

## **Auditor Tenure and Perceived Credibility of Financial Reporting**

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December 2006

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### **Acknowledgements**

We thank Tom Smith, Farshid Vahid, Dominic Gasbarro, Mike Kend, Mark Wilson and Seng Teh for their useful comments on earlier drafts of this paper.

## **Auditor Tenure and Perceived Credibility of Financial Reporting**

**Summary:** We examine whether auditor tenure, auditor switches and engagement partner rotation affect analysts' perceptions of financial reporting credibility, measured by client-specific *ex ante* cost of equity capital. We use data for a sample of companies from 1995-2005 to test these relations. For the full sample period, we find that: audit firm tenure and engagement partner tenure are significantly associated with lower *ex ante* cost of equity capital, but only for non-Big 4 audit firms; and audit firm switches and audit partner rotation are not significantly associated with changes in *ex ante* cost of equity capital.

The accounting scandals, audit failures and regulatory changes (e.g., mandatory audit partner rotation) that occurred in 2001 and 2002 may have affected analysts' perceptions of the impact of audit attributes on financial reporting quality. Accordingly, we partition our sample into three sub-periods to examine whether our results are affected by the events occurring in 2001 and 2002. Our results for the events period (2001-2002) and post-events period (2003-2005) are different to the results for the pre-events period (1995-2000). The pre-events period results are almost identical to the full sample period results reported above. However, for the 2001-2002 and 2003-2005 periods, Big 4 audits, audit firm tenure and engagement partner tenure are not significantly associated with *ex ante* cost of equity capital. This suggests that analysts' perceptions of the impact of these audit attributes on financial reporting credibility were affected by the events that occurred in 2001 and 2002.

**Keywords:** Big 4 audit firm; audit firm tenure; engagement partner tenure; audit partner rotation; auditor switching; *ex ante* cost of equity capital

**Data availability:** The data used is from public sources identified in the manuscript.

# Auditor Tenure and Perceived Credibility of Financial Reporting

## I. INTRODUCTION

We examine whether different aspects of auditor tenure affect market perceptions of financial reporting credibility, as reflected in the client's *ex ante* cost of equity capital. The finance literature posits that increasing financial information credibility reduces the cost of capital by reducing investors' information risk (Klein and Bawa 1976; Barry and Brown 1985; Diamond and Verrecchia 1991; Coles et al. 1995).<sup>1</sup> Audits add credibility to the financial information by providing an independent verification of management-provided financial reports, thus reducing investors' information risk (Watts and Zimmerman 1986; Dye 1993; Johnson et al. 2002; Mansi et al. 2004). Prior studies suggest that capital market participants value audit quality (Teoh and Wong 1993; Moreland 1995; Khurana and Raman 2004; Mansi et al. 2004; Pittman and Fortin 2004). Auditor independence and competence are critical elements affecting the credibility and reliability of an auditor's report (Watkins et al. 2004) and, therefore, financial reporting credibility.

Regulators have reacted to recent corporate scandals that cast doubts on audit quality by relating audit quality to auditor independence and auditor tenure by including the possible negative effects on long auditor-client relationships as possible threats to auditor independence (Sarbanes-Oxley Act 2002; General Accounting Office 2003). Professional accounting bodies are also concerned that the length of auditor client relationships may impair audit quality (AICPA 1978 and 1992; ICAA and CPA Australia 2001<sup>2</sup>; Coordinating Group on Audit and Accountant Issues 2003). The general concern is that as this relationship gets

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<sup>1</sup> Consistent with prior research (e.g., Francis et al., 2004; Diamond and Verrecchia, 1991; Leuz and Verrecchia, 2004), our research is predicated on the relation between the cost of equity and the quality of audited financial reports, reflecting the pricing of the non-diversifiable firm-specific information risk.

<sup>2</sup> Institute of Chartered Accountants in Australia and Certified Public Accountants of Australia.

longer, auditors are more likely to accede to their client's accounting and reporting choices in order to retain the client. Regulators have pushed for mandatory auditor rotation. The focus of this issue has been concerned with whether there should be mandatory audit firm or engagement partner rotation.

Proponents of mandatory auditor rotation argue that audit quality is diminished with long auditor tenure. This is despite the lack of convincing empirical evidence from the auditing research literature. However, others argue that longer auditor-client relationships improve audit quality because the auditor acquires client specific knowledge over time. This implies that audit quality is lower during the early years of the auditor client relationship and audit quality increases with length of auditor tenure due to the reduction in information asymmetry between the auditor and the client.

Countries requiring audit partner rotation include Australia, Canada, the United Kingdom and the US.<sup>3</sup> In the US, the AICPA Practice Section requirement for mandatory engagement partner rotation every seven years (AICPA 1978) became a requirement for US Securities and Exchange Commission clients. The Sarbanes-Oxley Act of 2002 requires that the lead audit partner and audit review partner be rotated every five years on public company engagements. The United Kingdom requires audit engagement partner rotation every seven years for listed companies. In 2001, Australia's professional accounting bodies (Australian Society of CPAs and The Institute of Chartered Accountants in Australia) introduced mandatory engagement partner rotation requirements into their independence standard (ICAA and CPA Australia 2001). The requirement is that the lead partner should be rotated after a predefined period of no longer than seven years. Legislation was introduced in 2004 that requires the engagement and review partner of listed companies to be rotated after no more

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<sup>3</sup> Other countries that require audit partner rotation include France, Hong Kong, Japan and Mexico.

than five years. Evidence of the effect of auditor tenure on audit quality is mixed, and there is limited empirical evidence of the effect of auditor tenure on audit quality.

We contribute to the literature in at least two important ways. First, we examine the effect of audit firm tenure, engagement partner tenure, audit firm switches and engagement partner rotation on the client-specific *ex ante* cost of equity capital.<sup>4</sup> No published research has examined the relation between auditor tenure, audit firm switches or engagement partner rotation and the *ex ante* cost of equity capital. Second, we examine whether these relations were affected by the financial scandals and the introduction of professional requirements for audit partner rotation in 2001. Our results are potentially useful to regulators and policy makers concerned about the possible effects of audit firm tenure and engagement partner rotation on investors' perception about credibility of financial reports.

We use Australian data to investigate the relation between auditor tenure and financial reporting credibility for two reasons. First, Australian auditing standards and legislation (section 324 (10) of the Australian Corporations Act) require the audit report to be signed in both the audit firm's and engagement partner's names, thus allowing identification of engagement partner tenure and rotation in addition to the audit firm tenure and audit firm switches readily observed in other countries. Data in other jurisdictions, such as Canada or the US, do not allow engagement partner identification. Therefore, using Australian data allows us to investigate the effect of engagement partner tenure and rotation on perceived financial report credibility. Second, audits in Australia do not provide the hypothesised insurance role

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<sup>4</sup> Prior research uses earnings response coefficients (ERC), cost of debt and *ex ante* cost of equity capital to measure the impact of audit quality and credibility of financial reporting (e.g., Teoh and Wong 1993; Khurana and Raman 2004; Mansi et al. 2004; Pittman and Fortin 2004; Ghosh and Moon 2005). We use the *ex ante* cost of equity capital estimated using the PEG model (Easton 2004). Kothari (2001, pp123-124) suggests that the ERC metric represents a mapping of the time-series property of earnings and the cost of equity capital into changes in equity market values. As a consequence, it is a noisy proxy for perceived audit quality to the extent that the ERC captures both the *ex ante* cost of equity capital and the time-series property of earnings effects. Using the PEG estimate of the *ex ante* cost of equity capital potentially provides a more direct and less noisy measure of analysts' perceptions of the credibility of financial reporting.

(Dye 1993; Khurana and Rama 2004; Mansi et al. 2004), which may affect equity pricing, thus allowing us to focus on the information role of audits.<sup>5</sup>

The remainder of this paper is organized as follows: Section II outlines the debates and prior research results regarding auditor tenure and hypothesis development. Section III discusses the *ex ante* cost of equity capital, a proxy utilized in our study. Section IV describes the research method and data, and section V discusses sample selection and descriptive statistics. The results of the associations between lengths of auditor-clients relationship and *ex ante* cost of equity capital are discussed in section VI and additional analyses are reported in section VII. The final section provides concluding remarks.

## II. DEVELOPMENT OF HYPOTHESES

There is both theoretical support and empirical evidence that increasing the quality of financial information reduces the cost of capital by reducing investors' information risk (e.g., Klein and Bawa 1976; Barry and Brown 1985; Diamond and Verrecchia 1991; Coles et al. 1995; Khurana and Raman 2004; Mansi et al. 2004; Pittman and Fortin 2004). Financial reporting credibility is partly reflected in the confidence of users in audited financial reports (Watkins et al. 2004). As noted by Levitt (2000), investors' perceptions of audit quality play a critical role in maintaining systematic confidence in the integrity of financial reporting.<sup>6</sup> The higher the perceived audit quality, the more credible is the auditee's financial statements and the greater the users' confidence in those financial statements.

