

# The accumulated weight of evidence in audit fee research

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## Abstract

Research on factors related to audit fees has become widespread in recent decades, with nearly 200 papers now published. The studies examine issues such as audit quality or independence, using a model of the relationship of audit fees to the variables of interest, with controls for the size, complexity and riskiness of the entity being audited. Recent narrative research reviews suggest that auditing research has had only limited influence on public policy, and observe that this may be because research results are sometimes conflicting. This paper explores ways in which meta-regression analysis might be used to resolve such issues in audit fee research. Many of the findings have significant public policy implications. For example, non-audit services are widely believed to be associated with loss of auditor independence, and some authorities believe that auditors reduce their audit fee to attract clients and gain access to opportunities for consulting work; evidence from meta-analysis suggests this “loss-leader” pricing does not take place. The audit fee effects of longer auditor tenure (higher fees) are relevant to the debate over auditor rotation. Research about specialisation and Big firm premiums provide information about the extent to which higher quality auditors are desired and in what circumstances.

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# The accumulated weight of evidence in audit fee research

## 1. Introduction

This paper evaluates research that has examined the determinants of audit fees over the past three decades, with an emphasis on changes observed from recently-published studies. Meta-analysis is used to examine the accumulated effect of the drivers of audit fees identified in prior studies. There are a number of narrative literature reviews on this subject, and the use of meta-analysis complements these reviews by allowing us to take stock of the results from earlier studies. Although a recent study refers to “the under-researched area of how auditors charge for their services” (Ahmed & Goyal, 2005), research in this area is more extensive than most areas in accounting or auditing. A common methodology for examining the determinants of audit fees has been used in nearly 200 published journal articles, many of which include several sets of data.

There is a substantial body of auditing research that has been seen as either “a productive collaboration” that advances current auditing practices (Bell & Wright, 1995) or concludes that “very little is known about auditing in practice” (Humphrey 2008). This problem – that research does not provide clear information for policymakers – has been described in meta-analysis as the “ambiguity problem”, and was referred to by Senator Walter Mondale in a speech to the American Psychological Association in 1970. Mondale had sought guidance in developing his policy platform from educational research, but:

“What I have not learned is what we should do about these problems. . . . For every study, statistical or theoretical, that contains a proposed solution or recommendation, there is always another equally well-documented study, challenging the assumptions or conclusions of the first. No one seems to agree with anyone else's approach. But more distressing: no one seems to know what works.”

(cited in Bangert-Drowns and Rudner, 1991, 1).

Meta-analysis has become widely used in psychology and other fields as a way to advance research by finding an underlying result that synthesizes the existing literature and allows an overall conclusion to be developed. This study synthesizes audit fee research on audit quality and reviews the accumulated weight of evidence.

A recent meta-analysis of audit fee studies (Hay et al 2006, 182) suggested areas in which meta-analysis could be valuable for further study as: different forms of ownership and institutional structures; measures of internal control; governance, and the regulatory environment the firm operates in; audit quality and the circumstances in which increased quality is demanded and paid for by stakeholders; and the relation between non-audit services and audit fees. In this paper, I update that discussion, assess to what extent the anomalies, gaps and inconsistencies are now resolved, and set out future developments that meta-analysis can contribute to. With regard to the issues raised previously:

- It is now more clearly established that the association between internal control and audit fees is positive;
- Governance and regulation are now more widely researched, and the collective results show that improved governance through more active directors or audit committees is positively related to audit fees, while one person holding the combined offices of CEO and chairman is not significant, and regulation is negatively related;
- The overall evidence now suggests that there is a fee premium for auditor industry specialisation, although this result depends on the definition of “specialist”;
- Other issues on which there is now more evidence include Big 4 premiums (which appear to be clearly evident) and a premium for PricewaterhouseCoopers;
- Non-audit services are positively associated with audit fees;
- The recent results also show that longer audit firm tenure is associated with higher fees;
- Location in a large expensive city, or having a balance date during a busy season are usually significantly associated with audit fees, and those variables should be included in more studies.

- No further information came to light on ownership and institutional structures

Many of these findings have significant public policy implications. For example, non-audit services are widely believed to be associated with loss of auditor independence, and some authorities believe that auditors reduce their audit fee to attract clients and gain access to opportunities for consulting work; this evidence suggest this “loss-leader” pricing does not take place. The effects of longer auditor tenure are relevant to the debate over auditor rotation. Research about specialisation and Big firm premiums provide information about the extent to which higher quality auditors are desired and in what circumstances.

Meta-analysis of the accumulated effect of some of the drivers of audit fees identified in prior studies shows that some issues are becoming clearer, and there is evidence of higher audit fees being associated with longer audit tenure, busy season, auditor specialisation and city effects, and with the Big firms. These accumulated results have implications for policy makers. The paper challenges and criticises existing research, and especially the extent to which quantitative research proceeds by producing one empirical study after another without ever really taking stock of what has been discovered so far.

## **2. The need for meta-analysis**

Meta-analysis is a quantitative literature review. The term was first used by Glass (1976).<sup>1</sup> “Meta-analysis refers to the analysis of analyses. I use it to refer to the statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings” (Glass, 1976, p. 3). Meta-analysis became popular in education and

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<sup>1</sup> There were earlier criticisms of the fragmentary outcomes of hypothesis-testing approaches to research. Meehl (1967) describes an “eager-beaver researcher who has a long list of publications based on statistical hypothesis testing” thus: “In terms of his contribution to the enduring body of psychological knowledge, he has done hardly anything. His true position is that of a potent but sterile intellectual rake who leaves in his merry path a long train of ravished maidens but no viable scientific offspring” (Meehl 1967, p. 114).

psychology when it became clear that research was not making a contribution to policy issues. It can contribute in making sense of previous research, especially when integrating previous results becomes a task that is “too taxing for the human mind” (Hunter and Schmidt, 1990, 468). They stated that a typical narrative review concludes “that the research is in horrible shape” with inconsistent results and a need for more research. The problems in research that meta-analysis addresses are first, the ever-increasing volume of research, which makes drawing conclusions on what is known a difficult task; conflicting conclusions in research studies; and the unavoidable bias that occurs in narrative literature reviews because there are so many results to take account of.<sup>2</sup> Meta-analysis has now become widespread, and it has been reported that 25% of the papers in the *Psychological Bulletin* have ‘meta-analysis’ in the title (Glass, 2000).

