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Non-audit services and knowledge spillovers

An investigation of the audit report lag

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Abstract

Purpose – The accounting profession has argued strongly against claims that the provision of non-audit services to audit clients leads to impaired auditor independence, instead claiming that the joint provision of non-audit services and audit services creates knowledge spillovers that lead to a more efficient audit. This paper seeks to provide evidence concerning knowledge spillovers by examining the association between the audit report lag and non-audit services.

Design/methodology/approach – The authors obtained a sample of 260 firm-year observations from the financial reports of New Zealand public companies over the period 2004-2005 and tested for associations between non-audit services and audit report lag, controlling for other variables.

Findings – The paper finds evidence that non-audit services are associated with a shorter audit report lag, but that this occurs in a subsequent period, not in the year in which the services are provided.

Practical implications – The results suggest that firms purchasing non-audit services from their incumbent auditors benefit from knowledge spillovers by achieving a shorter audit report lag, but not immediately.

Originality/value – Previous studies have examined whether there is a relationship between non-audit services and audit report lag in the concurrent period. This paper extends tests to also examine the relationship between NAS in one year and the audit in a subsequent year. These results are more consistent with knowledge spillovers that allow a more efficient audit than they are with loss of independence by the auditor, because loss of independence would take effect immediately, while knowledge spillovers might take time.

Keywords Auditing, Auditor independence, Non-audit services, Audit reports, Audit report lag, Knowledge spillovers

Paper type Research paper

1. Introduction

It is widely believed that the provision of non-audit service (NAS) is detrimental to the independence of auditors, causing an economic bond between auditor and client that could allow the client to pressure the auditor into allowing manipulation of the financial statements (ICANZ, 2003; Hodge and Murray, 2012). There have been suggestions that auditors should not be permitted to provide these services and widespread debate over this question (Ashbaugh *et al.*, 2003; Hodge and Murray, 2012). This issue is therefore worthy of research, and one approach that has been widely used is to examine empirical

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evidence about the effects on audit work of providing NASs. So far, the evidence does not suggest that the provision of NAS is associated with reduced auditor independence (DeFond *et al.*, 2002; Ashbaugh *et al.*, 2003; Chung and Kallapur, 2003). There is also a view that there are benefits from NASs because the provision of NAS allows the auditor to gain extra knowledge, though a knowledge spillover effect, that helps to provide a more efficient audit (Wallman, 1996; Byrnes, 2002; Arrunada, 2004; Hodge and Murray, 2012).

This paper seeks to provide empirical evidence about the existence of knowledge spillovers by examining one potential indicator of a more efficient audit, faster completion time as measured by the audit report lag (hereafter ARL) in New Zealand. We extend testing beyond that conducted in previous studies to examine the relationship between NAS in one year and the audit in a subsequent year. This allows for the possibility that NAS may provide benefits, but not immediately. This test finds that there is indeed a negative association between NAS in one year and ARL in the following year, consistent with this suggestion that there are knowledge spillovers, with a time lag. Consistent with most previous studies, there is a positive association between NAS and ARL in the concurrent year.

We expect that if knowledge spillovers exist, one way in which they could manifest themselves could be if firms that purchase more NAS from their incumbent auditors benefit from a more efficient audit in the form of a shorter ARL. Although much research has been undertaken to identify determinants of ARL (Section 2), only a small number of studies investigate the association between NAS and ARL (Knechel and Payne, 2001; Knechel and Sharma, 2008). These studies were undertaken in the USA Knechel and Sharma (2008) show that the provision of NAS in the USA is associated with a shorter ARL, but this relationship changes over time, and in particular, it dissipates after Sarbanes Oxley Act (SOX). Knechel and Sharma (2008) examine four years, starting with a period before the restrictions imposed by SOX, and when most forms of NAS are allowed, and ending in a period after SOX, when many services are not allowed. In this paper we replicate and extend Knechel and Sharma (2008) by examining the New Zealand setting and extending its tests to cover spillovers from NAS in one year to ARL in a subsequent year. Our work also extends the research carried out by another New Zealand paper (Knechel *et al.*, 2012) by extending the examination to more than one period.

We examine a setting in New Zealand, which has the advantage that audit services continue to be self-regulated and there are no prohibitions on particular types of NASs. This setting allows us to examine the underlying issue of the association of NAS with ARL in an environment unobstructed by distortions introduced by regulations. We test the whether the provision of NAS is related to ARL using 260 firm-year observations from New Zealand public companies for the period 2004-2005. The tests show that in 2004 NAS are not associated with ARL, and in 2005 that there is a small positive association. We then extend testing to investigate whether NASs from a prior year are associated with ARL in the current year. Previous tests have examined whether NASs are associated with auditing simultaneously, in the same year as the services are carried out. However, it may take some time before any relation is evident. It could be the case that NASs provide knowledge spillovers in future audits, resulting in reduced ARL in a future year. For that reason we include NAS for 2004 in a model of ARL for 2005.

The results show that there is a negative association between NAS in 2004 and ARL in 2005, suggesting that knowledge spillovers do occur, but in the following year.

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These results are more consistent with knowledge spillovers (that allow a more efficient audit) than they are with loss of independence by the auditor, because loss of independence would take effect immediately, while knowledge spillovers might take time. The results of our study provide evidence suggesting that NAS are beneficial for the audit, rather than detrimental as the proponents of SOX suggest, although the impact is not immediate.

2. Prior literature

Two opposing views have emerged in relation to the supply of NAS by external auditors to their clients, the impaired independence view and the knowledge spillover view. Although much research has been carried out in relation to impaired independence (DeFond *et al.*, 2002; Frankel *et al.*, 2002; Krishnan *et al.*, 2005; Hay *et al.*, 2006a), the research on knowledge spillovers is relatively limited. Simunic (1984) and Palmrose (1986) use the relation between audit fees and NAS fees to investigate the existence of a beneficial knowledge spillover between these services. Simunic (1980) finds evidence of a positive relationship between NAS and audit fees, which is interpreted as support for the existence of knowledge spillovers. In Palmrose (1986), there is not only a positive relationship between NAS from incumbent auditors and audit fees, but a surprising result in that audit fees are also higher when NAS are provided by a firm other than the auditor. This finding is sometimes interpreted as suggesting knowledge spillovers do not occur, but Palmrose (1986) is much more cautious in interpreting it, noting that in her sample only a very few companies (eight out of 259) use non-incumbents for NASs (Palmrose, 1986, p. 411). Since then, the suggestion that auditors who provide NASs will be able to provide the audit for a lower fee has been extensively studied and no such effect has been found. Hay *et al.* (2006b) refer to 19 studies that examine this issue, 16 of which found that the relationship was positive, i.e. audit fees are significantly higher (not lower) when there are NASs.

