AUDITOR QUALITY AND DISCRETIONARY ACCRUALS: CASE OF AUSTRALIAN LISTED COMPANIES

Rusmin
Fakultas Ekonomi Universitas Teknologi Yogyakarta
e-mail: rusmin05@gmail.com

Abstract

This study empirically examines the relation between two dimensions of auditor quality: auditor independence and auditor specialization, and the level of discretionary accruals, a proxy for earnings management. This study focuses on earnings management in response to mounting pressure amongst investors, policy makers and corporate governance reformists for mechanism to curb excessive opportunistic behaviour amongst corporate management. Auditor independence and auditor specialization are the epicentre of this analysis as these two factors are considered to be key determinants of earnings management. As earnings management, auditor independence and auditor specialization are unobservable, I use absolute discretionary accruals, the ratio of non-audit to total fees and auditor industry market share as respective proxies.

Using 2004 data hand collected from 325 Australian publicly listed firms I find no significant association between the non-audit/total fee ratio and the magnitude of earnings management. Thus, this result suggests the provision of non-audit services by the incumbent auditor does not compromise independence and, therefore, the auditor's ability to constrain earnings management. This study also fail to find a firm engaging an audit firm with industry specialization skills has significantly lower levels of absolute discretionary accruals than a firm using the services of a non-specialist. The main findings of this study are robust to various sensitivity checks. Findings have implications for various stakeholders. For instance, there is currently appears to be a preoccupation amongst corporate governance reformists and policy makers internationally to curb the provision of non-audit services by the incumbent auditor to aid in such matters as the reduction in earnings management. These findings suggest this preoccupation may be misplaced and that constraining the ability of firms purchase non-audit services from the incumbent auditor could provide only limited benefits whilst increasing costs. In addition, policy makers and reformists need to consider more clearly the costs and benefits of any moves to limit industry concentrations within the audit market.

Keywords: *auditor independence, earnings management, auditor specialization.*

Abstrak

Penelitian ini secara empiris mengkaji hubungan antara dua dimensi kualitas auditor: independensi serta spesialisasi auditor, dan tingkat discretionary accruals, sebuah proxy untuk manajemen laba. Penelitian ini berfokus pada manajemen laba seiring dengan semakin meningkatnya tekanan di kalangan para investor, pembuat kebijakan, dan reformis tata kelola perusahaan agar membuat suatu mekanisme untuk mengendalikan perilaku oportunistik yang berlebihan di kalangan manajer. Independensi dan spesialisasi auditor menjadi pusat dari analisis ini karena kedua faktor tersebut dianggap sebagai penentu kunci dari manajemen laba. Sebagaimana manajemen laba, independensi dan spesialisasi auditor merupakan dua hal yang tidak bisa diamati. Penelitian ini menggunakan discretionary accruals absolut, rasio jasa non-audit terhadap jasa total dan pangsa pasar industri auditor sebagai masing-masing proxy.

Dengan menggunakan data tahun 2004 yang dikumpulkan langsung dari 325 perusahaan yang terdaftar di bursa saham Australia, penelitian ini tidak menemukan hubungan yang signifikan antara rasio jasa non-audit terhadap jasa total dan besaran manajemen laba. Dengan demikian, hasil penelitian ini menunjukkan ketentuan layanan jasa non-audit dari auditor yang

ditunjuk tidak menjamin independensi dan tidak mendukung kemampuan auditor untuk mencegah manajemen laba. Penelitian ini juga tidak berhasil menemukan suatu perusahaan yang berkaitan dengan perusahaan audit dengan keterampilan spesialisasi yang secara signifikan memiliki tingkat discretionary accruals absolut yang lebih rendah dibandingkan dengan perusahaan yang menggunakan layanan dari non-spesialis. Hasil temuan utama dari penelitian ini tangguh terhadap berbagai pemeriksaan sensitifitas. Hasil penelitian ini juga memberikan implikasi bagi berbagai stakeholder. Sebagai upaya untuk mengurangi manajemen laba, saat ini pengendalian ketentuan layanan non-audit oleh para auditor menjadi dominasi para reformis tata kelola perusahaan dan pembuat kebijakan secara internasional. Temuan-temuan ini menunjukkan bahwa perhatian terhadap masalah ini bisa teralihkan sehingga menghambat kemampuan perusahaan untuk membayar pelayanan jasa non-audit dari auditor yang hanya memberikan sedikit manfaat padahal biaya semakin meningkat. Selain itu, para pembuat kebijakan dan para reformis perlu mempertimbangkan dengan lebih jelas mengenai biaya dan manfaat dari setiap kegiatan untuk membatasi konsentrasi industri dalam pasar audit.

Kata kunci: *independensi auditor, manajemen laba,spesialisasi auditor.*

INTRODUCTION

This study investigates the association between earnings management and two major auditor qualities: independence and expertise. It utilizes a sample of 325 publicly listed companies on the Australian Stock Exchange (ASX). The cross-sectional modified Jones (1991) model is used to measure discretionary accruals (the proxy for earnings management). Consistent with previous research, this study uses the ratio of non-audit fees to total fees as a proxy for auditor independence (e.g., Scheiner, 1984; Firth, 1997; Gore, Pope, and Singh, 2001; Frankel, Johnson, and Nelson, 2002; Larcker and Richardson, 2004) and auditor industry market share to proxy auditor expertise in an industry sector (e.g., Pearson and Trompeter, 1994; Craswell, Francis, and Taylor, 1995; Hogan and Jeter, 1999; DeFond, Francis, and Wong, 2000). I apply a 20% market share threshold across all industries to denote an industry specialist.

Earnings management is an issue of growing international importance to investors, policy makers, market analysts and the general public. For their part, policy makers have sought to introduce various corporate governance reforms designed to aid in the constraint of earnings management. Scholars, too, have not been apathetic. Healy and Wahlen (1999), for example, in a review of the earnings management literature, called for greater research of factors that limit earnings management. An area of particular interest and scrutiny amongst policy makers, the popular press and scholars alike is the influence of the incumbent auditor in constraining the magnitude of earnings management. This study, in response to both the growing concern toward earnings management and calls for more empirical research, provides empirical evidence on two characteristics of auditor quality that may influence earnings management: (1) auditor independence; and (2) auditor industry specialization.

The principle role of auditing is to ensure the quality of the corporate earnings. Differences in auditor value are thought to lead to variations in the credibility offered, objectivity employed and the quality of the earnings provided by clients. Given auditor quality is multidimensional and inherently unobservable, no single characteristics proxy is used to capture this concept. The literature examining earnings management–auditor quality linkages have generally followed two streams with one concentrating on auditor independence and the other auditor specialization. Policy makers (Levitt, 1998), popular press articles (e.g., MacDonald, 2001; Liesman, Weil, and Schroder, 2002) and scholarly researchers (e.g., Frankel *et al.,* 2002; Ashbaugh, LaFond, and Mayhew, 2003) have recently linked the provision of non-audit services to poor corporate reported earnings. It is frequently hypothesized the provision of non-audit services can strengthen the incumbent auditor's economic bond with the client (Frankel *et al.,* 2002). As the proportion of non-audit services to total

fees increases the bond intensifies such that it increases the auditor's incentive to acquiesce to client pressure, thereby, providing a more conducive environment for corporate management to engage in opportunistic behavior (i.e., earnings management) (Simunic, 1984; Becker et al., 1998). With respect to auditor industry specialization, researchers (e.g., Craswell *et al.,* 1995; Balsam, Krishnan, and Yang, 2003; Chen, Lin, and Zhou, 2005) have hypothesized that a by-product of an audit firm opting to specialize in a given industry is an improvement in the superiority of services provided and credibility afforded to the auditor. Consequently, auditor quality will be enhanced. Bonner and Lewis (1990) and Owhoso, Messier and Lynch (2002) provide empirical evidence showing industry specialists produce more effective audits. If specialization enables an auditor to be more effective it is then perceived the auditor's ability to detect and constrain earnings management will be further enhanced (Krishnan, 2003b).

Whilst prior literature has examined the association between earnings management and auditor independence and auditor specialization, the empirical findings are mixed. I seek to re-examine these issues contributing to the literature is several key ways. First, prior research examined the two aforementioned associations in isolation despite auditor value being multidimensional. Vafeas and Theodourou (1998) comment that when focusing on a single component of a multidimensional issue the failure to control for other key potential determinants may lead to spurious relationships and misguided conclusions. This study seeks to improve on that notion by accounting for auditor independence and auditor specialization in conjunction. Second, due to data limitation prior auditor specialization studies have relied primarily on information from the 1980s to mid 1990s (e.g., Ferguson and Stokes, 2002; Ferguson, Francis, and Stokes, 2003), or used total sales or assets to proxy for audit services rather than actual audit service fees (e.g., Mayhew and Wilkins, 2003). Various studies note the audit market has changed considerably in recent years following recent structural shifts in audit firms toward a greater industry focus. This infers industry specialization may play an increasingly importance role in constraining earnings management (Hogan and Jeter, 1999; Solomon, Shields, and Whittington, 1999). The collapse of Arthur Anderson and the recent current corporate governance debate merely reinforces the growing importance of auditor specialization. In this light, this study contributes to the literature by examining the earnings management–auditor specialization linkage using 2004 calendar year data and using actual audit fees to measure auditor industry specialization. Finally, whilst earnings management – auditor value associations are global concerns most of the research literature uses U.S. or U.K. data. There remains serious question about the ability to generalize findings to alternative domestic settings such as those were ownership structure differs from major Western economies. This analysis is important for extending the international understanding of the association between earnings management and both auditor independence and auditor specialization.