There are several recent narrative literature reviews of research on auditing (e.g., Francis 2004, DeFond & Francis 2005, Carcello 2005, Kinney 2005, Simunic 2005 and Humphrey 2008), and they note that research in auditing also comes to conflicting conclusions. They do not go so far as to conclude that research is in “horrible” shape, and indeed they point out some conclusions that can be made from the body of audit research. However, they include laments that audit research is inconsistent and that it lacks influence over public policy and practice. These literature reviews also call for further research. Their conclusions suggest that meta-analysis has a place in reconciling the inconsistent results and providing a contribution to policy making.

DeFond & Francis (2005) saw recent changes in regulations related to auditing as not needed, and as a punishment that had been imposed upon auditors, and that ignored the evidence

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<sup>2</sup> “Informal methods of narrative review permit biases to remain easily undetected. Reviewers' biases can influence decisions about study inclusion, relative weights given to different findings, and analysis of relations between study features and outcomes. These biases can have clandestine effects when reviewers do not systematically seek to reduce them or provide sufficient information for readers to evaluate their extent.” (Rudner et al. 2000)

of research. They note that “popular opinion seems almost unanimous in concluding that the auditing profession is broken” . . . “however, many of the accusations that have been levelled against the audit profession are based on anecdotes or shallow simplifications” (DeFond & Francis 2005 9). Other researchers have different interpretations. Carcello (2005) argues that some research (in areas such as earnings management), suggests that “auditor performance is less meritorious” (Carcello 2005, 32). There are also laments that auditing research has had little influence on policy. Francis (2004: 359) notes: “audit research has had very little impact on audit regulations or the policy making process”.<sup>3</sup>

Calls for improving research include Francis (2004 360): “the findings collectively suggest that audit quality may be at a socially desirable level, there are some fundamental and important things we do not know about audit quality.” Carcello (2005) states that one reason why auditing research does not have more effect on public policy is that “as is the case with most social science work, findings across different studies are often inconsistent. These inconsistent results reflect the realities of using different samples, different models and different variable definitions” (Carcello 2005, 37). He calls for research that can synthesize the conflicting findings of research. This issue of inconsistent results is well- known in meta-analysis as the “ambiguity problem” discussed earlier, whereby policy makers are unable to make use of literature that includes conflicting results. Meta-analysis has become popular in many disciplines as a means of overcoming this problem.<sup>4</sup>

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<sup>3</sup> DeFond & Francis (2005, 14) note that one study (Frankel et al. 2002) was cited and relied on in drafting SOX. But numerous subsequent studies challenge the results in Frankel et al (2002) and show that they are sensitive to the choices made in research design, sample selection and model specification. Francis (2004, 357) comments that “the accounting establishment was upset by the Frankel et al. study, and I believe there was some sympathy within the academic community to publish papers refuting their findings.”

<sup>4</sup> The counterpart to the ‘ambiguity problem’ is the ‘flat earth’ criticism (Glass 2000) – if existing research is too complex, then meta-analysis is too simplified. This is a reasonable point, but meta-analysis continues to have value

DeFond & Francis (2005 26) suggest that with a government oversight body (the PCAOB) “there is at least the possibility that academic research can have a greater impact on policy-making and auditing practice than has been the case in the past” but that researchers need to be “staunchly independent” and publish papers with results that may not be flattering to the auditing profession.

### **3. Meta-analysis method**

Early examples of papers based on meta-analysis techniques in auditing and accounting include Christie (1990), Trotman & Wood (1991), Kinney & Martin (1994) and Ahmed & Courtis (1999). More recent examples in auditing-related areas include Sánchez-Ballesta & García-Meca (2007) examining corporate governance and Pomeroy & Thornton (2008) examining audit committee effectiveness.<sup>5</sup> The present paper uses meta-regression techniques like those in Hay et al. (2006). The method used is a straightforward approach consistent with previous work in the field.

The method used in this study is one of accumulation of the *t*-statistics (or equivalent) for variables commonly used in multiple regression studies. It uses the Stouffer Combined test, which combines significance levels from various tests to produce a Z-statistic that can be used to test the direction and significance of an effect. I also calculate a “file drawer test” as the number of additional studies with insignificant results that would be needed to yield an overall insignificant result for the meta-analysis at the five percent level (Wolf 1986, 38). I adjust for data independence – where two studies are using largely the same data (e.g., all of the listed companies in a particular country for a particular year), then I also examine the results with each

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in resolving ambiguity, and there is a middle ground in which results can be combined to make them useful while some discussion of contradictions and inconsistencies is included.

<sup>5</sup> There is also a descriptive meta-analysis by Broadbent & Guthrie (2008)

of these studies excluded one at a time. This sensitivity test is not usually considered necessary in meta-analysis (see for example Dalton et al. 1998, 283-284 or Stanley & Jarrell 1989) but provides reassurance that the results are not distorted.<sup>6</sup>

In order to summarize and analyze the extent of research on audit fees, a list of published audit fee studies was identified from a number of sources. I started with *Thirty Years of Audit Research* (Brazel, 2006) extended by electronic searches conducted using ABI/Inform and EBSCO Host with key words audit or auditing, and followed by a further review of the tables of contents of journals likely to publish research on auditing.<sup>7</sup> The search examined publications up to December 31, 2007. The set of papers I consider were published over 31 years (1977-2003) and include more than 20 countries. Table 1 lists the papers included in the study and published from 2004 to 2007.<sup>8</sup> For the analysis, when a paper reported separate results for individual sub-sample analyses that were not also reported on a combined basis, I treated each set of results as a separate analysis. All of the explanatory variables, including control variables for issues such as client size were coded and included in the data and meta-analysis was conducted where there were sufficient observations. This allows for ‘taking stock’ of the research findings as a whole, and I can then comment on those issues that are relevant for public policy. Knowing about these variables and which ones make a difference is important in ensuring future audit fee researchers get their models specified correctly. As suggested below, future research ought to take a more directed approach.

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<sup>7</sup> I did not include conference papers or unpublished papers listed in SSRN since these papers may not have been subject to a review and editorial process, and are usually published with some variation at a later date.

<sup>8</sup> Papers in my study published prior to 2004 include those listed in Hay et al. (2006) plus these papers: Bandyopadhyay & Kao, 2001; Chase, 1999; Chung & Lindsay, 1988; Ettredge Reed & Stone, 2000; Su, 2000.



