

UK evidence of auditor brand name and industry specialisation

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Abstract

There is considerable empirical evidence that after controlling for factors known to affect the level of audit fees, the large international firms earn an audit fee premium. In this paper, we estimate a Big Six premium of 10% to 23% for a large sample of UK clients. Recent studies contend that the development of brand name and industry specialisation reputations is costly and the Big Six firms can expect a return from this investment. We find evidence consistent with brand name returns across most sub-samples of clients. However, the audit fees charged by the Big Six firms are not significantly higher than the fees charged by their non Big Six counterparts for the smallest quartile of clients. An explanation for this finding is that the demand for a firm with a brand name 'bottoms out' below a critical size because of the extra cost. The audit fees charged by the Big Six firms are not significantly higher for the sub-sample where industry specialisation is defined by the size of the non audit fee. An explanation for this result is that there may be an inter-relationship between the pricing of audit and non audit services. Unlike the prior literature, we find scant evidence of returns to industry specialisation. We believe that returns to specialisation are insignificant because the UK Big Six firms are large enough to be considered specialists across all markets.

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1. Introduction

Many empirical studies contend that the Big Six accounting firms¹ charge premium audit fees. Simon and Francis (1988) estimate a premium of 18% across several studies². Moizer (1997) reviews the literature and finds evidence of a Big Six premium, ranging from 16% to 37%, in nine of the twelve countries analysed. Since UK and Australian researchers possess a comparative data advantage over their US counterparts³, the first motivation for this study is to analyse the pricing of UK audits. We find that the audit fees charged by the large international accounting firms are 10% to 23% higher than those charged by smaller firms.

Following the principal-agent and costly contracting lines of thought, various theorists attempt to explain the observed Big Six premium as a return to investments in reputations for quality audits. Simunic (1980), Watts and Zimmerman (1986) and Francis and Wilson (1986) argue that the demand for quality audit services increases as agency costs rise because agents enter into voluntary bonding schemes and/or shareholders increase the monitoring of their agents. Klein and Leffler (1981) and Shapiro (1983) contend that the supply of quality audit services within a competitive market is consistent with the theory of product differentiation. Craswell et al (1995) extend this argument by stating that the Big Six premium may be consistent with returns to brand name and industry specialist reputations. However, theorists are unclear as to whether brand name or industry specialist firms should charge premium fees. A counter-argument is that such reputable firms might enjoy economies of scale and pass on these cost savings in the form of lower audit fees.

¹ Following the mergers in the UK between Coopers and Lybrand and Deloitte, Haskins and Sells and between Ernst and Whinney and Arthur Young, there were six large international accounting firms over the majority of the sample period. We will use the term Big Six (and refer to the firms using their original name) throughout this paper to encompass the times when they consisted of eight separate entities and when the number reduced to six. A further merger between Coopers and Lybrand and Price Waterhouse received EC approval in 1998.

² The papers analysed were Baber et al (1987), Etteredge and Greenburg (1990), Francis (1984), Francis and Simon (1987), Francis and Stokes (1986), Palmrose (1986a) and Rubin (1988).

³ The disclosure of audit fees by listed UK clients has been required for many years by Company Law. Since 1992, large clients are legally required to disclose their non audit fees by the Statutory Instrument SI 1991/2128.

Recent empirical studies test for evidence of returns to the investment and maintenance of brand name and industry specialisation reputations. Most of these studies report a significant brand name premium but the industry specialisation results have been mixed. Palmrose (1986a) tests for these returns simultaneously using a sample of 361 US clients. She estimates a brand name premium of 23% but finds that the industry specialisation premium is insignificant. Craswell et al (1995) separate the industry specialists from the non specialist firms. For a sample of 1,484 Australian clients, they report a brand name premium of 22% to 39% and an industry specialisation premium of 34%. DeFond et al (1996) also run independent regression analyses for a sample of 348 Hong Kong clients. They document a brand name premium of 63% and an industry specialisation premium of 29%. Finally, Matthews et al (1998) estimate a non Big Six industry specialisation premium of 26% for a sample of 160 Australian clients.

A number of criticisms can be levelled at this literature. First, there is a lack of consensus as to the definition of a specialist and the importance of industry size is largely ignored. Second, the relationship between audit and non audit service fees have largely been ignored. A criticism of the US studies is that the sample sizes are often very small because researchers can only rely on contract clients completing a questionnaire as a data source. Finally, the descriptive statistics reported by various papers are unusual and cast doubts as to the validity of the results.

The second motivation for this study is to estimate the size of returns to reputations for brand name and industry specialisation. We extend the prior literature by accounting for the size of the industry and using industry based and accounting firm share based definitions of specialisation. This paper develops a model that simultaneously tests for returns to brand name, non Big Six industry specialisation and Big Six industry specialisation reputations. Consistent with the prior work, we report strong evidence of brand name returns, however we

find that returns to industry specialisation reputations are insignificant. These null results may be driven by the conflicting pricing policies mentioned above and there is suggestive evidence that the large international accounting firms may have sufficient market power in the UK to be considered specialists across all industries.

The remainder of this paper is organised as follows. Since the analysis of reputations for quality audits has been brief, we discuss the theoretical background and prior literature in section 2. We explain the research design in section 3, and present our results and summary in sections 4 and 5 respectively.

2. Theoretical Background

This work addresses three interesting aspects of the audit services market – the quality of the product and the supply and demand for the service. Although there is a mandatory imposed demand for a generic level audit, the quality of the product is difficult to observe. Moizer (1997) contends that high quality audits may minimise the chance that the financial statements contain noise or bias but the risk of bias and error still prevails. Audit quality is difficult to observe because users do not have access to planning or working papers or substantial knowledge of the client's internal control systems. The main verification of audit quality is provided in the case of audit failure but litigation cases against accounting firms are rare, especially after the verdict of the Caparo case, and many cases are settled out of court (Palmrose 1988).

Economic theorists note that reputation effects develop in markets where product quality can only be resolved imperfectly after consumption. Rogerson (1983) contends that high quality firms gain a large market share by 'word of mouth' advertising and there is no incentive to reduce product quality if consumers quickly become aware of the shortfall. Shapiro (1983) reports that consumers use the quality of product purchased in the past as an

indicator of present or future quality. A firm may be willing to produce high quality items because they will reap the benefits from establishing a positive reputation. Therefore, economic theory predicts that firms may have the incentive to create and maintain reputations for quality.

Jensen and Meckling (1976), Watts and Zimmerman (1986) and Simunic and Stein (1987) explain the demand for quality differentiated audit services using the agency and costly contracting frameworks. The need for the principal to motivate an agent arises because of the moral hazard problem and the assumption that the agent acts in a self interested way. In reality, corporations maintain order by way of signed contracts which specify the activities to be completed by the agent and the rewards received from these actions. The demand for quality audits is motivated in this framework as the reputable accounting firm monitoring the contracts between the principal and agent.

The supply of quality differentiated audits can be motivated by the theory of product differentiation. Klein & Leffler (1981) argue that reputable accounting firms have an incentive to produce high quality audits (and incur the extra costs) because consumers will recognise this extra quality and reward the firms. Dupoch and Simunic (1980) contend that the inaccessibility of audit working papers forces users to judge audit quality on the basis of observable characteristics, including the firm's name. Examples of the significant investments in the reputation of their services made by the Big Six accounting firms during the 1990's include CLASS (Coopers and Lybrand Audit Support System) and Audit Innovation (Ernst & Young). Furthermore, Price Waterhouse benefited from their prestigious client portfolio in the 1980's.

Craswell et al (1995) expand the costly contracting and agency lines of thought and contend that accounting firms provide assurance about the integrity of the client's control systems and financial statements. To the extent that these control systems are industry

specific, the client's agency problems will take particular characteristics. Auditor specialisation in these industries may lead to higher levels of audit expertise and this expertise may be expected to comprise a significant element beyond the general expertise necessary for all audits. If an industry specialised audit requires additional expertise to provide readers with the same level of assurance as a non specialised audit, then accounting firms must undertake additional costly audit work and can expect positive returns to these investments (consistent with product differentiation). Craswell et al contend that if industry specialist audit fees are systematically higher than non specialist audit fees, this is consistent with the demand for quality differentiated audits in a competitive market because clients have voluntarily contracted with the costly specialists⁴.

Economic theory is not fully supportive of the Craswell et al (1995) argument. There may be scale economies associated with industry specialisation and it is not clear whether these cost savings should be passed on to clients in the form of lower audit fees. Therefore it is important to consider what is meant by the term industry specialist. We believe that a specialist is an individual or group of people that have become experts within an industry. This expertise may arise through significant investments in the study of legal regulation, production processes and the market behaviour of major players. Industry specialist expertise may exist in a number of forms, it may be centred entirely on one person, it may involve a group of people of differing ranks working in an industry or it may be a set of audit seniors.

In addition to considering the nature of specialisation, we believe that the size of the industry is also important. If an industry is small, few accounting firms may have the incentive to invest capital and labour resources in the creation and maintenance of reputations for industry specialisation because there is insufficient money, clients and returns on this

⁴ This does not imply that our Big Six accounting firms conduct poor quality work since all audits must satisfy the minimum quality level outlined under the profession's regulations and the laws governing negligence. This demand for quality differentiated audits merely implies that a number of firms voluntarily specialise in the provision of greater levels of audit quality.

investment. If an industry is large, all of the Big Six firms may claim to have industry specialist expertise. If one observes size differences across industries, one might weight particular industries based upon the size of the market that they are competing for. Since the economic importance of industries varies both within one country and across national borders, it is important to examine the size of the industry.

Several researchers test for evidence of specialisation but there is a lack of consensus as to the definition of a specialist and the size of an industry is often ignored. Palmrose (1986a) defines a specialist as the market leader(s) based on sales revenue. Craswell and Taylor (1991) use the definition of firms with at least 10% of the total number of clients, audit fees, or total (audit plus non audit) fees in an industry. DeFond et al (1996) classify specialists as the top three firms in an industry based on the market value of audit fees. Culvenor and Godfrey (2000) use an accounting firm measure of specialisation - the difference between the firm's share of work in an industry against their share of the market.

Recent papers consider the size of the industry within their definition of specialisation. Craswell et al (1995) modify their earlier work by defining specialists as those firms in industries containing at least 30 clients, who conduct the audit work for at least 10% (by number or fee revenue) of the clients. Ritson et al (1997) also require the industry to contain at least 30 clients and denote firms as specialists if they command at least 20% of the total audit revenues. Matthews et al (1998) denote as specialists those firms, in industries containing at least 10 client, with at least 2 clients and 20% of the audit fees. In an industry containing 5 to 9 clients, they define specialists as firms with at least 3 clients and 20% of the audit fees or at least 2 clients and 60% of the audit fees. Krishnan and Yang (1998) test two definitions of specialisation. First, they adopt the Palmrose (1986a) definition and second they test a continuous sales revenue measure in industries containing at least ten clients.

