



Lancaster University
MANAGEMENT SCHOOL

Lancaster University Management School
Working Paper
1997/001

Determinants of Voluntary Accounting Policy Choices by
Australian Life Insurers

Paul Klumpes

The Department of Accounting and Finance
Lancaster University Management School
Lancaster LA1 4YX
UK

©Paul Klumpes

All rights reserved. Short sections of text, not to exceed
two paragraphs, may be quoted without explicit permission,
provided that full acknowledgement is given.

The LUMS Working Papers series can be accessed at <http://www.lums.lancs.ac.uk>
LUMS home page: <http://www.lums.lancs.ac.uk/>

Determinants of Voluntary Accounting Policy Choices by Australian Life Insurers*

Paul J M Klumpes
Department of Accounting and Finance
Management School
Lancaster University
Lancaster LA1 4YX
United Kingdom

Email: P.Klumpes@lancaster.ac.uk
Phone: (+44) 1524 59 3981
Fax: (+44) 1524 831 645

Version 10.0
March, 1998

* I would like to thank Mike Adams, John O'Hanlon, Ken Peasnell, Peter Pope and seminar participants at Essex University and Lancaster University for their comments on an earlier version of this paper.

Determinants of Voluntary Accounting Policy Choices by Australian Life Insurers

ABSTRACT

This paper empirically examines various incentives facing managers of Australian life insurers to voluntarily use actuarial-based income smoothing techniques (AIS). AIS were subsequently incorporated into jointly-developed Australian and New Zealand life insurance accounting standards (LIAS) issued in 1997. The propensity of managers to voluntarily use AIS is predicted to be related to the firm's tax rate, ownership structure, size, expense ratio and solvency. These predictions were tested on a sample of 28 firms during the period 1992-93. Empirical results suggest that firms using AIS tend to be larger, pay higher levels of income tax and are less likely to contravene minimum solvency requirements.

Key words: Actuarial income-smoothing techniques, life insurance

Data availability: The data used in this study is based on publicly available sources.

Introduction

Reporting life insurance profitability is complex due to the uncertainty surrounding the term of policies written. Historically, UK life insurance companies have prepared financial reports mainly to meet government solvency-based requirements. However following increasing product competition from other financial service providers and take-over activities during the late 1980s, UK actuaries, with specialised professional skills in the financial management of these businesses, developed various actuarial income-smoothing techniques (AIS) in order to provide shareholders with a more 'realistic' picture of the business (Horton and Macve, 1995). AIS uses present-value techniques to determine long-term life insurance business profitability for inclusion in financial reports produced on a 'smoothed' economic earnings basis. However AIS has been criticised in both the academic literature and financial press for not meeting either statutory-based solvency rules, or providing a 'true and fair view' (O'Brien, 1995). These issues have also attracted the attention of accounting rule-makers: recently the International Accounting Standards Committee commenced a project on this issue.

In recent years, the Australian actuarial profession has closely followed these UK developments. In 1991 the Australian actuarial profession developed a particular type of AIS known as the 'Margin on Services' (or 'MOS') method of valuing policy liabilities. This type of AIS measures the present value of future receipts from and payments to policyholders, plus planned margins of revenues over expenses related to services yet to be provided to policyholders. AIS were subsequently incorporated into proposed life insurance accounting standards jointly promulgated by Australian and

New Zealand accounting standard bodies as an exposure draft in July 1996. This paper examines why managers of certain Australian life insurance firms faced incentives to voluntarily use AIS shortly after it was developed (1992-93).

Due to the complexity and uncertainties surrounding life insurance business, life insurers face relatively high levels of information asymmetry in their relationships with customers and shareholders (Ross, 1989). Bartov and Bodnar (1996) (hereinafter “B&B”) show that an information asymmetry perspective provides a rationale for explaining accounting choice. This perspective suggests that, *ceteris paribus*, value-maximising managers have incentives to choose more informative accounting techniques (such as AIS) to reduce the degree of information asymmetry among capital market participants. B&B posit that firms with greater information asymmetry are more likely to switch to more informative accounting methods when they become available. They find support for these predictions on the choice of functional currency among a sample of 788 U.S. multinational firms reporting cumulative translation adjustments on their balance sheets in the fiscal year 1982/1983. However B&B caution against too wide an interpretation of their results, and call for ‘future research to develop methods and identify settings which allow further examination of the information asymmetry perspective and other theories of accounting research’ (B&B, 416).