Table 2 summarizes where the various papers have been published. There is a large number (67) of recent studies, and the growth in published articles has taken place especially in the specialist auditing research journals *Auditing: A Journal of Practice & Theory* (10 articles), *International Journal of Auditing* (9) and *Managerial Auditing Journal* (6).

<<<< Insert Table 2 here >>>>

Table 3 summarizes the country and setting of the various studies. There are many more US studies (22) now that data is more freely available as audit fees are required to be disclosed in company accounts, and a substantial number of additional UK (14) and Australian studies (6). There are also papers from countries not included in the previous analysis, namely Denmark, France, Indonesia, Italy, Jordan and Korea.

<<<< Insert Table 3 here >>>>

## **4. Results**

### **Client attributes**

Table 4 reports the meta-analysis results, showing the findings of Hay et al. (2006) for comparison, together with the effects in studies published from 2004 to 2007 and the accumulated effect of all of the studies. The table reports the number of studies showing positive, negative and not significant results, the significance and sign of the overall meta-analysis result and the file drawer test.

#### *Size*

Virtually all studies include a measure of client size (usually assets) and nearly all find significant results. There would have to be millions of “no results” studies to change this result. Some studies include “market power” of the client, which is a further size measure, of relative size of the client within its industry. A negative coefficient is predicted, based on an expectation

that particularly large clients are desirable and may be able to negotiate lower fees. The coefficient on market power is not significant overall.

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### *Complexity*

Client complexity is measured by (a) organizational complexity (number of subsidiaries, segments or SIC codes) and (b) geographical complexity (foreign assets or sales). The results are strongly significant and positive. Some recent studies examine complex accounting events, including extraordinary items or discontinued activities. These are also significant and positively associated with audit fees overall. The ratio of a company's book value to market value is a measure of the extent to which the value of the company is not captured by the assets included in its book value. Market value will be high compared to book value of the company is expected to grow, and this measure is used to indicate growth opportunities. (The reciprocal of this measure, market-to-book is also used, and these results are also included, with appropriate adjustments). The results are significantly positive overall for the studies published in the period 2004-2007, indicating lower fees for companies with growth opportunities, and weakly significant (.0745) and positive for the overall period.

### *Inherent risk*

Inherent risk is the auditing term for the risk of misstatements in financial statements before taking account of the controls used by the company and the procedures used by the auditor. It is usual to include a measure of the level of inventory or receivables, or both, as these areas require special audit procedures. The results are significant and positive overall, although inventory is less significant and is often not significant in individual studies (17 positive results, 3 negative and 21 insignificant). Some studies also include measures for systematic risk, volatility and growth. Systematic risk but not volatility were significant and positive in Hay et

al. (2006); both are now significant and positive in the overall results. Growth in sales is significant and negative in the full results, but was not previously.

Earnings management has been considered as part of inherent risk and there are an increasing number of studies. The overall results are not significant, both when pooling OLS results and replacing them with jointly estimated figures where available, although there is some evidence of higher fees being associated with higher discretionary accruals and lower fees with lower discretionary accruals (Abbott et al. 2006).

#### *Profitability*

Profitability is measured by both rate of return, and existence of a loss in recent periods. Rate of return (on assets or investment) is expected to have a negative relationship with audit fees as more profitable companies are less likely to get into financial difficulties that could implicate the auditor; losses are expected to have a positive relationship for similar reasons. Studies frequently include both measures, and usually find that both are significant. They are significant overall.

#### *Leverage and liquidity*

Leverage, and similar accounting measures, takes account of a company's level of debt or liquidity. Measures in this category include the current ratio, the quick ratio and leverage ratio. Measures that indicate higher liabilities have a positive relationship with audit fees. Companies with higher liabilities are at greater risk of getting into financial difficulties, and there is a risk for the auditor of being caught up in these issues and suffering a share of any losses. The argument in audit fee literature about the audit risk arising from current ratio is based on the financial stability of the company – if it becomes insolvent and goes into bankruptcy or something similar, then the auditor will at the least incur additional time and trouble, and at worst will be the 'deep pockets' defendant who is sued. Results for leverage vary over time and among countries,

apparently being less significant after 1990, and not significant in Hong Kong (where there is a lower risk of auditors being sued).

#### *Internal audit*

It has been argued that internal audit services as a form of control could be substituted for external audit work, but this is rarely observed in studies. There are alternative arguments for a complementary relationship, in brief because a company in need of improved financial controls will increase its investment in both accounting systems and in better auditing. Hay et al. (2006) reported that results for internal audit were mixed and the overall meta-result was not significant. In the present study, the results are now significant and positive.

#### *Corporate governance*

There were few studies examining corporate governance in earlier research and calls for much more research. I found eight more studies that include outside directors, ten that include number of board meetings, seven that examined audit committee expertise, six examining audit committee meetings and seven that examined audit committee independence. All of these variables were significant in the meta-analysis. Combining these studies with those from earlier periods also provides five or more studies on audit committee existence and the roles of chairman and CEO being combined. The results are significant and positive for audit committee existence but not for CEO/chairman combined. The results showing that most corporate governance variables are positively associated with audit fees is counter-intuitive. However, the studies investigating the issue show that this is quite a reasonable result – higher quality independent directors are more concerned about the quality of the financial statements, and demand that there are higher-quality auditors, and then demand high-quality work from them.

### *Industry*

Certain industries have higher or lower fees than others. Utilities, financial institutions and (in recent results) mining companies tend to have lower fees than companies in other industries. Manufacturing companies have higher fees.

## **Auditor attributes**

### *Big 4*

Higher audit fees might be expected when an auditor is recognized to be of superior quality. A common measure of audit quality is the auditor being one of the Big 8/6/5/4 audit firms. The meta-analysis results strongly support the observation that Big 8/6/5/4 is associated with higher audit fees. An exception is a paper by Chaney et al. (2004), which controls for self-selection effects (certain clients are more suited to Big 4 firms, and it is economically more efficient for them to use those firms), although this paper is controversial (Lennox & Stokes, 2008).

