Recognition of Actuarial Gains and Losses under IAS 19 among UK Listed Companies

(Pengiktirafan Aktuari Keuntungan dan Kerugian di bawah IAS 19 dalam kalangan Syarikat-syarikat Tersenarai UK)

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ABSTRACT

The requirement for UK listed companies to prepare their financial statements in accordance with IFRS for accounting periods beginning on or after January 1, 2005 provided these companies with an accounting policy choice in the area of pension accounting. Probit models indicate that the characteristics of size of firm and interest coverage are significant determinants influencing the choice of accounting policy. Therefore, managers are likely motivated to make the income-smoothing accounting choice (the use of the "corridor" method) when size of firm and interest coverage are large, while the more volatile full recognition policy is more likely to be chosen when size of firm and interest coverage are small. These findings support the argument that the retention of options in IFRS may operate to the detriment of key stakeholders, in particular equity investors, by providing opportunities for earnings management.

Keywords: IFRS; accounting policy choice; corridor method; IAS 19; actuarial gains and losses

ABSTRAK

Keperluan untuk syarikat-syarikat tersenarai UK menyediakan penyata kewangan selaras dengan IFRS bagi tempoh perakaunan bermula pada atau selepas 1 Januari 2005 telah memberikan syarikat-syarikat tersebut suatu pilihan dasar perakaunan dalam bidang perakaunan pencen. Model probit menunjukkan bahawa ciri-ciri saiz firma dan liputan faedah adalah penentu penting yang mempengaruhi pilihan dasar perakaunan. Oleh itu, pengurus mungkin terdorong untuk membuat pilihan perakaunan pendapatan pelicinan (menggunakan kaedah "koridor") apabila saiz firma dan liputan faedah adalah besar, manakala dasar pengiktirafan penuh yang lebih tidak menentu adalah lebih cenderung untuk dipilih apabila saiz firma dan liputan faedah adalah kecil. Penemuan ini menyokong hujah bahawa pengekalan pilihan dalam IFRS mungkin boleh menjejaskan pihak berkepentingan utama, khususnya pelabur ekuiti, dengan menyediakan peluang bagi pengurusan perolehan.

Kata kunci: IFRS, pilihan dasar perakaunan; kaedah koridor; IAS 19; pengiktirafan aktuari keuntungan dan kerugian

INTRODUCTION

When an accounting standard provides companies with a range of options that may be used to account for a particular type of transaction or event, and it is observed that different companies choose different options, then it is useful to try to understand what factors have influenced company managers in making the choice of accounting policy. Recently, UK companies have been offered a choice of different policies for accounting for actuarial gains and losses arising in respect of company-sponsored defined benefit pension schemes. This choice has arisen as a by-product of the European Union's 'IAS Regulation' (Regulation No. 1606/2002). The Regulation, issued on July 19, 2002, required member states in the EU to amend their company laws so that publicly traded companies would be required, with effect from accounting periods beginning on or after January 1, 2005, to prepare their consolidated accounts in accordance with International Financial Reporting Standards (IFRS).

Subsequently, on December 16, 2004, the International Accounting Standards Board (IASB) issued an amendment to IAS 19 which came into immediate effect (iGAAP 2005). This amendment to IAS 19 which gives companies the option of immediate recognition of actuarial gains and losses in the statement of recognised income and expense is similar to the provisions of FRS 17. Alternatively, the standard permits actuarial gains and losses inside a 10% 'corridor' to remain unrecognised indefinitely and those outside the 'corridor' to be spread over the average remaining service life of employees in the scheme, or a shorter period. Actuarial gains and losses may arise in relation to both the scheme assets and liabilities, of which they may arise due to:

1. differences between the expected return and the actual return (e.g. a sudden change in the value of the scheme assets);
2. differences between the actuarial assumptions underlying the scheme liabilities and actual

experience during the period and the effect of changes in actuarial assumptions;

3. any adjustment necessary resulting from the limit on the amount that can be recognised as an asset in the balance sheet (FRS 17, paragraph 58).

In choosing the accounting policy options in relation to the option of recognition of actuarial gains and losses, Fields et al. (2001) claim that managers may exercise their discretion or judgement which is associated with information asymmetry problems: (1) managers who have more information about the current situation and the future plans of companies than other interested parties; and (2) managers who have an incentive to provide information that favours their own interests which may not be consistent with the interests of external stakeholders. These problems may lead managers to exercise accounting choices that convey private information to investors or to use discretion opportunistically by inflating earnings to increase their compensation.