A commonly accepted definition of audit quality is the market-assessed joint probability that an auditor will both detect and report material misstatements (DeAngelo 1981a).

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<sup>5</sup> The "insurance" role of audits was largely removed by the Victorian and South Australian Courts in *R. Lowe Lippman Figdor & Franck (a firm) v A.G.C. (Advances) Ltd* (1992) 2 VR 671 and *Esanda Finance Corp Ltd v Peat Marwick Hungerfords* (1994) 12 ACLC 199. The latter was confirmed by the High Court of Australia in *Esanda Finance Corporation Ltd v Peat Marwick Hungerfords (Reg)*(1997) 142 ALR 750. Similar to the Caparo principles in the UK, this decision effectively precludes debtholders and acquiring shareholders suing auditors for damages based on the statutory audit in Australia.

<sup>6</sup> The former Chairman of the SEC.

According to this definition, audit quality is a function of the auditor's ability to detect material misstatements (auditor competence) and report those detected misstatements (auditor independence). Since actual audit quality is unobservable, financial report users can only respond to the appearance of audit quality. While audit firm size is frequently used or tested as an indicator of audit quality, the linkage between auditor tenure and audit quality is not clear. Some argue that longer tenure improves audit quality through learning, while others argue that longer tenure decreases audit quality because of independence concerns. We discuss these arguments below.

The literature has long been concerned that the duration of the relationship between the auditor and the client potentially affects audit quality, but contains conflicting arguments (e.g., Mautz and Sharaf 1961; Shockley 1981; Lyer and Rama 2004). The auditor independence hypothesis posits that audit quality is compromised as auditor tenure increases, while the auditor expertise hypothesis contends that audit quality increases with auditor tenure.

The auditor independence hypothesis incorporates three different arguments as to why audit quality might decrease as auditor tenure increases. First, over time, the auditor's incentives shift toward maintaining and profiting from the client and the audit. The prospect of "client-specific rents" that the auditor can extract only over time may create an economic dependency on the client concerned, which impairs auditor independence (DeAngelo 1981a, 1981b; Magee and Tseng 1990; Raghunathan et al. 1994). Second, as the auditor-client relationship lengthens, auditors may develop a "learned confidence" in the client (described in the IFAC Code of Ethics as a familiarity threat), which may result in the auditor not testing financial report assertions, anticipating results instead of being alert to anomalies, using less rigorous audit procedures or using static audit programs (Hoyle 1978; Shockley 1981; AICPA 1992; Arrunada and Paz-Ares 1997; Johnson et al. 2002; GAO 2003). Third, a long

relationship between a client and its auditor may lead to the development of personal relationships to the extent of developing bonds of loyalty, trust or emotive relationships (psychological dependence) so that truly independent auditor behavior becomes difficult (AICPA 1992; Arel et al. 2005). The consequences of diminished independence with long auditor tenure include the increased likelihood of the auditor acceding to client pressure in relation to their choice and application of accounting policies and, at the extreme, the possibility that excessive familiarity results in collusion between the auditor and the client (McLaren 1958).

The auditor expertise hypothesis is based on information asymmetry between the client and the auditor, which reduces over time as auditors acquire client-specific knowledge. Because increased client-specific knowledge provides a comparative advantage in detecting material misstatements in financial reports, the lack of this knowledge in the early years of an audit engagement may result in a lower quality audit (Beck et al. 1988; Hoyle 1978; Knapp 1991; Solomon et al. 1999; Geiger and Raghunandan 2002).

Auditor tenure has two aspects: the tenure of the audit firm and the tenure of individuals engaged in the audit, particularly the engagement partner. Although both have been tested in the literature, the emphasis has been on audit firm tenure due to difficulties in identifying the engagement partner in most countries. Empirical evidence of the effects of audit firm tenure on audit quality is mixed. Studies report that audit quality decreases with audit firm tenure, including the auditor's failure to detect fraudulent financial reporting or issuing going concern opinions before bankruptcy (Casterella et al. 2002; Choi and Doogar 2005) and a positive relation between audit firm tenure and discretionary accruals (Davis et al. 2002).

Conversely, some studies report that audit quality increases with audit firm tenure. Johnson et al. (2002) find that the absolute value of unexpected accruals is higher in the early years of audit firm tenure. Myers et al. (2003) report a negative relation between audit firm

tenure and earnings quality measured by discretionary accruals and special items. Several studies find that audit failures are more likely to occur with short audit firm tenures (St. Pierre and Anderson 1984; Stice 1991; AICPA 1992; Raghunathan et al. 1994; Walker et al. 2001; Geiger and Raghunathan 2002; Carcello and Nagy 2004). Mansi et al. (2004) report that the cost of debt decreases as audit firm tenure increases. Ghosh and Moon (2005) find a positive relation between audit firm tenure and several measures of reliance on reported earnings (as a proxy for audit quality).

Given the mixed results in the literature, our hypothesis for audit firm tenure is non-directional.

H1: Audit firm tenure is associated with client-specific *ex ante* cost of equity capital.

Both the auditor independence and auditor expertise hypotheses also apply to the possible effects of engagement partner tenure on audit quality. As in the case of audit firm tenure, the more limited empirical evidence regarding engagement partner tenure is mixed. Chen et al. (2004) report that the length of engagement partner tenure is negatively related to the absolute value of discretionary accruals. Based on a sample of companies from the Taiwanese audit market, Chi and Huang (2005) report that the level of abnormal accruals is lower in the early years of audit tenure (either firm or engagement partner) and the later years of firm tenure. Cary and Simnett (2006) find that the probability of a going-concern qualification and beating (missing) earnings benchmarks are negatively associated with engagement partner tenure, suggesting an independence concern with engagement partner tenure. However, they find no evidence that engagement partner tenure is significantly associated with either earnings distributions or unexpected accruals. Similar to our hypothesis for audit firm tenure, our hypothesis for engagement partner tenure is non-directional.

H2: Engagement partner tenure is associated with client-specific *ex ante* cost of equity capital.

The issue of audit firm rotation has received considerable attention with suggestions that it will improve auditor independence.<sup>7</sup> However, some research suggests that audit firm switches cause client-specific expertise to be lost, resulting in a lower quality audit (Beck et al. 1988; Knapp 1991; Solomon et al. 1999; Geiger and Raghunandan 2002). If audit firm switches affect financial analysts' perceptions of financial reporting quality, this should be reflected in the client-specific *ex ante* cost of equity capital. The non-directional hypothesis for the effects of audit firm switches follows.

H3: Audit firm switches are associated with changes in client-specific *ex ante* cost of equity capital.

Engagement partner rotation is perceived as a lower cost alternative to audit firm rotation. The logic behind engagement partner rotation is to bring a fresh perspective to the audit and promote engagement partner independence (AICPA 1978; Committee on the Financial Aspects of Corporate Governance 1992). The adoption of mandatory partner rotation polices in several countries shows that regulators believe that the benefits of partner rotation outweigh the potential costs associated with long periods of partner tenure. The Cadbury Committee (Committee on the Financial Aspects of Corporate Governance 1992) reports that partner rotation encourages a "fresh viewpoint", which enhances the technical rigor of an audit. A similar view was held in the AICPA's requirement to change the partner

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<sup>7</sup> See ICAEW (2002), GAO (2003, 2004), CGAA (2003), and FEE (2004) for recent debate on auditor rotation.

in charge of auditing a public company at least every seven years. The policy “was adopted for the specific purpose of periodically bringing a fresh perspective to each audit” (AICPA 1992, 4). The IFAC Code of Ethics (2003, para. 8.151) states that “using the same lead engagement partner on an audit over a prolonged period may create a familiarity threat”. Auditor independence is likely to be enhanced with engagement partner rotation as the perceived familiarity and trust that results from a long period of auditor-client association impacts on individuals rather than the audit firm.

Engagement partner rotation, unlike audit firm rotation, allows client-specific knowledge to be retained within the audit firm. However, there may be some knowledge loss at the individual level because the new engagement partner is unlikely to have the same level of client-specific knowledge as the previous engagement partner. While the incoming engagement partner is developing the necessary client-specific knowledge and expertise, there is a possibility of reduced audit quality.<sup>8</sup>

If investors perceive that rotation of engagement partners encourages independence or brings a “fresh perspective” that increases audit quality, then financial report users will perceive financial reports as more credible. In contrast, if financial report users perceive that the loss of client-specific knowledge reduces audit quality, then the *ex ante* cost of equity capital should increase with engagement partner rotation. Consequently, our hypothesis for engagement partner rotation is non-directional.