Francis et al (1999) categorise markets into those of less than 10 clients, 11-19 and greater than 20 clients. They define an ‘industry market leader’ as the firm with the greatest share of the market. Most of the above studies define specialisation based on the firm conducting a significant amount of audit work relative to the total industry audits and we summarise these studies in Table 1. This study extends the prior work by taking into account the size of the industry and the firm’s industry expertise relative to their portfolio of expertise across all their clients. We test both dichotomous and continuous measures of specialisation and use definitions based on both the share of the industry and the accounting firm.

Table 1 Prior Study Definitions of Specialisation

Paper	Sample Date	Definition of Specialist	Brand Name	B6 Ind. Spec.	NB6 Ind. Spec.	No. Ind’s	Minimum clients in the industry
Palmrose (1986)	1981	1-3 Market leader(s) based on sales revenue	*	NOT	N/A	12	N/A
Craswell and Taylor (1991)	1982–1987	10% of the audit fees or the total remuneration	N/A	N/A	N/A	23	30
Craswell et al (1995)	1987	10% of clients or 10% of the audit fees	*	*	N/A	23	30
DeFond et al (1996)	1992	Top 3 share of audit fees	*	*	Lower	3	N/A
Ritson et al (1997)	1989-1993	20% of all total audit revenues in the industry	N/A	N/A	N/A	23	30
Krishnan and Yang (1998)	1999, 1990	Market leader based on sales revenue. Continuous proxy.	N/A	N/A	N/A	61	10
Matthews et al (1998)	1990–1993	2 clients and 20% of fees if large industry, or, 2(3) clients and 60% (20%) of fees if small.	N/A	N/A	*	17	5
Francis et al (1999)	1988–1990	Industry market leader	N/A	N/A	N/A	27	1
Culvenor & Godfrey (2000)	1997	If proportion of the firm’s work in industry exceeds their share of the market.	N/A	N/A	N/A	26	N/A

B6 Ind. Spec. = Returns to Big Six industry specialist reputations; NB6 Ind. Spec. = Returns to Non Big Six industry specialist reputations; No. Inds. = Number of industries in the sample.

The rate of growth in the provision of additional advisory services has been a rapid and one must consider whether the accounting firms are selling a joint product. Simunic (1984) argues that there should be scale economies associated with the joint provision of these services. However, Turpen (1990), Barkess and Simnett (1994), Butterworth and Houghton (1995), Craswell et al (1995), Ezzamel et al (1996) and Firth (1997) observe a positive association between audit and non audit service fees. One rationale for this

correlation is that clients are willing to pay an audit premium for the right to purchase advisory services or for some specialist expertise in the field of advisory services. We extend the prior work by testing for returns to the provision of non audit services.

3 Research Design

We test for evidence of brand name and industry specialist reputations using two methodologies. First, we improve the existing methodology by simultaneously testing for returns to brand name, (hypothesis H1), non Big Six industry specialisation, (hypothesis H2) and Big Six industry specialisation reputations, (hypothesis H3)⁵. Second, we replicate Craswell et al (1995) and test for brand name returns by restricting our test to non specialist industries, (hypothesis H4) and removing specialist auditors from the sample, (hypothesis H5). We test for industry specialisation returns by excluding the non Big Six non specialists, (hypothesis H6) and by comparing the difference between specialist Big Six audit fees and non Big Six audit fees in specialist industries against the brand name premium of H5, (hypothesis H7). These hypotheses are stated formally as follows:

H1 *Ceteris paribus*, the Big Six auditors have larger audit fees than non Big Six auditors.

H2 *Ceteris paribus*, non Big Six industry specialist auditors will have higher audit fees than non Big Six non specialist auditors.

H3 *Ceteris paribus*, Big Six industry specialist auditors will have higher audit fees than Big Six non specialist auditors.

H4 In industries not having specialist auditor, Big Six auditors will, *ceteris paribus*, have larger audit fees than non Big Six specialists.

H5 In industries having specialist auditors, non specialist Big Six auditors will, *ceteris paribus*, have larger audit fees than non-specialist non Big Six auditors.

⁵ As a form of sensitivity analysis, we also test the Palmrose (1986a) methodology but the results are not significantly different.

H6 In the industries having specialists, the specialist auditors will, *ceteris paribus*, have larger audit fees than the non-specialist Big Six auditors.

H7 In those industries with specialists, the specialist Big Six auditors will, *ceteris paribus*, have larger audit fees than non Big Six non-specialist auditors, by an amount exceeding the brand name premium in hypothesis H5.

The audit pricing literature is robust across different samples and countries and explains the majority of the variation of audit fees using proxies for client size, litigation risk, audit complexity and the Big Six dummy. We collected data on total assets, debt, earnings before interest and tax, financial year end, quick ratio, current ratio, operating profit, share issues and industry codes from the Standard and Poor's Global Vantage database⁶. Since Global Vantage incorrectly reports auditors' remuneration⁷, we collected audit and non audit service fee data from the Datastream International and Extel Company Research databases. These databases do not contain subsidiary information and the Global Vantage auditor identity dummy is defined using a US perspective⁸. Therefore, we collected subsidiary and auditor identity data by hand from the International Centre for Research in Accounting's microfiche collection and the International Stock Exchange yearbook. Consistent with DeFond et al (1996), we exclude the auditor opinion dummy because of the infrequency of qualification over the sample period. We exclude missing or repeat observations for the same client, financial clients and any outlier observations⁹. We take logarithmic and square root

⁶ At the time of data retrieval, this database covers most of the major global indices, e.g. FT350, AMSE, NYSG and most of the local market indices for the 54 listed countries.

⁷ On cross examination with the hard copies of financial statements, we found a number of fundamental errors on the Global Vantage database, resulting in a downward bias on the non audit fee.

⁸ Since several US accounting partnership sign under a different name to their UK counterparts, there is a number of missing observations on this database.

⁹ Global Vantage records financial information by type of share, hence clients with multiple share issues are recorded several times. 65 investment trusts are incorrectly included in the industrial database and must be removed for two reasons. First due to the nature of their business, interpretation of their financial statements and ratios is problematic. Second, financial institutions operate in widely different regulatory environments than industrials which might result in different costs for their auditors. We remove 108 outliers with the greatest (above £4 million) or smallest (below £10,000) 1% of the audit fees. We have later relaxed this assumption and tested the results using Windsorised outliers and by excluding outliers on all the major variables and although the explanatory power of the model falls, this does not affect the main results.

transformations to reduce the influence of the largest clients and after the transformation all the variables reported in Table 2 are well behaved¹⁰.

Table 2 Descriptive Statistics for the sample of UK clients

Variable	Mean	St Dev	Min	Q1	Median	Q3	Max
Audit fee	335.351	528.412	10.67	56	120	344	3800
Total assets	475.871	1345.313	0.355	35.329	98.055	325.288	22565
Subsidiaries	16.290	17.872	0	5	11	21	196
Total debt	110.328	383.652	0	3.42	14.442	59.6	8898.752
Operating profit	52.128	184.259	-235.9	3.243	9.502	31.999	3531
EBIT	56.975	195.452	-235.9	3.413	10.425	35.113	3670
Revenue	529.212	1256.835	0	45.14	119.376	352.681	13893
NAS	260.468	2892.809	0	12	40	116	4000
Remuneration	503.239	3558.118	0	40	104	285	7000
Capital	491.194	1689.531	0.107	29.794	88.346	281.198	27367.71
LAF	4.971	1.272	2.267	4.025	4.787	5.841	8.243
LTA	11.655	1.616	5.872	10.472	11.493	12.692	16.932
Sub	3.562	1.897	0	2.236	3.316	4.583	14
Current	1.569	0.720	0.015	1.158	1.437	1.832	7.708
Quick	0.937	0.585	0.012	0.631	0.861	1.121	7.575
DTA	0.098	0.125	0	0.014	0.070	0.149	3.612
ROI	0.107	0.108	-1.345	0.077	0.116	0.156	0.692
Foreign	0.236	0.267	0	0	0.158	0.412	1
YE	0.682	0.466	0	0	1	1	1
Loss	0.150	0.357	0	0	0	0	1
LREV	4.908	1.625	-3.863	3.814	4.783	5.869	9.578
CATA	0.587	0.208	0.017	0.47	0.619	0.733	0.997
LNAS	3.713	1.752	0	2.485	3.688	4.753	8.294
Brand	0.733	0.442	0	0	1	1	1

Audit Fee = Fee relating to the audit (£'000); Total Assets = Total assets (£'M); Subsidiaries = Number of domestic subsidiaries; Total Debt = Total debt (£'M); Operating profit = Profit (£'M); EBIT = Earnings before interest and tax (£'M); Revenue = Total revenue (£'000); NAS = Non audit fee (£'000); Capital = Market capital (£'M); LAF = natural logarithm of the audit fee (£'000); LTA = natural logarithm of total assets (£'000); Sub = square root of the number of subsidiaries; Current = ratio of current assets to current liabilities; Quick = ratio of current assets less stock to current liabilities; DTA = ratio of long-term debt to total assets; ROI = ratio of earnings before interest and tax to total assets; Foreign = proportion of subsidiaries that are foreign operations; YE = fiscal year end between December and March; Loss = dummy variable, operating loss reported in prior 3 years; LREV = natural logarithm of total revenue (£'000); CATA = ratio of current assets to total assets; LNAS = natural logarithm of non-audit service fee; Brand = dummy variable, Big 6 Auditor = 1; Remuneration = total auditors' remuneration; Capital = market value of client in £'M at 31/12/1995.

