs and assumptions, including those regarding capital market returns. They argued that "such approach would increase reported pension costs, regardless of the level of funding, particularly in cases where plan assets include a high equity component". Their equity investment in 2009 is at about 68%	Concerns about using a "spot" discount rate for long-term items such as pension plans.	Altria, Balfour Beatty, British Airways, Eli Lilly, Entergy, Fletcher Building, Ford, Infosys, Jardine Matheson, Kesa Electricals, Norsk Hydro, Pfizer, Progress Energy, Raytheon, Sanofi–Aventis, Siemens	
Deutsche Post DHL: According to their financial statement, the new requirement would increase the pension costs for the group from €298 to €310 in 2009 (by roundly 4%)	Concerns about the economic consequences of ERR elimination.	Altria, AMX, BASF (counter view), BAT, Deutsche Post DHL, Jardine Matheson, Nestlé, PPL, Shell	
	Panel B: Presentation		
	Question 6: Presentation of pension expense components		The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.
Shell International PV: they suggested to present finance cost	Presentation of net interest costs	AMX, Canada Poster Corporation, Fletcher Building, Hydro-	

Motivation	General Themes	Responding Firms	IASB response
and service cost in the same line because they think it is consistent with presenting a net position of pension in the balance sheet. And they also admit that "it also be a significant effort for companies such as ourselves, who present the cost of DB plans on a net basis and expenses by function in the income statement, to then have to differentiate between these components in order to exclude the finance cost from each line item"	together with service costs.	Québec, Infosys, Jardine Matheson, Shell, SKF	
Exxon Mobil: supported the recycled from OCI to net income over the average remaining service period of the active participants because in doing so, the net income reflects the total benefit cost over time. They also believe the financial statement users place more weight on net income number.	Re-measurement amounts should be recycled back to P&L statements since part of these amounts reflect management operational decisions. The proposal also does not reflect the "true and fair view" of the cost of DB plans.	Altria, Canada Poster Corporation, Bayer, BAT, Entergy, Exxon Mobil, Progress Energy	
	Recurring activities should be presented in net income and non-recurring activities in OCI.	Bayer, Constellation Energy, Larsen & Toubro	
First Energy: rather than gave a direct answer for this question, they used this response to mention their opposed opinion about the abolition of ERR again.	Lobbying activities against abolition of the "corridor method" and ERR.	Altria, AMX, Canada Poster Corporation, FirstEnergy	
	Question 3: Disaggregation of pension expenses		The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.
	Simplify accounting for pensions by presenting net periodic pension costs as a global item	Air France–KLM, ING, Nestlé, Progress Energy, Rayonier, Sappi, Stagecoach	

Motivation	General Themes	Responding Firms	IASB response
	under a single caption.		
	Question 7: Settlements and curtailments		The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.
PPL Corporation: believe that "non-routine" settlement gains/losses is similar to curtailments, and are triggered by a company action. Thus they should be considered as part of operating income.	Settlement transaction outcomes are not necessarily the result of re-measurement; non-routine settlements are more likely to arise from direct action of the reporting entity, and share many similarities with curtailment.	AstraZeneca, BASF, Deutsche Post DHL, Eli Lilly, Hoffmann–La Roche, Nestlé, PPL	
Deutsche Post DHL: "In practice there are cases where it is debateable whether a certain transaction is a curtailment or a settlement or both (and whether it is first a curtailment or a settlement). For this pragmatic reason but also conceptually, we do believe that it is reasonable to treat plan amendments, curtailments and settlements in the same way, i.e. via P&L"	Distinguishing between curtailments and settlements is sometimes very complex.	BASF, BT, Deutsche Post DHL, Ford, Shell	
British Airways: No, we do not agree that curtailments should be treated in the same way as plan amendments. It is more appropriate for the gains and losses as a result of a curtailment to be recognised in other comprehensive income."	Are curtailment transactions decisions made by management or significant events requiring re-measurement?	British Airways	
	Both curtailment and settlement should be taken out of P&L since they are significant events that require re-measurement.	FirstEnergy, Ford, PepsiCo, Stagecoach, URS	
	Panel C: Disclosure		