H4: Engagement partner rotation is associated with changes in client-specific *ex ante* cost of equity capital.

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<sup>8</sup> Rake (2004), the International Chairman of KPMG, commenting on the requirement of audit partner rotation in Sarbanes-Oxley ACT 2002, states that this policy will not improve audit quality, but will make audit practice more difficult.

### III. THE *EX ANTE* COST OF EQUITY CAPITAL

Consistent with prior studies, this study uses the client-specific *ex ante* cost of equity capital as a proxy to measure the credibility of financial reports (Khurana and Raman 2004; Francis et al. 2004 and 2005). The finance literature has used several methods to estimate *ex ante* cost of equity capital (e.g., Gordon and Gordon 1997; Gebhardt et al. 2001; Botosan and Plumlee 2002; Easton 2004; Ohlson and Juettner-Nauroth 2005). We use the price-earnings (P/E) ratio divided by the short term earnings growth rate model, hereafter the PEG model, formulated by Easton (2004), to estimate client-specific *ex ante* cost of equity capital. This is consistent with its prior use to examine the relation between the cost of equity capital and earnings attributes (Francis et al. 2004 and 2005), and as a measure of financial reporting credibility in relation to audit firm size (Khurana and Raman 2004). We choose this measure because it dominates the alternative measures as a firm-specific estimate of *ex ante* cost of equity capital (Botosan and Plumlee 2005).<sup>9</sup> The client-specific *ex ante* cost of equity capital is estimated as:

$$R_p = \sqrt{\frac{\text{eps}_2 - \text{eps}_1}{P_0}}$$

Where:

$R_p$  = client-specific *ex ante* cost of equity capital;

$\text{eps}_2$  = the two-year ahead mean analysts' earnings forecast per share;

$\text{eps}_1$  = the one-year ahead mean analysts' earnings forecast per share; and

$P_0$  = the fiscal year-end price per share immediately prior to the EPS forecasts.

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<sup>9</sup> Botosan and Plumlee (2005) also report that the target price (or dividend discount) method, introduced in Botosan and Plumlee (2002), is also a superior measure of the *ex ante* cost of equity capital. However, the necessary data are not available for Australian companies.

#### IV. RESEARCH METHOD AND DATA

To examine the relation between client-specific *ex ante* cost of equity capital and audit firm size, auditor tenure, and engagement partner rotation, we utilize the following regression model:

$$R_p = f(AT, PR, Big4, VAR, LEV, Size, Beta, B/P, Growth, Year, IND) \quad (1)$$

To examine the relation between changes in client-specific *ex ante* cost of equity capital and audit firm switches and engagement partner rotation, we utilize the following regression model:<sup>10</sup>

$$\Delta R_p = f(PR, AFS, \Delta VAR, \Delta LEV, \Delta Size, \Delta Beta, \Delta B/P, \Delta Growth, Year, IND) \quad (2)$$

Where:

$R_p$  = client-specific *ex ante* cost of equity capital estimated by the PEG model;

AT = auditor tenure, measured as audit firm tenure (AFT), the number of consecutive years that the firm has retained the auditor or engagement partner tenure (PT), the number of consecutive years that the audit report has been signed by the same audit partner;

PR = partner rotation, which is a dummy variable equal to 1 if the engagement partner changed in year  $t$  without a change in audit firm, otherwise 0;

AFS = audit firm switch, which is a dummy variable equal to 1 if the audit firm changed in year  $t$ , otherwise 0;

Big4 = dummy variable equal to 1 if the audit firm is a Big4 accounting firm in year  $t$  otherwise 0;<sup>11</sup>

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<sup>10</sup> We estimate differences, which allow us to eliminate possible fixed firm effects. In other words, we use generalized method of moments (GMM) to estimate conditional moment conditions consistent with Whited and Wu (2006).

VAR = earnings variability measured by the standard deviation of analysts' earnings forecasts available on I/B/E/S during the fiscal year-end month;

LEV = financial leverage measured by the ratio of total debt to total assets at the end of the fiscal year;

Size = size measured by the natural logarithm of the market value of common equity at the end of the fiscal year;

Beta = share beta (systematic risk) calculated over 36 months to the fiscal year-end;

B/P = ratio of book value of equity to market value of equity at the end of the fiscal year;

Growth = earnings growth measured as the difference between the mean analysts' earnings forecasts for four and three years ahead divided by the mean of three year ahead earnings forecasts;<sup>12</sup>

Year = dummy variables to control for fiscal year;

IND = dummy variables based on two-digit SIC codes (26 industries);

$\Delta$  = change in the corresponding variable from year<sub>t-1</sub> to year<sub>t</sub>.

## Control Variables

In examining the relation between the length of auditor client relationship and client-specific *ex ante* cost of equity capital, it is important to control for other client-specific risk factors. Therefore, we include several control variables in our model.

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<sup>11</sup> This study concentrates on audits during 1995-2005. During this period, the large international accounting firms were considered as Big 6 and then Big 5 (merger of Price Waterhouse with Coopers and Lybrand) and then Big 4 (merger of Arthur Andersen with Ernst and Young). For convenience, this study refers only to the Big 4.

<sup>12</sup> As part of our sensitivity tests, we examine whether the results are sensitive to short-term vs long-term measures of growth. To test this, we also measure expected growth as the difference between the mean analysts' earnings forecasts for three and two years ahead divided by the mean of two year ahead earnings forecasts and two and one years ahead divided by the mean of one year ahead earnings forecasts. We also measure realised growth as the difference between actual earnings per share for the current and previous year divided by actual earnings per share for the previous year. Our results are not affected by the alternative measures of growth.

### ***Audit firm type***

Watts and Zimmerman (1986) argues that the greater monitoring ability of large audit firms provides a higher quality audit. DeAngelo (1981a) argues that larger audit firms provide higher quality audits because they have more brand name capital to lose and are, therefore, more independent. Large audit firms are also better able to resist client pressure because their large portfolio of clients means they are less dependent on a single client. Prior research (e.g. DeAngelo 1981a; Dopuch and Simunic 1982; Palmrose 1988) suggests that because audit quality can not be observed directly, external users evaluate audit quality based on the reputation of the auditor. Investors may rationally perceive Big 4 audit firms as providers of higher quality audits, because Big 4 audit firms have more of the observable characteristics associated with quality, such as quality control and specialized training (Dopuch and Simunic 1982).<sup>13</sup> The effect on audit quality of using a Big 4 audit firm has been well established in prior research with consistent findings that US audits by Big 4 audit firms increase the credibility of financial reports (e.g., Dopuch and Simunic 1982; Teoh and Wong 1993; Khurana and Raman 2004; Mansi et al. 2004; Pittman and Fortin 2004). However, Khurana and Raman (2004) report that there is no relation between *ex ante* cost of equity capital and audit firm size in Australia, Canada and the UK. They attribute their findings for non-US firms to the absence of the insurance role of audits due to less litigious environments.

### ***Beta***

We control for systematic risk, measured by the stock's beta, because the CAPM indicates that cost of equity capital is positively associated with systematic risk (market beta)

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<sup>13</sup> Big 4 audit firm refers to the large international accounting firms, which are described as Big 8, Big 6, Big 5 and Big 4, depending on the time frame of the study.

(Sharpe 1964; Linter 1965; Mossin 1966; Harris and Marston 1992; Harris et al. 2003; Botosan and Plumlee 2005). Consequently, Beta is expected to have a positive sign.

### ***Leverage (LEV)***

Previous studies indicate that the greater the leverage, the greater the perceived risk associated with the client and, hence, the higher the cost of equity capital (e.g., Modigliani and Miller 1958; Fama and French 1992; Gebhardt et al. 2001). Therefore, LEV is expected to have a positive sign.

### ***Earnings Variability (VAR)***

Barth et al. (1999) reports that stable and increasing earnings result in lower risk premiums. Gebhardt et al. (2001) and Gode and Mohanram (2003) report that variability in reported earnings may be a source of risk for firms' equity valuation, such that the greater the variability in reported earnings, the greater the perceived risk in the company, and the higher the cost of equity capital. Therefore, VAR is expected to have a positive sign.

### ***Market Value of Common Equity (Size)***

Berk (1995) suggests unless all risk factor are included in the model for expected returns, a negative association between a firm's market value of equity and expected returns will be observed because these two variables are inherently inversely related. Consistent with prior research (Berk 1995; Khurana and Raman 2004; Botosan and Plumlee 2005), Size is expected to have a negative relation with *ex ante* cost of capital.