This study tests for evidence of industry specialisation using dichotomous and continuous measures of specialisation. We first define specialisation using the dominant auditor industry model, (hereinafter DAI), where the dummy takes the value of 1 if the number of clients in an industry and the firm's share of the industry audit fees both exceed

¹⁰ The extent of the skewness of our distribution can be assessed by comparing the mean and median values of the audit fee (£335,351 and £120,000 respectively) against the mean and median logarithm of audit fees which are 4.971 and 4.787 respectively. The mean and median Current and Quick ratios are similar to the figures one would a priori expect unlike the mean acid test ratio found by Craswell et al (5.828) and the mean Current and Quick ratios quoted by DeFond et al (0.447 and 2.157). We believe that these results may be affected by

10% and the industry contains at least 30 clients.¹¹ Second, we define specialisation based on the accounting firm's share of the industry, (hereinafter AFSI), where the dummy takes a value of 1 if at least 20% of the number of their clients and 20% of the value of their audit fee revenue is from the industry.¹² The Big Six pricing regression and industry specialisation regressions are stated below:

$$LAF = \alpha_0 + \beta_1 LTA + \beta_2 Sub + \beta_3 Current + \beta_4 Quick + \beta_5 DTA + \beta_6 ROI + \beta_7 YE + \beta_8 Foreign + \beta_9 Loss + \beta_{10} Auditor + \varepsilon \quad (1)$$

$$LAF = \alpha_0 + \beta_1 LTA + \beta_2 Sub + \beta_3 Current + \beta_4 Quick + \beta_5 DTA + \beta_6 ROI + \beta_7 YE + \beta_8 Foreign + \beta_9 Loss + \beta_{10} Brand + \beta_{11} NB6Spec + \beta_{12} B6Spec + \varepsilon \quad (2)$$

$$LAF = \alpha_0 + \beta_1 LTA + \beta_2 Sub + \beta_3 Current + \beta_4 Quick + \beta_5 DTA + \beta_6 ROI + \beta_7 YE + \beta_8 Foreign + \beta_9 Loss + \beta_{10} Brand + \varepsilon \quad (3)$$

$$LAF = \alpha_0 + \beta_1 LTA + \beta_2 Sub + \beta_3 Current + \beta_4 Quick + \beta_5 DTA + \beta_6 ROI + \beta_7 YE + \beta_8 Foreign + \beta_9 Loss + \beta_{10} Specialist + \varepsilon \quad (4)$$

$$LAF = \alpha_0 + \beta_1 LTA + \beta_2 Sub + \beta_3 Current + \beta_4 Quick + \beta_5 DTA + \beta_6 ROI + \beta_7 YE + \beta_8 Foreign + \beta_9 Loss + \beta_{10} AFSISpec + \varepsilon \quad (5)$$

Where:

LAF = natural logarithm of total audit fees (£'000),

LTA = natural logarithm of total assets (£'000),

Sub = square root of the total number of subsidiaries,

Current = ratio of current assets to current liabilities,

Quick = ratio of current assets less stock, to current liabilities,

DTA = ratio of long term debt to total assets,

ROI = ratio of earnings before interest and tax tot total assets,

YE = dummy variable, 1 indicates a financial year end between December and March, 0 otherwise,

Foreign = proportion of subsidiaries that represent foreign operations,

Loss = dummy variable, 1 indicates operating loss reported in any of the three prior years, 0 otherwise

Auditor = auditor indicator variable, 1 indicates a Big Six firm, 0 otherwise,

Brand = auditor indicator variable, 1 indicates a Big Six auditor, 0 otherwise,

NB6Spec= auditor indicator variable, 1 indicates a Non Big Six specialist, 0 otherwise,

B6Spec = auditor indicator variable, 1 indicates a Big Six specialist, 0 otherwise,

Specialist = auditor indicator variable, 1 indicates an industry specialist, 0 otherwise,

AFSI Spec = continuous measure of the accounting firm share of the industry variable.

financial clients. We include a year end dummy because UK accounting firms are particularly busy between December to March and clients might be required to pay premium fees during this period.

¹¹ This definition is consistent with the Craswell et al study. The continuous DAI variable is found by computing the ratio of the accounting firm's audit fees within an industry to the total industry audit fees.

¹² The continuous AFSI industry specialist variable is found by computing the ratio of the accounting firm's audit fees within an industry to the total amount of audit fees within their portfolio of clients.

4 Results

Consistent with the early Big Six premium studies, the first series of results, documented in Table 3, are a test of hypothesis H1. This is a benchmark test of model 1, to examine whether the audit fees charged by Big Six firms are higher than non Big Six fees. Since there is some evidence of heteroskedasticity, the following results are presented using the White (1980) error correction process. Model 1 has very good explanatory power, as shown by the F and adjusted R² statistics and the findings are robust across different control variables¹³. We find that the LTA, Sub, Current and Foreign variables are significant in the hypothesised direction. As predicted, the Auditor dummy is significant at $p < 0.05$, indicating that the average audit fees charged by Big Six auditors from 1985 to 1995 are 10.3% to 23.2% higher than the fees of their non Big Six counterparts¹⁴. These rents are lower than those reported by Palmrose (1986a), Craswell et al (1995) and DeFond et al (1996) but may not fully represent the brand name premium because industry specialisation has been ignored.

The tests of hypotheses H2 to H7 assess whether the returns to brand name and industry specialist reputations are significant. For our initial investigation, we classify industries using a one digit SIC scheme and report the DAI (AFSI) specialists in Table 4 Panel A (Table 4 Panel B). Most of the industry specialisation occurs in the consumer goods, general industrials and wholesale and merchandising sectors. As expected, the Big Six accounting firms are the dominant industry specialists. KPMG have developed the greatest amount of specialist expertise, followed by Price Waterhouse, Ernst and Young, Touche Ross, Coopers and Lybrand and Arthur Andersen. Unsurprisingly, the international accounting firms that were subsumed during the mergers that took place in the period, Arthur

¹³ Craswell et al (1995) use the ratio of current assets to total assets variable and several studies use the logarithm of sales revenue to proxy for size. The above results are not sensitive to the choice of proxy.

¹⁴ We compute the Big Six premium using the formula outlined in footnote 7 by Simon and Francis (1988).

Young and Deloitte, Haskins and Sells, have the least amount of specialist expertise. Unlike Craswell et al (1995), we find that two non Big Six firms meet the specialist criteria¹⁵.

In Table 4 Panel C, we report the results of our analyses of hypotheses H1 to H3. We report our findings using the AFSI specialists and the Palmrose (1986a) methodology (model 2) but do not document the results for the Craswell et al (1995) methodology and/or the DAI specialist definition because these are not significantly different. The F and adjusted R-square statistics indicate that the model has very good explanatory power. Similar to the Big Six pricing analysis, the LTA, Sub, Current and Foreign variables are significant in the hypothesised direction. The parameter estimates indicate that brand name returns are significant at $p < 0.05$ in 1987, 1991, 1992 and 1995. However, unlike Craswell et al, DeFond et al and Matthews et al, we find that returns to Big Six and non Big Six industry specialisation reputations are not significant. These results support the brand name component of the Big Six premium but do not back the industry specialisation element.

We run a number of further tests to examine whether we have failed to accurately capture industry specialisation or if the returns to reputations are insignificant. First, since the dichotomous definitions of specialisation choose an essentially arbitrary hurdle rate, we run sensitivity analyses using the steeper AFSI 30% and DAI 20% specifications. As one would expect, this alternative proxy produced fewer specialist industries and auditors. We present only the AFSI results, in Table 5 Panel A, since the findings using the Craswell et al methodology and/or the DAI definition are not statistically different. The explanatory power of the models is good and the LTA, Sub, Current and Foreign variables are significant in the predicted direction. Similar to our earlier analyses, the returns to brand name reputations are significant at $p < 0.05$ in 1987 and 1990 to 1995. Unlike most of the prior literature, the industry specialist returns are not significantly correlated with audit fees.

¹⁵ Craswell et al find only Big Six specialists. BDO Binder Hamlyn and Grant Thornton meet our criteria.

All of the audit pricing studies measure industry specialisation using a dichotomous variable, however Krishnan and Yang (1998) capture industry specialisation with a continuous variable. One explanation for our insignificant results might be that accounting firms choose to invest different amounts in the development of specialist expertise such that firms have degrees of reputation. The results of our analysis using a continuous definition of specialisation are documented in Table 5 Panel B. The LTA, Sub, Current and Foreign variables are significantly correlated with audit fees and the explanatory power of the models is good. The brand name dummy is significant at $p < 0.05$ in 1987, 1990 to 1992, 1994 and 1995. There is some evidence of a significant industry specialisation variable at $p < 0.05$ from 1988 to 1990, 1994 and 1995 but these results are not consistent across both models.

In section 1, we note that a small number of firms have the incentive to invest in specialist reputations in small industries because the potential returns are limited but many firms may credibly claim to possess industry specialist reputations in large industries. We test whether the one digit SIC scheme is too general by estimating the returns to brand name and industry specialisation reputations using a two digit SIC scheme. In Table 6 Panel A, we observe that most of the variation in audit fees is captured by the same ratios and the explanatory power of the models is good. The brand name dummy variable is significant at $p < 0.05$ in 1986, 1987 and from 1990 to 1995 but industry specialisation is not significant.

Our analysis examines industry specialisation across all industries but the prior literature focuses on a limited number of industries where one might expect specialisation to develop¹⁶. We replicate these studies by restricting our sample to the following ‘finer’ industries: agricultural products, mineral extraction, utilities and leisure and other service industries. These results, reported in Table 6 Panel B, reveal that most of the variation in

¹⁶ Palmrose considered alcoholic beverages, office equipment, transportation, communications, utilities, retail and financials. Craswell et al and Matthews et al focus on mining, mineral extraction, construction, household goods, chemicals, engineering, transportation and financials. DeFond take their sample from the population of industrial clients.

audit fees is explained by same control variables and the explanatory power of the models is good. For our restricted industry sample, brand name returns are significant at $p < 0.05$ in 1986, 1987, 1990, 1991, 1992, 1994 and 1995. Consistent with our earlier work, the returns to industry specialisation reputations are not significantly different from zero.

We extend our analysis by examining whether the Big Six premium is driven by industry specialist returns for a sub-sample of small clients. The rationale for this appraisal is that large clients may only be able hire a Big Six firm because of their need for resources but small clients might choose to hire a Big Six firm only if they offer industry specialist knowledge. To avoid sample selection bias, we take the lowest quartile of clients based on their total assets and report the results in Table 6 Panel C. Similar to our earlier findings, the explanatory power is reasonably good and the LTA, Sub, Current and Foreign variables are significantly correlated with the dependent variable. Unlike our prior work, the returns to brand name reputations are only significant at $p < 0.05$ in 1995 but industry specialist returns are significant in 1986, 1994 and 1995. These findings suggest that the demand for an accounting firm with a brand name reputation ‘bottoms out’ below a critical size. There is some evidence that small clients may only be willing to pay premium fees if the Big Six firm provides industry specialist expertise.