The remainder of this paper is organized as follows. The next section establishes the literature review for developing testable hypotheses. Section 3 describes the research design. Primary results including descriptive statistics, correlations and regression analysis is presented in Section 4. Discussion of results and implications for future research are discussed in the concluding section.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Recent advances in positive-descriptive research explicitly acknowledge the existence of market imperfections such as information asymmetry, transactional uncertainty, and the costs associated with contracting and political intervention. These problems are recognized as agency problems which emerge when conflicts of interest between agents and principal affect the companies' business operation. The basic assumptions of agency problems are agents tend to choose actions that maximise their own

personal welfare, therefore, all decisions made by agents may or may not be in the best of principals. It is considered that this body of literature provides importance insights into the motivations of manipulating earnings by the corporate managers.

Auditor Independence and Earnings Management

Arens *et al.* (2002: 28) state that independence in auditing means "taking an unbiased viewpoint in the performance of audit tests, the evaluation of the results and the issuance of the audit report". Independence permits auditors to remain objective in drawing conclusions about the financial statements that they examine. Therefore, it increases the quality of audit by providing assurance that the auditor will plan and execute the audit objectively. Financial statement users will only rely on the auditor's report if they believe the auditor is rendering an objective and impartial opinion. If the public were to be in doubt that the auditor is under the influence of management, the audit would lose its value (Clikeman, 1998).

Gill *et al.* (1999) mention that independence has two facets: independence in fact and independence in appearance. Both independence in fact and independence in appearance are complementary; they cannot be completely separated from each other. If the auditor appears independent, but is not actually independent in fact, the audit quality suffers and the quality of financial information is diminishes. When auditors are independent in fact, but users believe them to be advocates for the clients, most of the value of the audit function will be lost (Carmichael, 1999). Independence in appearance is perceived as representative of independence in fact, because the former can be observed while the latter may not (Olazabal and Almer, 2001). Accordingly, this study effectively examines independence in appearance.

Agency cost model draws the role of the auditors as a monitoring mechanism to reduce agency costs (Jensen and Meckling, 1976). Hirst (1994) claims that generally auditors are sensitive to earnings management and have a propensity to focus on managerial incentives to overstate earnings numbers. Auditing plays an important role both in the reduction of agency problems and information asymmetry by objectively verifying the validity of financial statements (Balsam *et al.,* 2003; Gay and Simnett, 2003). The effectiveness of auditing and its ability to constrain the earnings management depend on the objectivity, in other words, independence of auditors when perform an audit (OICU-IOSCO 2002). Thus, the more independent the auditor the more they will constrain earnings management.

There is contradictory empirical evidence pertaining auditor-impaired independence due to the provision of non-audit services.[1] Frankel *et al.* (2002) find a positive and significant association between non-audit fees and the magnitude of the absolute value of discretionary accruals. Their findings imply that auditors compromised their independence due to a large portion of non-audit fees received from their audit clients. Gore *et al.* (2001) document the same results as Frankel *et al.* (2002) for non-Big five but not for Big five accounting firms. In other words, they suggest that smaller firms are more likely to compromise their independence than larger accounting firms. Antle *et al.* (2002) investigate the relations among audit fees, non-audit fees, and discretionary accruals in a simultaneous equations model. After simultaneously estimating the determinants of audit fees, non-audit fees, and discretionary accruals, they find negative and significant association between non-audit fees and discretionary accruals. However, after adjusting for firm performance, Ashbaugh *et al.* (2003) fail to find any evidence of a relationship between the provision of non-audit fees and the magnitude of earnings management. Finally, both Chung and Kallapur (2003) and Reynolds *et al.* (2004) find no association between measures of auditor independence and measures of earnings management.

Whilst the empirical literature is mixed, I adopt the conventional view that auditor independence is impaired when the non-audit/total fee ratio increases, thereby, reducing

the auditor's ability to detect and constrain earnings management. Thus, I test the following hypothesis:

H_1: There is an inverse relationship between the provision of non-audit services to audit clients and the magnitude of earnings management.

Auditor Specialization and Earnings Management

Specialist auditors are likely to invest more in staff recruitment and training, information technology, and state-of-the art audit technologies than non-specialist auditors (Dopuch and Simunic, 1982). According to Solomon, Shields and Whittington (1999) audit firms are likely to suggest non-error explanations for ratio fluctuations. Thus, the efficiency and effectiveness of audit depend on the accuracy of auditors' non-error frequency knowledge. In their experimental study, Solomon *et al.* (1999) find that industry-specialist auditors have more accurate knowledge of the frequency of financial statement non-error explanations for unexpected ratio fluctuations compare to non-specialist auditors.

Prior empirical studies (e.g., Zhou and Elder, 2001; Balsam *et al.,* 2003; Krishnan, 2003b) support the notion that specialist auditors perform a higher quality audit than non-specialist auditors; therefore, specialist auditors are less likely to allow management to manage reported earnings. Zhou and Elder (2001) indicate that specialist auditors lower earnings management in the initial public offerings process. Balsam *et al.* (2003) examine the effect of auditor specialization on the absolute level of discretionary accruals and earnings response coefficients. They report that clients of industry specialist auditors' have lower discretionary accruals and higher earnings response coefficients than clients of non-specialist auditors. Additionally, Krishnan (2003b) find evidence consistent with the argument that specialist auditors mitigate accruals-based earnings management more than non-specialist auditors. Following the literature defined above, this study tests the following hypothesis:

H_2: The magnitude of discretionary accruals of a firm whose auditor is and industry specialist are lower than the magnitude of discretionary accruals of a firm whose auditor is a non-specialist.

RESEARCH METHOD

Sample Selection

The total number of Australian firms listed on the ASX as at 11 December 2004 was 1,563. Due to the large population of listed firms, I randomly collect 450 firms' annual reports from Aspect Huntley DatAnalysis database for the financial year ending on 30 June 2004. This study focuses on Australian incorporated entities listed on the ASX; thus I excluded 10 foreign incorporated firms. Consistent with prior research I then eliminated 31 firms from the finance sector. Firms in this sector are subject to different regulatory requirements that could unduly affect abnormal accruals and audit fees paid. Mayhew and Wilkins (2003) report that audit fees in the first year of a firm's listing may be significantly different from years of normal business operations. Consequently, 30 IPO firms during the investigation calendar year are excluded from the sample. I was unable to collect sufficient information to calculate proxy for the control variables for 49 entities. Finally, I excluded five outliers (>4 standard deviations from the absolute discretionary accruals mean).[2] Thus, the statistical analysis is based on a final useable sample of 325 companies. Table 1 Panel A summarizes the sample selection process, whilst Panel B provides an industry breakdown of the final usable sample that is employed in the statistical analysis.

Proxy for Earnings Management

Consistent with prior literature (DeFond and Jiambalvo, 1994; Gul, Chen, and Tsui, 2003), this study examines negative and positive discretionary accruals as both can be used to conceal poor performance or save current earnings for future use. Prior to estimating discretionary accruals I calculate total accruals (hereafter *TAC*) for firm *k* in year *t* as the change in non-cash current assets less the

change in operating current liabilities less depreciation and amortization expenses. *TAC* is:

$$TAC_{jt} = (\Delta CA_{jt} - \Delta Cash_{jt}) - (\Delta CL_{jt} - \Delta LTD_{jt} - \Delta ITP_{jt}) - DPA_{jt} \quad \ldots\ldots\ldots\ldots (1)$$

Where:

TAC_{jt} = total accruals for firm *j* in time period *t*;

ΔCA_{jt} = change current assets for firm *j* from time period *t-1* to *t*;

$\Delta Cash_{jt}$ = change cash balance for firm *j* from time period *t-1* to *t*;

ΔCL_{jt} = change current liabilities for firm *j* from time period *t-1* to *t*;

ΔLTD_{jt} = change long-term debt included in current liabilities for firm *k* from time period *t-1* to *t*;

ΔITP_{jt} = change income tax payable for firm *j* from time period *t-1* to *t*; and

DPA_{jt} = depreciation and amortization expense for firm *j* from time period *t*.

Table 1: Sample used in analysis and industry breakdown

Panel A: Sample formation

Description:	Number
Initial sample of Australian listed companies	450
Less:	
Foreign incorporated companies listed on ASX as at 30 June 2004	10
Bank and insurance industry firms listed on ASX as at 30 June 2004	31
Companies that were IPOs during the 2004 calendar year	30
Firms with insufficient information for which to construct all proxy measures	49
Outliers	5
Final sample used	***325***

Panel B: Industry breakdown of final sample

Industry type[Ψ]	
01 Energy	27
02 Materials	85
03 Capital Goods	20
04 Commercial Services & Supplies	16
05 Automobiles & Components	11
06 Hotels, Restaurants & Leisure	10
07 Media	16
08 Retailing	12
09 Food & Staples Retailing	10
10 Health Care Equipment & Services	12
11 Pharmaceuticals & Biotechnology	20
12 Real Estate	20
13 Software & Services	27
14 Technology Hardware & Equipment	15
15 Telecommunication Services	12
16 Other-Transportation & Utilities	12
Total:	***325***

Legend: Ψ – Industry sectors are defined in accordance with the ASX classification schema

I then decompose *TAC* into normal accruals (hereafter *NAC*) and discretionary accruals (hereafter *ACC*) using the cross-sectional *modified* Jones (1991) model defined formally as:

$$TAC_{jk,t} / TA_{jk,t-1} = \alpha_{jt} [1/ TA_{jk,t-1}] + \beta_{jt} [(\Delta REV_{jk,t} - \Delta REC_{jk,t})/ TA_{jk,t-1}] + \gamma_{j,t} [PPE_{jk,t} / TA_{jk,t-1}] + \varepsilon_{jk,t} \quad (2)$$

Where:

$TAC_{jk,t}$ = total accruals for firm *j* in industry *k* in year *t;*

$TA_{jk,t-1}$ = are total assets for firm *j* in industry *k* at the end of year *t-1*;

$\Delta REV_{jk,t}$ = change net sales for firm *j* in industry *k* between years *t-1* and *t*;

$\Delta REC_{jk,t}$ = change in receivables for firm *j* in industry *k* between years *t-1* and *t*;

$PPE_{jk,t}$ = gross property, plant and equipment for firm *j* in industry *k* in the year *t*;

$\alpha_j, \beta_j, \gamma_j$ = industry specific estimated coefficients; and

ε_j = error term.