Further evidence on the information asymmetry perspective is warranted for a number of reasons. First, B&B acknowledge that information asymmetry is not a well defined concept and examine a number of alternative indirect empirical proxies. Second, in studying the choice of foreign currency by US firms, B&B rely on prior research which defines information asymmetry in terms of a demand for liquidity by capital market participants (Diamond and Verrecchia, 1991). While this accounting

choice may help to reduce information asymmetry among market participants about the impact of exchange rates on firm performance, it is not directly value-relevant to their assessment of a firm's underlying cash flows. By contrast, Chaney and Lewis (1995) define information asymmetry in terms of the inability of investors to observe economic earnings from reported accounting earnings. They show that a manager of a high-value firm, realising that investors place higher value on firms who they expect to maintain economic earnings in the future, over-reports income relative to the first-best tax minimising reporting policy by using accounting policies which 'smooth' their earnings. Third, prior research has not examined information asymmetry in explaining intra-industry accounting policy choices, such as in life insurance, where monitoring, bonding and control costs are severe.¹

The findings presented in this paper suggest that, consistent with the information asymmetry perspective, reported tax rates affect choices made by a sample of Australian life insurance firms to voluntarily use AIS during 1992-93. These results hold even after controlling for other economic incentives commonly used by prior studies to explain intra-industry accounting policy choices in samples of similar financial service firms.²

The paper is organised as follows. The next section outlines the empirical framework used to examine accounting policy choices by Australian life insurers. The third section outlines the sample selection procedure, defines the variables and describes the data. The fourth section reports the results. The final section presents the conclusion.

Empirical Framework

This section explains the theoretical background which motivates the study, describes the institutional setting and develops a testable hypothesis.

Theoretical Background

The information asymmetry is based on the assumption that, in equilibrium, value-maximising firms have various levels of information asymmetry. When this equilibrium is perturbed by the introduction of a new discretionary opportunity to improve disclosure credibly, firms with greater information asymmetry should be more likely to switch to the new, more informative accounting method (B&B, 400).

B&B (406) note that one problem with operationalizing the information asymmetry perspective for non-insurance firms is that the degree of information asymmetry among market participants is not directly observable. They utilise the volume of shares traded in the firm as a variable linked to the degree of information asymmetry, based on a review of theoretical models. However this variable is not an appropriate empirical proxy for examining information asymmetries among market participants related to Australian life insurance firms for two reasons. First, it does not capture the reduction in information asymmetry among policyholders, the primary providers of capital to mutual firms. Second, stock issued by most Australian life insurance firms are not actively traded on the Australian stock exchange.³

Another variable known to be associated with information asymmetries is a firm's current year tax liability as a percentage of reported earnings. Chaney and Lewis (1995, 320) show that a manager of a high-value firm (i.e.: a firm that investors expect has a high ability to generate economic earnings) over-reports income relative to the first-best tax minimising reporting policy. Investors realise that only high-value

firms are willing to pay the additional corporate taxes associated with over-reporting to this level and value such firms accordingly. On the other hand, managers of low value firms realise that the additional expected tax penalty from over-reporting earnings exceeds the benefits of being identified as high-value firm and select the tax minimising reporting policy (Chaney and Lewis, 321). Testing these implications requires the identification of a new disclosure opportunity that could credibly reduce information asymmetry among market participants.