We extend this research on knowledge spillovers by examining the association between NAS and ARL using an approach similar to that in Knechel and Sharma (2008), while extending that approach by examining associations between NAS and ARL over more than one year. Existing research on ARL has been conducted in a number of geographical settings including Australia (Dyer and McHugh, 1975; Davis and Whittred, 1980; Whittred, 1980), New Zealand (Courtis, 1976; Gilling, 1977; Carslaw and Kaplan, 1991), Canada (Ashton *et al.*, 1989; Ashton and Newton, 1989), the USA (Ashton *et al.*, 1987; Bamber *et al.*, 1993; Schwartz and Soo, 1996; Knechel and Payne, 2001; Knechel and Sharma, 2008; Mitra and Hossain, 2007) and Hong Kong (Ng and Tai, 1994; Jaggi and Tsui, 1999). The most common variables investigated are client size, industry, year-end, reporting a loss, presence of an extraordinary item, client complexity, auditor size and type of audit opinion issued. Client size has been found to be negatively associated with ARL indicating that larger companies have a shorter ARL. Longer ARLs are predominantly associated with firms reporting an extraordinary item, firms reporting a loss and complex firms. Prior research appears to be inconsistent with regard to industry, year-end, ownership characteristics and auditor characteristics. Some research finds that longer ARLs are associated with firms operating in the financial services industry, firms with weaker financial condition, year-ends that fall in the auditors' busy period and firms receiving a non-standard unqualified audit report. Other studies find that shorter ARLs are related to firms with overseas ownership (OWN), owner-controlled

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companies and companies with more concentrated ownership, as well as firms who employ a Big 8/6/4 audit firm. However, these results were not consistent across studies.

More recent literature has investigated the association of NAS with ARL. Knechel and Payne (2001) obtained proprietary data from an accounting firm. They found that incremental audit effort, taxation services and the use of less experienced audit staff were positively associated with ARL, while management advisory services were negatively related to ARL. Knechel and Payne (2001) suggest that this is due to management advisory services having a synergistic relationship with ARL, while tax services represent added complexity, which increased ARL.

Knechel and Sharma (2008) find a negative association between ARL and NAS in a sample of USA firms across the fiscal years 2000-2002, suggesting that knowledge spillovers occurring from the provision of NAS make the audit more efficient. However, Knechel and Sharma (2008) find no relationship in 2003, in the post-SOX period, indicating that following the ban on certain NAS the knowledge spillovers disappeared (they also find a positive relationship with a 2003 dummy variable in their pooled tests). In contrast to Knechel and Sharma (2008) and Lee *et al.* (2009) find mainly negative coefficients. Their results differ considerably before and after the passage of SOX. Pre-SOX NAS are insignificantly related to ARL, or significant 10 percent; post-SOX NAS are strongly negative, and many other changes occur, for example the coefficient on Big 8 switches from positive to negative. The mixed results from previous studies suggest that the relationship is very sensitive to the setting in which it is examined[1]. A recent paper by Knechel *et al.* (2012) is a useful additional contribution to research in this area. It also examines ARL and the effect of knowledge spillovers in New Zealand in the period 2004-2005. The paper examines simultaneous knowledge spillovers, in contrast to our examination of spillovers in a subsequent period. They also find evidence of knowledge spillovers that allow reduced ARL.

Our paper contributes to this existing literature on ARL by investigating the association of ARL with knowledge spillovers. We do this by examining NAS fees and audit fees as determinants of ARL. We extend tests to examine relationships over more than one year. While knowledge spillover arguments do not suggest that spillovers can only be immediate, previous testing has assumed that this will be the case, and have examined concurrent NAS and auditing. We extend testing beyond that done in previous studies to examine the relationship between NAS now and the audit in a subsequent period. Our paper also contributes to the literature by investigating ARL in a recent period after the collapse of Arthur Andersen and the implementation of the SOX have drawn considerable public attention to NASs both in the USA and internationally, including in New Zealand. Accounting firms in New Zealand are still permitted to provide NAS to audit clients (unlike in the USA where SOX prohibits firms from providing audit clients with all NAS except taxation services). It is therefore interesting to see, in an environment relatively free of interference from regulations, whether NAS continue to have a significant association with ARL like that identified by Knechel and Payne (2001) or whether the relationship has more recently eroded as found by Knechel and Sharma (2008).

3. Hypothesis development

Views about the auditors providing NASs include arguments that they lead to loss of independence. In a speech to the National Association of State Boards of Accountancy,

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the chairman of the SEC stated that "all too often, the audit responsibility becomes more a business line used to get a foot in the door for other, more profitable services" and:

> Do we really believe that the investing public will see the auditor as having only rigorous, objective analysis on his [or her] mind if he [or she] also must consider how his [or her] work impacts strategic planning, marketing, communications, and personnel decisions? (Levitt, 2000).

In opposition to this view are statements such as that by Wallman (1996, p. 92), former Commissioner of the SEC, who stated that in his personal opinion prohibiting auditors from providing NASs "denies the benefits to the audit function of learning more about the audit client and its business". Other critics include Lowenstein (2002, p. A22) who states "Securities and Exchange Commission Chairman Harvey Pitt doesn't get it" when Pitt says auditor independence is the cause of the Enron collapse. Arrunada (1999, p. 513) argues that "the provision of NASs by auditors to their audit clients reduces total costs, increases technical competence and motivates more intense competition". In addition, writers defending the provision of such services sometimes give as a reason why some auditors should be permitted to continue providing such services is that there are benefits. For example: "consulting work can provide a better understanding of the company and improve the audit" (Byrnes, 2002); or: "the provision of NASs by auditors to their audit clients reduces total costs, increases technical competence and motivates more intense competition" (Arrunada, 2004). A related argument is that allowing firms to provide these services allows them to attract the best experts, who can also help raise the quality of the audit (Hodge and Murray, 2012).

If these views are correct, then measurable benefits should exist when NAS are provided. A shorter ARL is one possible benefit. Previous studies have considered several other benefits, including the effect on audit fees; share market impact; and earnings quality. We argue that it is still useful to examine whether this effect applies to ARL. If there is in fact a shorter audit lag following the provision of NASs, then that contributes to the public debate on whether such services should be allowed, as there is at least one advantage.

If these affects apply, then an auditor should be able to complete the audit work in a shorter period of time due to this extra knowledge gained from performing NAS. Simunic (1984) argued that an auditor who carries out NASs is able to provide services to the client at a lower unit cost; as a result, the client is likely to purchase a greater quantity of audit services, substituting them for internal control costs, leading to an increase in the overall audit fee. His evidence was consistent with this argument. Subsequent evidence about audit fees or hours in studies by Palmrose (1986), Abdel-Khalik (1990), Davis *et al.* (1993) and O'Keefe *et al.* (1994) is not consistent with this view and does not show that audit effort is reduced by knowledge spillovers. However, Antle *et al.* (2006) find a positive relationship between NAS and audit fee, consistent with knowledge spillovers.

The relationship between NAS and ARL is examined more directly by Knechel and Payne (2001) and Knechel and Sharma (2008). A previous study reported that: "the value of financial statement information to investors declined the longer audit reports were delayed" (Knechel and Payne, 2001). Delays in reporting also increase the risk that well-informed investors will be able to take advantage of those less-informed (Bushman and Smith (2001). Knechel and Payne (2001) find that companies which purchase tax services from their auditor have a longer ARL, while companies purchasing management

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advisory services have a shorter ARL. This is attributed to tax services potentially reflecting added complexity, which increases the required audit work and ARL. By contrast the results suggest management advisory services have a synergistic impact on ARL (Knechel and Payne, 2001). Knechel and Sharma (2008) report a negative relationship between total NAS and ARL in 2001 and 2002 (i.e. before the passage of SOX), but not in 2003. They suggest that the efficiency benefits of knowledge spillovers have eroded since that legislation was passed, preventing auditors from offering certain types of services. Knechel and Sharma (2008) also suggest that knowledge spillovers could lead to greater audit effectiveness, not only greater efficiency. Increased effectiveness could result in an audit that takes either less time, or more time, particularly if it results in the auditor being more able to identify problem areas that lead to negotiating with the client over changes to the financial statements. There are also good reasons to argue that knowledge spillovers could lead to an audit taking more time, as Simunic (1984) suggests that they lead to demand for more of an auditor's services, and because Knechel and Payne (2001) found a positive relationship between tax services and ARL. Although previous studies have examined single year models, knowledge spillovers are likely to produce benefits over several years. It may be the case that any spillovers do not occur immediately, but transpire once the NAS have been completed. Thus, it could be that NAS in the current year is beneficial, but this is not evident until a subsequent year. NASs could also lead to changes in the client's accounting procedures, and on the way the auditor sets priorities among clients, and these factors could result in either a faster or a slower audit. In summary, prior literature contains arguments that companies that purchase both audit services and NAS from the same external audit firm benefit from a positive externality in the form of a knowledge spillover. It follows that the more knowledge an auditor has of a company and its operations, the faster the auditor can complete the audit, ceteris paribus; but there are also arguments that increased effectiveness occurs and this can affect the audit in either direction, so that it takes either more time or less time. Therefore, the hypothesis we empirically investigate is:

H1. There is a relationship between the magnitude of NAS purchased from a company's principal auditor and ARL.

