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## CHARACTERISTICS OF ORGANISATIONS USING AN AUDIT FOR INTERIM FINANCIAL STATEMENTS

**A**s a result of changes incorporated in the Corporate Law Reform Act 1994, disclosing entities — those that make some kind of public offer of securities — are now required to prepare half-year financial statements. These financial statements may be either audited or reviewed.

In June 1992, the Statement of Auditing Practice/Related Services AUP/RS1 *Review Engagements* was issued by the Auditing Standards Board (now the Auditing and Assurance Standards Board) and the Australian Accounting Research Foundation (AARF). In the "Explanatory Framework for Guidance on Audit and Audit Related Services" issued by AARF in August 1992, a number of substantial differences are noted between a "general purpose financial report audit" and a "review engagement", which is classified as an audit-related service. The two types of service differ in the amount of work done and therefore the degree of assurance that the auditor is able to provide. *Assurance* refers to the auditor's satisfaction with the relevance and reliability of the information provided. In a financial report audit engagement, the auditor's objective is to provide an opinion about the reliability of representations that are the responsibility of another party. An audit report on a general purpose financial statement expresses a positive and objective opinion, and provides a high but not absolute level of assurance about management representations. The objective of a review engagement, on the other hand, is to provide a moderate level of assurance, a lower level than that provided by a financial report audit, through the issue of a report which encompasses a statement of "negative assurance".

In expressing an audit opinion, the auditor's objective is to provide a "reasonable" level of assurance that the financial statements are free of material misstatement. On the other hand, in expressing an opinion on a review, the auditor expresses an opinion that nothing has come to his or her attention that causes him or her to believe that the financial statements are not properly drawn up. The current auditing standard AUS 902.32

*This study examines the characteristics of companies that choose to have a full audit of their interim financial statements, as distinct from a review. A cross-section of 252 firms that had submitted interim financial reports to the Australian Stock Exchange were selected from the Business Review Weekly (BRW) list of top 1,000 companies. A direct logistic regression analysis was undertaken to assess whether voluntarily adopting an audit was related to size (assets), leverage, minority interest, profitability, industry, and whether the company had used a Big-6 audit firm. The results indicate that the level of leverage is a significant predictor of companies adopting a review, whereas use of a Big-6 audit firm was associated with conducting an audit. In addition, there is some evidence companies in the financial services industry were positively associated with conducting an audit.*

indicates that when completing a review the auditor should describe the scope of the engagement to enable the user to understand the nature of the work performed and appreciate that an audit was not performed and, therefore, that an audit opinion is not expressed.

When the exposure draft ED 34 *Review Engagements* was released in October 1990, concern was expressed about use of negative assurance. Milburn (1980) suggested that a negative assurance could be used to describe anything from a reasonably thorough investigation, to one in which virtually nothing had been done. Comments submitted to AARF in relation to exposure draft ED 34 included that some respondents believed the negative assurance style was clumsy; that negative assurance could be used as an excuse in advance for all the errors that may be missed; that it would not be well accepted; and that it was likely to exacerbate the expectation gap. It was also suggested by Pound (1987) that the expression of negative assurance could foster unrealistic expectations, and imply a greater degree of credibility than was intended.

The statement of negative assurance for a review engagement is used as a consequence of the limited procedures involved in this type of undertaking. While the review engagement does involve the application of audit skills and techniques, it does not normally involve the use of certain procedures required for a full audit, and therefore does not provide all the evidence that is required for an audit. Reviews involve limited procedures such as questioning company personnel and analysing financial or non-financial information.

As a result of the limited extent of the procedures performed in a review engagement, there is not sufficient evidence to enable the auditor to provide a positive expression of opinion. Nevertheless, the evidence obtained in a review engagement must be sufficient to enable the auditor to express moderate assurance.

When interim financial reporting was introduced in the US, Canada, UK, and Ireland, the recommendations in each of these countries was that financial statements should be reviewed. However, the Middleton Report (1993) in Australia recommended that half-yearly reports for publicly listed companies should be subject to a financial report audit. The reasoning behind this recommendation was that while cost/benefit arguments existed for a review of half-yearly financial statements, concern existed that the public's expectations of auditors would result in users of half-yearly reports attaching the same degree of assurance to a review opinion as they would to financial report audit opinions.

## EXPECTATION GAP

A number of respondents to ED34 felt that the general public, which already had a poor understanding of what constituted a general purpose financial report audit, would not perceive the difference between this and a review engagement. Overseas studies<sup>1</sup> had expressed similar concern about the ability of users

to distinguish between different degrees of assurance in relation to different forms of audit report.