Thus one empirically testable explanation for why a life insurance firm manager may choose to voluntarily use an innovative new accounting technique (such as AIS) is because it is a credible device to reduce the firm's high level of information asymmetry, by demonstrating to investors that the firm can generate economic earnings (a 'high-value' firm), thus increasing investors' ability to infer firm type from reported earnings. In this study, AIS was chosen for the empirical tests because (i) it was a considered to be an innovative method for reporting a firm's economic earnings; (ii) life insurance firms with higher information asymmetries faced greater incentives to adopt AIS early as a signal of 'high-value' to investors; (iii) AIS is available to both mutual and shareholder-owned life insurance firms.⁴

An Institutional Setting

Prior to 1996, statutory financial reports sent to the Australian life insurance regulator (the Insurance and Superannuation Commission, hereinafter 'ISC') for solvency purposes were based on regulatory accounting standards (RAS).⁵ Australian life insurance firms are exempted from Australian accounting standards. Until recently there were no accounting standards equivalent to RAS for life insurance firms to

report profitability to their shareholders. AIS were developed by the Australian actuarial profession as being specifically appropriate for revealing ‘realistic’ profits to shareholders, policyholders and other annual financial report users (Dunsford 1988).

This study examines the voluntary use of AIS by life insurance firms in the earlier period 1992-93 because; (i) AIS reports profitability, which are not available under RAS; (ii) AIS were regarded as being effectively non-switchable accounting policy choices because they were endorsed as ‘best practice’ by the actuarial profession and shortly thereafter were mandated by professional actuarial standards issued in 1994;⁶ (iii) AIS were also developed in other Anglo-American countries at this time;⁷ and (iv) after 1993, AIS use became more widespread following ongoing consultation between Australian and New Zealand standard setters (Klumpes, 1995b).

Hypothesis Development

Life profit testing models demonstrate that, *ceteris paribus*, AIS-based life insurance profits emerge earlier over the term of a simple life insurance policy than RAS-based profits.⁸ This is because AIS allows the smoothing of income expected to be earned over the life of a policy, by recognition of a planned margin (Institute of Actuaries 1991). These ‘planned margins’ are not acceptable under either ordinary Australian GAAP (Klumpes 1995b) or UK GAAP (O’Brien, 1995). However in the joint exposure draft Australian and New Zealand professional accounting standard setting bodies argued that the mandatory use of AIS would reduce the level of information asymmetry faced by life insurance firms in reporting their profitability. They claimed that AIS would improve the informativeness of the disclosure of the long term profitability of an ‘industry entrusted with considerable economic resources,

and upon which many individuals and groups depend on their continued operation’ (AASB ED 73, 39).

The theoretical literature reviewed earlier implies that firms voluntarily use AIS in order to eliminate some of the information asymmetry among market participants, policyholders and other users about their ability to generate economic income. This could be corroborated by observed empirical evidence which shows that AIS users report higher income tax rates than non users. The costs of using LIAS are the additional information production costs associated with implementing AIS. These costs are likely to be roughly uniform across firms.⁹ However since the benefits of improved disclosure are increasing in the initial level of the information asymmetry, it is hypothesised that life insurance firms with higher reported income tax rates are more likely to voluntarily adopt AIS:

Australian life insurance firms with higher reported income tax rates are more likely to use AIS.

Other Possible Determinants of AIS Choice

B&B (403) note that it is necessary to control for several variables when investigating the incremental power of the information asymmetry perspective for explaining cross-sectional variation in accounting choices. Previous research indicates that firm size has proven to be a robust variable for explaining cross-sectional accounting choice. One explanation is that large firms seek to choose accounting practices that reduce the probability of large earnings in order to avoid possible political attention (regulation and/or taxation). Based on this view, large firms should

choose to use AIS, as it reduces the volatility associated with profits reported over the life of a life insurance contract and the expected costs associated with them.