NAC is defined as the fitted values from *Equation 2,* whilst *ACC* is the residual (i.e., the difference between *TAC* and *NAC*). *ACC* is defined formally in *Equation (3)*:

$$ACC_{ik,t} = TAC_{jk,t} / TA_{jk,t-1} - \{\alpha_{jt} [1/ TA_{jk,t-1}] + \beta_{jt} [(\Delta REV_{jk,t} - \Delta REC_{jk,t})/ TA_{jk,t-1}] + \gamma_{j,t} [PPE_{jk,t} / TA_{jk,t-1}]\} \quad (3)$$

Where: $\alpha_{j,t}$ $\beta_{j,t}$ $\gamma_{j,t}$ are the fitted coefficients from *Equation 2*.

Proxy for Auditor Independence

Prior literature, in the main, has measured auditor independence as the ratio of non-audit fees to total fees (e.g., Scheiner, 1984; Firth, 1997; Frankel *et al.,* 2002; Abbott et al., 2003). This proxy specification for auditor independence is also consistent with the position of policy makers such as the SEC (SEC, 2000, Section III.c.5). Some researchers (e.g., Frankel *et al.,* 2002; Ashbaugh *et al.,* 2003), however, comment the non-audit to total fee ratio fails to capture the financial significance of a client to the audit firm. Further, cross-sectional variations in the ratio may "be driven by the levels of both non-audit fees and audit fees" (Frankel *et al.,* 2002, p.82). In response to these concerns alternative proxies designed to capture a client's financial significance have been forwarded. For instance, Frankel *et al.* (2002) use the percentile rank of the amount of non-audit fees by audit firm, whilst DeFond, Raghunandan and Subramanyam (2002) and Ashbaugh *et al.* (2003) use a log transformation of audit and non-audit fees. Presently there is no theoretical or empirical basis supporting the use of one approach over another. For reasons of consistency, and to better enable comparability of findings with the majority of prior research, I report the main findings and analysis based on the ratio of non-audit fees to total fees (hereafter *Non-AuditRatio*).[3]

Proxy for Auditor Industry Specialization

Auditor industry specialization cannot be observed directly; thus, researchers must rely on proxies for relevant estimates. Yardley, Kauffman, Caimey and David (1992) and Hogan and Jeter (1999) derived a measurement proxy of auditor industry specialization by concentrating on the establishing the proportion of audit fees earned by an audit firm from a single industry relative to audit fees generated from serving all clients. For many prior studies of auditor specialization, particularly those focusing on data where audit fee information has not been available, researchers (e.g., Kwon, 1996; Krishnan, 2003b) have relied on sales revenue or assets as the basis for estimating an auditor's market share. Where audit fee data is available, such as in Australia and Hong Kong, researchers (e.g., Craswell *et al.,* 1995; Ferguson and Stokes, 2002; Ferguson *et al.,* 2003), the approach defined by Yardley *et al.* (1992) and Hogan and Jeter (1999) also prevails. As audit and non-audit fee information is available in Australia I estimate portfolio market share of audit fees for the 2004 calendar year as the sum of all audit fees received by the auditor from firms serviced in a given ASX industry sector divid-

ed by the sum of the total audit fees received by the auditor for all firms served.[4] The following equation defines this measure:

$$MS_{ik} = \frac{\sum_{j=1}^{J_{ik}} AuditFee_{ijk}}{\sum_{k=1}^{K}\sum_{j=1}^{J_{ik}} AuditFee_{jk}}$$

Where:

i = an index of audit firms;
j = an index of client firms;
k = an index of client industries;
I_k = number of audit firms in industry k;
J_{ik} = the number of clients served by audit firm i in industry k;
$AuditFee_{ijk}$ = total client audit fees by auditor i of client j in industry k;
MS_{ik} = audit fee market share of auditor i in industry in industry k.

Previous studies use different approaches to define auditor specialization with most researchers applying an arbitrary market share threshold (typically 10–20%) (e.g., Pearson and Trompeter, 1994; Craswell *et al.,* 1995; DeFond *et al.,* 2000; Ferguson and Stokes, 2002). Some recent research use an alternative approach whereby industry specialization is denoted by ranking audit firms by market share (e.g., Ferguson *et al.,* 2003), or by ranking audit firms and denoting the top firm as a specialist if it has a defined lead (usually 10–20%) with it next competitor (e.g., Mayhew and Wilkins, 2003). This study defines an audit firm as a specialist in a given industry sector if it has 20% market share.[5] Based on my specification (not tabulated), 42.42% of audit specialist observations are associated with Ernst and Young, with 39.39% with PricewaterhouseCoopers. Observations for audit specialist associated with Deloitte and Touche, and KPMG Peat Marwick is 6.06% and 12.12% respectively. Following prior literature (e.g., Craswell *et al.,* 1995; Mayhew and Wilkins, 2003) *Specialist* is coded 1 if an audit firm has 20% or more market share (measured as defined above) in an industry sector. Industry is defined using the ASX industry sector classifications.[6]

Proxy for Control Variables

To control for compounding influences of cross-sectional factors I include control variables into the regression analysis. Consistent with prior literature (Becker *et al.,* 1998; Reynolds and Francis, 2001; Frankel *et al.,* 2002), I include firm size (*FSize*) as prior studies indicate that litigation risk is greater for larger size clients (Lys and Watts, 1994; Heninger, 2001). Also, large companies are less likely to engage in earnings management due to more scrutiny from financial analysts and investors (Zhou and Elder, 2001). This study includes *ABSTAccruals* to control for a firm's 'accrual-generating potential' (Becker *et al.,* 1998), thus firms with higher absolute values of total accruals are likely to have greater discretionary accruals (Krishnan, 2003a). Prior studies show firms with a higher likelihood of violating debt agreements are more likely to have an incentive to increase earnings (e.g., Watts and Zimmerman, 1986; Healy and Palepu, 1990; Press and Weintrop, 1990; DeFond and Jiambalvo, 1994; Sweeney, 1994). *Leverage* is included to control for this possible compounding factor. Previous research (e.g., Dechow, Sloan, and Sweeney, 1995; Frankel *et al.,* 2002; Kothari, Leone, and Wasley, 2002) reports discretionary accruals are dependent on a firm's financial performance. This is because a firm's financial performance may affect corporate management opportunistic window and the incentives for managing earnings. Furthermore, financial performance may have a bearing on a firm's audit risk (Gul *et al.,* 2003; Krishnan, 2003a). *ROI* and *Losses* are included to control for the possible compounding influences of a firm's financial performance. The perceived quality of the auditor is also considered to be a possible determinant of the magnitude of earnings management (e.g., Frankel *et al.,* 2002; Gul *et al.,* 2003). Prior research usually distinguishes between non-Big-4 and Big-4 audit firms arguing the later are commonly perceived to be of a higher quality than the former (Heninger, 2001;

Mayhew and Wilkins, 2003). I include *Big-4* as a control for perceived auditor quality. As the materials sector is the dominant industry group in the Australian capital market, this may have an influence on discretionary accruals, audit fees and auditor specialization. To determine that results are not driven by industry specific features; I include *IndMat* to control for industry affects. Becker *et al.* (1998) and Reynolds and Francis (2001) (amongst others) report cash flow from operations influence corporate management actions in managing earnings. Thus, I include *CashFlowOp* to control for discretionary accruals dependence on cash flow from operations. Researchers such as Skinner and Sloan (2002), and Chung and Kallapur (2003) show that growth firms have a greater incentive to engage in earnings management. Following this prior research I include *MV* to control for the affects of a firm's growth pattern on the behavior of corporate management to manage earnings. The specific proxy measure for the dependent, experimental and control variables are fully defined in Table 2.

Table 2: Variable definition and description

Variable Description	Variable Title
Dependent Variables	
Absolute *DACs* firm *i* for year *t*- measured by Jones (1991) model.	*AbsDAC*
Control Variables	
Absolute value of total accruals for firm *i* divided by total assets for firm I for year *t*-1.	*ABSTAccurals*
Natural logarithm of the total book reported assets of firm *i* for their fiscal year *t*.	*FSize*
Ratio of book value long-term debt of firm *i* for year *t*- to book value total assets of firm *i* for year *t*.	*Leverage*
Ratio of earnings before extraordinary items of firm *i* for year *t*- to book value total assets of firm *i* for year *t*.	*ROI*
Indicator variable with firm *i* scored one (1) if their incumbent auditor in fiscal year *t*- is a Big-4 firm; otherwise scored zero (0).	*Big-4*
Indicator variable with firm *i* scored one (1) if it has occurred a financial loss at least once in the three prior fiscal years; otherwise scored zero (0).	*Losses*
Percentage of outstanding common shares owned by top twenty shareholders of firm *i* for year *t*-.	*OwnCon%*
Indicator variable with firm *i* scored one (1) if from the manufacturing industry; otherwise scored zero (0).	*IndMat*
Ratio of market value for firm *i* in at end year *t*- to book value of total assets (less intangible assets) for firm *i* at the end of year *t*.	*MV*
Cash flow from operations for firm *i* during the year *t*- deflated by total assets as at end of year *t*-1.	*CashFlowOp*
Experimental Variables	
Ratio of non-audit fees paid by firm *i* to the external auditor to total audit fees paid by firm *i* to the external auditor in year *t*.	*NonAuditRatio*
Indicator variable if the auditor of firm *i* has 20% or more market share in audit fees for an industry; otherwise scored zero (0).	*Specialist*

Empirical Model Equations

I use OLS multiple regressions as the main statistical technique to test the hypotheses developed above. The main regression models I test are defined in the following equations:

Equation 1:

$$AbsDAC_i = a_i + \gamma_{i1}\ NonAuditRatio_i + \alpha_{i1}\ FSize_i + \alpha_{i2}\ ABSTAccurals_i + \alpha_{i3}\ Leverage_i + \alpha_{i4} ROI_i + \alpha_{i5} Big\text{-}4_i + \alpha_{i6} Losses_i + \alpha_{i7}\ CashFlowOp_i + \alpha_{i8}\ OwnCon\%_i + \alpha_{i9}\ IndMat_i + \alpha_{i10} MV_i + \varepsilon_i$$

Equation 2:

$$AbsDAC_i = a_i + \gamma_{i1}\ NonAuditRatio_i + \gamma_{i2}\ Specialist_i + \alpha_{i1}\ FSize_i + \alpha_{i2}\ ABSTAccurals_i + \alpha_{i3}\ Leverage_i + \alpha_{i4} ROI_i + \alpha_{i5} Big\text{-}4_i + \alpha_{i6} Losses_i + \alpha_{i7}\ CashFlowOp_i + \alpha_{i8}\ OwnCon\%_i + \alpha_{i9}\ IndMat_i + \alpha_{i10} MV_i + \varepsilon_i$$

Equation 3:

$$AbsDAC_i = a_i + \gamma_{i2}\ Specialist_i + \alpha_{i1}\ FSize_i + \alpha_{i2}\ ABSTAccurals_i + \alpha_{i3}\ Leverage_i + \alpha_{i4} ROI_i + \alpha_{i5} Big\text{-}4_i + \alpha_{i6} Losses_i + \alpha_{i7}\ CashFlowOp_i + \alpha_{i8}\ OwnCon\%_i + \alpha_{i9}\ IndMat_i + \alpha_{i10} MV_i + \varepsilon_i$$

If *NonAuditRatio* and *Specialist* effect absolute discretionary accruals as predicted the coefficients γ_1 and γ_2 should be negative. Whilst this study is not testing the effect of our control variables on the dependent variable, based on my intuition and prior research referred to above, I expect the coefficient on *FSize*, *Leverage*, *Big*-4, *Losses,* and *CashFlowOp* to be negative with the sign on *ABSTAccruals*, *ROI*, and *MV* to be positive. There is no prior literature that enables us to definitively define a directional sign *a priori* for *OwnCon%* and *IndMat*.

RESULTS

Descriptive Statistics of Independent Variables

Table 3 shows the composition of total fees paid by Australian listed firms' breakdown by the ASX industry classification and the type of accounting firms.

Table 3, Panel A, reports that firms belonging to the *ASX-Food & Staples Retailing* sector paid, on average, the highest amount of total fees (AUD$670,285) and audit fees (AUD$411,526). These amounts are almost three times above the sample means (AUD$261,722 and AUD$160,896, respectively). For non-audit services, firms in the *ASX-Media* sector paid, on average, the highest amount of fees (AUD$276,058) amongst other industry sectors. Again this amount is nearly three times over the mean (AUD$100,825) for all industry types.

On average, total audit fees earned by the Australian accounting firms from the Australian capital market in the study year (AUD$160,896) are much larger than average audit fees previous years (1993 to 2000, which is AUD$136,406) reported in Caitlin & Taylor (2005). On the other hand, average non-audit fees received by the Australian accounting firms is quite lower than in periods 1993 to 2000 (AUD$100,825 versus AUD$124,161) (Caitlin and Taylor, 2005). Average audit and non-audit fees of public client in international markets such as U.S. (USD$1,193,952 and USD$514,601, respectively) and U.K. (£424,233 and £404,820, respectively) far exceeds that of the average Australian client (Ashbaugh *et al.,* 2003; Ferguson, Seow, and Young, 2004). Proportionately, Australian firms in the *ASX-Energy* and *ASX-Hotels, Restaurants & Leisure* sectors purchase the highest relative level of non-audit services to total fees (51.92% and 53.64% respectively) from the incumbent auditor. In contrast, firms in the *ASX-Health Care Equipment & Services* and *ASX-Technology Hardware & Equipment* sectors purchase the lowest relative levels of non-audit services (25.69% and 27.25% respectively). The distribution of the relative level of non-audit services to total fees from the mean across industry sectors shows a relatively narrower range than observed in the U.S. (the lowest 48.97%; mean 69.00%; the highest 81.05%) (Whisenant, Sankaragurusway, and Raghunandan, 2003). Nonetheless, the evidence suggests different industries exhibit sizeable variations in the relative levels of audit and non-audit ser-

vices provided by audit firms. It is noted, however, that audit fees remain the largest component (61.48%) of total fees of an Australian audit firm's revenue stream.[7] This figure is significantly larger than the composition of audit fees received by audit firms in the U.S., which is 51.00% (Frankel *et al.*, 2002), U.K., which is 51.17% (Ferguson *et al.*, 2004) but quite lower than the composition of audit fees received by Singaporean audit firms (70.99%).

Table 3: Audit and Non-Audit Fees breakdown by industry type and accounting firm

	N	Total Fee	Audit Fee						Non-Audit Fee					
		Mean (AUD$)	Mean (AUD$)	Median (AUD$)	SD (AUD$)	Min (AUD$)	Max (AUD$)	% Total Fee	Mean (AUD$)	Median (AUD$)	SD (AUD$)	Min (AUD$)	Max (AUD$)	% Total Fee
Panel A-Industry Type [Ψ]														
01 Energy	27	192,699	92,651	18,500	232,751	11,000	989,000	48.08	100,048	4,400	327,101	0	1,613,000	51.92
02 Materials	85	185,031	116,060	25,000	353,942	2,630	2,769,000	62.72	68,971	6,220	210,769	0	1,568,000	37.28
03 Capital Goods	20	349,352	217,590	78,250	406,116	32,341	1,851,000	62.28	131,761	32,848	339,756	0	1,554,000	37.72
04 Commercial Services & Supplies	16	141,355	82,323	41,522	83,219	10,346	291,452	58.24	59,031	11,200	124,467	0	497,611	41.76
05 Automobiles & Components	11	303,549	151,492	92,800	164,976	8,500	577,192	49.91	152,058	42,000	349,912	0	1,195,094	50.09
06 Hotels, Restaurants & Leisure	10	124,850	57,878	28,715	44,962	18,000	126,232	46.36	66,972	41,185	97,347	0	317,512	53.64
07 Media	16	659,067	383,010	58,815	740,678	17,600	2,921,000	58.11	276,058	8,176	524,631	0	1,598,000	41.89
08 Retailing	12	312,377	222,032	164,253	204,862	34,000	824,697	71.08	90,345	38,000	105,296	0	334,346	28.92
09 Food & Staples Retailing	10	670,285	411,526	93,808	906,014	10,535	2,951,800	61.40	258,759	13,820	603,291	0	1,905,200	38.60
10 Health Care Equipment & Services	12	284,009	211,037	59,250	304,997	17,200	1,013,000	74.31	72,972	9,090	139,356	0	461,862	25.69
11 Pharmaceuticals & Biotechnology	20	111,992	73,748	47,280	116,093	16,233	554,574	65.85	38,244	14,475	52,854	0	73,748	34.15
12 Real Estate	20	296,664	183,997	115,099	235,188	8,000	881,000	62.02	112,667	24,120	199,414	0	698,000	37.98
13 Software & Services	27	285,519	202,485	90,000	434,950	5,000	2,269,627	70.92	83,034	13,120	120,764	0	385,830	29.08
14 Technology Hardware & Equipment	15	194,354	141,393	70,000	150,212	7,000	433,982	72.75	52,962	10,000	78,694	0	232,221	27.25
15 Telecommunication Services	12	140,717	92,302	38,300	148,537	13,000	528,711	65.59	48,415	5,180	111,754	0	392,130	34.41
16 Other-Transportation & Utilities	12	450,182	226,648	83,037	428,295	20,850	1,558,389	50.35	223,534	31,199	355,841	3,000	1,209,052	49.65
Total	***325***	***261,722***	***160,896***	***49,737***	***367,449***	***2,630***	***2,951,800***	***61.48***	***100,825***	***11,600***	***260,910***	***0***	***1,905,200***	***38.52***
Panel B-Accounting Firm [Ω]														
Big-4:														
PWC	48	485,433	304,042	164,500	504,247	2,650	2,769,000	62.63	181,391	86,423	313,892	0	1,568,000	37.37
KPMG	48	539,660	321,291	59,222	584,828	10,870	2,951,800	59.54	218,369	17,225	434,391	0	1,905,200	40.46
EY	66	337,667	189,632	74,717	396,074	7,000	2,921,000	56.16	148,035	36,131	300,790	0	1,613,000	43.84
DT	25	206,259	134,251	55,065	219,403	8,000	1,043,000	65.09	72,007	10,790	129,064	0	556,725	34.91
Total Big-4	*187*	*1,569,018*	*949,216*	*353,504*	*1,704,552*	*28,520*	*9,684,800*	*60.50*	*619,802*	*150,569*	*1,178,136*	*0*	*5,642,925*	*39.50*
Non Big-4	*138*	*60,961*	*46,401*	*30,350*	*44,277*	*2,630*	*215,000*	*76.12*	*14,559*	*3,955*	*27,853*	*0*	*191,000*	*23.88*
Total	***325***	***261,722***	***160,896***	***49,737***	***367,449***	***2,630***	***2,951,800***	***61.48***	***100,825***	***11,600***	***260,910***	***0***	***1,905,200***	***38.52***

Legend:

[Ψ] Industry sectors are defined in accordance with the ASX classification schema.

[Ω] Big-4 audit firms abbreviations: PWC is PriceWaterhouse Coopers; KPMG is KPMG Peat Marwick; EY is Ernst & Young; and DT is Deloitte & Touche.