However, a study conducted on user perceptions of the review report (Gay, Schelluch and Baines 1998) concluded that while there still remains an expectation gap as to the messages being conveyed by both the review and the audit reports, both auditors and users perceived that a review report provided a lower level of assurance than an audit.

Section 302 of the Corporations Law requires disclosing entities to prepare and lodge half-year financial statements. While section 302 permits either an audit or a review of interim financial statements, it could be argued that for cost/benefit reasons most disclosing entities would rely on a review engagement for interim financial statements, and that the additional cost would only be incurred when the expected benefit is greater than its cost.<sup>2</sup>

The question addressed by this study is why some companies would incur the additional cost of a full audit for interim financial statements.

## THEORY DEVELOPMENT AND HYPOTHESIS FORMULATION

While research has been undertaken on the question of user perceptions of the review report (Gay *et al* 1998), there have been no previous studies on the characteristics of companies that choose to have an audit for interim financial statements. The literature has linked the demand for monitoring to the level of agency costs (Jensen and Meckling 1976, Watts 1977). This desire to reduce agency costs has been associated with the demand for quarterly reviews (Ettredge *et al* 1994) and the demand for external auditing (Chow 1982). Further, while the preparation of interim reports is no longer voluntary, decisions of voluntary disclosure are frequently motivated by the desire to reduce agency costs (Hossain *et al* 1995, Leftwich *et al* 1981, McKinnon and Dalimunthe 1993). To identify which organisational characteristics might affect the decision on whether to use an audit or review, the literature on agency theory, demand for audit services and voluntary disclosure were examined.

If a firm issues any form of capital to outsiders (non-managers), an agency relationship exists between the holders of outside capital (the principals) and the managers (the agents) (Leftwich *et al* 1981). As a result of this agency relationship, the principal and agent will incur positive monitoring and bonding costs; there will also be some divergence between the agent's decisions and those decisions that would maximise the welfare of the principal. Since the relationship between the shareholder and manager of a company fits the definition of a pure agency relationship, the issues associated with the separation of ownership and control are intimately associated with the general problem of agency (Jensen and Meckling 1976).

Expenditures on monitoring can reduce agency costs. Consequently, the higher the level of agency

costs, the greater the incentives for managers to employ monitoring. As auditing is a monitoring device widely viewed as a means of reducing agency costs (Jensen and Meckling 1976), it follows that when agency costs are greater there is increased demand for higher-level audit quality (Francis and Wilson 1988). Thus, it could be expected that the demand for enhanced credibility that can be provided by an audit is a function of a company's external agency costs (Ettredge *et al* 1994).

This study examines whether there are specific characteristics of the firm that would indicate agency costs are reduced by having an audit for interim financial statements rather than a review. Agency theory suggests that factors such as firm size and financial leverage may affect financial disclosure by influencing the magnitude of agency costs and/or the costs of manager-external owner contracting (Watts 1977, Leftwich *et al* 1981, Chow and Wong-Boren 1987, Bradbury 1992). A number of other characteristics suggested by the literature will also be considered.

**Firm size.** It is generally held that the larger the firm, the higher the proportion of capital held by outsiders (Leftwich *et al* 1981, Jensen and Meckling 1976). Therefore, agency theory suggests that larger firms have a greater need for monitoring costs. A further reason that size may be considered significant is that small companies may not have the resources to perform more expensive audits (Juan and Chye 1993), whereas in larger corporations relevant information is accumulated for internal reporting, and therefore is not as costly for them (Singhvi and Desai 1971).

Firm size has been linked to the increased voluntary hiring of external auditors (Chow 1982) and the increased use of quarterly reviews (Ettredge *et al* 1994). Studies by Bradbury (1992), McKinnon and Dalimunthe (1993), Mitchell *et al* (1995), Chow and Wong-Boren (1987), and Aitken *et al* (1997) all found a positive association between firm size and the extent of disclosure of segment information. Hossain *et al* (1995) found a positive relationship between size and the level of information voluntarily disclosed, while McNally *et al* (1982) concluded that size is a dominant corporate characteristic in establishing the leaders in voluntary disclosure practices. Juan and Chye (1993) also found a positive relationship between size and

compliance with non-mandatory accounting pronouncements. Therefore, hypothesis 1 is:

*H<sub>1</sub>: The larger the company, the more likely it is to undertake an audit for interim financial statements.*

**Leverage.** Agency theory suggests that the agency cost of outside capital depends on the nature of claims held by outsiders. It suggests, therefore, that costs will be higher for firms with proportionally more debt in the capital structure (Leftwich *et al* 1981), and that voluntary disclosure can reduce these costs by facilitating debt suppliers' assessments of a firm's ability to meet its debts (Jensen and Meckling 1976). On this basis, it could be suggested that the additional cost associated with an audit would be borne voluntarily by firms with larger amounts of debt in their capital structure, as this would provide more reliable information to debt providers.