In addition, the managers (i.e. agents) are likely to impose costs on the users (i.e. owners) of the financial statements due to self-interested choice of accounting policy. These managers may, for example, choose the accounting policy which is expected to increase the stock price prior to the expiration of their own stock options, although the accounting method or choice could eventually result in undervalued stock prices. Due to this agency cost, contracting parties (e.g. owners and debt holders) restrict the choices available to managers. This situation provides testable propositions on the variation of accounting choices across firms and the nature of firms that change their accounting techniques (Watts & Zimmerman 1986).

Following Watts and Zimmerman (1978) and Hagerman and Zmijewski (1979), the present study adopts the positive theory of accounting policy choice to investigate firm-specific characteristics associated with the choice of policy for actuarial gains and losses for UK listed companies. Therefore, the present study fills a gap in the literature of accounting policy choice on the subject of pension accounting in the UK. More particularly, this study contributes to positive accounting theory literature by identifying factors influencing the choice of accounting policy for pensions by UK companies.

The remainder of this paper is divided into four sections. The next section of the paper discusses firm-specific characteristics and hypotheses development. Section 3 presents the research method. Section 4 discusses the empirical results and the final section ends with conclusions.

FIRM-SPECIFIC CHARACTERISTICS AND HYPOTHESES DEVELOPMENT

Prior theory and research has suggested that an accounting policy choice depends on a range of firm-specific characteristics or factors. The various factors explored in prior research have been derived from a consideration of

how accounting policies, and the accounting numbers that are derived from them, are likely to affect the wealth or utility of those responsible for making accounting policy choices, typically the firm's management. The principal factors (i.e. size, leverage, financial slack, growth rate, interest coverage and investment opportunity sets) which have been examined in the previous accounting policy choice studies, particularly those dealing with pension-related policies, are reviewed in this section.

SIZE

Large firms can better afford the expenses for collecting and disseminating information which are costly to the small firms (Firth 1979; Atiase et al. 1988). These large firms are also exposed to the political costs imposed by governmental regulatory bodies, tax agencies and interest groups in the forms of price controls, higher corporate taxes and socially responsible behaviour (Watts & Zimmerman 1986). These political costs could result in managers of large firms being more likely to choose earnings decreasing accounting procedures (Zmijewski & Hagerman 1981). Accordingly, Watts and Zimmerman (1978) present theoretical arguments which suggest that management's preferences among accounting methods will depend on the size of the firm.

With regards to the study of pension accounting policy choice, Francis and Reiter (1987) investigate an association between pension funding ratio and firm size. They predict that large firms have high-level funding strategies in order to reduce the reported income. This study reveals that size is positively associated with funded status but it is very weakly significant in supporting the political cost hypothesis. Ghicas (1990) further evaluates some possible determinants of the decision to switch from a cost-allocation actuarial method to a benefit-allocation actuarial method. Following Watts and Zimmerman (1978) and Zimmerman (1983), his study hypothesises that switching firms are smaller than non-switching firms, because switching increases both the net income and the total assets. Furthermore, the switching small firms do not expect any costs from higher political visibility as compared to non-switching large firms which may choose income and asset decreasing accounting methods. The findings indicate that size is a marginally significant determinant for the switching firms.

In subsequent years, Tung and Weygandt (1994) test the size hypothesis in a study which predicts that early adopters of SFAS 87 are smaller than later adopters due to early adoption of this standard would ordinarily increase the reported income. Employing a sample of companies which adopted SFAS 87 for fiscal years 1985 and 1986, the findings report that most of the largest firms adopted SFAS 87 early. In improving these results, Ali and Kumar (1994) consider interactions between firm- specific characteristics and the magnitudes of the financial statement effects on an accounting policy choice. Using a similar hypothesis and a sample of study

by Tung and Weygandt (1994), the magnitude interaction models do not provide evidence that size as a political cost measure.

More recently, Doost-Hosseini (2007) investigates the factors that could influence the decision of early adoption of FRS 17 among UK listed companies. Using a sample of switching companies (i.e. 30 companies) and non-switching companies (i.e. 195 companies), the findings indicate that firm size affects the decision to adopt FRS 17 early at ten percent significant level. However, firm size is not an important determinant in the recognition of actuarial gains and losses among 158 European companies listed in STOXX 600. These findings are provided by Morais (2008) who investigates the firm-specific characteristics that could affect the choice of the accounting method of recognition actuarial gains and losses among companies adopting IAS 19 in the first year (i.e. the year 2005). The following alternative hypothesis is stated as below:

H$_1$ Size of firm influences the choice of options of recognition of actuarial gains and losses under IAS 19 among UK listed companies.