4. Research method

4.1 Sample

The data in this paper covers a two-year period from 2004 to 2005. The sample includes all New Zealand companies listed on the New Zealand Stock Exchange (NZSX) for the period. Data on the variables described in the next section was obtained from IRG online and from annual reports obtained from IRG online, and the New Zealand Companies Office. Companies were excluded from the sample if they changed their balance date during the sample period, or if the necessary information was not available due to the company listing or delisting during the period and not filing an annual report for one of the years. A total of 23 companies were excluded due to these criteria, resulting in a final sample of 130 firms or 260 firm year observations.

4.2 Empirical model

To examine the relationship between ARL and NAS fees for New Zealand listed companies for each of the years 2004 and 2005 we use a multiple regression model consisting of the dependent variable (ARL), explanatory variable and 13 control variables:

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$$\begin{aligned} ARL = {} & \alpha_0 + \alpha_1 NAS + \alpha_2 AUD + \alpha_3 SIZE + \alpha_4 OWN + \alpha_5 ROA + \alpha_6 FINL \\ & + \alpha_7 LIQ + \alpha_8 IND + \alpha_9 SUBS + \alpha_{10} CA/TA + \alpha_{11} LOSS + \alpha_{12} YREND \\ & + \alpha_{13} BIG4 + \alpha_{14} AUDOPIN + \alpha_{15} IFRS + \varepsilon \end{aligned} \quad (1)$$

In further tests we examine NAS broken down by type of service, and relationships over a longer period than one year. The explanatory variables used are from prior research. We now discuss how each variable was measured and the predicted direction.

4.2.1 Dependent variable

ARL. Consistent with prior literature ARL is defined as the period between a company's fiscal year end and the date of the auditor's report, measured in days.

4.2.2 Explanatory variables

NAS fees. It is initially measured as the total amount of fees paid that are not for audit work[2]. In subsequent tests we use alternative measures of NASs based on auditor independence research. These include a dummy variable for the existence of NAS; the total fees for both audit and NASs; the ratio of NASs to audit fees; the log of non-audit fees and the log of total fees; and the relative importance to the auditor of the client. Relative importance is measured by the ratio of the client's non-audit fees, audit fees and total fees (respectively) to the auditor's total fees.

4.2.3 Control variables

Audit fees (AUD). The variable audit fee (AUDFEE) is measured as the total amount paid to auditors for year-end and interim audit work. We do not predict a direction for the relationship between AUDFEE and ARL due to conflicting arguments in prior studies[3].

Company size (SIZE). We use the natural log of total assets to proxy for company size. We predict a negative relationship between company size and ARL due to large firms being able to exert more pressure on auditors for timely reporting. In addition large clients are likely to possess stronger internal controls which the auditors can rely on, thus reducing the amount of audit work to be done at year-end.

Overseas ownership. We measure OWN as the percentage ownership by a major overseas shareholder. Following Gilling (1977) we expect a negative relationship between ARL and OWN, due to large external investors placing pressure on the auditor to complete the audit in as short a time as practical, so as to obtain timely information. As sensitivity tests, we also used dummy variables for OWN greater than threshold levels of 80, 50, 40, 20 and 10 percent.

Financial condition. We use three measures of financial condition: return on assets (ROA), the ratio of net income to total assets, financial leverage (FINL), the ratio of total debt to total assets, and liquidity (LIQ), the ratio of current assets to current liabilities. Companies with a weaker financial condition expose the auditor to greater audit risk, which will lead a requirement for more audit work, thus potentially increasing ARL. We therefore predict a negative relationship with ROA and LIQ and a positive relationship with FINL.

Industry (IND). We use a dummy variable equal to 1 for companies with SIC codes 6,000-6,999[4] and 0 otherwise to proxy for industry classification and predict a negative relationship as financial services companies hold little inventory or fixed assets so are less complex to audit (Bamber *et al.*, 1993). The effects of inventory and receivables variables were first derived from interviews conducted by Simunic (1980) and have been validated by numerous previous research studies. A much-cited paper

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by Hay *et al.* (2006) showed that there are more than 70 previous studies that an inventory or receivable variable or an equivalent, and most (56) find significant effects. The reason is that these types of assets require specific audit procedures (inventory observation and accounts receivable confirmation) which involve a large amount of detailed audit work.

Subsidiaries (SUBS). Following previous studies (Ng and Tai, 1994) we use the number of principal SUBS held by the company as a proxy for complexity and diversification and expect that this is positively related to ARL.

Current assets/total assets (CA/TA). Companies with large amounts of current assets require the auditor to perform more testing at year-end (as discussed above under IND). Therefore, we predict a positive relationship between the ratio of current assets to total assets and ARL.

Loss (LOSS). Companies reporting a loss for the years examined were coded as 1, as they are expected to have a longer ARL, (Courtis, 1976; Ashton *et al.*, 1989; Carslaw and Kaplan, 1991; Bamber *et al.*, 1993; Schwartz and Soo, 1996), due to the company wishing to delay the bad news and/or the auditor being more cautious during the engagement in response to the greater risk. All other companies were assigned 0.

Financial year-end (YREND). In New Zealand the two most common year-end dates are March 31 and June 30 and the period between these dates (and shortly after) is considered the busy season. We use a dummy variable equal to 1 if the company has a year-end that falls between March 31 and June 30, inclusive and 0 otherwise and predict a positive relationship between YREND and ARL (Dyer and McHugh, 1975; Ng and Tai, 1994; Knechel and Payne, 2001).

Auditor size (BIG4). We assign Big 4 audit firms a value of 1 and all others a 0 and predict that Big 4 audit firms are associated with shorter ARLs. Big 4 audit firms are larger and also invest more in training and auditing technology and are therefore able to audit more efficiently and have a greater flexibility in scheduling to complete audits on a timely basis.

Audit opinion type (AUDOPIN). We use a dummy variable equal to 1 if the company received a non-standard audit report (anything other than a standard unqualified report) and 0 otherwise. We expect a positive relationship between ARL and companies receiving a non-standard audit opinion.

IFRS early adopter. In December 2002 the New Zealand Accounting Standards Review Board announced that New Zealand entities' financial reports must comply with international financial reporting standards (IFRS) for periods commencing 1 January 2007. Entities also had the option of early adoption from 1 January 2005. In light of this, for tests carried out for the year 2005 we include a variable equal to 1 if the company is an early adopter of IFRS and 0 otherwise. First time reporting under IFRS is expected to increase ARL, as it increases the amount of work auditors have to do to ensure compliance with the new standards, due to the complexity of IFRS. Therefore, we expect a positive relationship between IFRS and ARL.