However, results of previous studies have been inconclusive on this question. Long-term debt has been found to be positively associated with the decision to use quarterly reviews (Ettredge *et al* 1994) and voluntarily engage external auditors (Chow 1982). Bradbury (1992), Mitchell *et al* (1995) and Hossain *et al* (1995) found a positive relationship between voluntary disclosure and the amount of leverage in a firm's capital structure, whereas studies by McKinnon and Dalimunthe (1993) and Aitken *et al* (1997) do not support this hypothesis. In addition, debt providers may require an audit as part of a debt covenant agreement, and a link has been shown between leverage and voluntary interim reporting (Leftwich *et al* 1981).<sup>3</sup> Thus, the second hypothesis is:

*H<sub>2</sub>: The higher the leverage, the more likely a company is to undertake an*

*audit for interim financial statements.*

**Minority interest.** The minority interest variable measures the extent to which shares in subsidiaries of the parent company are held (directly or indirectly) by outside or minority shareholders. McKinnon and Dalimunthe (1993) contend that consolidated financial statements are prepared to provide information to the shareholders of the holding company on the performance and financial position of the corporate group as a whole. However, while minority shareholders have access to the financial statements of the subsidiary company in which they hold shares, this information could be of limited use in detecting fraud against the minority. It is suggested, therefore, that an audit, being of higher quality than a review, can be used as part of a

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control system that mitigates the relative inability of diffused ownership to directly monitor and control management action (Francis and Wilson 1988).

McKinnon and Dalimunthe (1993), Mitchell *et al* (1995) and Aitken *et al* (1997) all found a relationship between the diffusion of ownership and the amount of segment information provided. It can be argued that the larger the minority interest, the more likely they will be able to exert pressure to have an audit undertaken to provide a higher level of assurance as to the reliability of the financial statements. Thus, the third hypothesis is:

*H<sub>3</sub>: The larger the proportion of minority interest the more likely a company is to undertake an audit for interim financial statements.*

**Big-6 auditor.**<sup>4</sup> It has been suggested that the choice of external auditors is a mechanism that helps alleviate conflicts of interest between principals and agents (Watts and Zimmerman 1986, Schipper 1981). For example, the larger the audit company, the less incentive the auditor has to behave opportunistically and therefore the higher the perceived quality of the audit (DeAngelo 1981).

Chow and Wong-Boren (1991) consider that Big-6 audit firms have incentives to maintain independence from clients' pressure for limited disclosure because of the economic consequences associated with potential damage to their reputation. Therefore, they encourage their clients to disclose a greater amount of information in published annual reports, indicating that the level of voluntary disclosure is likely to be higher for companies audited by Big-6 firms. Juan and Chye (1993) also suggest that large public accounting firms with better quality-control policies and procedures may influence their clients to provide greater disclosure than would smaller accounting firms.

A positive association has been found between agency cost proxies (such as diffusion of ownership and leverage) and the choice of a brand name Big-6 auditor (Francis and Wilson 1988), and between type of auditor (Big-6 or non-Big-6) and voluntary disclosure of oil and gas reserves by Australian companies (Craswell and Taylor 1992).

However, no significant association was found by McNally *et al* (1982) and Hossain *et al* (1995) between type of auditor and the extent of information voluntarily disclosed. One study of voluntary interim reporting revealed that those who disclosed interim reports were actually less likely to engage a Big-6 auditor (Leftwich *et al* 1981). Nevertheless, it may be argued that Big-6 firms are likely to advocate audits rather than reviews because of the higher level of assurance they provide. Therefore, the fourth hypothesis is:

*H<sub>4</sub>: Companies which use one of the Big-6 audit firms are more likely to have an audit for interim financial statements than companies which use a non-Big-6 firm.*

**Profitability.**<sup>5</sup> Singhvi and Desai (1971), in a study of 500 large publicly listed US corporations, found a positive relationship between the quality of disclosure and the rate of return. They suggest that the profitability of an organisation is generally regarded as a

sign of good management. When the rate of return is high, management may disclose more information to support future capital raisings, and in order to support the continuance of its position. It may be argued, therefore, that management may choose to have an audit to give users greater confidence that the good result is reliable. Therefore, the fifth hypothesis is:

*H<sub>5</sub>: The higher the profitability, the more likely a company is to undertake an audit for interim financial statements.*

**Industry.** Watts and Zimmerman (1986) suggest that a firm's accounting policy choice could be affected by the sensitivity of the industry to which the firm belongs. Thus, a firm in a politically sensitive industry, such as oil and gas, is more likely to disclose information to prevent a disproportionate share of scrutiny from government agencies or interest groups. McKinnon and Dalimunthe (1993) and Mitchell *et al* (1995) found membership of the mining and oil and gas industries to be a significant explanatory variable for voluntary disclosure of segment information.