LEVERAGE

Restrictive covenants in the debt agreements have been recognised to reduce managers' ability in creating wealth transfers between debt and equity holders (Jensen & Meckling 1976). Firms with debt covenant restrictions near-binding are believed to be associated with the benefits of an income-increasing accounting choice (Holthausen & Leftwich 1983). In such context, given the lending agreements are denominated in accounting numbers, positive accounting theory assumes that the higher the debt to equity ratio or leverage the more likely the firm's manager is to select accounting procedures that shift reported earnings from future periods to the current period (Watts & Zimmerman 1986).

Friedman (1982) examines on the relationship between pension assets allocation and leverage. He reports that firms with more leverage have invested assets by holding less equity and more debt securities in the pension fund. Additionally, the following evidence is reported: (1) debt to equity ratio is inversely associated with pension funding ratio (Francis & Reiter 1987); (2) firms with accrued benefit actuarial cost methods are more heavily leveraged than firms with projected benefit actuarial cost methods (VanDerhei & Joanette 1988); (3) the higher the long term debt to tangible assets ratio, the higher the probability that firms will switch methods to decrease this ratio and avoid technical default (Ghicas 1990); (4) early adopters of SFAS 87 have a higher debt level than later adopters (Tung & Weygandt 1994; Ali & Kumar 1994); (5) leverage does not affect the decision of early adoption of FRS 17 among UK listed companies (Doost-Hosseini 2007); and (6) leverage is an important determinant of recognition of actuarial gains and losses under IAS 19 for 158 European companies (Morais 2008).

These findings which are generally consistent with debt to equity hypothesis are possibly due to the nature of the pension accounting which is highly affected by the accrual based methods as well as highly involved in actuarial assumptions (choice of actuarial assumptions affects the measurement of pension numbers in the financial statements and thus if researchers did not control for the choice of actuarial assumptions, this could represent a factor in explaining the different results obtained by researchers for the significance of leverage). Thus, the following alternative hypothesis is stated as:

H$_2$ Leverage of a firm affects the choice of options of recognition of actuarial gains and losses under IAS 19 among UK listed companies.

FINANCIAL SLACK

Financial slack is referred as a sum of cash on hand, marketable securities and an amount of default-risk-free debt which firm can issue (Myers & Majluf 1984). This financial slack which may be in the form of unused debt capacity, pension fund assets or excess liquidity is maintained by firms for the following reasons: (1) to finance investment opportunities that arise at inappropriate time; and (2) to avoid the adverse selection problems associated with external equity financing (Myers & Majluf 1984). With regards to the latter reason, an empirical investigation reveals that managerial self-interest has associated with the motivation for maintaining a source of funds in the form of pension financial slack (Datta et al. 1996).

In the context of pension-related studies, Bodie et al. (1984) interpret profitability which was positively associated with high-level funding of pensions as indirect evidence of a financial slack. Given the profitability variable may proxy for a wide range of effects, capital availability variable provides a more direct test of the financial slack incentive (Francis & Reiter 1987). These authors further believe that the resulting financial slack may be accessed in two ways: (1) change the actuarial assumptions to reduce future contributions; and (2) terminate the plan thereby capturing the excess plan assets for the firm. Using capital availability as a proxy for financial slack, they find that the motivation of overfunding is directly related to storing financial slack. The following alternative hypothesis is stated as:

H$_3$ Financial slack of a firm influences the choice of options of recognition of actuarial gains and losses under IAS 19 among UK listed companies.

GROWTH RATE

Firms disclose their growth rates (i.e. selected 3, 5 or 10 years) in the financial highlight sections in the annual reports. These earnings growth rates which have an incentive for an accounting choice are associated with agency theory and the following signalling effects: (1) low growth in earnings signals

owners that management may be imposing agency costs; and (2) high growth in earnings signals customers that managers and owners may be monopolistically pricing the products (Lamm-Tennant & Rollins 1994). In such context, the managers are motivated to make income-increasing accounting choices when earnings growth is low and elect income decreasing choices when earnings growth is high (Ayres 1986).

With regards to pension accounting studies, Friedman (1982) finds that growth rate has no significant effect on the choice of pension liabilities (this refers to the part of the basic actuarial liability in excess of the amount of assets committed to the pension fund). Subsequently, Ghicas (1990) predicts that the earnings growth of firms switching actuarial cost methods is lower than the earnings growth of nonswitch firms given the switch in actuarial cost methods improves earnings by using the same method for funding pension costs and accruing pension expenses.