### ***Book-to-Price Ratio (B/P)***

Prior research (Fama and French 1992; Berk 1995; Botosan and Plumlee 2005) argues that the book-to-price ratio and cost of equity capital are positively associated because book-to-price is inversely related to the market value of equity. Prior research consistently documents a positive relation between book-to-price ratios and cost of equity capital as proxied by average realized returns (Chan et al. 1991; Fama and French 1992; Davis 1994; Davis et al. 2000). Therefore, we expect B/P to have a positive sign.

### ***Expected Earnings Growth (Growth)***

Abnormal earnings arising from growth opportunities are riskier than normal earnings, which suggest a positive association between growth and equity risk (Beaver et al. 1970). La Porta (1996) provides empirical evidence of such an association. He reports that high-expected growth stocks have higher standard deviations of returns and higher market betas than low expected-growth stock. Khurana and Raman (2004) and Botosan and Plumlee (2005) report a positive association between expected earnings growth and *ex ante* cost of equity capital. Therefore, consistent with prior research, we expect Growth to have a positive coefficient.

### ***Industry (IND) and Time (year)***

The cost of equity capital can vary across time and industries. Therefore, we include control variables for the year of the observation (Year) and the client's industry (IND).

## **V. SAMPLE SELECTION AND DESCRIPTIVE STATISTICS**

### **Sample Selection and Data**

Our sample is selected from all Australian domiciled companies listed on the Australian Stock Exchange during 1995-2005.<sup>14</sup> Data for 2499 cases were extracted from I/B/E/S International, Connect 4, Australian Graduate School of Management Annual Reports Files, the CRIF database, and Aspect Financial Analysis databases. To determine audit firm and partner tenure, we searched the client's audit reports for engagement partner's and audit firm's names from the time of appointing the current auditor back to the later of when the firm first listed or 1950 (the earliest year for which audit report data are available). For a case to be included in Model 1, analysts' earnings forecasts and data for the test and control variables were required, which yielded a sample of 2033 cases.

Auditors might terminate their relationship with clients that prefer low quality of financial reporting or more risky clients (Ghosh and Moon 2005). This could cause an auditor-driven bias in the measure of audit firm tenure and audit firm switching. To address this concern, we also construct a restricted sample of companies in which audit firm tenure is at least 3 years.<sup>15</sup> We present analyses for both the full and restricted samples.

## **Descriptive Statistics**

Table 1 reports the sample size for each year of our sample period (Panel A) and summary statistics for both full sample (Panel B) and restricted sample (Panel C). Mean audit firm tenure for the full sample is 9.08 years, while for the restricted sample is 10.30 years. Our mean estimate of *ex ante* cost of equity capital of 0.104, which is similar to the 0.103 reported by Khurana and Raman (2004) for a sample of Australian companies. The summary

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<sup>14</sup> During the period covered by this study, mergers of accounting firms meant the Big audit firm changes from the Big8 to Big4. Consistent with Johnson et al. (2002), we treat the auditor-client relationship as continuing when name changes merely reflect mergers.

<sup>15</sup> We select 3 years of audit firm tenure as a basis for our restricted sample because, if auditors want to terminate their engagements with more risky clients then, it is more likely that this termination happens in the early years of the audit engagement. In our sample, the frequency of audit firm switches declines substantially after the first three years of audit firm tenure.

statistics for the two samples are very similar. The differences for audit firm tenure, engagement partner tenure, partner rotation and audit firm switches between the two samples are in the expected direction given the criteria used to select the restricted sample.

**Insert Table 1 here**

Table 2 reports the Pearson correlation matrix for the dependent and independent variables. The correlation between the dependent variable,  $R_p$ , and AFT is negative. The correlation between AFS and  $R_p$  is positive. The correlation between PT, PR and the  $R_p$  are not significant. The correlations between the dependent variable and the control variables are all in the expected direction.

**Insert Table 2 here**

## **VI. MULTIVARIATE RESULTS**

For our multivariate tests, we estimate Model 1 and Model 2 as pooled-cross sectional models controlling for industry and year fixed effects. To mitigate concerns about serial correlation between multiple observations of the same firm in the sample and for hetroskedasticity, following Green (1990) and Gujarati (2003), we use the Newey-West (1987) method. We also use Rogers' clustered standard error estimates (Rogers 1993) to control for serial correlation and hetroskedasticity.

We also report results using the Heckman (1978) method to control for possible auditor selection bias. In addition, we split our sample into sub-periods to test for any effects caused by the financial crises and the introduction of professional requirements for partner rotation in 2001. We also examine the sensitivity of our results by using the Ohlson-Juettner (2005) model of estimating *ex ante* cost of equity capital.

Using both the PEG and Ohlson-Juettner measures of *ex ante* cost of equity capital, we also test for a non-linear relationship between audit firm tenure and client-specific *ex ante* cost of equity capital by using various transformations of AFT, such as square root of AFT,

AFT squared, AFT cubed and log of AFT in Model 1. The results for these transformed variables are not significantly different to those reported in the paper and, therefore are not reported.

### **Model 1 Results**

Table 3 reports the findings of how auditor tenure (audit firm tenure and engagement partner tenure) affects client-specific *ex ante* cost of equity capital for both the full and restricted samples, while controlling for the interaction between auditor tenure and Big 4 audit firm effects (AFT×Big4 and PT×Big4). Because of the high correlation between audit firm tenure and partner tenure, we run separate regressions for their effects on client-specific *ex ante* cost of equity capital.

#### **Insert Table 3 here**

With the exception of Big4, all control variables are significant, in the expected direction and consistent with prior studies (Gebhardt et al. 2001, Gode and Mohanram 2003; Francis et al. 2004 and 2005; Khurana and Raman 2004). The *ex ante* cost of equity capital is positively associated with Beta, LEV, VAR, B/P and Growth, and negatively related to Size.

The coefficient for Big 4 audit firm is significant and negative for all four regressions. This supports the argument that analysts perceive that Big 4 audit firms provide higher quality audits. Our results indicate that the information role of high quality audits, proxied by Big 4 audit firms, is valued in Australia. This contradicts the result for the Australian sample reported in Khurana and Raman (2004). They attribute their result to the absence of the insurance role in Australia and that brand name reputation did not drive perceived audit quality. Their findings imply that the lower information risk resulting from higher quality audits (proxied by Big 4 audit firms) is not valued in Australia. However, their results for Australian companies may have been affected because of their sample of companies or their

sampling period. Their sample is comprised of the largest Australian companies.<sup>16</sup> Larger companies have larger analysts' followings and more alternative sources of information exist for such firms. As a result, audited financial reports may play less of a role in reducing information risk compared to smaller companies. We obtain the same result as Khurana and Raman (2004) for Big 4 audit firms if we restrict our sample to the largest 100 firms for the period 1995 to 1999.

The effect of audit firm tenure (AFT) is conditional on the interaction between AFT and Big 4. The conditional effect is measured as the sum of the coefficients, which for our sample is zero ( $-0.002 + 0.002 = 0.000$  for the full sample).<sup>17</sup> Therefore, audit firm tenure is significant and negative for non-Big 4 audit firms in both the full and restricted samples, whereas audit firm tenure is not significant for Big 4 audit firms. The result for non-Big 4 auditors is consistent with the auditor expertise hypothesis, i.e., that longer audit firm tenure results in perceptions of higher quality financial reports and lower *ex ante* cost of equity capital. The results for Big 4 audit firm clients suggest that financial analysts rely more on the audit firm's reputation to assess the credibility of clients' financial reports rather than the length of audit firm tenure. This may be due to a perception by analysts that Big 4 auditors supply higher quality audits based on their perceived competence regardless of the length of their association with the client.

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<sup>16</sup> Khurana and Raman (2004) used the intersection of the I/B/E/S International, the Global Vantage Industrial Commercial File and Issue Files for 1990-99 to select their Australian sample. This results in a sample that is biased toward larger Australian companies. Their sample size for 1995-99 ranges from 63 to 108 companies per year. We also use I/B/E/S International, but we extract our accounting information from the Connect 4 and Aspect Financial databases. As a result, our sample is larger and less biased towards large companies. Our sample size for 1995-99 ranges from 129 to 189 companies per year.

<sup>17</sup> The zero sum result is the consequence of rounding the coefficients to three decimal places. Following Jaccard et al. (1990), we test the significance of this result using  $t = b/S$  where  $b$  is the observed slope for each group and  $S$  is the estimated standard error of each group. Calculating the  $t$  statistics for Big 4 clients and comparing them with  $N-K-1$  degree of freedom with the  $t$  distribution Table (Gujarati 2003) shows that these observed slopes for AFT of Big 4 clients are not different from zero for both the full and the restricted samples.