Bazley *et al* (1985) found that there was an industry effect for voluntary lease disclosure, with mining and oil companies, banks, and finance companies being least likely to disclose leases. However, they were not certain whether this industry effect was the result of certain industries being more lease-intensive or of differences in political costs.

Thus, while the evidence of industry effect on voluntary disclosure is inconclusive, it is considered an appropriate variable to include when considering when an audit or review will be conducted. Therefore, the sixth hypothesis is:

*H<sub>6</sub>: There is an association between the industry membership of a company and undertaking an audit for interim financial statements.*

## METHOD

**Sample selection.** A sample of 300 companies was selected from the *Business Review Weekly*, October 1996, list of the top 1,000 companies. As the requirement to publish interim financial reports applies specifically to Australian disclosing entities, foreign-owned, private and government organisations were excluded. Of those selected, 45 had not submitted interim financial reports to the Australian Stock Exchange at the time of data collection, and three companies had relevant data missing for some key variables, leaving 252 companies with useable data. The companies remaining were from a cross-section of industries (eg, retail, manufacturing, financial services). Data were collected from each firm's interim financial reports.

The major characteristics of companies included in the sample are summarised in Table 1. Eighteen companies had audited interim financial statements and 234 firms had their interim statements reviewed. In addition, of the 252 companies analysed, 198 used a Big-6 audit firm and 54 companies used non-Big-6 audit firms. It is noteworthy that univariate statistics

**TABLE 1: BACKGROUND CHARACTERISTICS OF COMPANIES INCLUDED IN THE SAMPLE**

|  | Mean       | Median       | Maximum           | Minimum               | Skewness |
|--|------------|--------------|-------------------|-----------------------|----------|
| Total assets                             | \$3,620m   | \$330m       | \$167,000m        | \$0.660m              | 7.62     |
| Total liabilities                        | \$2,840m   | \$130m       | \$154,000m        | \$0.030m              | 7.98     |
| Net revenue                              | \$760m     | \$128m       | \$33,600m         | \$0.009m              | 9.17     |
| NPAT                                     | \$40m      | \$10m        | \$1,100m          | -\$1,500m             | 0.58     |
| Minority interest                        | \$40m      | \$0.00m      | \$2,900m          | -\$5m                 | 8.53     |
| External debt                            | \$780m     | \$10m        | \$74,000m         | \$0                   | 11.06    |
| Industry                                 | f          | %            | Review            | Audit                 |          |
| Resources                                | 46         | 18.3         | 42 (17.9)         | 4 (22.2)              |          |
| Manufacturing                            | 26         | 10.3         | 26 (11.1)         | 0 (00.0)              |          |
| Retail                                   | 14         | 5.6          | 14 (6.0)          | 0 (00.0)              |          |
| Financial services                       | 39         | 15.5         | 31 (13.2)         | 8 (44.4) <sup>†</sup> |          |
| Services                                 | 19         | 7.5          | 17 (7.3)          | 2 (11.1)              |          |
| Construction                             | 33         | 13.1         | 32 (13.7)         | 1 (5.6)               |          |
| Other                                    | 75         | 29.8         | 72 (30.8)         | 3 (16.7)              |          |
| <b>Total</b>                             | <b>252</b> | <b>100.0</b> | <b>234 (92.2)</b> | <b>18 (7.8)</b>       |          |
| † $\chi^2$ (6, n = 252) = 16.04, p < .05 |            |              |                   |                       |          |
|  | Review     |              | Audit             |                       |          |
|  | f          | %            | f                 | %                     |          |
| Non Big-6                                | 47         | 20.1         | 7                 | 38.9                  |          |
| Big-6                                    | 187        | 79.9         | 11                | 61.1 <sup>††</sup>    |          |
| †† $\chi^2$ (1, n = 252) = 2.48, p > .05 |            |              |                   |                       |          |

( $\chi^2 = 16.04$ ,  $df = 6$ ,  $p < .05$ ) indicate that financial services companies are more likely to undertake an audit (44.4%) than a review (13.2%) compared with companies in the resources, manufacturing, retail, services, construction, and other industries.

#### Model variables

*Review or audit (REVIEW)*. As the analysis was to determine whether a review or audit was used, the dependent variable was dichotomised: 0 = review; 1 = audit.

*Firm size (SIZE)*. Total assets was used as a proxy for size. However, as the data for assets were positively skewed, "Size" was transformed by using the natural log of total assets. This variable is consistent with the size measure used by McKinnon and Dalimunthe (1993) and Hossain *et al* (1995).