Similarly, Sami and Welsh (1992) hypothesise that firms adopting SFAS 87 earlier than required have a smaller percentage growth in pre-adoption earnings than nonadopters. Using annual reports for the years 1979 to 1983, and a list of companies adopting SFAS 87 for 1985 or 1986, they reveal that growth rate has no significant association with switching firms and early adopters of SFAS 87, respectively. In addition, Doost-Hosseini (2007) suggests that growth rate does not affect the decision of early adoption of FRS 17 among UK listed companies. These results imply that growth rate is not an important factor in influencing the switching firms and early adopters in relation to pension accounting policy studies. The following alternative hypothesis is stated as:

H$_4$ Growth rate of a firm influences the choice of options of recognition of actuarial gains and losses under IAS 19 among UK listed companies.

INTEREST COVERAGE

Debt covenants are normally used to prohibit the issuance of new debt unless firms maintain a minimum prescribed ratio of income to interest expense (Smith & Warner 1979). Hence, the firms with low interest coverage ratio which are closer to default on debt covenants are more likely to choose accounting methods that increase reported income in order to ease the constraint (Bowen et al. 1981; Daley & Vigeland 1983; Ayres 1986). For example, the companies which are constrained by debt covenants are hypothesised to early adopt SFAS 87, which has an income increasing effect on the current income and eventually increases the ratio of income to interest expense, due to the presence of underlying contract defined by the accounting numbers (Tung & Weygandt 1994).

With regard to pension accounting, VanDerhei and Joannette (1988) examine firms with accrued benefit actuarial cost methods which tend to relax debt constraints by increasing earnings numbers. The findings which support the hypothesis indicate that firms with accrued benefit actuarial cost methods has a lower interest coverage ratio. Sami and Welsh (1992) further predict that high-debt firms which adopt SFAS 87 earlier than required have a lower interest coverage ratio than high-debt nonadopters. Similarly, Tung and Weygandt (1994) expect that firms are likely to be early adopters of SFAS 87 if the firms have a lower interest coverage ratio. Both findings reveal that the SFAS 87 early adopters which incline to have a lower interest coverage ratio than later adopters are more likely to adopt an income increasing accounting procedure. The following alternative hypothesis is stated as:

H$_5$ Interest coverage of a firm affects the choice of options of recognition of actuarial gains and losses under IAS 19 among UK listed companies.

INVESTMENT OPPORTUNITY SET

Investment opportunity set (IOS) refers to a substantial portion of firm value which is composed of intangible assets in the form of future investment opportunities or the extent to which firm value depends on future discretionary expenditures (Myers 1977; Missonier-Piera 2004). This IOS is claimed to be associated with accounting policy choices which are regarded as corporate policies that vary across the firms (Smith & Watts 1992). In such context, a contract which is based on less readily observed values of future investments could provide managers with greater flexibility to act opportunistically, and consequently, the greater the IOS the more likely the managers of the firms will use the income increasing accounting procedures (Skinner 1993; Smith & Warner 1979). This IOS and accounting procedures are found to be associated, signifying that managers of firms pursuing with income increasing accounting policies are characterised as having higher IOS (Astami & Tower 2006).

Subsequently, Ghicas (1990) hypothesises that firms with switching actuarial cost methods could have a higher rate of undertaking new investment projects. The results which indicate that switch firms experience a lower rate of undertaking new projects than nonswitch firms are contrary to the expectation of the hypothesis. The possible explanations for these inconsistent findings are (1) the switch firms which experience lower levels of working capital may be facing higher probability of violating the working capital constraint; and (2) the switch firms may not be able to undertake new projects by passing up positive net present value projects (Ghicas 1990). The following alternative hypothesis is stated as:

H$_6$ Investment opportunities set of a firm influences the choice of options of recognition of actuarial gains and losses under IAS 19 among UK listed companies.

US LISTED COMPANIES

With the exception of Doost-Hosseini (2007) and Morais (2008), empirical research on accounting policy choice in

the context of pensions has been carried out almost entirely on North American data, and hence issues of cross-listing have not been relevant in previous studies. However, as the present study considers UK listed companies, the existence of a listing on a US market could potentially be a factor affecting accounting policy choice.