The role of solvency in prior accounting choice research arises from its role as a regulatory signal related to the violation of minimum net worth requirements (e.g.: Blacconiere et al. 1991). Australian life insurers are required to maintain a surplus of statutory fund assets in excess of their policy liabilities. Thus the probability of regulatory intervention only arises where the statutory funds are in deficit, as was the case for two insolvent life insurers, Regal and Occidental, in 1990. As intervention can lead to closure, involuntary merger, management supervision or other restrictions on operations as specified by the *Life Insurance Act 1945 (Cth)*, managers are likely to view the consequences of violating these capital requirements to be costly. Thus low value life insurance firms that are closer to violating their minimum net worth requirements are more likely to adopt a tax minimising policy and hence are less likely to use an innovative new method, i.e. AIS, in reporting their profitability to shareholders.

Another control factor is ownership structure. Incentive conflicts between policyholders and shareholders of Australian life insurance firms can be controlled with alternative (share versus mutual) forms of ownership structure. Share-owned companies have access to equity markets which provide sources of solvency that are unavailable to mutuals (Blacconiere et al. 1991). Thus high value share-owned life insurance firms are more likely to use AIS in order to distinguish their firm type to market participants from low value share-owned firms than would high value mutual firms.

A final control variable posited to be associated with accounting policy choice by the Australian life insurance industry is the level of expenses incurred to operate a

life insurance business, relative to periodic total value of business ('expense ratio'). Brennan (1993) shows that it is equivalent to a 'spread' that banks, mutual funds and insurance companies use to price their products. Evidence shows that the expense ratio is endogenous with a life insurance firms' investment and operating decisions. Babbel and Staking (1983, 10) show that the expense ratio used in capital budgeting by US life insurance firms over the thirty year period 1949-1979 is positively related to the interest rate. Klumpes (1995a) finds that managers of 33 Australian life insurance firms with relatively high expense ratios have a greater propensity to voluntarily disclose accounting information in promotional brochures offering investment-related contracts in 1990-91. In this study, it is posited that such firms are also more likely to use AIS than other firms.

Sample Selection and Variable Definitions

Sample Selection

AIS first became available when the Australian Institute of Actuaries developed Guidance Note 253 on the determination of policy liabilities in 1991. AIS was later the subject of discussion papers issued both by the Australian Accounting Research Foundation (1994) and the Accountants and Actuaries Liaison Committee (1994). AIS was eventually published as a professional actuarial standard in June 1995, the same month in which the Australian government proposed the overhaul of the *Life Insurance Act, 1945 (Cth)*. Thus the sample covers the period 1992-93, when

the decision to use AIS was voluntary. Sample firms were selected from those registered under the *Act* and were identified by a two step procedure. First, they must have been in continuous existence over this study period. Second, they are not owned by another Australian life insurance firm. This procedure yields a total of 42 firms.

Next, 7 life insurance firms were eliminated that specialise in reinsurance activities. These firms specialise in transferring mortality risk and in some cases investment income of direct life insurance firms. Adams (1996) provides evidence that the propensity of New Zealand direct life insurance firms to use reinsurance during 1988-1993 was associated with higher leverage and greater underwriting risk. Thus reinsurance firms' decision to use AIS may explained by factors other than information asymmetry. Another 7 firms were eliminated which did not provide all the data required for the tests below. The final sample contains 28 firms.

A life insurance firm is classified as a voluntary AIS user if it was used in the first two years it became available (1992-93), i.e. in the two years prior to the issue of the AARF (1994) discussion paper. Of the final sample of 28 firms, 13 (46 percent) are voluntary AIS users. For each sample firm, annual data was obtained from (1) statutory returns submitted to the ISC; and (2) reports issued to shareholders.

Variable Definitions

The taxation rate is available for both mutual and non-mutual Australian life insurance firms in annual profit and loss account data submitted to the ISC (Form C, First Schedule). Since taxes were calculated on a firms' RAS-based taxable profit (or loss) during the study period 1992-1995, it is not directly affected by a firm's decision to adopt AIS. It is denoted *INFOASYM*.