Similar to AFT, the effect of engagement partner tenure (PT) is conditional on the interaction between PT and Big 4. The conditional effect is measured as the sum of the coefficients, which for our sample is zero ( $-0.003 + 0.003 = 0.000$  for the full sample). Therefore, engagement partner tenure is significant and negative for non-Big 4 auditors in both the full and restricted samples, whereas partner tenure is not significant for Big 4 auditors. As for AFT, the result for non-Big 4 auditors is consistent with the auditor expertise hypothesis while analysts rely on reputation for Big 4 audit partners.

Our results conditionally support H1 and H2, that audit firm tenure and engagement partner tenure are associated with client-specific *ex ante* cost of equity capital, but only for non-Big 4 auditors. The results are partially consistent with the findings of Mansi et al. (2004) and Ghosh and Moon (2005), who find that the cost of debt declines and that the ERC (earnings response coefficients) increase with audit firm tenure and Chen et al. (2004), which finds that engagement partner tenure is associated with higher quality audits. However, they did not consider the interaction between audit firm type and auditor tenure. We find that longer tenure only matters for clients of non-Big 4 auditors. Our result suggests that the finding reported by Carey and Simnett (2006), i.e., that non-Big 6 auditors are less likely to issue a qualified audit opinion as audit partner tenure increases, is not perceived as an independence problem by financial analysts.

The test variable for partner rotation (PR) is not significant in either the full or restricted sample, indicating that partner rotation does not affect analysts' perceived audit quality, and thus financial reporting credibility.<sup>18</sup>

As part of our additional analyses, we include a dummy variable for audit firm switches (AFS) in the engagement partner tenure model. The results (not reported in a table) are not

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<sup>18</sup> We also included an interaction between audit firm type and partner rotation. The result for that variable is not significant and did not affect the results for any of our other variables. There were only 18 cases of partner rotation for non-Big 4 firms in our sample, which limits any inferences that might be drawn about any interaction between audit firm type and engagement partner rotation.

significant for AFS in either the full or restricted sample and the other results are not affected by the inclusion of this variable.

## **Model 2 Results**

Model 2 is used to examine whether a change in audit firm (both auditor switches and changes in audit quality) and engagement partner rotation are related to the changes in *ex ante* cost of equity capital. Auditor changes may not result in an immediate change in the *ex ante* cost of equity capital, therefore, we examine changes in the *ex ante* cost of equity capital over both a one year and two year period. The requirement of two and three subsequent years of complete financial data reduces the sample to 1,385 and 1,049 firm year observations for the one-year and two-year change models respectively.

### **Insert Table 4 here**

We include the direction of switches between auditor types. We identify 92 auditor switches in our sample: 55 from Big 4 to Big 4 auditors, 34 from non-Big 4 to Big 4 auditors, and 3 from non-Big 4 auditors to non-Big 4 auditors. There were no switches from Big 4 to non-Big 4 auditors.

The results from estimating Model 2 are reported in Table 4. The signs for the control change variables are consistent with Model 1.<sup>19</sup> For the change in  $R_p$  over a one-year period, we do not find any significant association between audit firm switches, partner rotation and changes in client-specific *ex ante* cost of capital. Given our earlier result for Big 4 audit firms, we expected that a change from a non-Big 4 audit firm to a Big 4 audit firm would have decreased the *ex ante* cost of equity capital, however, the Non-Big4-Big4 variable is not significant. However, the interaction between this auditor switching variable and changes in Size is significant. This could indicate that rapidly growing companies switched to a Big 4

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<sup>19</sup> We also test for the interaction between PR and AFT and find no effect.

audit firm so they could be better serviced rather than to signal higher quality financial reporting.

For the change in  $R_p$  over a two-year period, we do not find any significant association between partner rotation and changes in client-specific *ex ante* cost of capital. For audit firm switches, the direction of the switch is significant and negative where the switch is from a non-Big 4 auditor to another non-Big 4 auditor. For switches in this direction, the significant negative effect on *ex ante* cost of equity capital appears two years after the switch, which is consistent with the auditor expertise hypothesis, i.e., that non-Big 4 auditors accrue expertise over time for a particular audit client. However, given there are only three such switches in our sample, we interpret this result with great caution.

## VII. ADDITIONAL ANALYSES

### Controlling for Auditor Self-Selection Bias

As our sample is dominated by Big 4 auditors (88.4% of our sample firms have a Big 4 auditor), there is a potential concern that audit firm tenure reflects an auditor-self selection bias that could drive our results. Prior research (Johnstone 2000; Raghunandan and Rama 1999) suggests that Big 4 auditors are likely to self-select less risky clients to protect their reputation even if litigation risk is not substantial. If this argument is correct, Big 4 audit clients should have a lower *ex ante* cost of equity capital regardless of the impact of having a Big 4 auditor on the credibility of financial reporting. As pointed out by Khurana and Raman (2004), under this interpretation, Big4 merely becomes a proxy for some omitted risk factors not captured by the risk factors included in Model (1). Consistent with Khurana and Raman (2004) and Mansi et al. (2004), to control for this potential concern, we model the auditor selection decision as a function of firm specific variables that are shown to be important

factors in the auditor selection decision. We estimate the following logistic regression model (Model 3) used in Chaney et al. (2004):<sup>20</sup>

$$\text{Big4} = f(\text{TAssets}, \text{Aturn}, \text{DA}, \text{Curr}, \text{QR}, \text{ROA}, \text{Loss}) \quad (3)$$

Where:

Big4 = dummy variable equal to 1 if a firm has a Big 4 auditor, 0 otherwise;

TAssets = logarithm of year-end total assets;

Aturn = logarithm of asset turnover, calculated as sales divided by total assets;

DA = ratio of long term debt to total assets;

Curr = current assets divided by total assets;

QR = quick ratio calculated as quick assets (current assets minus inventory) divided by current liabilities;

ROA = return on assets calculated as the ratio of earnings before interest and tax divided by total assets;

Loss = dummy variable equal to 1 if the firm had a loss in the previous, otherwise 0.

We use a logistic regression to estimate Model 3 and then calculate the inverse Mills ratio based on Heckman (1979). The inverse Mills ratio (Mills) is then included to correct for potential self-selection bias when we re-estimate Model 1 (*ex ante* cost of equity capital on auditor type, audit firm tenure and audit partner rotation). The results of the logistic regression to estimate Model 3 (the auditor self-selection model) and the re-estimated Model 1 are reported in Table 5.<sup>21</sup> In the re-estimated Model 1, the inverse Mills ratio has a significant and

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<sup>20</sup> Chaney et al. (2004) also include foreign sales as a percentage of total sales to control for the likelihood that exporting firms are more likely to hire a Big 4 auditor. We do not include this variable because its data is not available.

<sup>21</sup> The auditor selection model is estimated using the sample of 2499 firms, which includes firms with data that is missing for Model 1. The result is the same if we restrict the sample to the 2033 firms used to test Model 1.

negative association with the client-specific *ex ante* cost of equity capital but the results for our test variables are not affected by inclusion of the inverse Mills ratio.

### **Insert Table 5 here**

#### **Controlling for Ownership**

Prior research suggests that block holders (Jensen 1993; Bhide 1993; Shleifer and Vishny 1997) can affect a firm's agency costs and thereby, a firm's cost of capital.<sup>22</sup> We test the number of block holders (number of shareholders with more than 5% equity ownership) in Model 1 with and without the inverse Mills ratio. Our result after including the number of block holders (not reported) does not show a significant effect for this variable on client-specific *ex ante* cost of equity capital and does not affect the results for our test variables.

#### **Sub-period Analyses**

We repeat the analyses shown in Table 3 after partitioning our sample into three sub-periods (1995-2000, 2001-2002 and 2003-2005). We choose these sub-periods because of the accounting scandals, audit failures and regulatory changes in 2001 and 2002. Several accounting scandals took place in 2001 (e.g., Enron and WorldCom in the US, and HIH, Harris Scarfe and One.Tel in Australia). Also, the rotation of audit partners became a professional requirement in Australia in 2001 (ICAA CPA Australia 2001).<sup>23</sup> In 2002, the US passed the Sarbanes-Oxley Act and Australia issued an exposure draft of CLERP 9.<sup>24</sup> Both the Sarbanes-Oxley Act and the exposure draft of CLERP 9 considered the issues of

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<sup>22</sup> Prior US research suggests that management ownership and institutional ownership can affect a firm's agency costs and thereby, a firm's cost of capital (e.g., Shleifer and Vishny 1997; Bushman and Smith 2001; Ashbaugh et al. 2004). However, measuring institutional ownership in Australia is problematic because of the use of nominee companies (Stapledon 1996) and data on managerial ownership is only available for year 2001 and later.