A new variable 'US' refers to UK companies which are also listed in the US market. Having a US listing is hypothesised to be more likely to influence the choice of recognition of actuarial gains and losses given that companies with a US listing were required (at least during the periods covered by the research) either to publish financial statements complying with US GAAP (in particular with SFAS 87 and SFAS 158, which require the corridor method treatment), or to reconcile their financial statements to US GAAP on the Form 20-F. Adopting the corridor method in IFRS-based financial statements is expected to reduce the administrative and transactional costs of UK listed companies accessing US capital markets. Hence, the following alternative hypothesis is stated as:

H₇   Having a US listing influences the choice of options of recognition of actuarial gains and losses under IAS 19 among UK listed companies.

RESEARCH METHOD

The choice of recognition of actuarial gains and losses (CRAGL) was determined by analysing the pension notes (i.e. either in the accounting policy sections or pension accounting notes) in the financial statements for the years 2005 to 2007. Only a small minority of companies was found to adopt the corridor method. Corridor method is less popular among UK listed companies because this option which is inconsistent with the requirement of UK GAAP might explain the rate of use in the UK (Keitz 2006). Two methods of analysing the data were considered but rejected. First, a simple matched-pairs comparison of adopters versus non-adopters was rejected because this would result in data for only a very small number of companies being analysed, and would raise difficulties in identifying appropriate matches. Second, probit analysis based on all companies available for analysis was rejected because the companies adopting the corridor method would have been overwhelmed by the non-adopters. Hence the likelihood of obtaining statistically significant results would be low, even if there were differences between adopters and non-adopters.

This study follows Doost-Hosseini (2007) in constructing a sub-sample of non-adopters using a sector-year matched approach. This sub-sample was constructed as follows: for each adopter, in each year, all non-adopters in the same business sector in that year were included in the sub-sample. Hence the sub-sample excluded companies from business sectors in which no adopter had been identified in a specific year. Doost-Hosseini

(2007) adopted this approach in order to control for the possibility that the sector in which a company falls may have an effect on the company's accounting policy choice, by excluding all sectors in which no company adopted the accounting policy that he was investigating. A by-product of the sector-year matched approach is that the power of the probit analysis is enhanced. Finally, this approach identified the non-corridor adopters (i.e. adopt equity method or full recognition in the income statements) according to the years (i.e. 2005, 2006 and 2007) and the sectors in which the corridor method adopters were classified.

TABLE 1. Sample of study

	2005	2006	2007	Total
Companies with DB* pension scheme	185	178	182	545
Less non-matched companies	160	124	137	421
Final sample	25	54	45	124
Corridor method adopters	4	5	6	15
Non-corridor method adopters	21	49	39	109
Final sample	25	54	45	124

Note: *DB which is a defined benefit pension scheme is an entity's obligation by providing the agreed benefits relating to current and former employee services (IAS 19, para. 7). Pension benefit under DB pension scheme is determined using an explicit formula which is commonly expressed as a percentage of salary at or near retirement and is usually dependent on services with the company (Dent & Sloss 1996).

The present study employs probit analysis to investigate the factors that could explain which options of recognition of actuarial gains and losses among UK listed companies adopting IAS 19. To determine the form of the models to be tested, an initial univariate analysis was conducted, regressing the variable CRAGL against each of the seven hypothesized explanatory variables individually. It was found that two variables (SIZE and INTC) were significantly associated with CRAGL, while the other five variables were not significantly associated.

To refine the explanatory power of the models, seven multivariate probit models were investigated. The first of these was the bivariate model incorporating the two variables SIZE and INTC. Five models were constructed consisting of SIZE, INTC and each of the remaining five variables. Finally, a multivariate model consisting of all seven explanatory variables was investigated. The probit models which are developed in this study are as follows:

$$\text{CRAGL} = a + \beta_1 \text{SIZE} + \beta_2 \text{INTC} + \varepsilon_{it} \tag{1}$$
$$\text{CRAGL} = a + \beta_1 \text{SIZE} + \beta_2 \text{INTC} + \beta_3 \text{LEV} + \varepsilon_{it} \tag{2}$$
$$\text{CRAGL} = a + \beta_1 \text{SIZE} + \beta_2 \text{INTC} + \beta_3 \text{FS} + \varepsilon_{it} \tag{3}$$
$$\text{CRAGL} = a + \beta_1 \text{SIZE} + \beta_2 \text{INTC} + \beta_3 \text{GROW} + \varepsilon_{it} \tag{4}$$
$$\text{CRAGL} = a + \beta_1 \text{SIZE} + \beta_2 \text{INTC} + \beta_3 \text{IOS} + \varepsilon_{it} \tag{5}$$
$$\text{CRAGL} = a + \beta_1 \text{SIZE} + \beta_2 \text{INTC} + \beta_3 \text{US} + \varepsilon_{it} \tag{6}$$
$$\text{CRAGL} = a + \beta_1 \text{SIZE} + \beta_2 \text{INTC} + \beta_3 \text{LEV} + \beta_4 \text{FS} + \beta_5 \text{GROW} + \beta_6 \text{IOS} + \beta_7 \text{US} + \varepsilon_{it} \tag{7}$$