DeFond et al (1996) and Matthews et al (1998) test for evidence of returns to non Big Six industry specialisation and the results have been mixed¹⁷. Our results for the restricted sample of non Big Six audited clients are reported in Table 6 Panel D. The explanatory power of the models is good and most of the variation of audit fees is explained by the same variables. Consistent with our earlier analyses, the returns to industry specialist reputations are not significant.

¹⁷ DeFond et al report that a non Big Six industry specialist in Hong Kong, Kwan Wong Tan & Fong, charge lower fees than both their Big Six and non Big Six non specialist counterparts. Matthews et al analyse the Australian market and report that specialist non Big Six auditors earn a premium over their non specialist non Big Six counterparts.

5. Econometric Analysis

Simunic (1980) questions the level of competitiveness in the audit market, one of the fundamental assumptions required to explain the Big Six premium in terms of brand name and industry specialisation reputations. Using the Craswell et al (1995) methodology, we test the level of competition by comparing proxies for market share and company size. For the full sample, the Big Six market share is 73% and total assets range from £355,000 to £22,565 million. Mean client size is £475,871,000 but the median size is just £98,055,000. The large sub-sample of clients have median assets of £911,022,000 and the Big Six market share is 80%. The smaller sub-sample have median assets of £40,740,000 and a Big Six market share of 66%. The UK Big Six audit firms are more dominant than their Australian counterparts. The Big Six firms allege that the audit market is very competitive, positing evidence of strong competition for initial audit tenders. However, the rate of auditor rotation is low and we can not exclude the possibility that the premium relates to the exercise of market power.

Simunic (1980), Francis and Stokes (1986) and Palmrose (1986a) find that the audit pricing model specification is sensitive to company size. Using a Chow test, we test the structural consistency of the models across the large and small client sub-samples and find that most of the model parameters remain consistent. The regression results, reported in Table 6 Panel E, indicate that the brand name premium is significant for both the upper and lower halves although it is greater for the smaller sector.

To examine the possible powerful effect of individual firms or industries, we re-estimate the Big Six pricing regression, model 1, dropping each of the Big Six firms and the various industries sequentially. This paper does not disclose these results because they are quantitatively similar to those reported above but the implication is that the results are not dominated by particular firms or industries.

In section 2, we note that there is considerable evidence of a positive correlation between audit and non audit service fees and researchers have struggled to explain the reason for such an association. To assess the importance of non audit fees, we first examine the size of the respective markets by documenting the aggregate audit and non audit service fees across industries in Table 6 Panel F. It is immediately evident that there is a vast difference between the size of the various industries and that non audit service fees are a significant part of the total remuneration across all industries. This table also suggests that one must consider non audit fees in addition to audit fee specialisation because firms may be selling a joint product.

One rationale for the above puzzling relationship is that clients are willing to pay an audit fee premium for the provision of specialist non audit services. To test for such evidence, we define industry specialisation based on the size of non audit service fees and report the findings in Table 6 Panel G. The same variables explain most of the audit fee variation and the goodness of fit of the models is strong. Unlike our earlier analyses, both the brand name and industry specialisation returns are not significantly different from zero. For robustness, we use the total auditors' remuneration to determine industry specialisation but since the results are not dissimilar we do not disclose them in this paper.

The observed positive association between audit and non audit service fees raises the possibility that the Big Six premium may be driven by a correlated omitted non audit fee. Consistent with Craswell et al (1995), we change the dependent variable in the Big Six pricing analysis, model 1, to the logarithm of total remuneration. We detect a strong correlation between the logarithm of remuneration and the Big Six dummy. Therefore our tests of the importance of non audit fee are inconclusive. To summarise, our results suggest that UK accounting firms earn premium fees in relation to their brand name reputation but there is scant evidence of returns to industry specialist reputations.

6 Summary and Conclusions

This paper reports strong evidence of a Big Six premium for a large sample of UK clients over the period 1985 to 1995. Recent studies explain these rents as returns to brand name and industry specialisation reputations. This study extends the prior work by performing a deep examination of the concept of specialisation, improving the definitions of industry specialisation and refining the methodology. Consistent with the prior literature, we find evidence of significant brand name returns for the majority of our sub-samples. However, brand name returns are insignificant for the small client market and if one defines industry specialisation based on the level of the non audit service fees. We believe that brand name reputations “bottom out” below a critical client size due to the client’s inability to bear the cost of a quality auditor. The insignificant brand name results for the non audit fee defined specialists may be due to an interrelationship between audit and non audit pricing.

Unlike the prior work, we find that industry specialist returns are insignificant. There are various possible explanations for this conflict. First, there may be institutional or regulatory differences which prevent specialist reputations from being developed in the UK. Second, the nature of the markets studied and samples selected differ between the studies. In particular, the importance of the financial clients to the results documented in the prior work is not clear. Finally, since the markets are larger in the UK, there is some evidence to suggest that the UK Big Six firms may be large enough to specialise across all industries.

There are a number of interesting areas open for future research. First, since the UK accounting firms are much larger than their Australian counterparts, it is important to consider the possibility of the use of oligopoly market power. Second, the relationship between audit and non audit service fees is worthy of further analysis because our results are mixed. Finally, there are a number of other motivations for the Big Six premium that have been ignored in the literature, for example the “deep pockets hypothesis”.

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Table 3 Multivariate audit fee regression model: estimation of the Big Six premium;

Predicted Sign	Intercept	LTA +	Sub +	Current -	Quick +	DTA +	ROI -	Foreign +	YE +	Loss +	Auditor +	N	F	R sq.
1985	-3.148 (9.58)	0.598 (19.72)	0.185 (8.27)	0.071 (0.74)	0.269 (2.08)	1.273 (2.17)	-0.613 (1.33)	0.190 (1.41)	-0.045 (0.57)	-0.103 (1.28)	0.126 (1.61)	225	113.6	0.838
1986	-2.867 (9.08)	0.559 (19.14)	0.222 (10.01)	0.181 (2.05)	-0.092 (0.91)	0.202 (0.40)	-0.035 (0.08)	0.359 (3.20)	0.046 (0.60)	0.021 (0.26)	0.139 (1.87)	288	124.4	0.811
1987	-2.362 (7.91)	0.515 (18.78)	0.233 (11.35)	0.012 (0.15)	0.096 (1.02)	0.182 (0.380)	-0.023 (0.04)	0.364 (2.54)	0.017 (0.25)	0.134 (1.14)	0.209 (2.99)	358	138.9	0.794
1988	-2.642 (10.14)	0.553 (24.01)	0.232 (12.77)	-0.078 (1.17)	0.103 (1.31)	-0.187 (0.51)	1.086 (2.32)	0.342 (2.73)	0.035 (0.56)	-0.003 (0.03)	0.098 (1.59)	430	180.2	0.807
1989	-2.482 (9.33)	0.554 (23.69)	0.209 (11.36)	-0.093 (1.70)	0.061 (0.86)	-0.591 (1.88)	0.641 (1.57)	0.347 (2.65)	0.075 (1.20)	0.176 (1.56)	0.125 (2.00)	446	174.4	0.796
1990	-1.484 (6.13)	0.465 (21.46)	0.246 (14.43)	-0.109 (2.47)	0.080 (1.16)	0.196 (0.76)	0.225 (0.59)	0.314 (2.75)	0.061 (1.06)	0.060 (0.55)	0.116 (1.98)	473	194.0	0.804
1991	-0.930 (4.20)	0.424 (21.20)	0.254 (15.35)	-0.176 (3.53)	0.126 (1.86)	0.147 (0.66)	-0.467 (1.80)	0.440 (4.04)	0.123 (2.29)	-0.013 (0.14)	0.139 (2.44)	496	207.6	0.807
1992	-0.727 (3.50)	0.404 (20.99)	0.251 (14.84)	-0.095 (1.95)	0.023 (0.42)	0.326 (1.83)	-0.320 (4.15)	0.543 (5.26)	0.065 (1.19)	-0.020 (0.28)	0.150 (2.55)	488	200.1	0.804
1993	-0.810 (3.94)	0.415 (21.55)	0.243 (14.93)	-0.155 (3.07)	0.085 (1.42)	0.273 (1.23)	0.067 (0.35)	0.635 (6.76)	0.030 (0.55)	0.086 (1.18)	0.112 (1.85)	488	217.4	0.816
1994	-0.703 (3.31)	0.414 (21.18)	0.244 (14.92)	-0.177 (3.70)	0.061 (1.03)	-0.030 (0.15)	-0.303 (1.30)	0.636 (6.20)	0.051 (0.93)	0.063 (0.85)	0.124 (1.96)	461	196.0	0.809
1995	-0.771 (3.77)	0.405 (21.34)	0.245 (15.28)	-0.134 (3.06)	0.075 (1.31)	0.185 (1.63)	-0.582 (3.04)	0.658 (6.99)	0.086 (1.64)	-0.077 (1.02)	0.161 (2.52)	485	228.5	0.825
Pool	-1.425 (19.93)	0.465 (70.09)	0.234 (43.13)	-0.112 (6.66)	0.081 (3.87)	0.171 (2.45)	-0.336 (5.78)	0.489 (14.38)	0.054 (2.98)	0.023 (0.91)	0.148 (7.70)	4638	1884.6	0.803

LTA = natural logarithm of total assets (£'000);
 Sub = square root of the number of subsidiaries;
 Current = ratio of current assets to current liabilities;
 Quick = ratio of current assets less stock to current liabilities;
 DTA = ratio of long-term debt to total assets;

Foreign = proportion of subsidiaries that are foreign operations;
 YE = dummy variable, fiscal year end between December and March inclusive = 1;
 Loss = dummy variable, operating loss reported in prior 3 years;
 Auditor = dummy variable, big six auditor = 1, 0 otherwise.
 ROI = ratio of earnings before interest and tax to total assets

Table 4 Panel A UK industries with DAI specialist auditors

SIC	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1	KP,TR	KP,TR	KP,TR	DH,KP,TR	DH,KP,TR	CL,EY,KP,TR	CL,KP,TR	CL,EY,KP,TR	CL,EY,KP,TR	CL,EY,KP	CL,EY,KP,TR
2	KP,PW	KP,PW	EW,KP,PW	KP,PW	KP,PW	CL,EY,KP,PW	CL,EY,KP	CL,EY,KP,PW	CL,EY,KP,PW	CL,EY,KP,PW	CL,EY,KP,PW
3	KP	KP	KP	KP	KP	EY,KP,PW,TR	KP,TR	CL,KP,TR	CL,KP,TR	CL,EY, KP,PW,TR	CL,EY,KP,PW
5	DH,KP, PW	DH,KP,PW	DH,KP,PW	KP,PW	DH,KP,PW	CL,KP,PW	CL,KP,PW	CL,KP, PW	CL,KP,PW	CL,KP, PW	CL,KP,PW
7	EW,KP	EW,KP		PW	EY,KP,PW	CL,EY,PW	CL,EY,KP,PW	CL,EY,KP,PW	CL,KP,PW	CL,KP, PW	CL,KP,PW
1	KP	KP	KP	KP	KP	KP	CL,KP	KP	KP	CL,KP	KP
2				KP	KP	KP	KP	KP	KP	KP	KP
3									KP	KP	KP
5	KP	KP	KP	KP							KP