The tests also involve empirical proxies for each of the control variables: firm size, mutual status, expense ratio and solvency ratio. Firm size of the i th firm ($LSIZE_i$) is the natural logarithm of the total value of policy liabilities of all statutory funds managed by the life insurance company, in \$A millions. The solvency ratio ($SRATIO_i$) is the net surplus (deficit) of total assets over total policy liabilities of the statutory funds, as calculated annually by the firm's actuary and annually reported to the ISC (Second Schedule). The expense ratio for Australian life insurance firms ($EXPENSE_i$) is published semi-annually by ISC (Table 11) and the ownership status of the life insurance company was denoted by a dummy variable, where zero was assigned to a mutual, and 1 to a shareholder-owned firm ($MUTUAL_i$).

Empirical Evidence

Univariate Tests

Results of univariate tests for my prediction based upon the information asymmetry perspective, along with each of the control variables, are shown in table 1. The differences in the means of the variables between the two groups of firms are in the predicted direction. The mean of $INFOASYM$ is significantly higher for AIS users, 4.402 versus 11.569. These results are supportive of the information asymmetry perspective as a hypothesis for explaining accounting choices.

The results for the control variable $LSIZE$ are also in agreement with the predictions outlined above. AIS users are larger on average than non-users. The former have a mean total policy liability of 7.562 (measured as the natural log of firm size in millions of Australian dollars), whereas the latter have a mean value of 5.489. AIS users are also to be less likely to violate minimum solvency requirements: their

mean *SRATIO* of 2.514% significantly exceeds that of non-users (0.926%). Although AIS users are also found to be more likely to be mutuals and have on average higher expense ratios, these coefficients are not significantly different from those of non-users. Overall, these results are comparable to those obtained by B&B (410).

INSERT TABLE 1 ABOUT HERE

Multivariate Tests

Table 2 shows correlations among the variables and indicates that these are not statistically significant between any of the explanatory variables.

INSERT TABLE 2 ABOUT HERE

Table 3 presents the results of the multivariate logistic model used to simultaneously test the hypothesis controlling for all other variables. The multivariate results are fully supportive of the univariate results. In particular, the coefficient estimate of the proxy for information asymmetry is positive and statistically significant at the ten percent level. The coefficients on the control variables *LSIZE* and *SRATIO* are also consistent with their univariate results.

INSERT TABLE 3 ABOUT HERE

Sensitivity Tests

The information asymmetry hypothesis is corroborated by further evidence which examines the change in expense ratio following the voluntary use of AIS, i.e. a switch to a more informative accounting method (B&B, 414). If this switch reduces information asymmetry, then the taxation rate should also be increased for AIS users. Following B&B's suggested procedure, this implication is tested by comparing the

change in taxation ratio in the year immediately following the first-time use of AIS (i.e.: 1993-4). The change in annual tax ratio for the firm (ΔTAX) is measured as the taxation ratio ($INFOASYM$) of the i th firm in the year following the decision to use AIS (year 1) minus the tax ratio in the year the decision was made (year 0), scaled by the tax ratio in year 0. Table 4 shows that, as expected, the mean of ΔTAX for AIS users is positive (3.031) and significant at the three percent level; the mean ΔTAX for non-AIS users is negative (-125.978). The mean difference is highly significant, indicating that AIS user tax rates increased relative to non-users. Similar results hold for the median ΔTAX .

INSERT TABLE 4 ABOUT HERE

Conclusion

The voluntary use of AIS is predicted to be explained by the information asymmetry perspective, which suggests that firms use innovative accounting methods in order to reduce the level of information asymmetry by capital market participants and other financial report users. Chaney and Lewis (1995) suggest that, where report users are unable to observe economic earnings from reported earnings, managers of high value firms seek to reduce their level of information asymmetry by over-reporting income relative to the first-best tax minimising policy.

This study developed tax rates as an empirical proxy for testing the implications of the information asymmetry perspective in the context of the voluntary use of AIS by Australian life insurance firms in 1992-93, when it first became available. At this time, Australian life insurance firms considered AIS to be an

innovative accounting method because it required them to report their profitability on an economic income basis for the first time, using a complex actuarial based present value calculation. Results from both univariate and multivariate tests are fully supportive of this information asymmetry perspective, even after controlling for other variables used by prior empirical accounting research to explain voluntary accounting choices by firm managers. These results are corroborated by sensitivity tests of subsequent changes in tax rates reported by AIS users and non-users.