Panel B shows that KPMG earned the largest amount of audit (AUD$321,291), non-audit (AUD$218,369) and, total fees (AUD$539,660) from the Australian capital market. These amounts are approximately twice as much as the sample means of all firms. On the other hand, DT received the smallest amount of audit (AUD$134,251), non-audit (AUD$72,007) and total fees (AUD$206,259) from the Australian listed clients. In term of non-audit fees, EY received a relatively larger portion (43.84%) than other accounting firms.[8] Fees paid by Australian listed companies for audit and non-audit services to the Big-4 audit firms, on average, are AUD$1,569,018 (96.26%) compared to AUD$60,961 (3.74%) for Non Big-4 audit firms.

Table 4 depicts the Australian audit firm market share by ASX industry classification. This table also provides the proportion of firms in given industry that used the services of a specialist auditor.

Table 4 reports that KPMG is the biggest audit service provider in the Australian capital market with a 29.49% market share (AUD$15,421,949 out of AUD$52,291,360). The second and third dominant audit service provider are PWC and EY, who had earned 27.91% and 23.93%, respectively, of audit fees received by all audit firms from the Australian capital market. Finally, DT had the lowest market share with only 6.42%.

Table 4 also shows that the Big-4 firms audit 57.54% (or 187) of listed companies in Australia. The clients of the Big-4 in Australian capital market have decreased over periods. For examples, in the years 1990-1998, Ferguson and Stokes (2002) document around that 65.00% of the sample firms were audited by one of the Big-5 audit firms. Whilst, Caitlin and Taylor (2005) report that in the periods from 1993 to 2000 the Big-6 audit, on average, 61.13% of the Australian listed firms. This reflects the fact that in the fiscal year ending 30 June 2004, the Non Big-4 audit firms audit a greater proportion of listed firms in Australia than they had done in previous periods. The Non Big-4 audit firms are less dominant (around 15.00%) in the U.S. capital market (Becker *et al.,* 1998; Mayhew and Wilkins 2003; Francis, Reichelt, and Wang, 2005) and in the U.K. (about 20.33%) (Ferguson *et al.*, 2003). No Big-4 audit firm in the Australia capital market is more dominant than other Big-4 audit firms. The audit fees paid by the Australian listed firms are more evenly distributed among the Big-4 firms than those of the Singapore case, especially PWC, EY and KPMG. These three accounting firms, on average, have earned approximately equal market share (27.91%, 29.49% and 23.93%, respectively). DT has earned a 6.42% market share.

The details of auditors' industry specialization in Table 4 show that PWC, KPMG and EY are specialist auditors in five, 11 and eight industry sectors respectively.[9] DT is only an expertise in the *ASX-Technology Hardware & Equipment* industry.[10] In terms of market leader per industry (defined as Big-4 audit firm with largest market share in a given industry), PWC is the lead audit provider in five industry sectors (*ASX-Materials, ASX-Real Estate, ASX-Software & Services, ASX-Technology Hardware & Equipment and ASX-Telecommunication Services*). KPMG is the dominant audit provider in seven industries (*ASX-Capital Goods, ASX-Automobiles & Components, ASX-Hotels, Restaurant & Leisure, ASX-Food & Staples Retailing, ASX-Health Care Equipment & Services, ASX-Pharmaceuticals & Biotechnology and ASX-Other-Transportation & Utilities*). Furthermore, EY is a leader in four industry sectors (*ASX-Energy, ASX-Commercial Services & Supplies, ASX-Media and ASX-Retailing*).

As stated above, the numbers of clients audited by the Big-4 firms are 57.54% (187 out of 325 firms).[11] Of the 187 firms the Big-4 clients, only 111 firms (or 34.15%) use a specialist auditor. The percentages of Australian listed firms that employ the Big-4 and specialist auditors are much lower than those of other comparable countries. There is evidence that Big audit firms (e.g., DeAngelo, 1981; Becker *et al.,* 1998; Francis, Maydew, and Sparks, 1999) and specialist auditors (e.g., Reynolds and Francis, 2001; Balsam *et al.,* 2003; Krishnan, 2003b) provide high quality audits than their counterparts.

Table 4: Australian auditing firms' market share and audit specialization

Industry[Ψ]	N	PWC[Ω]			KPMG[Ω]			EY[Ω]			DT[Ω]			Non-Big 4[?]			Specialist Auditor	
		N	AUD$	%	N	AUD$	%	N	AUD$	%	N	AUD$	%	N	AUD$	%	N	%
01	27	2	102,350	4.09	5	856,622	**34.24**	7	1,236,240	**49.42**	0	0	0.00	13	306,378	12.25	12	44.44
02	85	8	3,542,561	**35.91**	16	2,402,858	**24.36**	13	1,415,717	14.35	9	1,288,750	13.06	39	1,215,198	12.32	24	28.24
03	20	2	587,505	13.50	4	2,023,785	**46.50**	6	1,248,900	**28.70**	0	0	0.00	8	491,617	11.30	10	50.00
04	16	0	0	0.00	1	56,000	4.25	1	291,452	**22.13**	1	208,547	15.83	13	761,172	57.79	1	6.25
05	11	1	294,627	17.68	3	850,696	**51.05**	2	261,159	15.67	0	0	0.00	5	259,925	15.60	3	27.27
06	10	1	115,000	19.87	1	116,360	**20.10**	0	0	0.00	0	0	0.00	8	347,417	60.03	1	10.00
07	16	3	897,575	14.65	2	1,548,770	**25.27**	3	3,143,600	**51.30**	0	0	0.00	8	538,212	8.78	5	31.25
08	12	2	503,994	18.92	0	0	0.00	3	1,251,884	**46.99**	1	165,506	6.21	6	743,000	27.89	3	25.00
09	10	0	0	0.00	1	2,951,800	**71.73**	3	765,309	18.60	1	148,000	3.60	5	250,150	6.08	1	10.00
10	12	2	594,630	**23.48**	2	1,048,936	**41.42**	4	695,023	**27.44**	2	156,884	6.19	2	36,970	1.46	8	66.67
11	20	4	195,298	13.24	4	720,657	**48.86**	8	436,500	**29.59**	1	19,500	1.32	3	103,000	6.98	12	60.00
12	20	9	1,950,229	**53.00**	1	881,000	**23.94**	6	632,982	17.20	1	8,000	0.22	3	207,725	5.64	10	50.00
13	27	6	3,880,784	**70.98**	3	66,156	1.21	1	136,480	2.50	4	751,797	13.75	13	631,877	11.56	6	22.22
14	15	3	921,632	**43.45**	2	213,420	10.06	5	467,707	**22.05**	2	452,135	**21.32**	3	66,000	3.11	10	66.67
15	12	3	792,211	**71.52**	1	20,000	1.81	1	31,500	2.84	2	94,165	8.50	5	169,749	15.33	3	25.00
16	12	2	215,618	7.93	2	1,664,889	**61.21**	3	501,259	18.43	1	63,000	2.32	4	275,011	10.11	2	16.67
Total	***325***	***48***	***14,594,014***	***27.91***	***48***	***15,421,949***	***29.49***	***66***	***12,515,712***	***23.93***	***25***	***3,356,284***	***6.42***	***138***	***6,403,401***	***12.25***	***111***	***34.15***

Legend:

[Ψ]See Table 1 for the full descriptions for industry type. Industry sectors are defined in accordance with the ASX classification schema.

[Ω]Big-4 audit firms abbreviations: PWC is PriceWaterhouse Coopers; KPMG is KPMG Peat Marwick; EY is Ernst & Young; and DT is Deloitte & Touche. Audit firms with an audit fee market share in a given industry sector in excess of 20% are identified as industry specialists. Where identified as industry specialist the *Big-4* audit firm is highlighted in bold.

[?]None of a Non Big-4 audit firm in a certain industry earned 20% or more audit fee market share.

Firms in the *ASX-Health Care Equipment & Services* and *ASX-Technology Hardware & Equipment* sectors appear to use the services of a limited number of audit firms. Approximately 66.67% of firms in each of both these industries use specialist auditor services. Contradictory, the *ASX-Commercial Services & Supplies, ASX-Hotels, Restaurant & Leisure* and *ASX-Food & Staples Retailing* are less dominated by firms engaging the services of a specialist auditor (6.25%, 10.00% and 10.00% respectively). Interestingly, while paid the highest amount of total fees and audit fees, firms in the *ASX-Food & Staples Retailing* sector use minimal services of specialist auditors.[12]

Descriptive Statistics of Dependent and Control Variables

Table 5 provides the descriptive statistics for the study's dependent and control variables. Table 5 indicates that average discretionary accruals are -0.90% of the beginning balance of total assets.[13] The lower value of discretionary accruals for Australian firms is consistent with recent international comparative studies (e.g., Bhattacharya, Daouk, and Welker, 2003; Leuz, Nanda, and Wysocki, 2003) that earnings management is likely to be more prevalent in newly developed and emerging economies such as Singapore. However, the number of firms that have positive and negative discretionary accruals is virtually equal (162 and 163 firms, respectively). The approximately equal percentage of positive and negative discretionary accruals firms is consistent with other research (e.g., Klein, 2002).

In regard to the control variables, Table 5 indicates that the average firm total assets in year 2004 is AUD$303,730,000. The average firm size (measured by the log of total assets) is 17.23. The average absolute value of total accruals (*ABSTAccruals*) is 19.08% of total assets at the beginning of the year. An average long-term debt to total assets ratio (*Leverage*) of the sample firms is 15.24%. This value is slightly higher compared to those reported by Ferguson, Francis and Stokes (2003) (which is 11.00%).