5. Results

5.1 Descriptive statistics

Table I presents the descriptive statistics for the entire sample for both 2004 and 2005. AUDFEE increased substantially in this period and NAS fees also remained at a high level. The mean (median) ARL is 64 (57) days for 2004 and 60 (55) days for 2005.

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Table I.
Descriptive statistics for the ARL, NASs fees and control variables by year

	2004					2005				
	Mean	Median	SD	Minimum	Maximum	Mean	Median	SD	Minimum	Maximum
ARL	63.80	57.00	25.65	27.00	225.00	60.31	55.00	21.45	21.00	151.00
NAS	105,107	17,000	248,320	0	1,961,000	119,343	17,454	337,336	0	2,938,000
AUD	150,260	57,500	283,596	5,000	2,000,000	173,733	67,000	342,046	5,000	2,751,000
SIZE	17.95	17.99	2.04	13.10	22.74	17.99	18.25	2.25	8.29	22.73
Total assets	346.667	64.919	98.540	488	7,500.000	375.372	84.006	938.539	4	7,421.000
OWN	0.0841	0	0.209	0	1.00	0.0896	0	0.221	0	1.00
ROA	− 0.040	− 0.043	0.288	− 1.556	0.388	− 0.005	0.004	0.288	− 1.605	0.288
FINL	0.447	0.398	0.388	0.002	3.632	0.757	0.393	3.299	0.003	3.775
LIQ	12.931	5.273	71.100	0.165	610.25	6.442	1.662	28.798	0	306.551
IND	0.30	0.00	0.46	0.00	1.00	0.30	0.00	0.46	0.00	1.00
SUBS	7.44	5.00	8.67	0.00	48.00	7.62	4.00	8.73	0.00	40.00
CA/TA	0.41	0.38	0.35	0.00	2.94	0.41	0.40	0.35	− 0.25	2.61
LOSS	0.28	0.00	0.45	0.00	1.00	0.27	0.00	0.45	0.00	1.00
YREND	0.74	1.00	0.44	0.00	1.00	0.74	1.00	0.44	0.00	1.00
BIG4	0.79	1.00	0.41	0.00	1.00	0.78	1.00	0.42	0.00	1.00
AUDOPIN	0.08	0.00	0.27	0.00	1.00	0.10	0.00	0.30	0.00	1.00
IFRS						0.05	0.00	0.21	0.00	1.00

Notes: ARL – number of days from year-end date to the date the audit report is signed; NAS – non-audit services fees; AUD – audit fees; Total assets – total assets in millions; SIZE – natural log of total assets in millions; OWN – proportion of shares owned by major overseas shareholder; ROA – return on assets; FINL – ratio of total debt to total assets; LIQ – ratio of current assets to current liabilities; IND – industry classification dummy variable: financial companies assigned 1, otherwise 0; SUBS – number of subsidiaries; CA/TA – ratio of current assets to total assets; LOSS – dummy variable equal to 1 if reporting a loss, otherwise 0; YREND – dummy variable equal to 1 if year-end falls between March 31 and June 30 busy season, otherwise 0; BIG4 – dummy variable equal to 1 if auditor is a Big 4 firm, otherwise 0; AUDOPIN – dummy variable equal to 1 for opinions other than standard, otherwise 0; IFRS – dummy variable equal to 1 if company adopted IFRS reporting standards, otherwise 0

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The minimum ARL is 27 days for 2004 and 21 days for 2005, while the maximum is 225 days for 2004 and 151 days in 2005. The mean (median) NAS purchased is $105,107 ($17,000) for 2004 and $119,343 ($17,455) for 2005[5]. The mean (median) audit fee increased from $150,260 ($57,500) in 2004 to $173,733 ($67,000) in 2005. In general, the variables are stable from year to year and have approximately the values expected.

Table II shows Pearson correlations between pairs of variables. Examination of the bivariate correlations between ARL and the explanatory variables suggest that a longer ARL is negatively associated with size (SIZE), Big 4 audit firms (BIG4) and loss (LOSS); and positively associated with busy season (YREND) and a non-standard audit opinion (AUDOPIN). There are also significant correlation in both years between NAS and AUDFEE (AUD), SIZE, SUBS, LOSS and BIG4; and AUD is correlated with SIZE, SUBS and current assets (CA/TA). The correlations in general are as expected and consistent with prior research (Knechel and Sharma, 2008). We report further sensitivity tests in Section 5.5 to determine whether a multicollinearity problem exists.

5.2 Multivariate results

Table III presents the multiple regression results. There is a marginally significant positive relationship between NAS and ARL in 2005 and a significant positive relationship in the pooled results (although not in the results for 2004). There is thus some evidence from these tests of knowledge spillovers that lead to a longer ARL. Four of the control variables are significant in one or both years. ARL is negatively associated with the BIG4 variable at the 1 percent level in both years. Consistent with our prediction and prior studies (Gilling, 1977; Ashton *et al.*, 1989; Schwartz and Soo, 1996) this indicates that Big 4 auditors are faster to complete audit engagements than non-Big 4 auditors. In addition ARL is positively associated with a non-standard audit opinion (AUDOPIN) at the 1 percent level in 2004 and at the 5 percent level in 2005, in line with our prediction. Following research by Whittred (1980), Carslaw and Kaplan (1991), Bamber *et al.* (1993), Schwartz and Soo (1996) and Knechel and Sharma (2008) our paper shows that firms receiving an opinion other than a standard non-qualified opinion (AUDOPIN) have longer ARLs than firms receiving standard non-qualified opinions. Furthermore, the complexity variable for current assets (CA/TA) is positive and significant at the 5 percent level in 2005 and at the 1 percent level in the pooled results. Consistent with our predictions this implies that firms with a large proportion of current assets take longer to audit due to greater complexity.

5.3 Sensitivity tests and further examination

To further test whether our results are sensitive to the measures used for NAS and AUDFEE and to check if our results are robust to the possibility of non-normal distributions of these variables we follow prior research and rerun the regression for equation (1) using alternative measures. These include the natural log of total NAS purchased as the measure of NAS; the natural log of total AUDFEE purchased as the measure of AUD; the audit fee ratio (ratio of NAS to total audit and NAS fee). We also examine economic dependence (importance) measures for each of audit fee, non-audit fee and total fees. These are computed as the ratio of the fee (for NASs, for auditing and in total) for each company divided by the audit firm's total fees. This gives an indication of the economic significance of the client relative to the audit firm. In addition, we examine abnormal audit fee, computed as the residual from a model of the log of AUDFEE

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Table II.
Correlations between variables