The robustness of these findings to alternative interpretations is restricted by the choice of institutional setting, the reliance on tax rate as the appropriate proxy for information asymmetry and the relatively small sample size. Nevertheless, the results suggest two implications for the information asymmetry perspective. First, the findings demonstrate the robustness of the results derived by prior researchers (B&B) in using the perspective to explain accounting policy choice in other settings. Second, the findings appear to support the reliance on information asymmetry as a stated rationale given by Australian and New Zealand accounting standard setting bodies for issuing new AIS-based financial reporting standards for life insurance firms. Further evidence is needed to examine whether life insurance firm managers face similar incentives to voluntarily use AIS in other financial reporting environments, such as the UK, where these techniques have recently become available.

FOOTNOTES

1. Life insurers are of special interest here because (i) information is so asymmetric between the participants and the institution, and the need for control and contractual structures to permit them to function is so critical that they essentially define these institutions (Ross 1989); (ii) they sell non-traded residual claims, most of which are held by their policyholders rather than by shareholders (Fama and Jensen, 1983); (iii) their assets and liabilities are mainly financial (Merton, 1988); and (iv) they deal with long term contracts whose profitability is uncertain (Adams and Scott, 1994); (v) their regulation is primarily capital adequacy rather than disclosure-based.

2. Prior studies have investigated the effects of various economic incentives (eg: size, ownership structure, violation of minimum net worth requirements) on managerial behaviour of insurance-based institutions in (i) voluntary financial disclosures in policy brochures issued by Australian life insurers promoting investment-related contracts (Klumpes 1995a); (ii) the structure of balance sheets between New Zealand mutual and stock insurance companies (Adams 1995); and (iii) the voluntary use of regulatory accounting principles by managers of US Savings and Loan Associations (Blacconiere et al. 1991).

3. Of the 18 shareholder-owned life insurance firms included in the study sample, 8 are wholly-owned subsidiaries of foreign life insurance companies and 5 are owned by holding companies operating a wide range of other financial services (e.g.: banking).

4. In a mutual life insurance firm, the policyholders are also the owners of the firm and are important for capital raising (Mayers and Smith, 1981, 1986). Analogous to the arguments for shareholder-owned firms, improved disclosure by mutuals may be expected to result in a higher demand for (profit-sharing) policies due to reduced information asymmetry.

5. RAS were promulgated by the ISC, in collaboration with the Australian life industry (represented by the Life Insurance Federation) in 1986 (as Circular No. 241), following concerns expressed by the then securities regulator, the National Companies and Securities Commission, about apparent inconsistencies in financial reporting practices between life insurers and other types of Australian companies.

6. The MOS method was recommended as 'best practice' by an Australian Institute of Actuaries guideline in 1991, and later mandated as a 'professional actuarial standard' in 1995.

7. For more extensive reviews of accounting and financial reporting for life insurance activities in Australia, Canada, the UK and the USA, see Adams and Scott (1994). Fogarty and Grant (1995) review the role of the actuarial profession in US GAAP, while Klumpes (1998) reviews various actuarial-developed methods developed for UK life company reporting.

8. Life profit testing models examine the effect of alternative assumptions about profit calculation, interest rates etc. on the pattern of profits emerging over the term of a simple endowment policy (Adams and Scott, 1994). This result is corroborated by anecdotal evidence from a prospectus issued by an Australian mutual firm proposing de-mutualisation in 1994. The prospectus included both sets of profits on its life insurance business during the period 1991-93 which revealed that AIS-based profits were significantly higher over this period than its equivalent RAS-based earnings figures (Klumpes, 1995b).

9. Relative to RAS, the costs of using AIS primarily relate to the additional actuarial fees paid to value 'best estimates' of policy liabilities under MOS. As this actuarial procedure utilises standard software technology which costs the same irrespective of

the number of policies issued by the firm, it is reasonable to assume that these costs will be relatively uniform across firms.