where,

CRAGL = choice of recognition of actuarial gains and losses that takes the value of either 1 (corridor method) or 0 (non-corridor method).
SIZE = natural logarithm of total assets
INTC = income before extraordinary items and discontinued operation/interest expense
GROW = market to book value ratio
FS   = Natural logarithm of total cash on hand and marketable securities
IOS   = (Capital expenditures + acquisitions + advertising + RD)/ total assets)
LEV   = Total debt/ total assets, and
US   = Companies with US listing are valued as 1 and other companies as 0.

RESULTS

Table 2 provides the descriptive statistics of continuous independent variables examined in the present study. The statistical results are partitioned by corridor method adopters and non-corridor method adopters. Comparing between these groups, the findings indicate that the means on SIZE, INTC and FS are significantly larger for corridor method adopters than non-corridor method adopters. However, the t-statistic shows that the means on LEV, GROW and IOS of corridor method adopters are not significantly different from non-corridor method adopters. The minimums on SIZE, IOS and LEV are relatively similar for both groups, while the minimums on FS, GROW and INTC are dissimilar between corridor method adopters and non-corridor method adopters. The maximums on GROW and LEV are unlike between corridor method adopters and non-corridor method adopters. On the other hand, the maximums of SIZE, INTC, FS and IOS are relatively identical for both groups.

The correlation analyses of continuous independent variables investigated in the accounting policy choice study are presented in Table 3. The Pearson correlation matrix indicates that SIZE is highly correlated with FS, while other factors are less likely to be correlated. Each of other firm-specific characteristics (i.e. financial slack, investment opportunity set, leverage, growth and US listed companies) is incorporated into the factors (i.e. SIZE and INTC) and individually examined in Model 2 to Model 6. The statistics also show that a multicollinearity problem does not exist given that variance inflation factor (VIF) is less than 3.

TABLE 3. Pearson correlation matrix

	SIZE	LEV	FS	GROW	INTC	IOS
SIZE	1.0000					
LEV	0.1406	1.0000				
FS	0.7262	0.0523	1.0000			
GROW	-0.0270	- 0.1645	0.0400	1.0000		
INTC	0.3010	-0.4133	0.2393	0.0720	1.0000	
IOS	-0.0131	0.1816	0.0713	0.0532	-0.0404	1.000

The results of probit models are presented in Table 4. The positive sign indicates that an increase in the corresponding variable increases the likelihood of

TABLE 2. Descriptive statistics of continuous independent variables

Variables	Mean	Std Deviation	Min.	Max.	T-statistic
LN Asset (SIZE):					
Corridor Method Adopter	22.52	1.51	20.02	25.57	2.817
Non-corridor Method Adopter	21.38	1.14	18.79	25.51	
Interest Coverage (INTC):					
Corridor Method Adopter	16.17	14.59	1.72	43.35	2.407
Non-corridor Method Adopter	6.99	6.07	-5.39	43.27	
Leverage (LEV)					
Corridor Method Adopter	0.27	0.21	0.00	0.57	-0.411
Non-corridor Method Adopter	0.29	0.20	0.00	1.17	
LN Financial Slack (FS):					
Corridor Method Adopter	19.84	2.31	14.75	22.64	2.238
Non-corridor Method Adopter	18.45	1.85	9.85	22.32	
Growth (GROW):					
Corridor Method Adopter	-0.65	12.60	-32.36	12.19	-0.872
Non-corridor Method Adopter	2.25	7.12	-15.09	33.10	
Investment Opportunity Set (IOS):					
Corridor Method Adopter	0.06	0.04	0.00	0.14	-0.751
Non-corridor Method Adopter	0.07	0.05	0.00	0.27	

Note: *No of observations: Corridor Method Adopter (n = 15) and Non-corridor Method Adopter (n = 109)

TABLE 4. Probit results in which the dependent variable is dichotomous and independent variables are continuous and categorical