Table 4 Panel B UK industries with AFSI specialist auditors

SIC	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1		AY,			AY						
2	EW,DH, KP,PW	EW,DH, KP,PW	AY, EW, DH, KP,PW,	AY,EW,KP, PW,TR,GT	AY,DH,KP, PW,TR,GT	KP, PW,BH, GT	AA, CL, EY, KP, PW	CL, EY, KP, PW	AA, CL, EY, KP, PW, TR	AA, CL, KP, PW	AA, CL, EY, KP, PW, BH
3	AY, CL, PW,TR	AY, CL, EW, PW,TR	AA, AY,CL, DH, KP,PW, TR, BH, GT	AA,AY,CL, EW,DH,KP, PW,TR,GT	AA,AY,CL, EW,KP,PW, TR,BH,GT	AA, CL, KP, PW, TR,BH, GT	EY, KP, TR,GT	AA, EY, KP, PW, TR, BH, GT	AA, CL, EY, KP, TR, BH, GT	AA, EY, KP, PW, TR, BH, GT	AA, CL, EY, KP, PW, TR, BH, GT
5	DH, KP	DH, KP	DH, GT	GT			PW	PW	PW	PW	
2	PW	PW	PW	PW		GT		PW			
3	CL, TR	CL, TR	AA, AY, CL, TR, GT	AA, AY, CL	AY, TR, GT	AA, TR,	TR, GT	TR, BH, GT	TR, BH, GT	TR, BH, GT	TR, GT
5				GT							

SIC code 0 represents agricultural products, code 1 mineral extraction, code 2 consumer goods, code 3 general industrials, code 4 utilities, code 5 wholesale and merchandising, code 7 leisure services, code 8 is other services and code 9 denotes civil service. Audit partnerships are coded as follows, code NO represents no listed auditor, code AA, Arthur Andersen, AY, Arthur Young, code CL, Coopers and Lybrand or Coopers and Lybrand Deloitte, code EW, Ernst and Whinney, code EY Ernst and Young, code DH, Deloitte Haskins and Sells, code KP, Peat Marwick Mitchell, KMG Thomson McLintock until 1/4/1987, Peat Marwick McLintock until 1/1/1990 or KPMG, code PW, Price Waterhouse, code TR, Touche Ross code O, any other partnership, code BH, Binder Hamlyn or BDO Binder Hamlyn, code GT, Grant Thornton, code MS, Moore Stephens, PK, Pannell Kerr Foster, SO, Spicer and Oppenheim and code J denotes joint auditors.

Table 4 Panel C Multivariate audit fee regression models: joint estimation of the Big Six brand name and industry specialisation premium

Year	Intercept Sign	LTA +	Sub +	Current -	Quick +	DTA +	ROI -	Foreign +	YE +	Loss +	Brand +	Specialist +	B6spec	N	F	R sq.
1985	-3.143 (9.53)	0.598 (19.63)	0.185 (8.25)	0.069 (0.71)	0.271 (2.08)	1.292 (2.19)	-0.612 (1.33)	0.190 (1.41)	-0.047 (0.59)	-0.100 (1.23)	0.114 (1.28)	0.023 (0.26)		225	102.844	0.83
1986	-2.881 (9.02)	0.558 (18.97)	0.228 (10.17)	0.176 (1.98)	-0.088 (0.87)	0.198 (0.39)	0.099 (0.22)	0.352 (3.12)	0.025 (0.31)	0.048 (0.58)	0.100 (1.18)	0.091 (1.06)		288	111.251	0.81
1987	-2.338 (7.80)	0.510 (18.50)	0.236 (11.28)	-0.000 (0.00)	0.101 (1.06)	0.343 (0.71)	0.086 (0.16)	0.326 (2.25)	-0.006 (0.09)	0.138 (1.17)	0.166 (2.17)	0.130 (1.80)		358	125.695	0.80
1987	-2.321 (7.79)	0.516 (18.75)	0.233 (11.13)	0.004 (0.05)	0.089 (0.94)	0.241 (0.50)	-0.012 (0.02)	0.308 (2.14)	0.007 (0.10)	0.112 (0.95)	0.076 (0.89)	-0.219 (1.30)	0.427 (2.29)	358	117.092	0.80
1988	-2.572 (9.76)	0.547 (23.48)	0.235 (12.77)	-0.085 (1.27)	0.079 (1.00)	-0.120 (0.32)	1.018 (2.16)	0.363 (2.89)	0.039 (0.63)	0.013 (0.12)	0.062 (0.92)	0.091 (1.43)		430	164.318	0.81
1988	-2.563 (9.70)	0.548 (23.47)	0.234 (12.64)	-0.083 (1.23)	0.077 (0.97)	-0.126 (0.34)	0.992 (2.10)	0.360 (2.86)	0.040 (0.65)	0.007 (0.06)	0.044 (0.60)	-0.017 (0.10)	0.123 (0.65)	430	150.449	0.81
1989	-2.482 (9.12)	0.553 (23.04)	0.211 (11.23)	-0.100 (1.82)	0.082 (1.13)	-0.409 (1.24)	0.576 (1.40)	0.332 (2.51)	0.081 (1.28)	0.161 (1.41)	0.089 (1.31)	0.054 (0.86)		446	157.385	0.80
1989	-2.482 (9.11)	0.554 (22.96)	0.210 (11.15)	-0.099 (1.80)	0.081 (1.12)	-0.415 (1.25)	0.580 (1.40)	0.332 (2.50)	0.081 (1.29)	0.162 (1.42)	0.080 (1.07)	0.008 (0.05)	0.054 (0.30)	446	143.968	0.80
1990	-1.477 (5.90)	0.463 (20.62)	0.246 (14.07)	-0.110 (2.48)	0.080 (1.15)	0.213 (0.80)	0.196 (0.51)	0.324 (2.79)	0.072 (1.23)	0.048 (0.43)	0.116 (1.91)	0.022 (0.38)		473	175.163	0.81
1990	-1.477 (5.89)	0.463 (20.55)	0.246 (14.02)	-0.110 (2.48)	0.080 (1.15)	0.212 (0.79)	0.198 (0.52)	0.323 (2.78)	0.072 (1.24)	0.048 (0.43)	0.112 (1.67)	0.004 (0.03)	0.022 (0.14)	473	160.219	0.80
1991	-0.901 (3.99)	0.422 (20.54)	0.253 (14.98)	-0.181 (3.65)	0.125 (1.84)	0.177 (0.77)	-0.461 (1.76)	0.451 (4.13)	0.127 (2.36)	0.002 (0.02)	0.135 (2.21)	0.019 (0.33)		496	188.147	0.81
1991	-0.909 (4.03)	0.421 (20.54)	0.254 (15.02)	-0.183 (3.69)	0.129 (1.89)	0.172 (0.75)	-0.458 (1.75)	0.446 (4.09)	0.126 (2.33)	-0.006 (0.06)	0.161 (2.55)	0.364 (1.56)	-0.368 (1.55)	496	173.185	0.81
1992	-0.696 (3.30)	0.400 (20.26)	0.253 (14.72)	-0.098 (2.00)	0.021 (0.38)	0.349 (1.94)	-0.318 (4.14)	0.542 (5.22)	0.071 (1.30)	-0.018 (0.26)	0.136 (2.20)	0.041 (0.75)		488	182.171	0.81
1992	-0.697 (3.29)	0.400 (20.24)	0.253 (14.69)	-0.098 (2.00)	0.021 (0.38)	0.348 (1.94)	-0.318 (4.14)	0.542 (5.21)	0.071 (1.29)	-0.018 (0.26)	0.137 (2.03)	0.048 (0.31)	-0.008 (0.05)	488	166.636	0.80
1993	-0.802 (3.80)	0.413 (20.78)	0.244 (14.62)	-0.162 (3.18)	0.104 (1.66)	0.306 (1.36)	0.076 (0.39)	.625 (6.51)	0.036 (0.64)	0.082 (1.12)	0.103 (1.61)	0.033 (0.61)		488	194.731	0.82
1993	-0.809 (3.82)	0.412 (20.76)	0.243 (14.55)	-0.162 (3.18)	0.105 (1.68)	0.305 (1.35)	0.078 (0.41)	0.624 (6.49)	0.035 (0.63)	0.078 (1.08)	0.120 (1.71)	0.125 (0.77)	-0.103 (0.60)	488	178.289	0.82
1994	-0.758 (3.56)	0.420 (21.37)	0.238 (14.34)	-0.185 (3.85)	0.079 (1.30)	-0.016 (0.08)	-0.305 (1.31)	0.601 (5.81)	0.042 (0.76)	0.059 (0.80)	0.110 (1.72)	0.085 (1.54)		461	177.983	0.81

Year	Intercept Sign	LTA +	Sub +	Current -	Quick +	DTA +	ROI -	Foreign +	YE +	Loss +	Brand +	Specialist +	B6spec	N	F	R sq.
1994	-0.768 (3.59)	0.420 (21.33)	0.237 (14.30)	-0.184 (3.85)	0.081 (1.34)	-0.010 (0.04)	-0.310 (1.33)	0.599 (5.78)	0.042 (0.76)	0.056 (0.74)	0.129 (1.81)	0.170 (1.12)	-0.097 (0.60)	461	162.947	0.81
1995	-0.808 (3.94)	0.410 (21.50)	0.241 (14.99)	-0.135 (3.09)	0.071 (1.24)	0.180 (1.59)	-0.579 (3.03)	0.630 (6.60)	0.081 (1.54)	-0.070 (0.94)	0.127 (1.93)	0.106 (2.02)		485	209.464	0.83
1995	-0.821 (4.00)	0.409 (21.48)	0.240 (14.95)	-0.136 (3.12)	0.074 (1.29)	0.181 (1.59)	-0.576 (3.02)	0.627 (6.59)	0.079 (1.50)	-0.074 (0.98)	0.151 (2.10)	0.238 (1.44)	-0.146 (0.84)	485	191.950	0.83
Pool	-1.348 (18.20)	0.458 (66.39)	0.238 (41.89)	-0.121 (7.13)	0.080 (3.73)	0.180 (2.55)	-0.328 (5.56)	0.495 (14.07)	0.057 (3.02)	0.036 (1.36)	0.127 (6.08)	0.059 (3.12)		4638	1633.191	0.81
Pool	-1.348 (18.18)	0.457 (66.34)	0.238 (41.88)	-0.121 (7.13)	0.080 (3.73)	0.180 (2.55)	-0.328 (5.56)	0.495 (14.07)	0.057 (3.02)	0.036 (1.36)	0.128 (5.67)	0.066 (1.22)	-0.008 (0.14)	4638	1496.754	0.81

LTA = natural logarithm of total assets (£'000);
 Sub = square root of the number of subsidiaries;
 Current = ratio of current assets to current liabilities;
 Quick = ratio of current assets less stock to current liabilities;
 DTA = ratio of long-term debt to total assets;
 ROI = ratio of earnings before interest and tax to total assets;

Foreign = proportion of subsidiaries that are foreign operations;
 YE = dummy variable, fiscal year end between December and March inclusive = 1;
 Loss = dummy variable, operating loss reported in prior 3 years;
 Brand = dummy variable, big six auditor = 1, 0 otherwise;
 Specialist = dummy variable, industry specialist = 1, 0 otherwise;
 B6Spec = dummy variable, Big Six specialist = 1, 0 otherwise.