### *Individual firms*

With the exception of Price Waterhouse (later PricewaterhouseCoopers), no individual large firm exhibits a fee premium. The previous study (Hay et al. 2006) suggested that this PricewaterhouseCoopers phenomenon was confined to the 1980s, but two recent papers and the overall combined effect also find a positive significant association. There are not enough studies available as yet to conclude on whether any of the remaining Big 4 firms earn a premium compared to others.

### *Specialization*

Auditor specialization (in an industry) is also used as a measure of audit quality. This is an issue that has become controversial, i.e., whether auditors who specialize in an industry can charge a fee premium for their additional knowledge. The result was previously not clear-cut, but

more recent studies show that there are combined positive and significant effects for this measure.

In our analysis we now have 28 sets of data which include a test of auditor specialization. The analyses show sample sizes from 185 (and not significant) to 2,294 (and significant at .001). Meta-analysis finds that the overall significance level is .000, and there have to be 354 unpublished papers with no result to overturn this finding. This association between higher market share and higher audit fees appears to be consistently present. However, a narrative literature review would tend to (a) find this confusing and (b) tend to conclude that overall results are not significant. The method usually adopted combines data from a large number of industries. Different specifications for specialisation has been used (for example, market leader in a city or market leader nationally) and further investigation will be worthwhile.

#### *Tenure*

Audit tenure is a controversial issue, because there have been suggestions that companies should rotate auditors periodically to avoid becoming too close to their clients. The Sarbanes Oxley Act required an investigation of this issue, which concluded that rotation would not be beneficial. It is sometimes suggested that auditors offer a low-ball fee to attract a new audit client, and perhaps put audit quality or independence at risk by doing so (GAO, 2003). Hay et al. (2006) considered separately studies examining length of tenure and recent changes of auditor. The two constructs are both measures of tenure, and in this study have been combined (taking the inverse of auditor change), The combined effect of the studies show intriguing evidence that auditors with a short tenure charge lower fees and those with long tenure charge higher fees (indicated by a positive coefficient on the variable for tenure).

### *Location*

Some studies, especially in the UK, include a measure for “city effect” – it is expected that companies audited in the most expensive city (e.g. London) will cost more. The result including recent studies is now a very consistent positive relationship, and it seems valuable to suggest this as a further control variable to be used in other countries such as the US and Australia.

## **Engagement attributes**

### *Audit problems*

Audit problems can be most clearly identified by the auditor issuing a report other than the standard unqualified opinion. The earlier paper reported that all but one of the significant results were obtained before 1990 and the meta-result for studies conducted after 1990 was not significant. It now appears that this trend has changed again. A positive association with fees is expected when audit reports are qualified or modified, and this is found in the studies published from 2003 to 2007 and in the overall results. Under this general heading we also examined studies that look at client participation in the audit. There are not many such studies, but overall they have the expected negative result.

### *Non-audit services*

The relationship between audit fees and the existence of non-audit services has received a great deal of interest from researchers and commentators. On one hand, it is argued that the provision of audit services can lead to lower fees because of cross-subsidization of fees or synergies between audit and non-audit services, and this could be a problem because auditors might be cutting corners on the audit to attract the non-audit work. The meta-analysis shows that the overall results are strongly positive and significant. This does not support the prediction that non-audit services will be associated with fee cutting.

However some of the recent studies have used a more sophisticated model that considers that audit fees and non-audit fees might both be determined by the same explanatory variables and uses two-stage least squares to take account of this. Papers using that approach no longer find a positive result (in most cases, and overall) but they do not find evidence of lower audit fees either.<sup>9</sup>

### *Lag*

Audit report lag is the time delay between the balance date and the date of the audit report. It is a combination of the time taken by the client to prepare financial statements and the time taken to audit them. It is suggested that longer delay is an indication of problems, and perhaps behind the scenes negotiations over how to present them in the financial statements.

Although this measure is quite strongly related to audit fees, it is included in only a small number of studies.

### *Busy season*

There is also some evidence that audits in the busy season (companies with 31 December balance dates in most Northern Hemisphere countries, 30 June in Australia and New Zealand) are more costly. Evidence to support this is quite mixed (a significant positive result in 19 out of 83 studies, and a file drawer result of only 8). Nevertheless, this variable is significantly positively associated with audit fees ( $p < .001$ ) and such a measure should be included in more studies.

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<sup>9</sup> The issue of non-audit fees relates to the question of auditor independence in appearance. The issue of independence of mind is also of interest, and there are conflicting results about this too. There are studies which find evidence of loss of independence (e.g., Frankel et al. 2002) and others which examine similar evidence and do not find this result. This issue is outside the already wide scope of this paper, but has potential for future meta-analysis studies.



### *Number of reports*

This variable is another control for the extent of audit work in some circumstances. It is positively related to audit fees.

## **5. Review of findings and discussion of further exploration of the issues**

### *Commentary on the papers:*

Recent growth in papers about audit fee research has been especially widespread in auditing research journals. It includes more papers in the countries and settings research examined already, and extension to a wider range of countries. Some of the settings are quite exotic – for example, municipalities in Finland, or National Health Trusts in the UK. The standard regression model based on previous variables is commonly used and the most usual control variables are assets, number of subsidiaries (or segments), foreign subsidiaries (or sales or assets), inventory and receivables, both return on investment and existence of a loss, and leverage and liquidity. The auditor attribute of being a Big 4 firm is usually included, and the engagement attribute of audit opinion is often (although not always) included.

Recent studies have become larger and more complex. The mean number of observations increased from below 450 to more than 1,500, and the mean number of variables in the regression model increased from 10.24 to 13.10. The number of observations is influenced by a few very large studies (e.g., Clatworthy & Peel 2007 with over 50,000 observations), but the difference remains significant even when the ten largest studies are excluded. Both differences are significant at  $p < .01$ . Hay et al. (2006) had noted a similarly significant increase in the number of variables examined in studies published before 1990 compared to those published after. Mayhew (2005) criticised “kitchen sink” audit fee models that include more control variables than necessary.

<<<< Insert Table 5 here >>>>

Sometimes the count of studies gives an opposite result to the meta-analysis. In these cases (for example, inventory or internal audit), a conventional literature review is likely to give an especially misleading conclusion. This shows the value of meta-analysis.