References

- Accountants and Actuaries Liaison Committee (1994), 'Accounting for Actuaries', Sessional Meeting Paper, *Institute of Actuaries of Australia*, Sydney.
- Adams, M. (1995), 'Balance Sheet Structure and the Managerial-discretion Hypothesis: an Exploratory Empirical Study of New Zealand Life Insurance Companies', *Accounting and Finance* 35: 21-46.
- (1996), 'The Reinsurance Decision in Life Insurance Firms: An Empirical Test of the Risk-Bearing Hypothesis', *Accounting and Finance* 36: 15-30.
- and C.N.W. Scott (1994), 'Realistic Reporting of Life Insurance Policy Liabilities and Profits: Developments in Anglo-American Countries', *Journal of Institute of Actuaries* 121: 441-458.
- Australian Accounting Research Foundation (1994), *Discussion Paper No. 19: Financial Reporting of Life Insurance Activities*. AARF: Melbourne.
- Australian Accounting Standards Board (1997), *Exposure Draft 73: Financial reporting by life insurance businesses*. AASB: Melbourne.
- Babbel, D.F. and K.B. Staking (1983), 'A Capital Budgeting Analysis of Life Insurance Costs in the United States: 1950-1979', *Journal of Finance* 38(1): 149-170.
- Bartov, E. and G.M. Bodnar (1996), 'Alternative Accounting Methods, Information Asymmetry and Liquidity: Theory and Evidence', *The Accounting Review* 71: 397-418.
- Blaconiere, W.G., R.M. Bowen, S.E. Sefcik and C.H. Stinson, (1991), 'Determinants of the Use of Regulatory Accounting Principles by Savings and Loans', *Journal of Accounting and Economics* 14, 167-201.
- Brennan, M. (1993), 'Aspects of Insurance, Intermediation and Finance', *Geneva Papers on Risk and Insurance Theory*. 18: 1-37.
- Chaney, P.K. and C.M. Lewis (1995), 'Earnings Management and Firm Valuation Under Asymmetric Information', *Journal of Corporate Finance*, 1, 319-345.
- Diamond, D.W. and R. Verrecchia (1991), 'Disclosure, Liquidity and the Cost of Capital', *Journal of Finance*. 46:1325-1360.
- Dunsford, G.A. (1988), 'Life Offices - Revealing the Full Financial Picture', *Transactions of the Institute of actuaries of Australia* I: 132-244.
- Fama, E. and M. Jensen (1983), 'Agency Problems and Residual Claims', *Journal of Financial Economics* 26: 327-348.
- Fogarty, S. and F. Grant (1995), 'The Role of the Actuarial Profession in Financial Reporting', *Accounting Horizons* 9(3): 23-33.

Horton, J. and R. Macve (1995), *Accounting Principles for Life Insurance: A True and Fair View?*, Research Board, Institute of Chartered Accountants in England and Wales, London.

Institute of Actuaries (of Australia). (1991). *A Method for the Determination of Policy Reserves*. Institute of Actuaries: Sydney.

Klumpes, P.J.M. (1995a), 'Voluntary Disclosure by Financial Intermediaries: Evidence From Australian Life Insurers Promoting Investment-related Contracts', *Accounting and Finance* 35: 1-20.

----- (1995b). 'Competition Between Professions: Developing an Australian Life Insurance Accounting Standard', *Pacific Accounting Review* 7: 1-28.

----- (1998). 'Measuring the Profitability of UK Proprietary Life Insurers', *Mimeo*.

Mayers, D. and Smith, C.W., Jr. (1981), 'Contractual Provisions, Organizational Structure and Conflict Control in Insurance Markets', *Journal of Business* 54: 407-434.

----- (1986). 'Ownership structure and Control: the Mutualization of Stock Life Insurance Companies', *Journal of Financial Economics* 16: 73-98.