Table 5 Panel A Multivariate audit fee regression models with AFSI specialists defined at the 30% level:

Year	Intercept Sign	ITA +	Sub +	Current -	Quick +	DE +	ROI -	Foreign +	YE +	Loss +	Brand +	Specialist +	B6snec	N	F	R sq
1985	-3.144 (9.51)	0.598 (19.57)	0.185 (8.25)	0.071 (0.73)	0.268 (2.06)	1.283 (2.17)	-0.607 (1.31)	0.188 (1.39)	-0.044 (0.55)	-0.103 (1.28)	0.123 (1.53)	0.018 (0.14)		225	102.816	0.84
1986	-2.887 (9.03)	0.559 (18.98)	0.227 (10.13)	0.179 (2.02)	-0.092 (0.90)	0.199 (0.39)	0.081 (0.18)	0.350 (3.07)	0.033 (0.43)	0.040 (0.50)	0.127 (1.66)	0.090 (0.75)		288	110.973	0.81
1987	-2.324 (7.72)	0.510 (18.41)	0.238 (11.33)	0.003 (0.04)	0.098 (1.03)	0.276 (0.57)	0.046 (0.09)	0.333 (2.29)	0.001 (0.02)	0.137 (1.17)	0.211 (2.95)	0.066 (0.67)		358	124.426	0.79
1987	-2.324 (7.71)	0.511 (18.43)	0.237 (11.31)	0.008 (0.10)	0.091 (0.96)	0.245 (0.50)	0.005 (0.01)	0.335 (2.30)	0.005 (0.07)	0.133 (1.13)	0.195 (2.65)	-0.207 (0.67)	0.302 (0.93)	358	114.082	0.79
1988	-2.546 (9.67)	0.545 (23.39)	0.237 (12.90)	-0.082 (1.21)	0.081 (1.02)	-0.148 (0.40)	0.993 (2.11)	0.370 (2.94)	0.040 (0.63)	0.009 (0.09)	0.093 (1.47)	0.066 (0.74)		430	163.587	0.81
1988	-2.542 (9.63)	0.545 (23.36)	0.237 (12.82)	-0.081 (1.21)	0.081 (1.02)	-0.141 (0.38)	0.984 (2.08)	0.368 (2.92)	0.040 (0.64)	0.008 (0.07)	0.089 (1.37)	-0.005 (0.02)	0.081 (0.29)	430	149.625	0.81
1989	-2.469 (9.10)	0.552 (23.07)	0.211 (11.28)	-0.101 (1.83)	0.087 (1.20)	-0.394 (1.19)	0.556 (1.36)	0.328 (2.46)	0.083 (1.32)	0.158 (1.39)	0.108 (1.70)	0.102 (0.79)		446	157.337	0.80
1989	-2.459 (9.06)	0.552 (23.06)	0.213 (11.33)	-0.100 (1.80)	0.085 (1.18)	-0.402 (1.21)	0.543 (1.32)	0.315 (2.36)	0.087 (1.39)	0.161 (1.40)	0.093 (1.43)	-0.132 (0.53)	0.316 (1.09)	446	144.391	0.80
1990	-1.445 (5.81)	0.461 (20.66)	0.247 (14.20)	-0.109 (2.44)	0.078 (1.12)	0.194 (0.72)	0.172 (0.45)	0.337 (2.92)	0.076 (1.30)	0.048 (0.43)	0.124 (2.09)	-0.099 (0.86)		473	175.447	0.81
1990	-1.449 (5.82)	0.461 (20.55)	0.247 (14.09)	-0.109 (2.44)	0.078 (1.12)	0.190 (0.70)	0.184 (0.48)	0.335 (2.90)	0.075 (1.29)	0.048 (0.43)	0.120 (1.98)	-0.169 (0.65)	0.088 (0.30)	473	160.511	0.81
1991	-0.902 (3.98)	0.421 (20.43)	0.254 (15.02)	-0.182 (3.65)	0.126 (1.85)	0.172 (0.76)	-0.457 (1.74)	0.452 (4.13)	0.128 (2.37)	0.002 (0.02)	0.143 (2.50)	0.020 (0.16)		496	188.105	0.81
1991	-0.891 (3.93)	0.419 (20.29)	0.255 (15.11)	-0.181 (3.65)	0.130 (1.92)	0.163 (0.72)	-0.477 (1.82)	0.453 (4.15)	0.128 (2.36)	-0.012 (0.13)	0.165 (2.82)	0.364 (1.59)	-0.485 (1.78)	496	173.490	0.81
1992	-0.664 (3.14)	0.397 (20.15)	0.255 (14.85)	-0.094 (1.94)	0.019 (0.34)	0.337 (1.88)	-0.317 (4.41)	0.558 (5.39)	0.074 (1.35)	-0.024 (0.34)	0.148 (2.52)	-0.052 (0.63)		488	182.097	0.81
1992	-0.670 (3.16)	0.397 (20.12)	0.255 (14.81)	-0.094 (1.92)	0.019 (0.33)	0.333 (1.85)	-0.319 (4.15)	0.558 (5.39)	0.073 (1.33)	-0.025 (0.36)	0.164 (2.62)	0.045 (0.29)	-0.136 (0.74)	488	166.810	0.81
1993	-0.795 (3.76)	0.412 (20.74)	0.245 (14.63)	-0.160 (3.15)	0.103 (1.66)	0.310 (1.38)	0.066 (0.34)	0.630 (6.56)	0.037 (0.67)	0.078 (1.07)	0.116 (1.88)	0.018 (0.16)		488	194.558	0.82
1993	-0.797 (3.77)	0.410 (20.62)	0.245 (14.62)	-0.160 (3.14)	0.106 (1.70)	0.301 (1.34)	0.071 (0.37)	0.633 (6.58)	0.037 (0.67)	0.079 (1.08)	0.133 (2.06)	0.123 (0.75)	-0.196 (0.89)	488	178.330	0.82
1994	-0.763 (3.56)	0.419 (21.30)	0.239 (14.41)	-0.183 (3.83)	0.085 (1.39)	-0.015 (0.07)	-0.300 (1.29)	0.616 (6.00)	0.045 (0.80)	0.055 (0.73)	0.149 (2.26)	0.196 (1.09)		461	177.412	0.81
1995	-0.781 (3.81)	0.405 (21.34)	0.244 (15.23)	-0.135 (3.08)	0.077 (1.34)	0.185 (1.62)	-0.587 (3.06)	0.659 (6.99)	0.085 (1.61)	-0.079 (1.04)	0.171 (2.62)	0.183 (0.75)		485	207.593	0.82

Year	Intercept Sign	LTA +	Sub +	Current -	Quick +	DE +	ROI -	Foreign +	YE +	Loss +	Brand +	Specialist +	B6spec	N	F	R ²
Pool	-1.336 (18.03)	0.456 (66.25)	0.239 (42.16)	-0.120 (7.05)	0.081 (3.78)	0.176 (2.49)	-0.331 (5.60)	0.504 (14.34)	0.059 (3.17)	0.033 (1.24)	0.147 (7.41)	0.031 (0.88)		4638	1629.004	0.80
Pool	-1.334 (18.06)	0.456 (66.22)	0.239 (42.16)	-0.120 (7.06)	0.081 (3.80)	0.175 (2.48)	-0.329 (5.57)	0.504 (14.35)	0.060 (3.15)	0.032 (1.22)	0.153 (7.48)	0.106 (1.50)	-0.100 (1.22)	4638	1493.547	0.80

LTA = natural logarithm of total assets (£'000);
 Sub = square root of the number of subsidiaries;
 Current = ratio of current assets to current liabilities;
 Quick = ratio of current assets less stock to current liabilities;
 DE = ratio of long-term debt to total assets;
 ROI = ratio of earnings before interest and tax to total assets;

Foreign = proportion of subsidiaries that are foreign operations;
 YE = dummy variable, fiscal year end between December and March inclusive = 1;
 Loss = dummy variable, operating loss reported in prior 3 years;
 Brand = dummy variable, big six auditor = 1, 0 otherwise;
 Specialist = dummy variable, industry specialist = 1, 0 otherwise;
 B6Spec = dummy variable, Big Six specialist = 1, 0 otherwise.