While there has been some criticism of simple single-equation OLS models, this approach continues to be widely used. Whisenant, Sankaraguruswamy, and Raghunandan (2003) have shown that endogeneity can exist between audit fees and non-audit services but can be corrected by using a simultaneous equation approach. Endogeneity is also possible between audit fees and other governance or control variables (Knechel and Willekens 2006). Other studies have used the Heckman method to control for self-selection issues (this approach made a difference when used by Chaney et al. 2004, although not in the paper by Giroux & Jones 2007). Other studies have suggested audit fees and some of the other variables (especially non-audit fees) may be jointly determined and have used methods to take account of this (Antle et al. 2006; Hay et al 2006b).

#### *Examining socio-economic factors*

In Hay et al (2006) some factors were examined by a simple approach of separate analysis of certain groups of studies. They include analysis of certain issues according to the status of the journal, the country the study was set in, and broken down into periods. Some variation was found, e.g., profitability was not significantly associated with audit fees before 1990, but negative and significant after; leverage was significant in the US and UK but not Hong Kong; the “busy season” effect arose in US municipal audits. In addition, there are a number of further socio-economic issues that would be extremely interesting to examine further. These include examining whether some recent studies that have very large samples are having an effect on the overall results; changes in the issues examined in research over time, and in the results

found; and the length of time between data and publication (is it longer for higher-quality journals?). These tests have not been repeated, as there are alternative techniques in meta-analysis which are more effective because they can examine more than one issue at a time.

Meta-analysis contains a range of techniques for examining those issues. Further extension of meta-research could use meta-regression analysis to examine issues like those discussed earlier in the paper and in Stanley et al. (2008), such as publication bias. Applying these techniques to audit fee research, we can examine similar issues about socio-economic factors that might affect the published results. Are audit fee results affected by the seniority of the researcher, or the status of the university? Several auditing papers have already asked whether affiliation to an auditing firm through an endowed chair or being a former employee of the firm affects research results. Francis (2004: 360) states: “academic accountants are often viewed as apologists for the accounting profession and in particular for the Big 4 firms. This view is reinforced by numerous Big 4 professorships and donations to accounting departments of US universities, and the general lack of critical reflection in accounting scholarship published in leading US research journals.” DeFond & Francis (2005 p 10) point out that: “the auditing industry hires our students, makes donations to our departments and schools, funds professorships and chairs, gives us subjects for experiments and hires us as expert witnesses. All of these factors create a cosy relationship and a temptation for auditing researchers, referees and journal editors to adopt a sympathetic view to the profession”. Carcello (2005 page 37) notes: “there is an inherent risk that researchers, referees and journal editors might cater to research that is favourable to the profession”. Bazerman et al. (2006 p. 43) say: “This careful incremental approach [to changing the system of regulation in auditing] is endorsed by accounting firms themselves, and bears a striking resemblance to the approaches advocated by the leaders of other

industries attempting to stave off regulation in the face of strong evidence that they have been misleading the public. For example, tobacco industry executives have argued that we need more research on the causal effects of smoking . . .”. Meta-analysis provides a way to critique and criticise existing research and assess how reliable it is. For example, research on publication bias might shed light on whether audit fee researchers are biased due to the funding they receive from audit firms, or by other affiliations with auditors. This issue could have a highly controversial outcome. It might be appropriate to conduct tests for publication bias concerning other auditing issues like specialization, especially those where there are mixed results, or other controversial issues like non-audit services.

## **6. Concluding remarks**

This paper shows that audit fee research is widespread, and is contributing to improved understanding of some issues. However, there is considerable ambiguity, and perhaps for that reason (research results are too contradictory to be useful to policy makers), audit fee research does not appear to be influential. Part of the problem is the existence of paper after paper with little rigorous accumulation and synthesis of the results. ‘Taking stock’ of the existing research using meta-analysis, and developing overall conclusions on the issues of importance examined in audit fee studies may help this body of work to make a greater contribution to policy issues. In general, the evidence of the paper suggests that more audit fee studies are needed, although I argue in this paper that there are opportunities to make more use of what we already have available.

Audit fee research since 2003 has provided more evidence on a number of auditing issues. The overall evidence now suggests that there is a fee premium for auditor industry specialisation, although this result depends on the definition of “specialist”. Other issues on

which there is now more evidence include Big 4 premiums (which appear to be clearly evident) and a premium for PricewaterhouseCoopers; and increased evidence that non-audit fees are positively related to audit fees. In the previous meta-analysis, internal audit was not significantly related to audit fees; the evidence now available show that it is positively related to audit fees. Governance and regulation are now more widely researched, and the collective results show that improved governance through more active directors or audit committees is positively related to audit fees, while one person holding the combined offices of CEO and chairman is not significant, and regulation is negatively related. The variables for client location, auditor tenure and busy season are frequently not included in studies, but the evidence shows that they are significantly related to audit fees.

The previous meta-analysis of audit fee research suggested certain areas where more may be learned. These included internal control; governance and regulation; premiums for audit quality or specialization; and the relation between non-audit services and audit fees. The overall results now show that improved internal control, and improved governance are associated with higher audit fees. The existence of the Big 4 premium, the PricewaterhouseCoopers premium, and the premium for industry specialisation are strongly supported by the meta-analysis. The reported results also show that non-audit services are associated with higher audit fees. Longer tenure is also associated with higher fees. Significant effects that should be included in more studies are location in a large, high-cost city, and the busy season. Further research can investigate these issues, taking account of characteristics that affect individual studies by making use of meta-regression-analysis. Auditing research has had only limited influence on public policy, and this may be because the reported research results are sometimes conflicting. This

paper explores ways in which meta-regression analysis might be used to resolve such issues in audit fee research. Many of the findings have significant public policy implications.

Future research can examine to what extent the study of audit fees is valuable in practice, and the extent to which these techniques are already used to generate information for audit firms and companies. In addition, the extent to which researchers value these techniques is itself worthy of investigation.