	ARL	NAS	AUD	SIZE	OWN	SUBS	CA/TA	IND	ROA	FINL	LIQ	LOSS	YREND	AUDOPIN	BIG4
Panel A: 2004															
NAS	−0.140														
AUD	−0.162*	0.563*													
SIZE	−0.417**	0.403**	0.576**												
OWN	−0.030	0.032	0.142	0.183*											
SUBS	−0.080	0.458**	0.532**	0.473**	0.102										
CA/TA	−0.021	0.038	0.044	0.100	−0.002	0.147*									
IND	0.026	−0.090	−0.067	0.090	0.222**	0.044	0.059								
ROA	−0.250**	0.062	0.155	0.475**	0.041	0.201*	0.085	0.097							
FINL	0.130	0.151*	0.178*	0.093	−0.045	0.272**	0.059	0.181*	0.076						
LIQ	−0.057	−0.090	−0.067	0.015	0.233**	−0.149*	0.031	0.256**	0.056	−0.239**					
LOSS	0.382**	−0.147*	−0.189*	−0.593**	−0.055	−0.262**	−0.144	−0.109	−0.675**	−0.052	0.054				
YREND	0.147*	−0.014	0.145	0.079	0.229**	0.056	0.074	0.000	0.145	0.180*	−0.107	−0.173*			
AUDOPIN	0.498**	−0.121	−0.128	−0.493**	−0.067	−0.117	0.026	−0.001	−0.505**	0.103	−0.085	0.466**	−0.073		
BIG4	−0.454**	0.201**	0.187*	0.434**	0.123	0.053	−0.046	−0.035	0.199*	−0.056	0.064	−0.275**	−0.012	−0.278**	
IFRS	0.021	0.119	0.284**	0.064	0.439**	0.123	0.020	0.095	−0.020	0.244**	−0.024	−0.055	0.407**	0.074	0.023
Panel B: 2005															
NAS	−0.220**														
AUD	−0.025	0.526**													
SIZE	−0.203*	0.388**	0.502**												
OWN	−0.023	−0.033	0.038	0.158*											
SUBS	−0.039	0.317**	0.537**	0.507**	0.094										
CA/TA	0.300**	0.404**	0.170*	−0.023	0.007	0.103									
IND	−0.021	−0.097	−0.074	0.104	0.238**	0.033	−0.021								
ROA	0.006	0.046	0.063	0.470**	0.032	0.197*	0.121*	0.080							
FINL	−0.010	−0.026	−0.026	−0.393**	−0.040	−0.123	−0.144	−0.044	−0.930**						
LIQ	−0.089	0.006	0.034	0.044	0.441**	0.054	0.187	0.190*	0.027	−0.043					
LOSS	0.280**	−0.168*	−0.242**	−0.648**	−0.083	−0.315**	0.000*	−0.011	−0.224**	0.148*	−0.002				
YREND	0.251**	0.175*	0.045	0.108	0.159*	0.078	0.317**	0.000	0.113	−0.079	−0.011	−0.153			
AUDOPIN	0.286**	−0.118	−0.142	−0.487**	−0.033	−0.203*	−0.068	0.004	−0.262**	0.291**	−0.049	0.560**	−0.136		
BIG4	−0.279**	0.178*	0.191*	0.418**	0.091	0.054	0.043	−0.050	0.149*	−0.182*	0.073	−0.352**	0.022	−0.252**	
IFRS	0.246**	0.346**	0.144	0.096	0.301**	0.122	0.346**	0.095	0.030	−0.011	0.013	−0.132	0.407**	−0.074	0.031

Notes: Correlation is significant at: *0.05 and **0.01 levels (two-tailed); ARL – number of days from year-end date to the date the audit report is signed; NAS – non-audit services fees; AUD – audit fees; SIZE – natural log of total assets in millions; OWN – proportion of shares owned by major overseas shareholder; SUBS – number of subsidiaries; CA/TA – ratio of current assets to total assets; IND – industry classification dummy variable: financial companies assigned 1, otherwise 0; ROA – return on assets; FINL – ratio of total debt to total assets; LIQ – ratio of current assets to current liabilities; LOSS – dummy variable equal to 1 if reporting a loss, otherwise 0; YREND – dummy variable equal to 1 if year-end falls between March 31 and June 30 busy season, otherwise 0; AUDOPIN – dummy variable equal to 1 for opinions other than standard, otherwise 0; BIG4 – dummy variable equal to 1 if auditor is a Big 4 firm, otherwise 0; IFRS – dummy variable equal to 1 if company adopted IFRS reporting standards, otherwise 0

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Table III. Multiple regression of the ARL on NASs fees and control variables

Variable	Predicted sign	2004 Coefficient	2004 t-statistic	2004 p-value	2005 Coefficient	2005 t-statistic	2005 p-value	Pooled Coefficient	Pooled t-statistic	Pooled p-value
Constant	±	83.584*	2.324	0.022	57.423*	2.043	0.043	67.796**	3.402	0.001
NAS[a]	±	1.754	0.179	0.858	13.620	1.887	0.062	11.900*	2.132	0.034
AUD[a]	±	−5.108	−0.494	0.622	−5.281	−0.750	0.455	−5.122	−0.871	0.385
SIZE	−	−0.198	−0.118	0.906	0.341	0.217	0.828	−0.148	−0.132	0.895
OWN	−	0.095	0.850	0.397	0.034	0.344	0.731	.023	0.324	0.746
SSUBS	+	0.234	0.136	0.892	−0.306	−0.203	0.839	−0.102	−0.090	0.928
CA/TA	+	−8.433	−0.364	0.717	14.649*	2.408	0.018	10.573**	2.953	0.003
IND	−	0.981	0.210	0.834	−0.481	−0.120	0.905	0.908	0.299	0.765
ROA	−	14.269	1.483	0.141	−0.098	−0.163	0.871	0.187	0.313	0.754
FINL	+	6.152	1.062	0.290	−0.818	−0.532	0.596	−0.458	−0.302	0.763
LIQ	−	−0.026	−0.844	0.400	−0.091	−1.294	0.198	−0.037	−1.426	0.155
LOSS	+	14.103*	2.118	0.036	3.939	0.673	0.502	6.594	1.615	0.108
YREND	+	−2.243	−0.453	0.651	−2.490	−0.580	0.563	−2.502	−0.765	0.445
AUDOPIN	+	34.492**	3.710	0.000	18.193*	2.482	0.015	23.056**	4.052	0.000
BIG4	−	−19.647**	−3.644	0.000	−13.290**	−2.802	0.006	−16.659**	−4.636	0.000
IFRS	+				11.663	1.129	0.261			
Adjusted R^2		0.318			0.227			0.270		
F-ratio		5.010**		0.000	3.531**		0.000	7.384**		0.000

Notes: Significant at: *0.05 and **0.01; [a]in millions; ARL – number of days from year-end date to the date the audit report is signed (dependent variable); NAS – non-audit services fees; AUD – audit fees; SIZE – natural log of total assets in millions; OWN – proportion of shares owned by major overseas shareholder; SSUBS – square root of subsidiaries; CA/TA – ratio of current assets to total assets; IND – industry classification dummy variable: financial companies assigned 1, otherwise 0; ROA – return on assets; FINL – ratio of total debt to total assets; LIQ – ratio of current assets to current liabilities; LOSS – dummy variable equal to 1 if reporting a loss, otherwise 0; YREND – dummy variable equal to 1 if year-end falls between March 31 and June 30 busy season, otherwise 0; AUDOPIN – dummy variable equal to 1 for opinions other than standard, otherwise 0; BIG4 – dummy variable equal to 1 if auditor is a Big 4 firm, otherwise 0; IFRS – dummy variable equal to 1 if company adopted IFRS reporting standards, otherwise 0

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regressed on explanatory variables[6] for size, complexity and risk based on those discussed in Hay *et al.* (2006b). These measures are based in previous studies such as Ashton *et al.* (1987), Jaggi and Tsui (1999), Frankel *et al.* (2002), Ashbaugh *et al.* (2003), Chung and Kallapur (2003), Larcker and Richardson (2004), Hay *et al.* (2006a) and Knechel and Sharma (2008). The results from the tests using these alternative measures of auditor independence show that none of the coefficients on these alternative NAS variables is significantly associated with ARL.

As a further alternative examination of the issue, we substituted the change in ARL over the two year period for ARL. We also conducted tests examining log of ARL. These measures were also not significantly related to any of the measures for NASs. We also conducted tests examining SUBS instead of the square root of SUBS; and tests excluding financial industry companies instead of controlling for them using a dummy variable. The results were virtually identical to those reported in Table III.