(1) $\text{CRAGL*} = a + \beta_1 \text{ SIZE} + \beta_2 \text{ INTC} + \varepsilon_{it}$
(2) $\text{CRAGL} = a + \beta_1 \text{ SIZE} + \beta_2 \text{ INTC} + \beta_3 \text{ LEV} + \varepsilon_{it}$
(3) $\text{CRAGL} = a + \beta_1 \text{ SIZE} + \beta_2 \text{ INTC} + \beta_3 \text{ FS} + \varepsilon_{it}$
(4) $\text{CRAGL} = a + \beta_1 \text{ SIZE} + \beta_2 \text{ INTC} + \beta_3 \text{ GROW} + \varepsilon_{it}$
(5) $\text{CRAGL} = a + \beta_1 \text{ SIZE} + \beta_2 \text{ INTC} + \beta_3 \text{ IOS} + \varepsilon_{it}$
(6) $\text{CRAGL} = a + \beta_1 \text{ SIZE} + \beta_2 \text{ INTC} + \beta_3 \text{ US} + \varepsilon_{it}$
(7) $\text{CRAGL} = a + \beta_1 \text{ SIZE} + \beta_2 \text{ INTC} + \beta_3 \text{ LEV} + \beta_4 \text{ FS} + \beta_5 \text{ GROW} + \beta_6 \text{ IOS} + \beta_7 \text{US} + \varepsilon_{it}$

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	-7.35	-7.08	-7.42	-7.29	-7.29	-7.48	-6.60
	(-2.66)	(-2.51)	(-2.53)	(-2.57)	(-2.60)	(-2.63)	(-2.06)
SIZE	0.27	0.24	0.28	0.26	0.27	0.27	0.18
	(2.07)	(1.77)	(1.35)	(2.00)	(2.09)	(2.06)	(0.77)
INTC	0.04	0.05	0.04	0.04	0.04	0.04	0.06
	(2.43)	(2.54)	(2.43)	(2.54)	(2.47)	(2.29)	(2.47)
LEV		0.91					1.06
		(1.01)					(1.08)
FS			-0.01				0.05
			(-0.07)				(0.34)
GROW				-0.03			-0.03
				(-1.43)			(-1.27)
IOS					-3.34		-4.65
					(-0.89)		(-1.10)
US						-0.13	0.00
						(-0.20)	(0.01)
Likelihood ratio	-37.615499	-37.130984	-37.61291	-36.542227	-37.1845	-37.596219	-35.530975
Prob>chi2	0.0003	0.0006	0.0010	0.0004	0.0007	0.0010	0.0047
Pseudo R²	0.1776	0.1882	0.1776	0.2010	0.1870	0.1780	0.2232
Correctly classified	88.71%	88.71%	88.71%	88.71%	87.10%	88.71%	87.90%

*Choice of recognition of actuarial gains and losses (CRAGL) takes the value of either 1 (Corridor Method) or 0 (Non-corridor Method).

corridor method adoption. On the other hand, a negative sign denotes a decrease in the corresponding variable increases the likelihood to implement the corridor method. The chi-squared statistics indicate that all seven probit models are significant at the 0.001 level with the Pseudo R² ranging from 0.1776 to 0.2232. The percent correctly predicted ranged from 87.10% to 88.71%. Classifying all observations as non-corridor adopters leads to 109 correct predictions in a sample of 124 (87.9% correct). The percentages correctly predicted by all probit models (except Models 5 and 7) differ from the 87.9% achieved by the most successful naive model at the 0.001 level (although in this case a statistically significant difference does not amount to a substantive difference in the predictive ability of the models relative to the naive model).

In particular, the statistical analyses in Model 1 which is significant at one percent level provide evidence that the coefficients on SIZE and INTC are significant factors influencing the CRAGL. The positive coefficients on these firm-specific characteristics imply that the larger the size of firm and the higher interest coverage, the greater is the likelihood to adopt the corridor method. The significant variable of SIZE is consistent with Doost-Hosseini (2007) who indicates that firm size

affects the decision to adopt FRS 17 early at ten percent significant level. Model 2 which incorporates variable of LEV reveals that Pseudo R² has increased to 0.1882. Consistent with Model 1, the coefficients on SIZE and INTC are significantly associated with the choice of recognition of actuarial gains and losses. However, LEV is not a significant factor that influences the choice of recognition of actuarial gains and losses. This finding is not consistent with the study by Morais (2008) who indicates that leverage is an important determinant of actuarial gains and losses under IAS 19 for European listed companies. A possible explanation for the non-significant LEV could be due to (1) a small sample of UK companies in the present study; and (2) leverage amounts are not significantly different between corridor method adopter and non-corridor method adopter.