*Leverage (LEV)*. Leverage is measured by the ratio of total liabilities to total assets (Mitchell *et al* 1995).

*Minority interest (MIN)*. This variable was measured as the ratio of actual minority interest to net assets.<sup>6</sup>

*Big-6 auditor (BIG-6)*. Presented as a dummy variable, where 0 = non-Big-6 audit firm, 1 = Big-6 auditor.

*Profitability<sup>7</sup> (PFT)*. Measured as net profit divided by total assets.

*Industry*. Industry type was assessed using the Australian Stock Exchange's classification categories. As the ASX's classifications were quite specific leading to 80 categories, firms were reclassified into seven general industry classifications. These were: Resources (eg, mining, diversified resources, energy); Manufacturing (eg, food and household, pharmaceutical and health products, diversified industries); Retail (includes only the retail category);

Financial Services (eg, banks and finance, investment and financial services, property trusts); Services (transport, telecommunications, tourism and leisure); Construction (eg, developers and contractors, building materials, engineering); and Other (eg, miscellaneous industry, media and publishers). Industry type was dummy coded into six variables.

## PROCEDURE

Non-parametric and parametric tests, Spearman correlations, and direct logistic regression analyses were used to determine mean differences, establish relationships, and to predict a discrete outcome (review or audit) from seven dichotomous and four continuous independent variables (Demaris 1992). Logistic regression has been used previously by Bradbury (1992) and Mitchell *et al* (1995) to test characteristics of various disclosure items.

A direct logistic regression was performed to assess prediction of firms' voluntarily adopting an audit on the basis of size (assets), leverage, minority interest, profitability, use of Big-6 audit firms, and six industry dummy variables (resources, manufacturing, retail, financial services, services and construction). Analysis was performed using SPSS for Windows (6.1).

## RESULTS

**Non-parametric and parametric tests.** Mann-Whitney U and independent sample *t*-tests were conducted between audited and reviewed companies on size, profitability, minority interest and leverage (see

Table 2). On both non-parametric and parametric tests, significant differences ( $Z = 2.12, p < .05; t = 2.15, p < .05$ ) were observed on leverage, indicating that companies with a higher degree of leverage are more likely to conduct a review for their interim financial statements. This is contrary to expectation (see  $H_2$ ), suggesting that the additional cost associated with an audit is not voluntarily borne by firms with higher leverage.

In addition, a chi-square test ( $\chi^2 = 2.48, df 1, p > .05$ , see Table 1) revealed that no significant differences existed between companies that had undertaken an audit or review and type of auditing firm (Big-6 or non-Big-6). While this result is contrary to expectation (see  $H_4$ ), it is consistent with McNally *et al* (1982) and Hossain *et al*'s (1995) finding that there are no differences between type of auditor and voluntary disclosure.

**Logistic regression.** As a first step, a Spearman correlation matrix was generated to assess relationships between the dependent and independent variables, and to determine the viability of conducting logistic regression analyses. As shown in Table 3, correlation coefficients indicate that "Leverage" and "Financial Services" are significantly associated with whether an organisation has undertaken an audit or review, suggesting that these two variables are the best model determinants.

In addition, the table shows that significant positive correlations exist between "Size" and "Minority interest", "Size" and "Big-6", "Size" and "Resources" and "Size" and "Financial services"; between "Leverage" and "Minority interest", "Leverage" and "Resources", and "Leverage" and "Financial services"; between "Minority interest" and Retail"; and between "Profitability" and "Retail".

A direct logistic regression analysis examines the combined ability of all variables to explain the decision to use an audit or review. It provides an indication of the statistical significance of individual independent variables, as well as goodness of fit for the overall model (Mitchell *et al* 1995). The model took the form:

$$\log \frac{\pi_1}{1-\pi_1} = \log O_i = \alpha + B_1(\text{LnSize}) + B_2(\text{Lev}) + B_3(\text{min}) + B_4(\text{Big-6}) + B_5(\text{Profit}) + B_6(\text{Industry D1}) + B_7(\text{Industry D2}) + B_8(\text{Industry D3}) + B_9(\text{Industry D4}) + B_{10}(\text{Industry D5}) + B_{11}(\text{Industry D6})$$

where,  $O_i$  = the conditional odds of an organisation adopting an audit.

A test of the full model with all 11 predictors against a constant-only model was statistically reliable,  $\chi^2 (11, n = 252) = 27.87, p < .01$ , indicating that the predictors, as a set, adequately distinguished between those companies that undertook an audit and those which conducted a review. The full model accounts for 25% of the variance ("pseudo" R, based on the improvement in the -2LL value).<sup>8</sup> Overall fit of 94.7% for both audited and reviewed companies was good. Table 4 shows regression coefficients, Wald statistics, and odds ratios for each of the eleven predictors.