Due to high correlations among some variables, we perform further tests to identify whether multicollinearity is affecting the results. We calculate variance inflation factors (VIF). All of the VIFs are less than ten, indicating that multicollinearity is not affecting the results. We perform the regressions again using White's heteroscedasticity-consistent variances and standard errors. The results (untabulated) are consistent with the results from our main multivariate tests, indicating that the results do not suffer from heteroscedasticity.

5.4 Components of NAS and ARL

To investigate whether our results are sensitive to the measure of NAS used, we follow Knechel and Payne (2001) and break down the total NAS figure into four components: tax services, management advisory services (MAS), other assurance services and NAS not specified[7]. We conduct this test as prior research has shown that the provision of MAS and tax services have opposite relations with the audit. Simunic (1984), Palmrose (1986) and Knechel and Payne (2001) find that the provision of MAS results in knowledge spillovers or reduces start-up time and/or makes staff members more efficient. This is expected to be associated with a shorter ARL. In contrast, Davis *et al.* (1993) and Knechel and Payne (2001) state that firms which purchase large amounts of tax services have complex tax situations in the financial statements that must be resolved before an audit opinion can be issued, which is associated with a longer ARL.

Table IV shows the results of equation (1) with the four classifications of NAS substituted for total NAS. In 2005, and in the pooled results, "not specified" is positive and significant, and the three other categories are not significant. In 2004, none of the categories are significant. This result is difficult to interpret as we are unable to determine what NASs are included under "not specified". This finding parallels results in Kinney *et al.* (2004), who found an association between unspecified audit services and restatement of the financial statements (Kinney *et al.*, 2004, p. 585). The direction and significance of the control variables are consistent with the results of our main regression.

5.5 Relationship with ARL in subsequent periods

It is possible that knowledge spillovers do not occur immediately, but appear in later periods. This is a reasonable prediction if there is a learning curve, or if it takes time for the audit firm to build up sufficient additional knowledge to be able to gain the benefits of knowledge spillovers. This issue has not been examined in previous studies. In Table V, we report results of tests including the control variables and NAS in both

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Table IV. Multiple regression of the ARL and NASs broken down by type of service

Variable	Predicted sign	2004 Coefficient	2004 *t*-statistic	2004 *p*-value	2005 Coefficient	2005 *t*-statistic	2005 *p*-value	Pooled Coefficient	Pooled *t*-statistic	Pooled *p*-value
Constant	±	80.709*	2.253	0.026	58.835*	2.064	0.041	70.774**	3.600	0.000
Tax services[a]	±	−3.605	−0.098	0.922	79.290	0.023	0.982	5.667	0.234	0.815
MAS services[a]	±	−3.737	−0.163	0.871	32.900	0.008	0.994	−4.273	−0.243	0.808
Assurance services[a]	±	5.302	0.152	0.880	5.997	0.224	0.823	0.102	0.506	0.613
NAS not specified[a]	±	7.845	0.510	0.611	0.181*	2.140	0.035	0.197**	2.969	0.003
AUD[a]	±	−7.666	−0.717	0.475	−6.632	−0.919	0.360	−6.089	−1.021	0.308
SIZE	−	−0.016	−0.010	0.992	0.239	0.150	0.881	−0.297	−0.267	0.790
OWN	−	0.079	0.760	0.449	0.038	0.379	0.705	0.051	0.763	0.446
SSUBS	+	0.235	0.136	0.892	0.111	0.071	0.944	0.135	0.118	0.906
CA/TA	+	−8.861	−0.379	0.706	12.477	1.936	0.055	10.029	2.774	0.006
IND	−	1.102	0.234	0.815	−0.047	−0.012	0.991	1.295	0.427	0.670
ROA	−	15.160	1.559	0.122	−0.097	−0.159	0.874	0.255	0.429	0.669
FINL	+	5.575	0.972	0.333	−0.832	−0.535	0.594	−0.292	−0.193	0.847
LIQ	−	−0.025	−0.815	0.417	−0.093	−1.304	0.195	−0.039	−1.520	0.130
LOSS	+	14.275*	2.136	0.035	3.546	0.600	0.550	5.926	1.453	0.148
YREND	+	−1.661	−0.345	0.730	−2.126	−0.489	0.626	−3.095	−0.986	0.325
AUDOPIN	+	35.126**	3.730	0.000	18.196**	2.462	0.015	23.237**	4.086	0.000
BIG4	−	−19.807**	−3.637	0.000	−12.711**	−2.645	0.009	−16.443**	−4.570	0.000
IFRS	+				11.570	1.089	0.278			
Adjusted R^2		0.307			0.215			0.271		
F-ratio		4.364		0.000	2.964		0.000	6.667		0.000

Notes: Significant at: *0.05 and **0.01; [a]in millions; ARL – number of days from year-end date to the date the audit report is signed (dependent variable); Tax services – NAS fees for taxation; MAS services – NAS fees for management advisory services; assurance services – NAS fees for assurance services; NAS Not specified – NAS fees for services not specified; NAS – non-audit services fees; AUD – audit fees; SIZE – natural log of total assets in millions; OWN – proportion of shares owned by major overseas shareholder; SSUBS – square root of subsidiaries; CA/TA – ratio of current assets to total assets; IND – industry classification dummy variable: financial companies assigned 1, otherwise 0; ROA – return on assets; FINL – ratio of total debt to total assets; LIQ – ratio of current assets to current liabilities; LOSS – dummy variable equal to 1 if reporting a loss, otherwise 0; YREND – dummy variable equal to 1 if year-end falls between March 31 and June 30 busy season, otherwise 0; AUDOPIN – dummy variable equal to 1 for opinions other than standard, otherwise 0; BIG4 – dummy variable equal to 1 if auditor is a Big 4 firm, otherwise 0; IFRS – dummy variable equal to 1 if company adopted IFRS reporting standards, otherwise 0

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Variable	Predicted sign	Coefficient	*t*-statistic	*p*-value
Constant	±	− 3,180.234	− 1.836	0.069
NAS-2004[a]	±	− 0.211 *	− 2.105	0.038
NAS-2005[a]	±	0.226 **	2.902	0.004
AUD[a]	±	1.973	0.272	0.786
SIZE	−	− 0.927	− 0.610	0.543
OWN	−	0.048	0.514	0.608
SSUBS	+	0.499	0.344	0.732
CA/TA	+	5.669	0.907	0.366
IND	−	− 0.268	− 0.071	0.944
ROA	−	0.015	0.027	0.979
FINL	+	− 0.807	− 0.555	0.580
LIQ	−	− 0.090	− 1.345	0.181
LOSS	+	6.179	1.116	0.267
YREND	+	24.300	1.880	0.063
AUDOPIN	+	14.708 *	2.096	0.038
BIG4	−	− 9.803 *	− 2.151	0.034
IFRS	+	7.893	0.813	0.418
Adjusted R^2		0.280		
F-ratio		4.108 **		0.000

Notes: Significant at: *0.05 and **0.01; [a]in millions; ARL – number of days from year-end date to the date the audit report is signed (dependent variable); NAS-2004 – non-audit services fees in 2004; NAS-2005 – non-audit services fees in 2005; AUD – audit fees; SIZE – natural log of total assets in millions; OWN – proportion of shares owned by major overseas shareholder; SUBS – number of subsidiaries; CA/TA – ratio of current assets to total assets; IND – industry classification dummy variable: financial companies assigned 1, otherwise 0; ROA – return on assets; FINL – ratio of total debt to total assets; LIQ – ratio of current assets to current liabilities; LOSS – dummy variable equal to 1 if reporting a loss, otherwise 0; YREND – dummy variable equal to 1 if year-end falls between March 31 and June 30 busy season, otherwise 0; AUDOPIN – dummy variable equal to 1 for opinions other than standard, otherwise 0; BIG4 – dummy variable equal to 1 if auditor is a Big 4 firm, otherwise 0; IFRS – dummy variable equal to 1 if company adopted IFRS reporting standards, otherwise 0

Table V.
Multiple regression of the ARL in 2005 on NASs fees in 2004 and control variables

2004 and 2005 regressed on ARL[8]. The results show that NAS in 2004 are significantly negatively related to ARL in 2005 (while NAS in 2005 remains positively related to ARL in 2005). Thus, there is evidence that knowledge spillovers from NAS in 2004 allow auditors to conduct a faster audit in 2005. This appears to indicate that a learning period needs to occur before knowledge spillovers can take place.