Table 5 Panel B Multivariate audit fee regression models with AFSI defined continuous specialists:

Year	Intercept Sign	I.T.A +	Sub +	Current -	Quick +	DE +	ROI -	Foreign +	YE +	Loss +	Brand +	AFSISnec +	B6snec	N	F	R sq
1985	-3.148 (9.55)	0.598 (19.65)	0.185 (8.25)	0.071 (0.73)	0.268 (2.06)	1.268 (2.09)	-0.613 (1.33)	0.190 (1.40)	-0.045 (0.57)	-0.102 (1.27)	0.126 (1.61)	0.152 (0.03)		225	102.804	0.84
1985	-3.125 (9.48)	0.598 (19.68)	0.188 (8.34)	0.053 (0.54)	0.284 (2.18)	1.335 (2.19)	-0.531 (1.14)	0.185 (1.37)	-0.050 (0.63)	-0.106 (1.31)	0.088 (1.06)	-18.772 (1.16)	21.138 (1.25)	225	94.618	0.84
1986	-2.878 (9.02)	0.557 (18.92)	0.225 (10.03)	0.193 (2.16)	-0.097 (0.96)	0.070 (0.14)	0.051 (0.12)	0.367 (3.26)	0.032 (0.41)	0.039 (0.48)	0.136 (1.83)	6.170 (1.20)		288	111.413	0.81
1986	-2.866 (8.96)	0.558 (18.92)	0.226 (10.06)	0.184 (2.04)	-0.089 (0.88)	0.117 (0.22)	0.076 (0.17)	0.366 (3.25)	0.028 (0.36)	0.039 (0.47)	0.113 (1.41)	-3.764 (0.29)	11.464 (0.82)	288	102.062	0.81
1987	-2.319 (7.72)	0.508 (18.33)	0.237 (11.28)	0.020 (0.25)	0.084 (0.88)	0.124 (0.25)	0.102 (0.19)	0.347 (2.40)	0.004 (0.06)	0.145 (1.24)	0.220 (3.13)	5.678 (1.49)		358	125.236	0.80
1987	-2.308 (7.71)	0.508 (18.42)	0.237 (11.31)	0.015 (0.19)	0.087 (0.92)	0.250 (0.51)	0.120 (0.22)	0.358 (2.48)	0.003 (0.04)	0.149 (1.27)	0.178 (2.41)	-6.161 (0.82)	15.341 (1.81)	358	115.844	0.79
1988	-2.478 (9.48)	0.537 (23.19)	0.236 (12.96)	-0.056 (0.84)	0.064 (0.82)	-0.246 (0.66)	0.926 (1.99)	0.365 (2.93)	0.038 (0.62)	0.006 (0.06)	0.093 (1.50)	6.950 (2.99)		430	167.693	0.81
1988	-2.478 (9.47)	0.538 (23.11)	0.236 (12.93)	-0.056 (0.84)	0.064 (0.82)	-0.237 (0.64)	0.925 (1.98)	0.365 (2.92)	0.039 (0.62)	0.005 (0.05)	0.089 (1.35)	5.261 (0.52)	1.770 (0.17)	430	153.356	0.81
1989	-2.380 (8.84)	0.543 (22.81)	0.211 (11.42)	-0.080 (1.46)	0.070 (0.98)	-0.533 (1.63)	0.546 (1.35)	0.329 (2.51)	0.085 (1.37)	0.170 (1.50)	0.104 (1.65)	5.484 (3.25)		446	161.926	0.80
1989	-2.379 (8.82)	0.542 (22.68)	0.212 (11.41)	-0.080 (1.46)	0.070 (0.98)	-0.547 (1.66)	0.548 (1.35)	0.331 (2.52)	0.084 (1.36)	0.170 (1.51)	0.111 (1.68)	8.121 (1.17)	-2.778 (0.39)	446	148.148	0.80
1990	-1.460 (5.92)	0.462 (20.87)	0.247 (14.23)	-0.105 (2.36)	0.078 (1.13)	0.190 (0.71)	0.169 (0.44)	0.310 (2.70)	0.068 (1.17)	0.050 (0.45)	0.118 (1.99)	1.398 (2.18)		473	177.362	0.81
1990	-1.465 (5.94)	0.461 (20.83)	0.246 (14.19)	-0.103 (2.32)	0.078 (1.13)	0.167 (0.62)	0.174 (0.46)	0.311 (2.71)	0.068 (1.17)	0.050 (0.46)	0.127 (2.07)	3.722 (0.91)	-2.377 (0.58)	473	162.368	0.81
1991	-0.903 (4.00)	0.421 (20.62)	0.253 (15.06)	-0.176 (3.55)	0.122 (1.80)	0.155 (0.68)	-0.452 (1.73)	0.445 (4.09)	0.126 (2.34)	0.007 (0.07)	0.139 (2.44)	0.930 (1.48)		496	189.162	0.81
1991	-0.902 (3.99)	0.421 (20.58)	0.253 (14.97)	-0.176 (3.55)	0.123 (1.80)	0.156 (0.68)	-0.451 (1.72)	0.445 (4.09)	0.126 (2.33)	0.007 (0.07)	0.139 (2.29)	0.729 (0.10)	0.203 (0.03)	496	173.033	0.81
1992	-0.675 (3.22)	0.398 (20.32)	0.253 (14.80)	-0.093 (1.90)	0.019 (0.34)	0.328 (1.82)	-0.316 (4.12)	0.546 (5.30)	0.072 (1.32)	-0.028 (0.40)	0.148 (2.51)	0.784 (1.19)		488	182.585	0.81
1992	-0.654 (3.12)	0.398 (20.33)	0.257 (14.93)	-0.097 (2.00)	0.021 (0.39)	0.358 (1.99)	-0.326 (4.25)	0.546 (5.30)	0.072 (1.32)	-0.034 (0.49)	0.122 (2.02)	-7.224 (1.56)	8.143 (1.74)	488	168.346	0.80
1993	-0.790 (3.76)	0.411 (20.90)	0.243 (14.69)	-0.154 (3.05)	0.102 (1.64)	0.305 (1.36)	0.051 (0.27)	0.624 (6.55)	0.036 (0.66)	0.070 (0.96)	0.109 (1.80)	1.132 (1.65)		488	195.925	0.82
1993	-0.803 (3.79)	0.411 (20.89)	0.243 (14.60)	-0.152 (2.99)	0.100 (1.61)	0.311 (1.38)	0.051 (0.27)	0.625 (6.55)	0.037 (0.66)	0.070 (0.96)	0.121 (1.83)	7.818 (0.53)	-6.697 (0.46)	488	179.312	0.82

Year	Intercent Sign	LTA +	Sub +	Current -	Quick +	DE +	ROI -	Foreign +	YE +	Loss +	Brand +	AFSISpec +	B6Spec	N	F	R sq
1994	-0.742 (3.49)	0.418 (21.28)	0.239 (14.48)	-0.176 (3.68)	0.081 (1.34)	-0.033 (0.16)	-0.292 (1.26)	0.614 (5.99)	0.045 (0.81)	0.050 (0.67)	0.129 (2.05)	1.218 (1.71)		461	178.252	0.81
1994	-0.721 (3.39)	0.414 (21.05)	0.239 (14.52)	-0.173 (3.61)	0.076 (1.26)	-0.016 (0.08)	-0.316 (1.36)	0.614 (6.01)	0.042 (0.76)	0.051 (0.69)	0.156 (2.42)	5.050 (2.40)	-4.320 (1.94)	461	164.721	0.81
1995	-0.796 (3.96)	0.407 (21.85)	0.239 (15.16)	-0.116 (2.68)	0.066 (1.17)	0.128 (1.14)	-0.602 (3.20)	0.649 (7.03)	0.085 (1.65)	-0.094 (1.27)	0.158 (2.53)	3.499 (4.47)		485	217.890	0.83
1995	-0.795 (3.95)	0.406 (21.74)	0.238 (15.07)	-0.115 (2.66)	0.065 (1.15)	0.130 (1.16)	-0.600 (3.19)	0.653 (7.02)	0.085 (1.64)	-0.093 (1.25)	0.164 (2.55)	4.607 (1.59)	-1.194 (0.40)	485	199.390	0.83
Pool	-1.407 (19.57)	0.462 (69.05)	0.235 (42.88)	-0.107 (6.40)	0.083 (3.95)	0.165 (2.35)	-0.338 (5.81)	0.479 (14.09)	0.056 (3.05)	0.019 (0.75)	0.146 (7.60)	1.739 (6.25)		4638	1727.361	0.81
Pool	-1.407 (19.57)	0.462 (68.91)	0.235 (42.83)	-0.106 (6.35)	0.082 (3.92)	0.162 (2.32)	-0.337 (5.79)	0.479 (14.10)	0.056 (3.04)	0.019 (0.77)	0.151 (7.62)	3.080 (2.19)	-1.391 (0.97)	4638	1583.474	0.81

LTA = natural logarithm of total assets (£'000);
 Sub = square root of the number of subsidiaries;
 Current = ratio of current assets to current liabilities;
 Quick = ratio of current assets less stock to current liabilities;
 DE = ratio of long-term debt to total assets;
 ROI = ratio of earnings before interest and tax to total assets;

Foreign = proportion of subsidiaries that are foreign operations;
 YE = dummy variable, fiscal year end between December and March inclusive = 1;
 Loss = dummy variable, operating loss reported in prior 3 years;
 Brand = dummy variable, big six auditor = 1, 0 otherwise;
 AFSISpec = continuous measure of the non Big Six firm's share of the industry;
 B6Spec = continuous measure of the Big Six firm's share of the industry.

Table 6 Panel A Multivariate audit fee regression models using two digit SIC industry codes