According to the Wald criterion, "Leverage" and "Big-6" significantly predicted audit,  $z = 4.7543, p < .01$  and  $z = 5.1619, p < .01$  respectively. A model run with "Leverage" and "Big-6" omitted was not significantly different from a constant-only model; however, this model was significantly different from the full model,  $\chi^2 (2, n = 252) = 19.97, p < .01$ . This confirms the finding that "leverage" and "Big-6" reliably distinguish between companies that undertake an audit or a review among the 11 variables tested in this study. The odds of using an audit decreases by 94% when there is a one-unit change in leverage, whereas the odds of using an audit doubles (2.11) when an organisation uses a Big-6 firm. In addition, the result for leverage does not support the hypothesis ( $H_2$ ) that companies with high leverage are more likely to undertake an audit for interim financial statements than companies with low leverage, whereas hypothesis ( $H_4$ ) that companies which use one of the Big-6 firms are more likely to have an audit for interim financial statements than companies which use non-Big-6 firms is supported. This result for Big-6 firms is

TABLE 2: t-TEST AND MANN-WHITNEY U RESULTS BETWEEN AUDITED AND REVIEWED COMPANIES ON FIRM CHARACTERISTICS

|                                 | Audited<br>(n = 18) mean | Reviewed<br>(n = 234) mean | t     | p     | Z     | p     |
|---------------------------------|--------------------------|----------------------------|-------|-------|-------|-------|
| Size <sup>a</sup>               | \$5.73m<br>(\$0.98m)     | \$5.48m<br>(\$0.95m)       | 1.17  | 0.243 | 0.49  | 0.624 |
| Profitability <sup>b</sup>      | 1.0% (9.0%)              | 2.0% (9.0%)                | 0.52  | 0.600 | 0.67  | 0.510 |
| Minority interests <sup>c</sup> | 1.0% (1.0%)              | 5.0% (15.0%)               | 1.21  | 0.227 | 1.43  | 0.152 |
| Leverage <sup>d</sup>           | 40.0% (24.0%)            | 52.0% (25.0%)              | 2.15* | 0.033 | 2.12* | 0.034 |

\*p < .05

Note: Figures in parentheses are standard deviations.

<sup>a</sup>Size = Natural log of total assets

<sup>b</sup>Profitability = Net profit/total assets x 100

<sup>c</sup>Minority interests = Actual minority interest/net assets x 100

<sup>d</sup>Leverage = Total liabilities/total assets x 100.

**TABLE 3: SPEARMAN CORRELATION COEFFICIENTS FOR MODEL VARIABLES**

|                             | 1      | 2      | 3       | 4     | 5    | 6    |
|-----------------------------|--------|--------|---------|-------|------|------|
| 1. Audit                    | 1.00   |        |         |       |      |      |
| 2. Size                     | .03    | 1.00   |         |       |      |      |
| 3. Leverage                 | -.13*  | .09    | 1.00    |       |      |      |
| 4. Minority interest        | -.09   | .19**  | .13*    | 1.00  |      |      |
| 5. Big-6                    | -.12   | .30*** | -.08    | .01   | 1.00 |      |
| 6. Profitability            | .04    | .07    | -.09    | .01   | -.02 | 1.00 |
| 7. Resources (D1)           | .03    | .13*   | -.24*** | .01   | -.01 | -.04 |
| 8. Manufacturing (D2)       | -.09   | .03    | .01     | .02   | .05  | -.01 |
| 9. Retail (D3)              | -.07   | -.05   | .03     | -.13* | -.08 | .15* |
| 10. Financial services (D4) | .22*** | .13*   | .12*    | .02   | -.04 | -.12 |
| 11. Services (D5)           | .04    | .07    | -.08    | -.07  | .08  | -.02 |
| 12. Construction (D6)       | -.06   | -.01   | .04     | .03   | .00  | .03  |