Table 5: Descriptive statistics of dependent and control variables

Variable Description	Mean	Std Dev	Median	25 Percentile	75 Percentile
Dependent Variable:					
Total Accurals (AUD$,000)	-11,558	96,562	-366	-3,948	566
Deflated Total Accurals	-0.0891	0.6812	-0.0337	-0.1076	0.3195
DACs	-0.0090	0.8116	-0.0141	-0.4509	0.3660
AbsDAC	0.6061	0.5388	0.4291	0.2018	0.8480
Control Variables:					
Total Assets (AUD$,000)	303,730	855,697	21,149	7,356	132,835
FSize	17.2301	2.1673	16.8671	15.8110	18.7046
ABSTAccurals	0.1908	0.6599	0.0749	0.0324	0.1858
Leverage	0.1524	0.2473	0.0571	0.0015	0.2314
ROI	-0.0702	2.5608	-0.0151	-0.2563	0,0592
Big-4 (% of Sample)	57.5385				
Losses (% of Sample)	70.4615				
CashFlowOp	-0.0899	0.5993	-0.0097	-0.1862	0.1029
OwnCon%	62.5271	19.1222	65.3200	48.4850	76.7700
IndMat (% of Sample)	26.1538				
MV	2.7096	5.2131	1.2854	0.7417	2.6196

Legend:
Total accruals are defined as the difference between net income before extraordinary and abnormal items, and the cash flow from operations. Deflated total accruals are total accruals (as defined above) deflated by lagged total assets. *DACs* are the accruals prediction error; i.e., the difference between total accruals and estimated expected accruals. Total assets are the book value of total assets at the end of year zero. See Table 2 for full definitions and descriptions for the study's dependent, independent and control variables.

In terms of ownership concentration (*OwnCon%),* 62.53% of the equity shares of the sample firms are held by the top twenty shareholders. Consistent with Holland and Ramsay (2003), Gul, Chen and Tsui (2003) and Caitlin and Taylor (2005), average ROI and cash flow from operations (scaled by the beginning total assets) are negative (-7.02% and -8.99%, respectively).[14] The poor financial performance, as evidenced by 70.46% (229 out of 325) of the sample firms reporting a loss in the past three years, suggests that firms experienced financial suffering during those fiscal periods.[15] Such performance, might be, affected by deteriorating world economic conditions due to the Asian financial crisis from 1997 to 1998 and the SARS epidemic in 2001-2002 (Teo, 2003; Conyon, 2004; Mak and Kusnadi, 2005). The Big-4 accounting firms audit more than half the Australian listed firms in fiscal year end 30 June 2004. Around 57.54% of the Australian listed firms engage EY, PWC, KPMG or DT. Additionally, firms classified as Materials Industry (*InMat*) make up around 26.15% of the Australian firms that included in the sample. Finally, Table 5 shows that average market-to-book value (*MV*) of the sample firms is around 2.71 times.

Correlations

Table 6 presents a correlation matrix between the dependent, experimental and control variables. The upper half of each panel reports Pearson pairwise correlation coefficients (cr_p), the lower half Spearman correlation coefficients (cr_s). *AbsDAC* is negatively correlated with *NonAuditRatio* and *Specialist* both for Pearson and Spearman correlations. Although the negative correlations between both independent variables and dependent variable are as expected, these relationships are not significant. The dependent variable is positively and significantly associated with *ABSTAccurals* both for Pearson and Spearman correlations ($p<0.01$ cr_p and cr_s). Findings also show a significant positive correlation ($p<0.05$ cr_p and cr_s) between *NonAuditRatio* and *Specialist*. As the correlation value is below the critical limits of 0.80 (Hair et al., 1995; Greene, 1999; Cooper and Schindler, 2003) it is suggested that a multicollinearity problem between independent variables is not a serious concern. In respect to correlations between independent and control variables, and amongst control variables themselves, the highest correlations are between *ROI* and *CashFlowOp*, with a coefficient of -0.747 ($p<0.01$ cr_s). This value is, again, below the critical limit of 0.80.[16] Variance inflation factors calculated for all regressions reported in Tables 7 to 9 for all independent and control variables provide further indications that multicollinearity is not a problem in the model estimations (Hair *et al.*, 1995; Greene, 1999; Cooper and Schindler, 2003).

Table 6: Pearson and Spearman correlation matrix

	AbsDAC	*NonAudit Ratio*	*Specialist*	*ABSTAcc*	*FSize*	*Leverage*	*ROI*	*Big-4*	*Losses*	*OwnCon %*	*IndMat*	*MV*	*CashFlow Op*
AbsDAC		-.012	-.049	.523*	-.022	.040	-.088	-.076	.088	.001	-.088	.034	-.058
NonAuditRatio	-.013		.126**	-.113**	.359*	.204*	.123**	.263*	-.123**	.034	-.022	-.037	-.095
Specialist	-.076	.140**		.010	.322*	.110*	.082	.630*	-.145*	.007	-.074	-.005	-.029
ABSTAcc	.489*	-.090	.019		-.184*	.013	-.229*	-.101	.259*	.057	-.005	.139**	.140**
FSize	-.045	.389*	.303*	-.196**		.394*	.583*	.414*	-.558*	.113**	-.163*	-.352*	-.285*
Leverage	.021	.247*	.145*	-.025	.509*		.232*	.143*	-.253*	.163*	-.104	-.289*	-.193*
ROI	-.045	.148*	.076	-.220*	.592*	.320*		.111**	-.523*	.234*	-.118**	-.392*	-.428*
Big-4	-.071	.257*	.630*	-.106	.409*	.197*	.123**		-.186*	-.038	-.058	-.067	-.076
Losses	.077	-.136**	-.145*	.257*	-.565*	-.315*	-.631*	-.186*		-.104	.186*	.201*	.252*
OwnCon%	-.019	.040	-.005	.062	.143*	.149*	.268*	-.045	-.112**		-.126**	.011	-.100
IndMat	-.091	-.017	-.074	.001	-.173*	-.174*	-.162*	-.058	.186*	-.126**		.003	.007
MV	-.009	-.054	-.006	.149*	-.339*	-.362*	-.282*	-.039	.204*	-.065	.058		.194*
CashFlowOp	.099	-.195*	-.087	.208*	-.593*	-.393*	-.747*	-.161*	.530*	-.235*	.151*	.266*	

Legend:
* and ** indicate significance at $p< 0.01$ and $p<0.05$, respectively (based on two-tailed tests). See Table 2 for full definitions and descriptions for the dependent, independent and control variables.

Multivariate Main Results

The main results for testing hypotheses (H_1 and H_2) are reported in Table 7 Equation 1 (in Panel A) and Equation 2 (in Panel B) test the association of auditor independence and auditor specialization to the dependent variable in isolation. Equation 3 considers the effects of both independence and specialization in conjunction.

Regression model estimates reported in Table 7, Panels A, B and C, are all statistically significant (F-statistic p<0.01). The model in Table 7, Panel C (28.50%), explains the most variance in the dependent variable and that for Table 7, Panel B (28.70%), the least. The coefficients on *NonAuditRatio* are positive,[17] in both Panel A and C, but statistically insignificant.[18] These findings do not support the acceptance of H_1. The findings of no relationship between non-audit fees and the measures of earnings management is consistent with some prior studies (e.g., Chung and Kallapur, 2003; Reynolds *et al.*, 2004). Consistent with the hypothesis, suggesting that the magnitude of earnings management is significantly lower amongst firms engaging a specialist audit firm relative to those using the audit services of a non-specialist, the coefficients on *Specialist* are negative. However, this prediction is statistically insignificant and, therefore, the results do not support H_2.

In regard to control variables, the coefficients on *ABSTAccruals* are positive and significant (p<0.01) across all regression models. This finding is consistent with prior research (e.g., Frankel *et al.,* 2002; Ashbaugh *et al.,* 2003; Balsam *et al.,* 2003). Coefficients *on IndMat* are all negative and significant at p<0.10.[19] These results fail to confirm the argument that the Australian mining companies tend to manage reported earnings more than other industry companies (Godfrey and Koh, 1998). The coefficients on *CashFlowOp* are all negatively and significantly (p<0.01) associated with the measure of earnings management. These results are consistent with Dechow, Sloan and Sweeney (1995) and Peasnell, Pope and Young (2000) who suggest a negative relationship between cash flow from operations and earnings management.

Table 7: Multiple Regression results audit fees and specialization for absolute discretionary accruals

	Prediction	Panel A–*Equation 1*		Panel B–*Equation 2*		Panel C–*Equation 3*	
		Beta	***t*-statistic**	**Beta**	***t*-statistic**	**Beta**	***t*-statistic**
(Constant)			3.825*		3.680*		3.725*
ABSTAccurals	+	0.545	10.914*	0.545	10.944*	0.548	10.945*
FSize	-	0.089	1.189	0.109	1.513	0.096	1.283
Leverage	+	-0.017	-0.326	-0.014	-0.256	-0.017	-0.317
ROI	-	-0.080	-1.170	-0.083	-1.215	-0.081	-1.178
Big-4	-	-0.077	-1.448	-0.039	-0.604	-0.044	-0.681
Losses	+	-0.007	-0.109	-0.003	-0.052	-0.106	-0.915
OwnCon%	-	-0.049	-0.992	-0.049	-0.986	-0.049	-0.992
IndMat	+	-0.090	-1.860***	-0.090	-1.864***	-0.091	-1.880***
MV	+	-0.020	-0.365	-0.012	-0.233	-0.016	-0.295
CashFlowOp	-	-0.148	-2.820*	-0.147	-2.804*	-0.146	-2.790*
NonAuditRatio	-	0.035	0.682			0.031	0.603
Specialist	-			-0.058	-0.941	-0.054	-0.884
Model Summary							
R-Squared		0.310		0.311		0.312	
Adj. R-Squared		0.286		0.287		0.285	
F-Statistic		12.789*		12.844*		11.870*	
Sample Size		325		325		325	

Legend:
*, **, and *** indicate significance at p<0.01, p<0.05 and p<0.10, respectively (based on two-tailed tests). See Table 2 for full definitions and descriptions for the dependent, independent and control variables.

Directional signs on the coefficients for *Leverage* and *Losses* contradict with previous works (e.g., Burgstahler and Dichev, 1997; Klein, 2002), but are consistent with Frankel *et al.* (2002) and Krishnan (2003b). However, those coefficients are not significant. Moreover, directional signs on the coefficients of remaining control variables are generally consistent with prior related research (e.g., Peasnell *et al.*, 2000; Davidson *et al.*, 2005; Francis *et al.,* 2005). Again, all coefficients are insignificant.