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**Table 1: List of studies using audit fees as a dependent variable published from 2004 to 2007**

<i>Authors</i>	<i>Date</i>	<i>Publication*</i>	<i>Country</i>	<i>Setting</i>	<i>Period</i>	<i>Sample size</i>
Abbott, Parker & Peters	2006	AJPT	US	Listed companies (with Big 5 auditors)	2000	429
Ahmed & Goyal	2005	IJAu	Bangladesh, India, Pakistan	Listed companies	1998	566
Albring, Elder & Zhou	2007	IJAu	US	IPOs with non-Big 5 auditors	1990-1998	166
Antle, Gordon, Narayanamoorthy & Zhou	2006	RQFA	UK and US	Listed companies	1994-2000	2,294
Bandyopadhyay & Kao	2004	CAR	Canada	Municipalities	1995	257
Basioudis	2007	JBFA	UK	Listed companies	1996-97	1,816
Basioudis & Ellwood	2005	JAPP	UK	National Health Service audits	2001	349
Basioudis & Ellwood	2005	FAM	UK	National Health Service audits	1999-2000	373
Basioudis & Fifi	2004	IJAu	Indonesia	Listed companies	2000	67
Basioudis & Francis	2007	AJPT	UK	Listed companies (with Big 4 auditors)	2002-2003	506
Boon, Crowe, McKinnon & Ross	2005	IJAu	Australia	Local councils in NSW	1993-2002	988
Cameran	2005	IJAu	Italy	Listed and other companies	1995-2000	171
Carson & Fargher	2007	A&F	Australia	Listed companies (with Big 5 auditors)	1998-2004	558
Carson, Fargher, Simon & Taylor	2004	IJAu	Australia	Listed companies	1995-1999	857
Casterella, Francis, Lewis & Walker	2004	AJPT	US	Listed companies (with Big 5 auditors)	1993	651
Chaney, Jeter & Shivakumar	2004	AR	UK	Privately held	1994-98	7,755
Chen & Wu	2004	TaiAR	Taiwan	Listed companies	2000	258
Chen, Su & Wu	2007	IJA	China	Listed companies with B shares	2000-2003	217
Chi	2006	ICFAI	US	Listed companies	2000-2003	8,089
Chou & Lee	2005	RQFA	Hong Kong	Listed companies	1984-1998	450
Clatworthy & Peel	2007	JBFA	UK	Companies (listed and unlisted)	2004	51,429



<i>Authors</i>	<i>Date</i>	<i>Publication*</i>	<i>Country</i>	<i>Setting</i>	<i>Period</i>	<i>Sample size</i>
Dunmore & Shao	2006	PAR	NZ	Listed companies	2002	83
Fan & Wong	2005	JAR	Hong Kong, Malaysia & Singapore	Listed companies (with Big 5 auditors)	1994-1996	313
Fargher, Mayhew & Wilkins	2005	JAAF	US	Secondary equity offerings	1991-2000	1,054
Ferguson Francis & Stokes	2006	A&F	Australia	Listed companies	1998	681
Fields, Fraser & Wilkins	2004	JAPP	US	Financial institutions	2000	277
Fischer, Johnson & Elder	2004	RIGNA	US	Private colleges and universities	2000	109
Firth & Lau	2004	ABR	Hong Kong	Listed companies	1993-99	1,240
Francis & Wang	2005	AJPT	US	Listed companies (with Big 5 auditors)	2000-01	2,123
Francis, Reichelt & Wang	2005	AR	US	Listed companies (with Big 5 auditors)	2000-01	3,994
Ghosh & Lustgarten	2006	CAR	US	Listed companies	2000-2003	12,582
Giroux & Jones	2007	ABR	UK	Local authorities	2000/01	380
Gonthier-Besacier & Schatt	2007	MAJ	France	Listed companies	2002	109
Goodwin-Stewart & Kent	2006	A&F	Australia	Listed companies	2000	401
Gul	2006	JAR	Malaysia	Listed companies	1996-1998	740
Hay & Davis	2004	AJPT	New Zealand	Incorporated societies	1999	144
Hay, Knechel & Li	2006	JBFA	New Zealand	Top 200 companies	1999-2001	130
Higgs & Skantz	2005	AJPT	US	Listed companies	2000-02	2,716
Hoitash, Markelevich & Barragato	2007	MAJ	US	Listed companies	2000-03	2,475
Huang, Liu, Raghunandan & Rama	2007	AJPT	US	Listed companies (with Big 5 auditors)	2000-04	1,345
Jensen & Payne	2005	AJPT	US	Cities	1998	228
Jeong, Jung & Lee	2005	IJA	Korea	Listed companies	1999-2002	2,025
Johnsen, Meklin, Oulasvirta & Vakkuri	2004	EAR	Norway & Finland	Municipalities	1996-2000	345
Kallunki, Sahlstrom & Zerni	2007	IJAu	UK, Australia, Hong Kong, New Zealand, Malaysia, Norway, Sweden, Denmark, Singapore, South Africa		1994-2003	12,397
Knechel & Willekens	2006	JBFA	Belgium	Listed companies	2001	47

<i>Authors</i>	<i>Date</i>	<i>Publication*</i>	<i>Country</i>	<i>Setting</i>	<i>Period</i>	<i>Sample size</i>
Lee	2005	MAJ	US	Listed companies	2002	504
Lee & Mande	2005	QJBE	US	Listed companies	2000	780
Li & Wang	2006	MSE	China	A-share Listed Companies	2003	243
Lowensohn, Johnson, Elder and Davies	2007	JAPP	US	Florida local government	2003	241
Lyon & Maher	2005	JAR	US	Companies for which 1974 data available	1974	82
Mayhew	2005	AJPT	US	Listed companies (with Big 5 auditors)	2000-01	2,751
McMeeking	2007	MAJ	UK	Listed companies	1985-2002	180
McMeeking, Peasnell & Pope	2006	ABR	UK	Listed companies	1985-2002	3,240
Mellett, Peel & Kharbari	2007	FAM	UK	Universities	2001	110
Mitra, Hossein & Deis	2007	RQFA	US	Listed companies	2000	358
Naser & Nuseibeh	2007	IJCM	Jordan	Listed companies	2000-01	181
Niemi	2005	IJA	Finland	Sample of Big 6 clients	1996	81
Nikkinen & Sahlstrom	2004	IJAu	Denmark, Hong Kong, Malaysia, Singapore, South Africa, Sweden & UK	Listed companies (Worldscope database)	1992-2000	8,299
Piot	2004	FCS	France	Small and medium companies	1997	92
Pong	2004	EAR	UK	Listed companies	1991-95	3,540
Pong & Burnett	2006	MAJ	UK	Listed companies	1997 & 2001	1,000
Raghunandan & Rama	2006	AJPT	US	Listed companies	2004	660
Shailer Cummings, Vatuloka & Welch	2004	IJAu	Australia	Public sector entities	1992-1994	198
Vafeas & Waegelein	2007	RQFA	US	Listed companies	2001-02	410
Van der Zahn & Tower	2006	ICFAI	Singapore	Listed companies	2001	351
Yatim, Kent & Clarkson	2006	MAJ	Malaysia	Listed companies	2003	736