6. Conclusion

The advantage of the New Zealand setting is that all types of NASs are permitted. This situation allows us to examine the underlying issue without distortions introduced by regulations. Our paper provides empirical evidence relevant to the argument about whether the provision of NAS to audit clients creates knowledge spillovers that result in a more efficient audit. Our paper provides evidence of a positive association between ARL and NAS in 2005, suggesting that firms which purchase large amounts of NAS do not have faster audits as a result of knowledge spillovers. In further testing, we find that there is a positive association between NAS in the current year and ARL, but a negative association between NAS in the previous year and ARL. This is consistent with knowledge spillovers which have a delayed effect.

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These results imply that knowledge spillovers are beneficial in allowing a quicker audit, but that there is a learning curve, and the benefits do not occur until the subsequent year. This pattern of observations also suggests that this result is due to a faster audit, not loss of independence, which would be expected to take immediate effect. Thus, the provision of NAS appears to be beneficial, and so prohibiting these services would be detrimental. Our results, which show that there is in fact a shorter audit lag following the provision of NASs, provides a contribution to the public debate on whether such services should be allowed, as there is at least one advantage. Our paper is subject to several limitations that provide areas for future research. First, the sample sizes are relatively small. Further, it is possible that our measure of ARL does not accurately measure the actual time it takes the auditor to complete the audit. As we do not have access to internal audit firm data we do not know the date that the audit work started. As a result our measure of ARL includes the time taken for the client to prepare the financial statements and make them available to the auditor. Thus, it is possible that our measure overstates the actual ARL and is not measuring auditor efficiency. Data that allows ARL to be broken down into its components: the scheduling lag, the fieldwork lag and the reporting lag, would allow a more accurate investigation into whether the provision of NAS results in a more efficient audit. Additionally many companies do not separately classify the types of NAS purchased.

A further limitation is the many other factors that impact the time taken following balance date to complete an audit, including: preparedness for the audit; changes in the entity business during the year which may have increased or decreased the time necessary for the audit; the "tone at the top" of the entity; peer pressure from competitor entities; capacity of the audit firm; issues arising during the audit concerning internal controls, measurement, recognition and disclosure matters impacting the financial statements; timetable for the entity announcement and meetings; any changes in management during the year. It is quite possible that these effects might influence ARL. However, most of them are not likely to change very much from year to year, and our approach, which measures NAS in both 2004 and 2005, should take account of the effects NAS assuming these other effects are constant. Nevertheless, we recognise that this is a limitation. An interesting extension to the paper would be to interview audit partners or directors to assess their views on the existence of knowledge spillovers. The number interviewed would need to be quite extensive, to avoid being influenced by the experiences of a small number of people. In addition, it may be the case that the length of tenure of an auditor's position with a client is a relevant variable to be included in future research.

The results show that NAS can have a measurable association with improved efficiency in an audit but this does not necessarily occur in the same year that the services are provided. We suggest future research should extend these tests to other settings and periods in order to examine whether this result is particular to New Zealand, or to the period examined (while IFRS were being introduced), and whether there is a significant relationship over longer periods than one year.

Notes

1. Another recent study conducted by Mitra and Hossain (2007) indirectly investigates the relationship between NAS and the lag in their research into NAS and institutional stock ownership for a sample of USA companies. They find no significant association exists between ARL (as a control variable in a model of non-audit fees) and NAS. However, their

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model investigates the impact of lag on NAS, and they do not include a number of key variables that prior studies have shown are related to ARL.

2. We also investigated audit and non-audit fees paid to the principal auditor only. Results were very similar.
3. Simunic's (1980) economic model of audit pricing suggests that higher AUDFEE are associated with the auditor having to spend more hours on the audit (audit effort) as well as the client being a higher risk, meaning that ARL would be longer. However, arguments by Palmrose (1986) and Carcello *et al.* (2004) that higher AUDFEE correspond with higher audit quality, contradict this. Furthermore, Knechel and Sharma (2008) suggest that clients may be willing to pay higher AUDFEE for a faster audit, to allow more timely announcements to the market. These two arguments would result in a shorter ARL.
4. SIC codes for our sample were obtained from the Mergent online database.
5. As expected, NAS fees have reduced from a mean of $187,000 in 2001 (Hay *et al.*, 2006a).
6. Log of total assets, square root of the number of SUBS, ratio of current assets to total assets, return on assets, dummy variable for a loss in the last three years, audit opinion and a dummy for Big 4 auditor.
7. The variable "not specified" refers to firms who do not classify the NAS figure into the type of services purchased in the financial statements. This is a voluntary disclosure.
8. NAS for 2004 and 2005 are not highly correlated and multicollinearity is not an issue. Gujarati (2003 p. 361) suggest that multicollinearity is a problem when correlations between two variables are higher than 0.8. In this case, NAS for 2004 and NAS for 2005 are correlated at 0.574. We also compute VIFs for each variable. As a rule of thumb, if the VIFs are all less than ten, then multicollinearity is not causing problems (Gujarati, 2003, p. 362). All of the VIFs in our model are less than ten (in fact, the highest is less than three).

References

Abdel-Khalik, A. (1990), "The jointness of audit fees and demand for MAS: a self-selection analysis", *Contemporary Accounting Research*, Vol. 6 No. 2, pp. 295-322.

Antle, R., Gordon, E., Narayanamoorthy, G. and Zhou, L. (2006), "The joint determination of audit fees, non-audit fees and abnormal accruals", *Review of Quantitative Finance & Accounting*, Vol. 27, pp. 236-366.

Arrunada, B. (1999), "The provision of non-audit services by auditors – let the market evolve and decide", *International Review of Law and Economics*, Vol. 19 No. 4, pp. 513-531.

Arrunada, B. (2004), "Audit failure and the crisis of auditing", *European Business Organization Law Review*, Vol. 5 No. 4, pp. 635-643.

Ashbaugh, H., LaFond, R. and Mayhew, B.W. (2003), "Do nonaudit services compromise auditor independence? Further evidence", *Accounting Review*, Vol. 78 No. 3, pp. 611-640.

Ashton, R.H. and Newton, J.D. (1989), "The association between audit technology and audit delay", *Auditing: A Journal of Practice and Theory*, Vol. 8, pp. 22-37.

Ashton, R.H., Graul, P.R. and Newton, J.D. (1989), "Audit delay and the timeliness of corporate reporting", *Contemporary Accounting Research*, Vol. 5 No. 2, pp. 657-673.

Ashton, R.H., Willingham, J.J. and Elliot, R.K. (1987), "An empirical analysis of audit delay", *Journal of Accounting Research*, Vol. 25, pp. 275-292.