Examining SIZE, INTC and FS in Model 3, the statistical results show that the variable of INTC is only significantly associated with CRAGL. The factor of FS is less likely to influence the choice of recognition of actuarial gains and losses (i.e. either corridor method or non-corridor method). These findings further imply that the variable FS which is less likely to improve the Pseudo R² has resulted to non-significant variable of SIZE in Model 3. Another firm-specific characteristic

that is growth rate (GROW) is further examined in Model 4. In a similar vein, GROW is not a significant factor to influence the choice of recognition of actuarial gains and losses. The coefficients on SIZE and INTC are continuously associated with CRAGL, and the Pseudo R² (Prob > chi2) is 0.2010 (0.0004) in Model 4.

The results in Model 5 that investigates the factor of investment opportunity set (IOS) are shown in Table 4. Integrating this firm-specific characteristic into the original Model 1, the following findings are derived: (1) the coefficients on SIZE and INTC are positively associated with CRAGL; and (2) the coefficients on IOS are not significantly associated with CRAGL. However, the variable IOS has slightly improved the Prob > chi2 in Model 5. Additionally, the coefficient on variable of US (i.e. measured by companies which are also listed in the US) in Model 6 is not significantly associated with CRAGL. These findings suggest that UK companies which are also listed in the US market do not influence the choice of recognition of actuarial gains and losses. However, the coefficients on SIZE and INTC are consistently associated with the CRAGL. The Prob>chi2 is significant at one percent level and Pseudo R² is 0.1780 in Model 6.

Model 7 collectively investigates the firm-specific characteristics which are tested in the previous models (i.e. Model 1 to Model 6). This model which is significant at one percent level (i.e. Prob>chi2 is 0.0047) provides evidence that Pseudo R² (i.e. 0.2232) is the highest among the probit models. These results are explained by a small number of data and a large number of variables employed in Model 7. The statistical results further show that firm-specific characteristics are not significantly associated with CRAGL except for INTC.

CONCLUSIONS

The probit models indicate that the larger the size of the firm, the greater is the likelihood for companies with a DB pension scheme to choose the corridor method for the recognition of actuarial gains and losses. The results also suggest that interest coverage is associated with the adoption of corridor method. Firms choosing the less volatile corridor method tend to have higher interest coverage. On the other hand, firms with low interest coverage tend to choose the approach of full recognition outside the income statement, which leads to volatile balance sheets.

The rationale for this choice comes from the accounting implications of the two methods. Napier (2009) has recently described the effect of current accounting for actuarial gains and losses as leading to these items being 'ignored, smoothed or segregated.' A company choosing the corridor method is able to keep the full impact of actuarial gains and losses off the balance sheet by ignoring amounts within the corridor and smoothing amounts outside the corridor over several periods in the income statement. In other words, IAS 19 uses a rather bizarre concept of a corridor method in order to avoid excessive volatility and eventually smooth any actuarial gains and losses incurred by companies (Antill & Lee 2008). British American Tobacco provides evidence that the adoption of the corridor method is associated with the issue of 'volatility' by disclosing a statement 'the resultant volatility is moderated by deferral of some actuarial gains and losses' (British American Tobacco 2007: 91). In a similar vein, Stadler (2010) documents that German firms choose the treatment of AGL (i.e. corridor approach) in order to smooth the effect of inherently volatile pension numbers.

Some managers may prefer the possibility of reporting higher earnings through recognising actuarial gains over several years, even at the risk of having to recognise some actuarial losses. If, for example, interest coverage is high, then the risk of having to recognise some actuarial losses in the income statement (leading to a lower interest coverage figure) is not onerous since the fall in interest coverage is unlikely to jeopardise the company's credit status or breach its debt covenants. For companies with lower interest coverage, the possibility of segregating actuarial losses and not recognising them in the income statement may be more attractive, since a requirement to recognise even a small part of such losses in the income statement would reduce the interest coverage still further, perhaps into the danger zone. Managers of larger firms may fear that a substantial actuarial loss would have a significant adverse impact on the balance sheet if required to be recognised in full. Both of these circumstances may underlie the results obtained.

These findings provide support for the argument that the retention of options in International Financial Reporting Standards (IFRS) may operate to the detriment of key stakeholders, in particular equity investors, by providing opportunities for earnings management. However, these findings are based on a small sample of companies (i.e. 15 corridor method adopters and 109 sector-year matched non-corridor method adopters), which may restrict the generalisability of findings. Further research which investigates the factors that could influence the choice of recognition of actuarial gains and losses might be beneficial, but any such research needs to take into account the relative unpopularity of the corridor method in the UK.

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