\*p<.05; \*\*p<.01; \*\*\*p<.001

**TABLE 4: LOGISTIC REGRESSION ANALYSIS OF INTERIM AUDIT AS A FUNCTION OF ORGANISATIONAL CHARACTERISTICS**

|  | B                                   | S.E.    | Wald test (z-ratio) | R      | Odds   |
|--|-------------------------------------|---------|---------------------|--------|--------|
| Size   | .1268                               | .3581   | .1254               |        |        |
| Leverage   | -2.8416                             | 1.3032  | 4.7543*             | -.1564 | .0583  |
| Minority interest  | -23.1117                            | 19.4420 | 1.4131              |        |        |
| Big-6 auditor (1)  | .7457                               | .3282   | 5.1619*             | .1676  | 2.1080 |
| Profitability  | -4.8349                             | 4.0017  | 1.4598              |        |        |
| Industry   |                                     |         |                     |        |        |
| Resources (1)  | 1.9009                              | 7.5714  | .0630               |        |        |
| Manufacturing (2)  | -5.4592                             | 27.5223 | .0393               |        |        |
| Retail (3)   | -5.5390                             | 36.7375 | .0227               |        |        |
| Financial services (4)   | 3.4902                              | 7.5642  | .2129               |        |        |
| Services (5)   | 2.5567                              | 7.5807  | .1138               |        |        |
| Construction (6)   | 1.3727                              | 7.6016  | .0326               |        |        |
| Constant-only model  | -2 Log Likelihood = 112.605         |         |                     |        |        |
| Full model   | -2 Log Likelihood = 84.738          |         |                     |        |        |
| Model chi-square   | $\chi^2 = 27.87$ , df 11, p = .0034 |         |                     |        |        |
| "Pseudo" R <sup>2</sup> = .247                                   |                                     |         |                     |        |        |
| <i>Note: Figures in parentheses denote dummy coded variable.</i> |                                     |         |                     |        |        |
| * p < .01  |                                     |         |                     |        |        |

contrary to the univariate chi-square test and to the correlation results discussed earlier.

To understand this apparent inconsistency, additional logistic regression analyses were performed to investigate companies that undertook an audit or review. In the first stage, each explanatory variable's contribution was assessed individually in the model. In the second stage, "Leverage" and "Auditor" were assessed together in the model. This stage revealed that "Leverage" provided a significant result, whereas "Auditor" was not significant at the .05 level. In the third stage, a backward elimination procedure was used after all variables were introduced into the model. The results indicate that both "Leverage" and "Big-6" are significantly associated with audit only when size remains in the model, suggesting that large

er firms with lower leverage will use a Big-6 auditor to conduct an audit.

While the logistic regression results indicate that the use of a Big-6 audit firm was significant in determining whether or not to undertake an audit, five of the Big-6 firms were involved in audits. Each of these audit firms had also reviewed interim financial statements of other organisations. Therefore, it can be concluded that the audit/review decision is not necessarily driven by a particular Big-6 audit firm.

**Additional analysis.** To understand the theoretical discrepancies in our findings, particularly for hypothesis (H<sub>2</sub>), qualitative interviews were undertaken with those companies that had conducted an audit. Of the 18 companies, seven could not be contacted. Eleven chief financial controllers were inter-

viewed to provide further understanding of why an external audit for interim reports, rather than a review, was conducted by the company. Interview results indicated that for most trust companies an audit was a requirement of the trust deed, whereas for the remainder of the companies, an audit was seen as a means of increasing market credibility.<sup>9</sup> Of five trust companies in the sample, four had conducted an audit and four had used a Big-6 auditor.

After controlling for trust companies, logistic regression results revealed that even though leverage became a non-significant predictor (as expected because of the drop in the sample size), the odds of using an audit still decreased by 81% ( $B = -1.64$ ) when there was a corresponding one-unit change in leverage. This indicates that the results are not being unduly influenced by the five trust companies, and suggests that use of an audit is driven by factors other than requirements of trust deeds.

## DISCUSSION

Agency theory suggests that monitoring costs will depend on the asset structure of the firm and the composition of the financial claims, rather than absolute firm size (Leftwich *et al* 1981). The parametric and non-parametric results in this study provide partial support for this theory.

While previous studies on disclosure found a positive association between size and the extent of disclosure (Bradbury 1992, McKinnon and Dalimunthe 1993, Mitchell *et al* 1995, Aitken *et al* 1997), this study has found no significant difference in the size of the firms in terms of whether the firm had an audit.<sup>10</sup> An alternative proxy for size, net revenue, was also tested. However, this also did not result in a significant difference. Therefore,  $H_1$  is not supported.

Previous studies on the demand for audit services have found a positive relationship between the demand for an audit and leverage (Chow 1982, Ettredge *et al* 1994); however, results of studies on disclosure have been inconclusive. In this study, leverage was found to be a significant explanatory variable of "Review". This is somewhat inconsistent, as agency theory suggests that firms with proportionally more debt in their capital structure will incur greater monitoring costs (Jensen and Meckling 1976) and that the additional cost associated with an audit would be borne voluntarily by firms with larger amounts of debt in their capital structure. Therefore,  $H_2$  is not supported.

Minority interest indicates the extent to which shares in subsidiaries are held by minority shareholders. While previous studies have found a positive relationship between minority interest and demand for quality audits (Francis and Wilson 1988) and voluntary disclosure (Mitchell *et al* 1995, McKinnon and Dalimunthe 1993, Aitken *et al* 1997), this study observed that minority interest was not significant, and therefore  $H_3$  is not supported. This variable does not appear to have any effect on agency costs, and the

result perhaps reflects the fact that minority shareholders have little influence in such decisions.