**Notes:**

\* Journal names are shown below in Table 2

**Table 2:** Journals publishing articles included in the meta-analysis

Abbreviation	Journal*	Articles up to 2003	Articles 2004-2007	Articles total
A&F	Accounting & Finance	0	3	3
AA	Advances in Accounting	1	0	1
ABR	Accounting and Business Research	10	4	14
ABRv	Accounting and Business Review	1	0	1
AIA	Advances in International Accounting	3	0	3
<b><i>AJPT</i></b>	<b><i>Auditing: A Journal of Practice &amp; Theory</i></b>	<b><i>17</i></b>	<b><i>10</i></b>	<b><i>27</i></b>
<b><i>AR</i></b>	<b><i>The Accounting Review</i></b>	<b><i>11</i></b>	<b><i>2</i></b>	<b><i>13</i></b>
ARA	Asian Review of Accounting	2	0	2
ARJ	Accounting Research Journal	1	0	1
BAR	British Accounting Review	2	0	2
<b><i>CAR</i></b>	<b><i>Contemporary Accounting Research</i></b>	<b><i>7</i></b>	<b><i>2</i></b>	<b><i>9</i></b>
EAR	European Accounting Review	3	2	5
FAM	Financial Accountability & Management	0	2	2
FCS	Finance Contrôle Stratégie	0	1	1
FE	Financial Executive	1	0	1
GAJ	Government Accountants Journal	1	0	1
HBR	Harvard Business Review	1	0	1
ICFAI	ICFAI Journal of Audit Practice	0	2	2
IJA	International Journal of Accounting	7	3	10
IJAu	International Journal of Auditing	6	9	15
IJCM	International Journal of Commerce and Management	0	1	1
IJRM	International Journal of Research in Marketing	1	0	1
JAAF	Journal of Accounting, Auditing and Finance	4	1	5
<b><i>JAE</i></b>	<b><i>Journal of Accounting &amp; Economics</i></b>	<b><i>4</i></b>	<b><i>0</i></b>	<b><i>4</i></b>
JAPP	Journal of Accounting and Public Policy	3	3	6
<b><i>JAR</i></b>	<b><i>Journal of Accounting Research</i></b>	<b><i>13</i></b>	<b><i>3</i></b>	<b><i>16</i></b>
JBFA	Journal of Business Finance & Accounting	7	4	11
JEMS	Journal of Economics & Management Strategy	1	0	1
JIAAT	Journal of International Accounting Auditing and Taxation	2	0	2
JIFMA	Journal of International Financial Management & Accounting	1	0	1
JSM	Journal of Strategic Marketing	1	0	1
MAJ	Managerial Auditing Journal	3	6	9
MSE	Management Science and Engineering	0	1	1
PAR	Pacific Accounting Review	1	1	2
QJBE	Quarterly Journal of Business and Economics	0	1	1
RAEE	Research in Accounting in Emerging Economies	1	0	1
RAR	Research in Accounting Regulation	2	0	2
RIGNA	Research in Governmental and Nonprofit Accounting	2	1	3
RQFA	Review of Quantitative Finance and Accounting	1	4	5
TaiAR	Taiwan Accounting Review	1	1	2
		122	67	189

**Notes:**

\* Journals shown in bold italics are considered to be “high quality” journals

**Table 3:** Number of articles by country and setting

Country	Setting	Articles to 2003	Articles 2004 to 2007	Total articles
Australia	Listed companies	13	4	17
	Public sector	0	2	2
Bahrain	Listed companies	1	0	1
Bangladesh	Public and non-public firms	1	1	2
Belgium	Private companies	1	1	2
	Listed companies	0	1	1
Canada	Listed companies	2	0	2
	Municipalities	2	1	3
China	Listed companies	0	2	2
Denmark	Listed companies	0	1	1
Finland	Large companies	1	0	1
	Big 6 clients	0	1	1
France	Listed companies	0	1	1
	Small and medium companies	0	1	1
Hong Kong	Listed companies	7	2	9
India	Government and non-government firms	2	0	2
Indonesia	Listed companies	0	1	1
Ireland	Listed companies	1	0	1
Italy	Listed and other companies	0	1	1
Japan	Listed companies	1	0	1
Jordan	Listed companies	0	1	1
Korea	Listed companies	0	1	1
Malaysia	Listed companies	2	2	4
Netherlands	Listed companies	1	0	1
New Zealand	Listed companies	4	1	5
	Incorporated societies	0	1	1
	Insurance companies	1	0	1
	Municipalities	1	0	1
Nigeria	Top 200 companies	0	1	1
	Listed companies	1	0	1
Norway	Listed companies	1	0	1
	Municipalities	0	1	1
Pakistan	Listed companies	1	0	1
Singapore	Listed companies	1	1	2
	Government departments	1	0	1
South Africa	Listed companies	1	0	1
South Korea	Listed companies	1	0	1
Taiwan	Listed companies	1	1	2
United Kingdom	Listed companies	17	8	25
	Listed and unlisted companies	0	1	1
	Insurance companies	1	0	1
	Micro-firms	1	0	1
	Charities	1	0	1
	National Health Service Trusts	1	0	1
	Privately held	0	1	1
	Public sector	0	4	4

<b>Country</b>	<b>Setting</b>	<b>Articles to 2003</b>	<b>Articles 2004 to 2007</b>	<b>Total articles</b>
United States	Listed companies	36	19	55
	Insurance companies	1	0	1
	Savings and Loans	1	0	1
	Entities receiving federal financial assistance	0	0	0
	Municipalities	7	2	9
	Pension plans	1	0	1
	Public & non-public	2	0	2
	School districts	2	0	2
	Private colleges & universities	0	1	1
Multi-country	Listed companies	5	2	7
<b>Total</b>		<b>122</b>	<b>67</b>	<b>189</b>