<sup>23</sup> Before 2001, regardless of any requirement for rotation of audit partners, some accounting firms (especially Big 4 accounting firms) voluntarily changed their audit partners. Our data provides support for this argument as the number of audit partner rotation before 2001 is 173 cases and in 2002, there is a 46% increase in number of audit partner rotation relative to year 2001.

<sup>24</sup> CLERP 9 stands for the Corporate Law Economic Reform Program (Audit Report and Corporate Disclosure) Act, 2004.

mandatory rotation of audit firms and audit partners. As a result of these events, the concept of auditor independence and the credibility of financial reporting received considerable public exposure in the media. Some of the issues raised included auditor provided non-audit services, auditor tenure and audit partner rotation. Such a high level of public exposure may have impacted on perceptions of audit attributes that affect audit quality and, therefore, the credibility of financial reporting.<sup>25</sup> Partitioning our sample into three sub-periods allows us to examine whether our results are affected by the events occurring in 2001 and 2002. Table 6 reports the results for the three sub-periods.

**Insert Table 6 here**

The results for our test variables, Big4, AFT, PT and AFT×Big4 differ from those reported in Table 3 depending on which sub-period is examined. For the sub-period 1995-2000, Big4 has a negative and significant relation with *ex ante* cost of capital. This result is consistent with that reported in Table 3. However, post-2000, Big4 audit firms are not significantly associated with a lower *ex ante* cost of equity capital. This result implies that after the events in 2001 and 2002, audits by Big 4 audit firms are not perceived as improving the credibility of financial reporting. This could be a spillover effect from the negative publicity that Arthur Andersen, a Big 4 audit firm, received during that period.

For the sub-period 1995-2000, AFT has a negative and significant relation with *ex ante* cost of capital. The interaction term, AFT×Big4, is significant and positive, thus indicating that longer tenure for non-Big 4 firms is significantly associated with lower *ex ante* cost of equity capital. This result is consistent with the auditor expertise hypothesis for non-Big 4 audit firms and is consistent with the results reported in Table 3. However, post-2000, AFT and AFT×Big4 are not significantly associated with a lower *ex ante* cost of equity capital.

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<sup>25</sup> This argument is more likely for our sample as with the collapse of HIH in Australia, the Royal Commission Report on this scandal reports the length of relationship between Anderson (HIH's auditor) as one of the possible reasons for this scandal (HIH Royal Commission , 2004, Sec:7.2.1)

This result implies that after the events in 2001 and 2002, longer audit firm tenure is not perceived as improving the credibility of financial reporting. Given the non-significance of the interaction term, this result applies to both Big 4 and non-Big 4 audit firms. This could be due to the adverse publicity that audit firm tenure received during 2001-2002.

For the sub-period 1995-2000, partner tenure is significant and negative for non-Big 4 auditors in both the full and restricted samples, whereas partner tenure is not significant for Big 4 auditors. Post-2000, partner tenure is not significantly associated with a lower *ex ante* cost of equity capital for either Big 4 or non-Big 4 auditors. This result implies that after the events in 2001 and 2002, longer engagement partner tenure, regardless of audit firm type, is not perceived as improving the credibility of financial reporting.

Engagement partner rotation (PR) is not significantly associated with *ex ante* cost of capital in any of the sub-periods, which is consistent with the results reported in Table 3. Therefore, engagement partner rotation is not perceived as improving the credibility of financial reporting as measured by *ex ante* cost of equity capital.

### **Clustered Standard Error Analysis**

We also test the sensitivity of our results to our estimation procedure, which is a pooled cross-sectional analysis corrected for serial correlation and heteroskedasticity (Newey-West Method). As a further control for serial correlation, we re-estimate Models 1 and 2 using Rogers' clustered standard error estimates. Consistent with prior studies (e.g., Lamont and Polk 2001; Anderson and Reeb 2004; Gross and Souleles 2004; Faulkender and Petersen 2006), we include dummy variables for each year (to absorb the time effect) and then cluster observations by firm. This approach estimates Models 1 and 2 as pooled cross-sections, using an OLS regression and then computes the standard errors of the estimates considering the

correlation of the residuals within clusters.<sup>26</sup> Petersen (2005) shows that, when there is serial correlation in the data, this method provides an unbiased estimate of standard errors. The results using Rogers' clustered standard error estimates (not reported) are similar in all respects to the pooled cross-sectional results.

### **Results using the Ohlson and Juettner Model to Estimate *ex ante* cost of equity capital**

We consider the sensitivity of our results to the measure of *ex ante* cost of capital by also using *ex ante* cost of equity capital estimated by the Ohlson and Juettner (OJ) model (Ohlson and Juettner 2005) as the dependent variable. We use the OJ model to adjust for a possible bias in our sample toward more stable and less risky firms, as estimating *ex ante* cost of equity capital under the PEG model requires that  $\text{eps}_2 > \text{eps}_1 > 0$ , whereas the OJ model only requires that  $\text{eps}_2 > \text{eps}_1$ . For this analysis, we include all firms that satisfy the less restrictive OJ criteria but lose some cases because of missing observations for the additional variable, analysts' forecasts of one-year-ahead dividends per share.<sup>27</sup> We repeat all our analyses replacing *ex ante* cost of equity capital computed using the PEG model with the *ex ante* cost of equity capital estimated by the OJ model. The results using the OJ model are the same as those reported earlier.

## **VIII. SUMMARY AND CONCLUSION**

Prior research suggests that the length of auditor-client relationship affects audit quality, and, therefore, the integrity and the information risk associated with client's financial reporting. If analysts perceive the length of auditor-client relationship as improving

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<sup>26</sup> For an overview of how Rogers' clustered standard error estimates correct for serial correlation and heteroskedasticity, see Petersen (2005).

<sup>27</sup> The sample sizes are comparable across the tests. For example, the sample sizes are 1985 for AFT and 2000 for PT in Model 1.

(impairing) audit quality, then credibility of financial reporting will be higher (lower) and *ex ante* cost of equity capital will be lower (higher).

We examine whether auditor type, audit firm tenure, engagement partner tenure, auditor switches and partner rotation affect analysts' perceptions of financial reporting credibility, proxied by client-specific *ex ante* cost of equity capital. We use data for a sample of Australian companies from 1995-2005 to test these relations. For the full sample period, we find that: (1) Big 4 audits are significantly associated with lower *ex ante* cost of equity capital; (2) audit firm tenure and audit partner tenure are significantly associated with lower *ex ante* cost of equity capital, but only for non-Big 4 audit firms; and (3) audit firm switches and audit partner rotation are not significantly associated with changes in *ex ante* cost of equity capital. The result for audit tenure for non-Big 4 audit firms and partners is consistent with the auditor expertise hypothesis, i.e., that longer auditor tenure results in perceptions of higher quality financial reports and lower *ex ante* cost of equity capital. The finding that tenure does not matter for Big 4 audit firms suggests that financial analysts perceive that Big 4 auditors supply higher quality audits regardless of the length of their association with the client. This could be because Big 4 audit firms have more of the observable characteristics associated with quality, such as quality control and specialized training.

Partitioning our sample into three sub-periods allowed us to examine whether our results are affected by the events occurring in 2001 and 2002. Our results for the events period (2001-2002) and post-events period (2003-2005) are different to the full sample results. For the 2001-2002 and 2003-2005 sub-periods, Big 4 audits, audit firm tenure and engagement partner tenure are not significantly associated with *ex ante* cost of equity capital. These results imply that, after the events in 2001 and 2002, longer auditor tenure is not perceived as improving the credibility of financial reporting. This could be due to the adverse publicity that

auditor tenure received during 2001-2002 and the attention given to auditor tenure by regulators during that time period.

Engagement partner rotation does not have a significant relation with *ex ante* cost of equity capital during any of the sub-periods. Our data covers periods where partner rotation is voluntary and where it is a professional requirement. The absence of significant results for partner rotation does not support arguments for mandatory partner rotation.

Because our results are based on the Australian capital market and accounting and auditing practice, and audit markets are different around the world (Chi and Huang 2005), caution is required in generalising these results. For example, our results are from a regime without mandatory audit firm rotation and may not be applicable to regimes with mandatory audit firm rotation policies, as the incentives for auditors and clients under two regimes might be different. The potential differences between cross-countries capital markets indicate potential value in examining these issues in a cross-country setting. Finally, as we document a shift in analysts' perception about the effect of audit tenure on perceived audit quality, there is an opportunity to examine whether this shift persists over a longer period.