المنارة للاستشارات

www.mana

Bamber, E.M., Bamber, L.S. and Schoderbek, M.P. (1993), "Audit structure and other determinants of ARL: an empirical analysis", *Auditing: A Journal of Practice and Theory*, Vol. 12, pp. 1-23.

Bushman, R.M. and Smith, A.J. (2001), "Financial accounting information and corporate governance", *Journal of Accounting and Economics*, Vol. 32 Nos 1-3, pp. 237-333.

Byrnes, N. (2002), "Accounting in crisis", *Business Week*, January 28.

Carslaw, C. and Kaplan, S.E. (1991), "An examination of audit delay: further evidence from New Zealand", *Accounting and Business Research*, Vol. 22, pp. 21-32.

Chung, H. and Kallapur, S. (2003), "Client importance, nonaudit services, and abnormal accruals", *Accounting Review*, Vol. 78 No. 4, pp. 931-955.

Courtis, J.K. (1976), "Relationships between timeliness in corporate reporting and corporate attributes", *Accounting and Business Research*, Vol. 25, pp. 45-56.

Davis, B. and Whittred, G.P. (1980), "The association between selected corporate attributes and timeliness in corporate reporting: further analysis", *Abacus*, Vol. 16 No. 1, pp. 48-60.

Davis, L.R., Ricchiute, D.N. and Trompeter, G. (1993), "Audit effort, audit fees, and the provision of nonaudit services to audit clients", *The Accounting Review*, Vol. 68 No. 1, pp. 135-150.

DeFond, M.L., Raghunandan, K. and Subramanyam, K.R. (2002), "Do non-audit service fees impair auditor independence? Evidence from going concern audit opinions", *Journal of Accounting Research*, Vol. 40, pp. 1247-1274.

Dyer, J.C. and McHugh, A.J. (1975), "The timeliness of the Australian annual report", *Journal of Accounting Research*, Vol. 13 No. 2, pp. 204-219.

Frankel, R.M., Johnson, M.F. and Nelson, K.K. (2002), "The relation between auditors' fees for nonaudit services and earnings management", *The Accounting Review*, Vol. 77, pp. 71-105.

Gilling, D.M. (1977), "Timeliness in corporate reporting: some further comment", *Accounting and Business Research*, Vol. 2, pp. 34-36.

Gujarati, D.N. (2003), *Basic Econometrics*, McGraw-Hill, New York, NY.

Hay, D., Knechel, W.R. and Li, V. (2006a), "Non-audit services and auditor independence: New Zealand evidence", *Journal of Business Finance and Accounting*, Vol. 33, pp. 715-734.

Hay, D., Knechel, W.R. and Wong, N. (2006b), "Audit fees: a meta-analysis of the effect of supply and demand attributes", *Contemporary Accounting Research*, Vol. 23 No. 1, pp. 141-192.

Hodge, J. and Murray, Z. (2012), "Assurance providers respond", *Chartered Accountants Journal of New Zealand*, April, pp. 28-31.

Institute of Chartered Accountants of New Zealand (ICANZ) (2003), *Report to the Minister of Commerce: Improving Corporate Reporting, A Shared Responsibility*, ICANZ, Wellington.

Jaggi, B. and Tsui, J. (1999), "Determinants of ARL: further evidence from Hong Kong", *Accounting and Business Research*, Vol. 30, pp. 17-28.

Kinney, W., Palmrose, Z.-V. and Scholz, S. (2004), "Auditor independence, non-audit services and restatements: was the US government right?", *Journal of Accounting Research*, Vol. 42 No. 3, pp. 561-588.

المنارة للاستشارات

www.mana

Knechel, W.R. and Payne, J.L. (2001), "Additional evidence on audit report lag", *Auditing: A Journal of Practice and Theory*, Vol. 20, pp. 137-146.

Knechel, W.R. and Sharma, D.S. (2008), "Auditor provided non-audit services and audit effectiveness and efficiency", paper presented at the International Symposium on Audit Research, Los Angeles.

Knechel, W.R., Sharma, D. and Sharma, V. (2012), "Non-audit services and knowledge spillovers: evidence from New Zealand", *Journal of Business Finance and Accounting*, Vol. 39 Nos 1/2, pp. 60-81.

Krishnan, J., Sami, H. and Zhang, Y. (2005), "Does the provision of nonaudit services affect investor perceptions of auditor independence?", *Auditing: A Journal of Practice and Theory*, Vol. 24, pp. 111-135.

Larcker, D. and Richardson, S. (2004), "Fees paid to audit firms, accrual choices, and corporate governance", *Journal of Accounting Research*, Vol. 42 No. 3, pp. 625-658.

Lee, H.-Y. and Jahng, G.-J. (2008), "Determinants of audit report lag: evidence from Korea – an examination of auditor-related factors", *Journal of Applied Business Research*, Vol. 24 No. 2, pp. 27-44.

Lee, H.-Y., Mande, V. and Son, M. (2009), "Do lengthy audit tenure and the provision of non-audit services by the external auditor reduce audit report lags?", *International Journal of Auditing*, Vol. 13 No. 2, pp. 87-105.

Levitt, A. (2000), "A profession at the crossroads", Speech by the Chair of the US Securities and Exchange Commission to the National Association of State Boards of Accountancy, Boston, MA, September 18.

Lowenstein, R. (2002), "Auditor independence: the SEC Chairman doesn't get it", *Wall Street Journal*, Vol. 239 No. 16, p. A22.

Mitra, S. and Hossain, M. (2007), "Ownership composition and non-audit service fees", *Journal of Business Research*, Vol. 60, pp. 348-356.

Ng, P.H. and Tai, Y.K. (1994), "An empirical examination of the determinants of audit delay in Hong Kong", *British Accounting Review*, Vol. 26, pp. 43-59.

O'Keefe, T.B., Simunic, D.A. and Stein, M.T. (1994), "The production of audit services: evidence from a major accounting firm", *Journal of Accounting Research*, Vol. 32 No. 2, pp. 241-261.

Palmrose, Z. (1986), "The effect of nonaudit services on the pricing of audit services: further evidence", *Journal of Accounting Research*, Vol. 34, pp. 405-411.

Schwartz, K.B. and Soo, B.S. (1996), "The association between auditor changes and reporting lags", *Contemporary Accounting Research*, Vol. 13, pp. 353-370.

Simunic, D.A. (1980), "The pricing of audit services: theory and evidence", *Journal of Accounting Research*, Vol. 18, pp. 161-190.

Simunic, D.A. (1984), "Auditing, consulting and auditor independence", *Journal of Accounting Research*, Vol. 22, pp. 679-702.

Wallman, S.M.H. (1996), "The future of accounting, part III: reliability and auditor independence", *Accounting Horizons*, Vol. 10 No. 4, pp. 76-97.

Whittred, G.P. (1980), "Audit qualification and the timeliness of corporate annual reports", *The Accounting Review*, Vol. 4, pp. 563-577.

المنارة للاستشارات

www.mana

Further reading

DeAngelo, L. (1981), "Auditor size and audit quality", *Journal of Accounting and Economics*, Vol. 3, pp. 183-199.

Kinney, W.R. and Libby, R. (2002), "Discussion of 'the relation between auditors' fees for nonaudit services and earnings management", *The Accounting Review*, Vol. 77, pp. 107-114.

Zmijewski, M.E. (1984), "Methodological issues related to the estimation of financial distress prediction models", *Journal of Accounting Research*, Vol. 22, Supplement, pp. 59-82.

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