Multivariate Results for Partitioned Sub-samples

Prior research (e.g., Reynolds and Francis, 2001; Frankel *et al.*, 2002; Gul *et al.,* 2003) generally partition pooled samples by income-incentives and client firm size as these traits are frequently thought to influence management opportunistic behaviour. Following prior studies, this section presents the results of multiple regression tests performed on sub-samples partitioned by the directional sign on the discretionary accruals and firm size. All equations are performed as presented in Table 7. For brevity, this section only reports findings of multivariate results for partitioned sub-samples based on Equation 3. Findings based on the other equations (Equation 1 and Equation 2), however, are reflective of those reported in Tables 8 and 9.

Discretionary accruals sign

Partitioning the pooled sample into income-increasing and income-decreasing is based on the sign on their corresponding unadjusted discretionary accruals. The multivariate results from regressions of these two groups sample are provided in Table 8.

As shown in Table 8, Panel A (Panel B), the coefficient on *NonAuditRatio* is negative (positive) for the income-increasing (income-decreasing) sub-samples. The positive sign of coefficient on *NonAuditRatio* for the income-decreasing sub-sample is consistent with the inferences for the absolute discretionary accruals regressions reported in Table 7. The negative sign of coefficient on *NonAudit-Ratio* for the income-increasing sub-sample infers that the big portion of Australian non-audit services may not impair auditors' ability to constrain the magnitude of earnings management. However, the coefficients on both income-increasing (Panel A) and decreasing (Panel B) are statistically not significant. In conclusion, the results imply that auditor independence is shown to be an insignificant factor in reducing the level of earnings management by Australian firms, regardless of whether corporate management has an incentive to increase or decrease reported earnings.

Separating estimations for *Specialist* categorisation into income-increasing and decreasing sub-samples does not provide comprehensive support for the inferences about the absolute discretionary accrual regressions reported in Table 7. The coefficients on *Specialist* for both Australian sub-samples are negative and moderately significant ($p<0.10$) in the income-increasing sub-sample (see Panel A). This result suggests that auditor specialisation is a moderately significant factor in constraining the magnitude of earnings management when corporate management face incentives to increase reported accounting earnings. This finding infers Australian auditors seem to perceive that the opportunistic application of generally accepted accounting principles (GAAP) or income-increasing discretionary accruals are more risky than the conservative application of GAAP or income-decreasing discretionary accruals. The findings are consistent with St. Pierre and Anderson (1984) who document that auditors are usually sued for allowing management to overstate their reported earnings. Becker *et al.* (1998) argue that income-increasing earnings management which reflect an opportunistic application of GAAP is more likely signalling problems with auditor independence. As a result, the income-increasing earnings management is more of a concern to regulators and financial statements users (Ashbaugh *et al.,* 2003).

Table 8: Multiple Regression results for sample partitioning by discretionary accruals sign

	Prediction	Discretionary Accruals Sign			
		Panel A-Income Increasing		Panel B-Income Decreasing	
		Beta	*t*-statistic	Beta	*t*-statistic
(Constant)			3.633*		-0.547
ABSTAccurals	+	0.564	8.481*	0.608	8.140*
FSize	-	0.127	1.357	0.117	1.026
Leverage	+	0.076	1.080	-0.168	-2.111**
ROI	-	-0.066	-0.722	0.010	0.101
Big-4	-	-0.069	-0.777	-0.161	-1.830***
Losses	+	0.055	0.677	-0.102	-1.211
OwnCon%	-	-0.151	-2.155**	0.051	0.761
IndMat	+	-0.098	-1.444	-0.111	-1.655***
MV	+	0.088	1.243	-0.159	-2.032**
CashFlowOp	-	-0.334	-4.835*	0.211	2.741*
NonAuditRatio	-	-0.001	-0.009	0.084	1.128
Specialist	-	-0.157	-1.870***	-0.045	-0.523
Model Summary					
R-Squared		0.428		0.385	
Adj. R-Squared		0.382		0.335	
F-Statistic		9.302*		7.816*	
Sample Size		162		163	

Legend:
*, **, and *** indicate significance at p<0.01, p<0.05 and p<0.10, respectively (based on two-tailed tests). See Table 2 for full definitions and descriptions for the dependent, independent and control variables.

Table 9: Multiple Regression results for partitioning by client firm size

	Prediction	Client firm size			
		Panel A-Small Firms		Panel B-Large Firms	
		Beta	*t*-statistic	Beta	*t*-statistic
(Constant)			-0.285		3.668*
ABSTAccurals	+	0.547	7.663*	0.550	7.636*
FSize	-	0.162	1.975**	0.015	0.170
Leverage	+	-0.044	-0.626	0.064	0.849
ROI	-	0.024	0.264	-0.164	-2.024**
Big-4	-	0.014	0.155	-0.053	-0.623
Losses	+	0.011	0.146	-0.091	-1.099
OwnCon%	-	-0.090	-1.229	-0.004	-0.056
IndMat	+	-0.143	-2.076**	-0.077	-1.118
MV	+	0.059	0.780	-0.091	-1.223
CashFlowOp	-	0.052	0.667	-0.234	-3.274*
NonAuditRatio	-	0.085	1.231	-0.024	-0.330
Specialist	-	-0.082	-0.921	-0.039	-0.468
Model Summary					
R-Squared		0.358		0.347	
Adj. R-Squared		0.307		0.294	
F-Statistic		6.971*		6.585*	
Sample Size		163		162	

Legend:
*, **, and *** indicate significance at p<0.01, p<0.05 and p<0.10, respectively (based on two-tailed tests). See Table 2 for full definitions and descriptions for the dependent, independent and control variables.

In the full sample, there are three control variables, *ABSTAccruals, InMat and CashFlowOp* that are significantly associated with the absolute value of discretionary accruals (see Table 7). These three control variables are consistently significant when dividing sample according to income incentives, except for the *InMat*. The coefficient on *InMat* is only significant in the income-decreasing sub-sample (see Table 8, Panel B). This suggests that the significance of the *InMat* variable in the full sample is driven by income-decreasing discretionary accruals. In addition, the coefficients on *Leverage, Big-4* and *MV* are negatively and significantly ($p<0.05$, $p<0.10$ and $p<0.05$, respectively) related with the earnings management measure in income-decreasing sub-sample. Furthermore, the coefficient on *OwnCon%* is negative and significant ($p<0.05$) in the income-increasing sub-sample. The negative association between the *Big-4* and *MV* variables and income-decreasing earnings management is consistent with evidence reported by Frankel *et al.* (2002).

Client firm size

Table 9 provides the multivariate results from regressions for the small (Panel A) and large (Panel B) client firm sub-samples. The cut-off point for partitioning the pooled sample into these two groups is made according to the median of total assets (AUD$21,149,000).

As presented in Table 9, Panel A (Panel B), the coefficients on *NonAuditRatio* are positive (negative) for the small (large) firm sub-samples. The positive sign on coefficient of *NonAuditRatio* for the small firm sub-sample is consistent with the main findings, as reported in Table 7. The findings from the sample partitioning by client firm size suggest that auditors are likely to impair their independence when they audit the small clients but not for the large audit clients. However, these results are statistically insignificant. It appears that client firm size does not unduly influence the association between auditor independence and the magnitude of earnings management. The coefficients on *Specialist* are negative but insignificant for both small (Panel A) and large (Panel B) client sub-samples. These results are consistent with the primary findings as reported in Table 7. It implies that a client's size does not affect the association between audit specialisation and earnings management.

In the full sample, the coefficient on *ABSTAccruals* is positive and significant for both small and large firms sub-sample. However, the coefficients on *InMat* and *CashFlowOp* are negatively and significantly associated with the earnings management proxy for small and large client firms, respectively. This infers that the small (large) clients drive the negative and significant relationship between *InMat* (*CashFlowOp*) and the absolute value of discretionary accruals. Unlike the full sample, the coefficients on *FSize* (*ROI*) are positive (negative) and significant (at a $p<0.05$) associated with the measure of earnings management in the small (large) client sub-sample.

Additional Sensitivity and Robustness Checks

Apart from partitioning the pooled sample according to income-incentives and firm size, I perform additional sensitivity and robustness checks (for brevity, the results are not presented) to further ensure the inferences drawn thus far are valid. First, whilst the use of the *modified* Jones (1991) model is widely cited in the literature its application is not free from criticism. Researchers, for example, Bernard and Skinner (1996); Guay, Kothari and Watts (1996); Healy and Palepu (2001) argue the estimates from the *modified* Jones (1991) is biased with measurement errors therewith could potentially induce erroneous conclusions about the presence of earnings management. In light of such criticism I estimated discretionary accruals again using alternative techniques including: (a) the original specified Jones (1991) model; (b) inclusion (in separate estimations) to the *modified* Jones (1991) model of (i) cash flow operating activities (Dechow, 1994; Kim, Chung, and Firth, 2003); (ii) return on assets. All findings from use of alternative discretionary accrual model estimates do not facilitate any significant qual-

itative change in results as reported in Table 7. A point of note, however, is that the explanatory of the additional regressions tend to be lower when the model estimation of discretionary accruals is more restrictive (i.e., includes more variables to such as cash flow from operations) that may be associated with total accruals.