Merton, R.C. (1988), 'On the Application of the Continuous-time Theory of Finance to Financial Intermediation and Insurance', Twelfth annual invited lecture of the Geneva Association (Reprinted in R.C. Merton, *Continuous-time Finance*. Blackwell: Oxford, 1990).

O'Brien, C. (1995), 'Profit Reporting in Proprietary Life Insurance Offices', *Journal of the Institute of Actuaries* January: 331-350.

Ross, R. (1989), 'Institutional Markets, Financial Marketing and Financial Innovation', *Journal of Finance* 44: 541-566.

TABLE 2
Pairwise correlations between independent variables

<i>Variable</i>	<i>INFOASYM</i>	<i>MUTUAL</i>	<i>LSIZE</i>	<i>SRATIO</i>	<i>EXPENSE</i>
<i>(n=28):</i>					
<i>INFOASYM</i>	1.000	-	-	-	-
<i>MUTUAL</i>	0.251	1.000	-	-	-
<i>LSIZE</i>	0.224	0.342	1.000	-	-
<i>SRATIO</i>	-0.092	-0.073	-0.114	1.000	-
<i>EXPENSE</i>	-0.012	-0.016	-0.052	0.352	1.000

Table Notes: *INFOASYM* is the tax rate of the *i*th firm. *MUTUAL* is a dummy variable indicating whether a life insurance firm is a stock (=0) or a mutual (=1); *LSIZE* is the natural logarithm of total policy liabilities of statutory funds managed by a life insurance firm; *SRATIO* is the net surplus (deficit) of total assets over total policy liabilities of the statutory funds; *EXPENSE* is the total expenses incurred in operating the life insurance firm's business. All variables are measured in the year of the adoption. Tests of the hypotheses are two-sample t-tests, and reported significance levels are for one-tailed tests. The reported numbers are Pearson correlation coefficients.

TABLE 3
Logistic Model of Decision to Use AIS

Number of Observations = 28
 Dependent Variable = 1, if AIS user (n = 13)
 = 0, if non-AIS user (n = 15)

	Intercept	<i>INFOASYM</i>	<i>MUTUAL</i>	<i>LSIZE</i>	<i>SRATIO</i>	<i>EXPENSE</i>
Expected Sign	?	+	+	+	+	+
Coefficient	-39.412	0.166	5.255	3.824	3.881	0.235
Std Error	(20.969)	(0.096)	(3.613)	(2.042)	(2.042)	(0.225)
Significance (one-tailed)	0.060	0.081	0.148	0.061	0.075	0.297

Chi-squared statistic (H_0 : all model parameters (except the intercept) are zero): 29.321
 (p=0.0001)

Table Notes: *INFOASYM* is the tax rate of the *i*th firm. *MUTUAL* is a dummy variable indicating whether a life insurance firm is a stock (=0) or a mutual (=1); *LSIZE* is the natural logarithm of total policy liabilities of statutory funds managed by a life insurance firm; *SRATIO* is the net surplus (deficit) of total assets over total policy liabilities of the statutory funds; *EXPENSE* is the total expenses incurred in operating the life insurance firm's business. All variables are measured in the year of the adoption. Tests of the hypotheses are two-sample t-tests, and reported significance levels are for one-tailed tests.

TABLE 4
Tests for Changes in Reported Taxation Rate Following AIS Use

	<i>N</i>	<i>Mean</i> <i>ΔTAX</i>	<i>Median</i> <i>ΔTAX</i>
Life insurance firms using AIS in 1992-3	13	3.031	1.601
Life insurance firms not using AIS in 1992-3	15	-125.978	-64.012
p-values for two-samples tests of the null hypothesis that $\Delta TAX_0 > \Delta TAX_1$		0.030	0.038

Table Notes: The change in taxation rate for the *i*th firm [ΔTAX_i] is measured as the taxation rate of the *i*th firm in the year following the selection of AIS minus the taxation rate in the year the selection was first reported in the annual financial statements (year 0), scaled by the taxation rate in year 0. N is the number of observations.