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**TABLE 1**  
**Descriptive Statistics**

*Panel A: Sample Size by Year*

<b>Year</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>Total</b>
n	129	161	180	138	189	195	209	226	212	204	190	2033

<b>Variable</b>	<b>Mean or Percentage</b>	<b>Median</b>	<b>Std Dev</b>
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*Panel B: Full Sample (n = 2033)*

R <sub>p</sub>	0.104	0.090	0.073
AFT (Years)	9.03	7	7.83
PT (Years)	4.06	3	3.21
LEV	0.49	0.49	0.20
Size (\$million)	2722	587	7961
B/P	0.68	0.57	0.79
Beta	1.05	0.93	0.76
VAR	0.02	0.01	0.04
Growth	0.16	0.08	2.55
Big4	88.4%	-	-
PR	14.2%	-	-
AFS	4.5%	-	-

*Panel C: Restricted sample (n = 1748)*

R <sub>p</sub>	0.103	0.090	0.071
AFT (Years)	10.30	8	7.79
PT (Years)	4.52	4	3.27
LEV	0.50	0.50	0.21
Size (\$million)	2789	623	7958
B/P	0.68	0.57	0.84
Beta	1.03	0.92	0.73
VAR	0.02	0.01	0.03
Growth	0.15	0.08	2.71
Big4	88.6%	-	-
PR	15.03%	-	-
AFS	3.7%	-	-

The full sample includes all cases for 1995-2005. The restricted sample excludes cases where auditor tenure is less than three years. R<sub>p</sub> is the client-specific *ex ante* cost of equity capital estimated by the PEG model. AFT is audit firm tenure. PT is engagement partner tenure. LEV is the ratio of total debt to total assets. Size is the market value of common equity at the end of fiscal year. B/P is the ratio of the book value of equity to market value of equity at the end of fiscal year. Beta (systematic risk) is calculated over 36 months ending the fiscal year end. VAR is the earnings variability measured by the dispersion in analysts' earnings forecasts. Growth is the client's forecast earnings growth. Big4 is equal to 1 if the firm is audited by a Big4 auditor, 0 otherwise. PR is equal to 1 if the engagement partner changed in year *t* without a change in audit firm, 0 otherwise. AFS is equal to 1 if the client switched audit firms in year *t*, 0 otherwise. The raw value of Size is shown for descriptive purposes only. Its logarithmic form is used in the regression model.

**TABLE 2**  
**Pearson Correlation Matrix**

	R <sub>p</sub>	AFT	PT	VAR	Big4	B/P	Beta	LnSize	Growth	Lev	PR	AFS
R <sub>p</sub>	1.000											
AFT	-.037 (.089)	1.000										
PT	-.034 (.120)	.321 (.000)	1.000									
VAR	.244 (.000)	.124 (.000)	.068 (.002)	1.000								
Big4	-.075 (.001)	.112 (.000)	-.137 (.000)	.042 (.054)	1.000							
B/P	.225 (.000)	.009 (.685)	.000 (.992)	-.017 (.450)	.034 (.123)	1.000						
Beta	.191 (.000)	-.077 (.000)	-.032 (.140)	.044 (.045)	.033 (.128)	.025 (.258)	1.000					
LnSize	-.331 (.000)	.215 (.000)	.050 (.024)	.196 (.000)	.199 (.000)	-.213 (.000)	-.047 (.031)	1.000				
Growth	.001 (.053)	-.015 (.491)	.037 (.095)	.051 (.021)	-.047 (.033)	.013 (.556)	.024 (.277)	-.003 (.874)	1.000			
Lev	.044 (.046)	.086 (.000)	.000 (.982)	.202 (.000)	.097 (.000)	-.032 (.141)	-.014 (.524)	.204 (.000)	.009 (.668)	1.000		
PR	.005 (.823)	.076 (.001)	-.386 (.000)	-.031 (.156)	.078 (.000)	-.008 (.705)	-.005 (.814)	-.013 (.567)	-.014 (.514)	.013 (.549)	1.000	
AFS	.066 (.003)	-.223 (.000)	-.211 (.000)	.027 (.218)	.050 (.022)	.015 (.487)	.063 (.004)	-.047 (.034)	.004 (.847)	-.023 (.304)	-.088 (.000)	1.000

Correlations are based on 2033 firm-year observations over the period 1995-2005. R<sub>p</sub> is the client-specific *ex ante* cost of equity capital estimated by the PEG model. AFT is audit firm tenure. PT is engagement partner tenure. VAR is the earnings variability measured by the dispersion in analysts' earnings forecasts. Big4 is equal to 1 if the firm is audited by a Big4 auditor, 0 otherwise. B/P is the ratio of the book value of equity to market value of equity at the end of fiscal year. Beta (systematic risk) is calculated over 36 months ending the fiscal year end. LnSize is the natural logarithm of the market value of common equity at the end of the fiscal year. Growth is the client's forecast earnings growth. LEV is the ratio of total debt to total assets. PR is equal to 1 if the engagement partner changed in year *t* without a change in audit firm, 0 otherwise. AFS is equal to 1 if the client switched audit firms in year *t*, 0 otherwise.

**TABLE 3**  
**Regression of *ex ante* Cost of Equity Capital ( $R_p$ ) on Auditor Tenure**

Variable	Full Sample				Restricted Sample			
	AFT		PT		AFT		PT	
	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value
Constant	.402	0.000	.406	.000	.405	0.000	.409	0.000
Big4 *	-.026	0.017	-.025	0.016	-.029	0.030	-.027	0.028
AFT	-.002	0.033	-	-	-.002	0.050	-	-
PR	.005	0.234	-	-	.005	0.204	-	-
PT	-	-	-.003	0.026	-	-	-.003	0.041
AFT×Big4	.002	0.034	-	-	.002	0.052	-	-
PT×Big4	-	-	.003	0.044	-	-	.003	0.058
LEV *	.022	0.021	.021	0.024	.023	0.018	.022	0.025
B/P *	.015	0.000	.015	0.000	.014	0.000	.014	0.000
Beta *	.012	0.000	.011	0.000	.010	0.000	.010	0.000
Growth *	.001	0.091	.001	0.075	.001	0.081	.001	0.065
LnSize *	-.016	0.000	-.016	0.000	-.015	0.000	-.016	0.000
VAR *	.553	0.000	.549	0.000	.592	0.000	.586	0.000
Industry fixed effects	included		included		included		included	
Year fixed effects	included		included		included		included	
Adjusted R <sup>2</sup>	32.7%		33.2%		34.1%		34.6%	
n	2033		2055		1748		1770	

The full sample includes all firm-year observations available from 1995-2005. The restricted sample comprises firms for which auditor tenure is at least three years.  $R_p$  is the client-specific *ex ante* cost of equity capital estimated by the PEG model. AFT is audit firm tenure. PR is a dummy variable equal to 1 if the engagement partner changed in year *t* without a change in audit firm, otherwise zero. AFT×Big4 is the interaction term between audit firm tenure and Big4. PT is engagement partner tenure. PT×Big4 is the interaction term between engagement partner tenure and Big4. VAR is the earnings variability measured by the dispersion in analysts' earnings forecasts. Big4 is equal to 1 if the firm is audited by a Big4 auditor, 0 otherwise. B/P is the ratio of the book value of equity to market value of equity at the end of fiscal year. Beta (systematic risk) is calculated over 36 months ending the fiscal year end. LnSize is the natural logarithm of the market value of common equity at the end of the fiscal year. Growth is the client's forecast earnings growth. LEV is the ratio of total debt to total assets.

To conserve space, the parameters results for industry fixed effect (IND fixed effects) and year-fixed effects are not reported.

\* The p-values for these variables are for a one-tail test.