The use of a Big-6 auditor was found to be a significant indicator of the use of an audit for interim financial statements. This finding supports agency theory which suggests that the choice of external auditors is a mechanism which helps alleviate conflicts of interest between principal and agent (Watts and Zimmerman 1986). Therefore,  $H_4$  is supported.

While both Spicer (1978) and Singhvi and Desai (1971) found a significant positive association between profitability and information disclosure, in this study profitability was not found to be a significant variable in terms of predicting the use of an audit for interim financial statements. While high profitability could influence a firm to disclose information to support its good management, it does not appear to have an effect on the firm's agency costs.<sup>11</sup> Therefore  $H_5$  is not supported.

Watts and Zimmerman (1986) suggest that a firm's accounting policy choice could be affected by the sensitivity of the industry to which the firm belongs. In addition Bazley *et al* (1985), McKinnon and Dalimunthe (1993) and Mitchell *et al* (1995) found an industry effect associated with voluntary disclosure. The Spearman correlation results show that the financial services industry is positively associated with use of an audit for interim financial statements, whereas the logistic regression results indicate non-significance.<sup>12</sup> Therefore  $H_6$  is partially accepted.

## CONCLUSION AND LIMITATIONS

This study set out to determine whether there were firm-specific characteristics which would indicate whether an organisation would choose to have an audit for interim financial statements. Logistic regression analyses reveal that the use of a Big-6 auditor is not significant until size is introduced. Therefore, it appears that the major indicator of the use of a review is associated with higher leverage, whereas larger companies that undertake an audit are more likely to use the services of a Big-6 firm.

These findings provide inconclusive support to agency theory, which suggests that as the degree of leverage increases, so does the level of risk for debt providers. Thus, increased monitoring costs do not seem to be associated with undertaking an audit, which according to agency theory would be more appropriate for companies with high leverage. Our findings further suggest that in general, an audit does not provide sufficient benefits to justify the additional costs; hence, to ensure credibility and keep costs down, companies prefer to undertake a review.

While organisation size has been a significant indicator of voluntary disclosure in previous studies, this characteristic was not significant in our regression. However, the correlation results showed that size was significantly and positively correlated with Big-6. All the firms chosen for this study, while varying in size,



were among the 1,000 largest companies. It is possible, therefore, that if the sample had included more smaller firms, size may have been found to be significant. A further limitation of this study is that it was conducted for one year only, that being the year when the requirement for interim financial reporting was introduced. Future research could examine the extent to which companies have changed from their initial decision and whether, as discussed earlier, there could be a lag between profitability and a decision to voluntarily undertake an audit.

In conclusion, it is noteworthy that only 18 instances of audit, compared with 234 instances of review, were observed in our sample. While this is a limitation of our study and might cast doubt on the interpretation of results, the result is nonetheless reflective of larger listed companies on the Australian Stock Exchange. The study demonstrates that conducting a half-yearly audit is not popularly accepted by Australian companies.

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## NOTES

- 1 See, for example, Brown, Hatherly and Innes (1993), Epstein and Geiger (1994), Johnson (1988), Nair and Rittenburg (1987) and Pillsbury (1985).
- 2 While the difference in cost between a review and audit would vary on different engagements, the cost of a review should be lower because of the limited procedures involved.
- 3 It could be argued, however, that higher leverage might mean that there are fewer shareholders resulting in lower agency costs.
- 4 It should be noted that while there are now five large accounting firms, at the time of data collection there were six large firms. Therefore, the terminology referring to Big-6 has been retained.
- 5 It is acknowledged that there are problems with the measurement of profitability, including differences in accounting policies and different measurement periods that can make company comparisons unreliable.
- 6 While minority interest is also frequently calculated as one minus the percentage of the number of the subsidiaries of each company which are 100%-owned, Mitchell *et al* (1995) found a very high correlation, 0.939, between the two measures.
- 7 Profitability was calculated on the basis of profit reported in the interim financial statements and was not annualised. As data were cross-sectional, this would have required a number of assumptions about seasonal variations, economic cycles, and cross-industry variations. Further, the data were not standardised for industry, nor allowance made for a possible lag between profitability and the decision to undertake an audit or review.
- 8 -2LL refers to -2 log likelihood statistic.
- 9 It is presumed that there is a belief that increased market credibility will reduce agency costs.
- 10 It is noted that the sample was selected from the top 1,000 companies.
- 11 There may be a lag effect between profit calculation and the audit/review decision, which could become apparent with subsequent analysis.
- 12 Even though the Wald statistic in the logistic regression result indicates significance, the associated p value was non-significant.

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