Second, as noted above the ratio of non-audit service fee to total fees is extensively utilized in the research literature to proxy for auditor independence impairment (e.g., Parkash and Venable, 1993; Firth, 1997; Frankel *et al.,* 2002). Application of this proxy is consistent with results of the Earnscliffe Research and Communications (1999) survey that finds there is a perception that auditor independence is impaired when the amount of non-audit fees is large relative to audit fees. The non-audit/total fee ratio, however, is not free of criticism such as failing to capture client importance. Following Frankel *et al.* (2002) I construct several alternative measures of auditor independence including: (a) percentile rank of non-audit, audit and total fees by auditor; (b) logarithm transformation of audit and non-audit fees; and (c) ratio of non-audit fees to audit fees. Tests based on Models 1 to 3 performed using these alternative proxies for auditor independence generally yields consistent results with Table 7 results. One difference of note, however, is that when using the percentile rank of non-audit fees by auditor the coefficients are moderately positively significant at conventional levels (i.e., *t*-statistic ranging from 1.673 for test based on Model 1 to 1.708 for Model 3). Whilst findings using the percentile rank of non-audit fee by auditor are not entirely definitive the results may suggest the auditor's ability to detect and constrain earnings management is reduced when independence is impaired but in cases where the client's importance to the auditor is high.

Third, whilst I follow prior literature (e.g., Pearson and Trompeter, 1994; Craswell *et al.*, 1995; DeFond *et al.*, 2000) in using an arbitrary threshold to denote market share and subsequently industry specialization, this approach is not free of criticism. To determine if the findings are not driven by the arbitrarily applied cutoff threshold of 20%, this study uses alternative benchmarks of 10, 15, 25 and 30 percent. Regardless of whether I tighten or loosen my cutoff threshold, the coefficients on *Specialist* in additional sensitivity tests are consistent with Table 7 results. The findings infer Table 7 findings are not driven by my selection of a cutoff threshold. In an additional test I follow the recent derived approach of Ferguson *et al.* (2003) where industry rankings based on market shares within each industry to denote industry specialization. Again, tests using this second alternative proxy for auditor specialization yield consistent results with Table 7 findings.

Finally, in line with Ferguson *et al.* (2003), I run several regressions after alternatively excluding large industry clusters (namely *Commerce – Wholesale*, *Construction* and *Manufacturing – Electrical Products*). I also perform the same tests after alternatively eliminating each *Big-4* audit firm to make sure individual *Big-4* entities do not drive the results. Again, findings of my experimental variables hold. This infers this study's results are not sensitive to industry and *Big-4* audit firm characteristics. Finally, for some of the original control variables I construct alternative proxy measures. *Leverage*, for example, is measured as the ratio of total (rather than long-term) debt to total assets. Results of independent variables continue to hold in regressions performed using alternative proxy measures for control variables.

DISCUSSION AND CONCLUDING REMARKS

The purpose of this study is to examine the association between the magnitude of earnings management (proxied by discretionary accruals) and auditor quality. The two auditor quality characteristics are auditor independence (proxied by the ratio of non-audit service fees to total fees) and auditor specialization (measured by auditor industry market share). This study finds no evidence that non-audit services are associated with firms' discretionary accru-

als. This result is consistent with Chung and Kallapur (2003) and Reynolds *et al.* (2004), but, contrary to some previous studies (e.g., Frankel *et al.*, 2002; Ferguson *et al.,* 2004). Additionally, this study finds a negative but insignificant relation between specialist auditors and the level of earnings management. Thus, in contrast to previous studies (e.g., Reynolds and Francis , 2001; Balsam *et al.,* 2003; Krishnan, 2003b), this study fails to confirm that specialist auditors provide better quality audit than non-specialist auditors in an Australian context. This study then separately considered instances where: (1) the Australian client firms are small or large and (2) the discretionary accruals are positive or negative. The regression results on the *NonAuditRatio* for these three category sub-samples are generally similar to the main finding. However, further evidence from sub-samples regressions based on discretionary accruals sign indicates that the association between auditor specialization and earnings management is negative and moderately significant for the income-increasing earnings management. Overall, empirical evidence from the Australian capital market does not support the proposition that: (1) the purchase of non-audit services may or may not reduce auditor independence, and (2) specialist auditors produce better quality audit than non-specialist auditors.

The findings of this study have various implications for policy makers, corporate management, corporate governance reformists, investors and scholarly researchers alike. For example, there is currently appears to be a preoccupation amongst corporate governance reformists and policy makers internationally to curb the provision of non-audit services by the incumbent auditor to aid in such matters as the reduction in earnings management. These findings suggest this preoccupation may be misplaced and that constraining the ability of firms purchase non-audit services from the incumbent auditor could provide only limited benefits whilst increasing costs (such as any discount offered by the incumbent auditor resulting from cost savings achieved through knowledge spillover effects). Insights drawn from this study may be of assistance to policy makers as they consider the costs and benefits associated with varying levels of audit market concentration. These findings provide stronger support for allowing the audit market to operate in a basic lassez-faire manner without any overbearing interference by policy makers.

Whilst I have attempted to maintain the integrity of this study research method supported by various sensitivity and robustness checks, this study like any other empirical investigation is not without certain caveats. Earnings management, auditor independence and auditor specialization are all unobservable, therefore, this study relies on proxy measures that whilst previous used in the research literature are not free of criticism. For instance, discretionary accrual models measure discretionary accruals with error. These problems, however, are endemic to the respective literature and I am using the best currently available models and proxies. Future studies can seek to focus on refinements to the proxy measures for dependent and experimental variables. Another limitation is this study does not consider the compounding influences of firm-wide versus office-level influences (this is of particular importance to for audit specialization). Thus, future research can be conducted to investigate linkages identified in this study.

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[1] Most previous studies use non-audit service fees data from U.K. and U.S. publicly traded companies disclosed in the companies' annual reports. The U.K. data on non-audit service fees are available over a larger period of time compare to the U.S. data. The U.K. government have been required publicly companies to disclose audit and non-audit fees information in their annual reports since 1992. This information has been a mandatory item to be disclosed for the U.S. publicly companies only since the beginning of the year 2000. Consequently, studies using the U.K. audit and non-audit fees data provide an opportunity to diversify away time-specific effects.

[2] Statistical tests are not influenced by the retention or removal of outliers. However, the explanatory power of models tested is lower if the influential data points are retained.

[3] I also measure auditor independence using alternative proxy measurement techniques. As described in the "Sensitivity and Robustness Check" subsection analysis performed using alternative proxy measures for auditor independence did not lead to dramatically different findings from those reported in the main text.

[4] Some prior researchers (e.g., Hogan and Jeter, 1999) sum the two or three largest shares into a two/three-firm industry concentration ratio. As I investigate industry specialization by individual firms we use a single-firm measure.

[5] As described in the *Sensitivity Analysis* sub-section I also defined an audit firm as a specialist using alternative techniques as defined in prior literature. Whilst alternative proxy measures for defining an audit firm as a specialist is employed results from the statistical tests are not affected.

[6] Audit firms do not publish specific information about their industry specialization or how such notations are defined. To my best knowledge there is no theoretically based methodology described in the literature to define industries. Thus, researchers rely on forming reasonable proxies. I rely on the ASX classification schema due as it has a long accepted and recognized base within the Australian capital market, and amongst its participants.

[7] 23.38% of the full Australian samples did not purchase any non-audit services from their incumbent auditors.

[8] The higher the level of non-audit fees that auditors receive from their clients, the more incentives they will agree with the client' accounting choices.

[9] PWC is a specialist auditor in the *ASX-Materials, ASX-Health Care Equipment & Services, ASX-Real Estate, ASX-Software & Services, ASX-Technology Hardware & Equipment* and *ASX-Telecommunication Services*. KPMG is an expertise in the *ASX-Energy, ASX-Materials, ASX-Capital Good, ASX-Automobiles & Components, ASX-Hotels, Restaurants & Leisure, ASX-Media, ASX-Food & Staples Retailing, ASX-Health Care Equipment & Services, ASX-Pharmaceuticals & Biotechnology, ASX-Real Estate* and *ASX-Other* (*Transportation & Utilities*). While, EY specializes in the *ASX-Energy, ASX-Capital Goods, ASX-Commercial Services & Supplies, ASX-Media, ASX-Retailing, ASX-Health Care Equipment & Services, ASX-Pharmaceuticals & Biotechnology* and *ASX-Technology Hardware & Equipment*.

[10] The results of determination auditor industry specialization according to the criteria employed in this study are generally consistent with the industries in which the Big-4 auditors declare they are expertise.

[11] This sample represents 20.79% (325 out of 1,563 firms) of population. At the population level, total companies audited by the Big-4 accounting firm are 879 companies or 56.24%.

[12] As shown in Table 4, a specialist auditor in the *ASX-Food & Staples Retailing* industry is KPMG. Even though this audit firm has earned 71.73% of industry market share, this is based on just one out of ten clients in the *ASX-Food & Staples Retailing* industry.

[13] Using the same country data set, but different time periods Koh (2003) and Davidson, Goodwin-Stewart & Kent (2005) reported the means for discretionary accruals are 7.70% and -7.00%, respectively.
[14]For example, using Australian data in the fiscal years from 1990 to 2000, Holland & Ramsay (2003) reported mean of net profit after tax and cash flow from operations (both figures are scaled by the beginning-of-year book value of total assets) are -7.20% and -0.90%, respectively.
[15] 51.69% (168 out of 325firms) of the sample firms experienced loss in the fiscal year end 30 June 2004.
[16]As a further check for multicollinearity this thesis performs the model estimations reported in Table 7 to 9 again after first excluding *ROI* and then *CashFlowOp*. The independent exclusion of each respective control variable does not significant alter the findings reported in the main text.
[17] The positive sign on *NonAuditRatio* implies that the larger portion of non-audit fees that auditors receive from audit clients the more likely they compromise their independence.
[18] This study also re-performs the tests in Panels A and C (based on the Equations A and C) after excluding companies that have not purchased any non-audit services from their audit firms. These results are qualitatively the same as those reported in Table 7.
[19]26.15% (85 out of 325 firms) of the Australian sample is firms in the *ASX-Materials* industry sector. Firms are included in the *ASX-Materials* industry group consist of *Chemicals, Construction Materials, Containers & Packaging, Metals & Mining and Paper & Forest Products* industries. 90.59% (77 out of 85) of firms that include in the *ASX-Materials* industry group is the *Metals & Mining* industry.