Motivation	General Themes	Responding Firms	IASB response
Fletcher Building: "In particular the sensitivity analysis would be extremely complex for a group such as ours where we have a number of plans across a number of countries. As they all have different corporate bond/government bond rates, different salary growth projections and different mortality rates we do not see how we could provide any meaningful sensitive analysis on these plans"	Sensitivity analysis might be impractical due to the non-linear nature of some factors, and extremely complex for groups with several plans in different countries.	Altria, BASF, Fletcher Building, Nestlé, PepsiCo, Shell, Telstra	The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.
	Sensitivity analysis should be limited to key assumptions.	Air France–KLM, AngloAmerican, Chevron, Deutsche Post DHL, FirstEnergy, Unilever	
Hydro-Québec: We find it hard to understand how sensitivity analyses for the obligation alone could be useful for users of financial statements because such analyses are not required for the net defined benefit liability (asset) presented on the balance sheet given the difficulties involved with plan assts. Moreover, since the defined benefit obligation is determined based on management's best estimates, it seems to us that the use of any other assumptions would rather have the effect of discrediting the calculations based on management's best estimates."	Sensitivity tests for PBO and service costs are inappropriate.	Goodyear, Hydro-Québec	The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.
Anglo American:" We do not consider that disclosing the process used to determine actuarial assumptions will add significant value to the users of the financial	Disclosure relating to processes used to determine actuarial assumptions are impractical, and would lead to boilerplate lists in financial statements	AngloAmerican, BASF, BP, Chevron, Hoffmann–La Roche, Pfizer, PPL, Shell, Telstra, Unilever	The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.

Motivation	General Themes	Responding Firms	IASB response
statements. There is a significant element of this process which will be generic across many companies and this disclosure requirement is not likely to present any information which is beneficial. Further, its inclusion may result in significant generic information being included which may result in key information being difficult to identify".	because the process would be generic across many entities.		
AstraZeneca: "We do not believe the requirements of paragraph 125H is appropriate for financial statements prepared on a going concern basis…We believe that the benefits of such disclosure will be outweighed by the downsides of additional disclosure and create a dangerous precedent for all other values disclosed in the statement of financial position"	Disclosure of ABO would not provide any decision-useful information and might cause confusion.	AngloAmerican, AstraZeneca, Balfour Beatty, Deutsche Post DHL, BASF, BP, E.ON, Hoffmann–La Roche, Hydro-Québec, Kesa Electricals, National Grid, Shell, Telstra	The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.
A very generic and vague argument from **Telstra:** "We do not agree - The additional disclosures on information about asset-liability matching would not be practical to obtain. In addition the majority of users would not know what to do with the information."	Disclosures of asset liability matching strategies might be highly technical and might mislead financial statement users. Such disclosures might also be generic.	AngloAmerican, AstraZeneca, E.ON, Eli Lilly, FirstEnergy, Goodyear, Hydro-Québec, Shell, Telstra	The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.
E.ON: "we consider it redundant in many cases to require entities to disclose, as proposed in ED IAS19. 125K, factors that could lead to significant differences between contributions and service cost over the next five years. For one thing, this is	Disclosure requirements for factors that might cause contributions to differ from service costs are too broad and might lead to a boilerplate list of risks.	AstraZeneca, Balfour Beatty, BASF, BP, Deutsche Post DHL, E.ON, Eli Lilly, Exxon Mobil, Goodyear, Hydro-Québec, Nestlé, PPL, Shell, Telstra, Unilever	The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.

Motivation	General Themes	Responding Firms	IASB response
because decisions on the amount of contribution to external funds are often dependent on the results and financial position of an entity. But the factors essentially influencing results and financial position are already discussed in detail in the annual reports. For another, there is in many countries no obligation to fully finance the service cost in the context of corporate pensions, which means that in these jurisdictions, a divergence of service cost from contributions is likely to be commonplace"			
E.ON: We do not support the Board's proposal to combine the existing "post-employment benefits" and "other long-term employee benefits" categories into a common "long-term employee benefits" category and the associated changes in the accounting for such other long-term employee benefits. We believe that obligations classified as "other long-term employee benefits", such as anniversary bonus obligations or obligations under early retirement arrangements, differ markedly from obligations classified as "post-employment benefits" both in term of their maturities and in terms of their inherent actuarial and financial risks".	Concern about requirement to combine disclosures under "old" post-employment benefits (pensions) and other employee benefits (jubilee payments).	Deutsche Post DHL, E.ON, Hoffmann–La Roche, Nestlé	The IASB retained this proposal in the same form in the final version of IAS19R published in 2011.

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