**TABLE 4**  
**Regression of Changes in *ex ante* Cost of Equity Capital ( $\Delta R_p$ ) on Engagement Partner Rotation and Audit Firm Switches**

Variable	PR and AFS				PR and Direction of AFS			
	one-year change		two-year change		one-year change		two-year change	
	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value
Constant	-.009	0.352	.067	0.800	-.007	0.585	.003	0.777
PR	.002	0.713	.003	0.541	.000	0.973	.003	0.525
AFS	.027	0.381	.001	0.921	-	-	-	-
Non-Big4-Big4	-	-	-	-	-.009	0.478	.003	0.892
Non-Big4-Non-Big4	-	-	-	-	-.032	0.306	-.079	0.012
Non-Big4-Big4 $\times$ $\Delta \text{LnSize}^*$	-	-	-	-	.035	0.005	-.013	0.357
$\Delta \text{LEV}^*$	.083	0.016	.019	0.122	.081	0.017	.021	0.115
$\Delta \text{B/P}^*$	.009	0.080	.014	0.000	.008	0.105	.014	0.000
$\Delta \text{Beta}^*$	.009	0.014	.002	0.256	.009	0.014	.002	0.258
$\Delta \text{Growth}^*$	.002	0.197	.000	0.395	.001	0.220	.000	0.422
$\Delta \text{LnSize}^*$	-.047	0.000	-.023	0.000	-.048	0.000	-.024	0.000
$\Delta \text{VAR}^*$	.194	0.000	.305	0.027	.194	0.000	.307	0.022
Industry fixed effects	included		included		included		included	
Year fixed effects	included		included		included		included	
Adjusted R <sup>2</sup>	34.5%		27.1%		34.6%		27.3%	
n	1385		1049		1385		1049	

$\Delta R_p$  is the change in the client-specific *ex ante* cost of equity capital estimate by the PEG model measured as the difference between year<sub>t-1</sub> to year<sub>t</sub>. PR is a dummy variable equal to 1 if the engagement partner changed in year *t* without a change in audit firm, otherwise zero. AFS is a dummy variable equal to 1 if the audit firm changed in year *t*, otherwise 0. Big4-Big4 is a dummy variable equal to 1 if the client switched from a Big 4 auditor to another Big 4 auditor, otherwise zero. Non-Big4-Big4 is a dummy variable equal to 1 if the client switched from a non-Big 4 auditor to a Big 4 auditor, otherwise zero. Non-Big4-Non-Big4 is a dummy variable equal to 1 if the client switched from a non-Big 4 auditor to another non-Big 4 auditor, otherwise zero.  $\Delta \text{VAR}$  is the changes in earnings variability measured as the difference between year<sub>t-1</sub> to year<sub>t</sub>.  $\Delta \text{B/P}$  is changes in the ratio of the book value of equity to market value of equity at the end of fiscal year measured as the difference between year<sub>t-1</sub> to year<sub>t</sub>.  $\Delta \text{Beta}$  (systematic risk) is the changes in market beta measured as measured as the difference between year<sub>t-1</sub> to year<sub>t</sub>.  $\Delta \text{LnSize}$  is the changes in natural logarithm of the market value of common equity at the end of fiscal year measured as the difference between year<sub>t-1</sub> to year<sub>t</sub>.  $\Delta \text{Growth}$  is the changes in earnings growth measured as measured as the difference between year<sub>t-1</sub> to year<sub>t</sub>.  $\Delta \text{LEV}$  is the changes in financial leverage measured as the difference between year<sub>t-1</sub> to year<sub>t</sub>. To conserve space, the parameters results for industry fixed effect (IND fixed effects) and year-fixed effects are not reported.

\* The p-values for these variables are for a one-tail test.

**TABLE 5**  
**Regression of *ex ante* Cost of Equity Capital ( $R_p$ ) on Auditor Tenure Controlling for Auditor Self-Selection Bias**

Variable	Self-Selection Model		<i>Ex ante</i> Cost of Equity Capital ( $R_p$ )	
	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value
Constant	-8.87	0.000	.474	0.000
ATurn*	-.210	0.095		
Tassets*	1.24	0.000		
QR*	-.002	0.458		
Curr*	.239	0.241		
DA*	.449	0.133		
ROA*	-.141	0.408		
ROA×Loss*	1.06	0.188		
Big4 *			-.027	0.014
AFT			-.002	0.037
AFT×Big4			.002	0.042
PR			.006	0.159
LEV *			.015	0.094
B/P *			.015	0.000
Beta *			.011	0.000
Growth *			.001	0.151
LnSize *			-.018	0.000
VAR *			.605	0.000
Mills			-.095	0.000
Industry effects			included	
Year effects			included	
Pseudo / Adjusted R <sup>2</sup>	12.9%		35.3%	
n	2499		1864	

The sample includes all firm-year observations available from 1995-2005. The logistic regression of auditor selection is based on Chaney et al. (2004), with Big4 as the dependent variable (1 for Big 4 auditor, 0 otherwise). The explanatory variables are: TAssets is the logarithm of total assets; ATurn is the logarithm of sales/ total assets; QR is the quick ratio; Curr is current assets divided by total assets; DA is the ratio of long term debt to total assets; ROA is earnings before interest and taxes divided by total assets; and Loss equals 1 if the client had loss in the previous year (t-1), 0 otherwise. In the *ex ante* cost of equity capital model,  $R_p$  is the client-specific *ex ante* cost of equity capital estimated by the PEG model. AFT is audit firm tenure. PR is a dummy variable equal to 1 if the engagement partner changed in year *t* without a change in audit firm, otherwise zero. AFT×Big4 is the interaction term between audit firm tenure and Big4. PT is engagement partner tenure. PT×Big4 is the interaction term between engagement partner tenure and Big4. VAR is the earnings variability measured by the dispersion in analysts' earnings forecasts. Big4 is equal to 1 if the firm is audited by a Big4 auditor, 0 otherwise. B/P is the ratio of the book value of equity to market value of equity at the end of fiscal year. Beta (systematic risk) is calculated over 36 months ending the fiscal year end. LnSize is the natural logarithm of the market value of common equity at the end of the fiscal year. Growth is the client's forecast earnings growth. LEV is the ratio of total debt to total assets. Mills is the inverse Mills ratio obtained from the logistic regression for the auditor selection model and calculated based on the Heckman (1979) approach.

To conserve space, the parameters results for industry fixed effect (IND fixed effects) and year-fixed effects are not reported.

\* The p-values for these variables are for a one-tail test.

**TABLE 6**  
**Regressions of *ex ante* Cost of Equity Capital ( $R_p$ ) on Auditor Tenure for Sub-periods 1995-2000, 2001-2002 and 2003-2004**

Variable	1995 - 2000				2001-2002				2003-2005			
	AFT		PT		AFT		PT		AFT		PT	
	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value	$\beta$	<i>p</i> value
Constant	.335	0.000	.357	0.000	.534	0.000	.471	0.000	.365	0.000	.360	0.000
Big4 *	-.034	0.038	-.036	0.050	-.013	0.250	-.012	0.251	-.014	0.140	-.000	0.479
AFT	-.003	0.082	-	-	-.001	0.342	-	-	-.001	0.553	-	-
PT	-	-	-.005	0.084	-	-	-.002	0.141	-	-	.001	0.645
PR	.008	0.231	-	-	.009	0.312	-	-	-.003	0.510	-	-
AFT×Big4	.003	0.083	-	-	.001	0.349	-	-	.001	0.590	-	-
PT×Big4	-	-	.004	0.163	-	-	.001	0.494	-	-	-.001	0.416
LEV *	.022	0.052	.025	0.034	.021	0.191	.013	0.282	.019	0.119	.015	0.160
B/P *	.020	0.000	.020	0.000	.004	0.251	.007	0.118	.014	0.000	.015	0.000
Beta *	.016	0.001	.015	0.005	.011	0.001	.010	0.003	.011	0.000	.011	0.000
Growth *	.001	0.080	.001	0.074	.001	0.388	-.001	0.367	.000	0.494	-.000	0.466
LnSize *	-.012	0.000	-.013	0.000	-.023	0.000	-.020	0.000	-.013	0.000	-.014	0.000
VAR *	.697	0.006	.695	0.005	.882	0.000	.835	0.000	.048	0.117	.042	0.194
Industry fixed effects	included		included		included		included		included		included	
Year fixed effects	included		included		included		included		included		included	
Adjusted R <sup>2</sup>	35.9%		36.9%		44.4%		45.3%		33.3%		30.1%	
n	992		999		435		439		606		617	

The full sample includes all firm-year observations available from 1995-2005.  $R_p$  is the client-specific *ex ante* cost of equity capital estimated by the PEG model. AFT is audit firm tenure. PT is engagement partner tenure. PR is a dummy variable equal to 1 if the engagement partner changed in year  $t$  without a change in audit firm, otherwise zero. AFT×Big4 is the interaction term between audit firm tenure and Big4. PT×Big4 is the interaction term between engagement partner tenure and Big4. PR is a dummy variable equal to 1 if the engagement partner changed in year  $t$  without a change in audit firm, otherwise zero. VAR is the earnings variability measured by the dispersion in analysts' earnings forecasts. Big4 is equal to 1 if the firm is audited by a Big4 auditor, 0 otherwise. B/P is the ratio of the book value of equity to market value of equity at the end of fiscal year. Beta (systematic risk) is calculated over 36 months ending the fiscal year end. LnSize is the natural logarithm of the market value of common equity at the end of the fiscal year. Growth is the client's forecast earnings growth. LEV is the ratio of total debt to total assets. To conserve space, the parameters results for industry fixed effect (IND fixed effects) and year-fixed effects are not reported.

\* The p-values for these variables are for a one-tail test.