**Table 4: Summary of meta-analysis results showing significance of associations with audit fees**

		Hay et al. (2006)		2004-2007			All studies							
		Number of studies	Sign (if sig.)	Number of studies	Sig.	Sign (if sig.)	Number of studies	Sig. Pos.	Sig. Neg.	n.s.	Sig.	Sign (if sig.)	File-drawer test	
<i>Client Attributes</i>														
Size	Assets	87	pos	102	0.0000	pos	208	203	0	5	0.0000	pos	2,064,308	
	Sales	24	pos	13	0.0000	pos	37	35	0	2	0.0000	pos	47,812	
	City population	7	pos	3	0.0000	pos	14	14	0	0	0.0000	pos	5,090	
	Market power			9	0.2312	n.s.	9	3	5	1	0.2312	n.s.	N/a	
Complexity	No. of subsidiaries	82	pos	63	0.0000	pos	157	136	0	21	0.0000	pos	270,295	
	No of SIC codes	14	pos	1	N/a	N/a	16	12	0	4	0.0000	pos	676	
	No. of business segments	7	pos	33	0.0000	pos	43	33	1	9	0.0000	pos	9,790	
	Foreign Subsidiaries	39	pos	37	0.0000	pos	88	70	1	17	0.0000	pos	34,374	
	Foreign sales			18	0.0000	pos	19	18	0	1	0.0000	pos	5,780	
	Foreign assets	11	pos	16	0.0000	pos	28	26	0	2	0.0000	pos	9,325	
	Extraordinary or discontinued			8	0.0000	pos	11	7	0	4	0.0000	pos	604	
	Book to market			13	0.0014	pos	15	6	3	6	0.0745	n.s.	N/a	
	Inherent Risk	Inventory	19	pos	7	0.0000	pos	41	17	3	21	0.0000	pos	1,218
		Receivables	17	pos	23	0.0000	pos	44	32	2	10	0.0000	pos	7,027
Inventory and Receivables		43	pos	39	0.0000	pos	89	70	0	19	0.0000	pos	36,491	
Current assets		6	pos	23	0.0000	pos	32	16	1	15	0.0000	pos	7,335	
Volatility				6	0.2660	n.s.	9	2	1	6	0.0304	pos	3	
Growth in sales				3	0.0165	neg	5	0	3	2	0.0000	neg	25	
Earnings management				4	0.5050	n.s.	5	3	1	1	0.1421	n.s.	N/a	
Systematic risk		5	pos	0	N/a	N/a	6	4	0	2	0.0000	pos	67	
Profitability	Return on investment	37	neg	89	0.0000	neg	134	10	64	60	0.0000	neg	18,318	
	Loss	39	pos	71	0.0000	pos	118	35	8	75	0.0000	pos	142	
Leverage & liquidity	Current Ratio			38	0.0000	neg	44	5	24	15	0.0000	neg	2,038	
	Quick Ratio	16	neg	50	0.0000	neg	68	6	31	31	0.0000	neg	4,891	
	Leverage ratio	44	pos	87	0.0000	pos	142	67	4	71	0.0000	pos	14,735	
	Debt per capita	5	pos	5	0.0001	pos	14	6	0	8	0.0000	pos	260	
Internal Control Governance	Internal audit	11	n.s.	2	0.0043	pos	16	4	1	11	0.0032	pos	28	
	Regulation						5	3	2	0	0.0002	neg	19	
	Outside directors	5	pos	8	0.0000	pos	14	8	2	4	0.0000	pos	152	
	Board meetings (no. of)			7	0.0029	pos	10	4	0	6	0.0000	pos	55	
	CEO and chairman combined			2	0.4746	n.s.	6	0	1	5	0.3060	n.s.	N/a	
	Audit committee			4	0.0228	pos	7	3	0	4	0.0006	pos	20	
	Audit committee expertise			6	0.0194	pos	7	3	0	4	0.0051	pos	10	

		Hay et al. (2006)		2004-2007			All studies						
		Number of studies	Sign (if sig.)	Number of studies	Sig.	Sign (if sig.)	Number of studies	Sig. Pos.	Sig. Neg.	n.s.	Sig.	Sign (if sig.)	File-drawer test
Industry	Audit committee meetings			6	0.0001	pos	6	2	0	4	0.0002	pos	23
	Audit committee independence			5	0.0033	pos	7	2	0	5	0.0004	pos	22
	Financial institutions	16	neg	2	0.1992	n.s.	18	1	11	6	0.0000	neg	786
	Utilities	16	neg	7	0.0000	neg	27	3	16	8	0.0000	neg	802
	Manufacturing	6	pos	1	N/a	N/a	8	4	1	3	0.0000	pos	161
	Mining			7	0.0000	neg	13	1	10	2	0.0000	neg	497
<b><i>Auditor Attributes</i></b>													
<b>Auditor</b>													
Quality	Big 4	85	pos	80	0.0000	pos	175	112	5	58	0.0000	pos	73,264
	PricewaterhouseCoopers	10	pos	3	0.0002	pos	13	5	2	6	0.0001	pos	58
	Auditor specialist	9	pos	20	0.0000	pos	28	10	2	16	0.0000	pos	354
	Auditor specialist (city)			9	0.0000	pos	13	6	0	7	0.0000	pos	155
	Specialist city & national			6	0.0000	pos	7	5	0	2	0.0000	pos	118
Audit Tenure	Audit tenure	13	n.s.	28	0.0000	pos	68	26	9	33	0.0000	pos	1,479
	Change of auditor	23	neg										
<b>Auditor</b>													
Location	City effect	11	pos	16	0.0000	pos	27	20	1	6	0.0000	pos	4,826
<b><i>Engagement Attributes</i></b>													
Report Lag	Audit report lag	12	pos	6	0.0000	pos	18	10	0	8	0.0000	pos	529
Busy season	Year end	32	pos	47	0.0000	pos	83	19	4	60	0.0000	pos	8
<b>Audit</b>													
Problems	Audit opinion	46	pos	49	0.0000	pos	107	37	3	67	0.0000	pos	8,108
	Client participation						5	0	3	2	0.0000	neg	29
<b>Non-Audit</b>													
Services	Non-audit services	19	pos	27	0.0000	pos	51	42	3	6	0.0000	pos	21,906
Reporting	No. of audit reports	8	pos				11	9	0	2	0.0000	pos	471

**Table 5: Tests for differences in sample size and number of variables since previous study**

	Sample size	No. of variables
Mean to 2003	449.585	10.24
Mean from 2004	1538.844	13.10
Significance level of t-test for difference	0.004	0.000
Number of studies	313	