Year	Intercept Sign	LTA +	Sub +	Current -	Quick +	DTA +	ROI -	Foreign +	YE +	Loss +	Brand +	Specialist +	B6Spec	N	F	R sq
1985	-3.117 (9.46)	0.596 (19.62)	0.184 (8.21)	0.062 (0.64)	0.270 (2.08)	1.328 (2.26)	-0.605 (1.32)	0.186 (1.38)	-0.052 (0.66)	-0.101 (1.25)	0.131 (1.69)	0.210 (1.17)		225	103.597	0.84
1985	-3.103 (9.37)	0.594 (19.36)	0.183 (8.12)	0.063 (0.65)	0.273 (2.11)	1.346 (2.29)	-0.600 (1.30)	0.186 (1.38)	-0.050 (0.63)	-0.101 (1.25)	0.140 (1.75)	0.313 (1.14)	-0.182 (0.50)	225	94.641	0.84
1986	-2.867 (9.02)	0.557 (19.02)	0.222 (9.84)	0.174 (1.97)	-0.096 (0.95)	0.266 (0.52)	0.090 (0.20)	0.369 (3.29)	0.029 (0.37)	0.062 (0.75)	0.155 (2.07)	0.350 (1.92)		288	112.536	0.81
1986	-2.859 (9.00)	0.555 (18.94)	0.219 (9.69)	0.177 (2.01)	-0.099 (0.99)	0.249 (0.49)	0.102 (0.23)	0.378 (3.37)	0.037 (0.47)	0.065 (0.79)	0.175 (2.29)	0.569 (2.29)	-0.465 (1.29)	288	103.552	0.80
1987	-2.299 (7.68)	0.505 (18.31)	0.241 (11.56)	0.003 (0.04)	0.089 (0.94)	0.277 (0.58)	0.051 (0.10)	0.344 (2.39)	0.006 (0.09)	0.148 (1.27)	0.243 (3.44)	0.808 (2.30)		358	126.632	0.79
1988	-2.542 (9.65)	0.544 (23.34)	0.237 (12.87)	-0.081 (1.21)	0.080 (1.03)	-0.156 (0.42)	0.977 (2.07)	0.371 (2.94)	0.043 (0.70)	0.004 (0.04)	0.100 (1.60)	0.020 (0.10)		430	163.324	0.81
1988	-2.536 (9.60)	0.544 (23.25)	0.237 (12.86)	-0.082 (1.22)	0.082 (1.04)	-0.155 (0.41)	0.987 (2.09)	0.366 (2.89)	0.043 (0.70)	0.003 (0.03)	0.097 (1.54)	-0.083 (0.25)	0.166 (0.39)	430	149.415	0.81
1989	-2.451 (9.05)	0.551 (23.10)	0.212 (11.40)	-0.104 (1.88)	0.084 (1.16)	-0.409 (1.24)	0.540 (1.32)	0.332 (2.51)	0.081 (1.29)	0.161 (1.41)	0.104 (1.64)	0.523 (1.53)		446	158.126	0.79
1990	-1.472 (5.95)	0.462 (20.82)	0.247 (14.18)	-0.111 (2.51)	0.081 (1.16)	0.221 (0.83)	0.215 (0.56)	0.317 (2.75)	0.071 (1.22)	0.053 (0.48)	0.128 (2.16)	0.745 (1.31)		473	175.920	0.80
1991	-0.892 (3.95)	0.421 (20.55)	0.253 (15.06)	-0.183 (3.69)	0.127 (1.87)	0.171 (0.75)	-0.467 (1.78)	0.448 (4.11)	0.128 (2.37)	-0.008 (0.09)	0.146 (2.55)	0.447 (0.80)		496	188.407	0.81
1992	-0.677 (3.22)	0.398 (20.30)	0.254 (14.84)	-0.097 (1.99)	0.021 (0.38)	0.345 (1.92)	-0.319 (4.15)	0.548 (5.30)	0.072 (1.32)	-0.027 (0.40)	0.153 (2.58)	0.314 (0.57)		488	182.061	0.81
1993	-0.780 (3.71)	0.410 (20.80)	0.245 (14.78)	-0.161 (3.18)	0.105 (1.68)	0.321 (1.43)	0.055 (0.29)	0.622 (6.52)	0.034 (0.62)	0.071 (0.98)	0.126 (2.06)	0.571 (1.46)		488	195.628	0.82
1994	-0.744 (3.49)	0.418 (21.28)	0.240 (14.51)	-0.184 (3.83)	0.082 (1.35)	-0.020 (0.09)	-0.299 (1.28)	0.618 (6.02)	0.049 (0.81)	0.060 (0.80)	0.134 (2.12)	0.563 (1.04)		461	177.365	0.81
1995	-0.772 (3.77)	0.405 (21.33)	0.244 (15.26)	-0.135 (3.09)	0.075 (1.31)	0.187 (1.64)	-0.581 (3.03)	0.655 (6.94)	0.085 (1.62)	-0.076 (1.01)	0.166 (2.59)	0.450 (0.85)		485	207.674	0.82
Pool	-1.405 (19.47)	0.462 (68.85)	0.236 (42.88)	-0.112 (6.95)	0.087 (4.15)	0.200 (2.86)	-0.342 (5.86)	0.486 (14.28)	0.055 (2.99)	0.022 (0.87)	0.155 (7.99)	0.320 (3.60)		4638	1715.202	0.81
Pool	-1.405 (19.47)	0.462 (68.84)	0.235 (42.82)	-0.116 (6.94)	0.087 (4.15)	0.201 (2.86)	-0.341 (5.85)	0.486 (14.29)	0.055 (3.02)	0.021 (0.85)	0.158 (8.11)	0.441 (3.71)	-0.274 (1.53)	4638	1572.931	0.81

LTA = natural logarithm of total assets (£'000);
 Sub = square root of the number of subsidiaries;
 Current = ratio of current assets to current liabilities;
 Quick = ratio of current assets less stock to current liabilities;
 DTA = ratio of long-term debt to total assets;
 ROI = ratio of earnings before interest and tax to total assets;
 Foreign = proportion of subsidiaries that are foreign operations;
 YE = dummy variable, fiscal year end between December and March inclusive = 1;
 Loss = dummy variable, operating loss reported in prior 3 years;
 Brand = dummy variable, Big Six auditor = 1, 0 otherwise;
 Specialist = dummy variable, industry specialist = 1, 0 otherwise;
 B6Spec = dummy variable, Big Six specialist = 1, 0 otherwise.

Table 6 Panel B Multivariate audit fee regression models with AFSI ‘finer’ specialists

Year	Intercept Sign	LTA +	Sub +	Current -	Quick +	DTA +	ROI -	Foreign +	YE +	Loss +	Brand +	Specialist +	B6spec	N	F	R sq
1985	-3.141 (9.55)	0.597 (19.68)	0.184 (8.22)	0.077 (0.79)	0.255 (1.96)	1.394 (2.33)	-0.589 (1.28)	0.190 (1.41)	-0.043 (0.55)	-0.102 (1.27)	0.125 (1.61)	-0.242 (0.99)		225	103.379	0.83
1985	-3.103 (9.44)	0.593 (19.47)	0.186 (8.30)	0.082 (0.85)	0.242 (1.86)	1.406 (2.36)	-0.591 (1.29)	0.197 (1.46)	-0.048 (0.60)	-0.098 (1.22)	0.140 (1.79)	0.402 (0.76)	-0.809 (1.37)	225	95.311	0.82
1986	-2.912 (9.14)	0.560 (19.06)	0.227 (10.13)	0.191 (2.15)	-0.094 (0.93)	0.253 (0.49)	0.081 (0.18)	0.368 (3.28)	0.035 (0.45)	0.037 (0.45)	0.142 (1.91)	-0.349 (1.45)		288	111.734	0.81
1986	-2.903 (9.09)	0.558 (18.96)	0.227 (10.12)	0.193 (2.18)	-0.096 (0.95)	0.244 (0.47)	0.078 (0.18)	0.371 (3.29)	0.034 (0.43)	0.039 (0.48)	0.149 (1.98)	0.014 (0.02)	-0.436 (0.68)	288	102.260	0.81
1987	-2.328 (7.74)	0.510 (18.43)	0.239 (11.37)	0.002 (0.02)	0.108 (1.12)	0.301 (0.62)	0.030 (0.06)	0.348 (2.40)	0.002 (0.00)	0.129 (1.09)	0.215 (3.04)	-0.143 (0.78)		358	124.500	0.79
1987	-2.339 (7.75)	0.510 (18.42)	0.239 (11.33)	0.004 (0.05)	0.108 (1.12)	0.274 (0.56)	0.024 (0.04)	0.348 (2.40)	0.004 (0.05)	0.129 (1.09)	0.222 (3.08)	-0.046 (0.18)	-0.186 (0.52)	358	113.901	0.79
1988	-2.540 (9.65)	0.545 (23.41)	0.237 (12.87)	-0.087 (1.28)	0.089 (1.12)	-0.144 (0.39)	0.967 (2.05)	0.376 (2.98)	0.040 (0.64)	-0.003 (0.03)	0.093 (1.49)	-0.120 (0.78)		430	163.614	0.81
1988	-2.541 (9.64)	0.545 (23.38)	0.237 (12.85)	-0.086 (1.27)	0.088 (1.11)	-0.144 (0.39)	0.957 (2.02)	0.377 (2.99)	0.040 (0.64)	-0.003 (0.03)	0.097 (1.51)	-0.088 (0.41)	-0.067 (0.22)	430	149.635	0.81
1989	-2.468 (9.09)	0.552 (23.07)	0.211 (11.25)	-0.101 (1.83)	0.090 (1.23)	-0.408 (1.23)	0.540 (1.32)	0.343 (2.59)	0.086 (1.37)	0.159 (1.39)	0.112 (1.76)	-0.184 (0.81)		446	157.348	0.80
1990	-1.463 (5.91)	0.462 (20.79)	0.247 (14.15)	-0.109 (2.44)	0.078 (1.13)	0.197 (0.73)	0.187 (0.49)	0.328 (2.85)	0.071 (1.22)	0.050 (0.44)	0.120 (2.02)	0.244 (0.75)		473	175.360	0.81
1991	-0.899 (3.98)	0.421 (20.55)	0.254 (15.05)	-0.181 (3.64)	0.126 (1.84)	0.164 (0.72)	-0.465 (1.77)	0.454 (4.16)	0.129 (2.38)	0.001 (0.01)	0.142 (2.48)	0.068 (0.25)		496	188.122	0.81
1992	-0.679 (3.23)	0.398 (20.31)	0.254 (14.85)	-0.095 (1.95)	0.019 (0.35)	0.338 (1.88)	-0.318 (4.14)	0.552 (5.35)	0.073 (1.33)	-0.022 (0.32)	0.149 (2.52)	0.098 (0.36)		488	181.966	0.81
1993	-0.791 (3.76)	0.411 (20.85)	0.245 (14.77)	-0.158 (3.12)	0.102 (1.64)	0.299 (1.33)	0.060 (0.32)	0.632 (6.63)	0.037 (0.67)	0.081 (1.11)	0.112 (1.84)	0.222 (0.81)		488	194.879	0.82
1994	-0.734 (3.44)	0.417 (21.18)	0.239 (14.42)	-0.180 (3.75)	0.080 (1.31)	-0.026 (0.13)	-0.292 (1.25)	0.635 (6.18)	0.046 (0.82)	0.060 (0.80)	0.137 (2.16)	0.718 (1.33)		461	177.692	0.81
1995	-0.760 (3.71)	0.403 (21.12)	0.244 (15.29)	-0.133 (3.04)	0.074 (1.29)	0.184 (1.62)	-0.581 (3.03)	0.663 (7.03)	0.084 (1.59)	-0.076 (1.02)	0.173 (2.66)	0.297 (0.95)		485	207.773	0.82
Pool	-1.333 (18.03)	0.456 (66.29)	0.239 (42.23)	-0.120 (7.05)	0.081 (3.80)	0.176 (2.50)	-0.330 (5.60)	0.506 (14.45)	0.061 (3.22)	0.032 (1.21)	0.147 (7.39)	-0.068 (2.99)		4638	1629.024	0.80
Pool	-1.334 (18.03)	0.456 (66.27)	0.239 (42.21)	-0.120 (7.04)	0.081 (3.80)	0.176 (2.50)	-0.330 (5.60)	0.507 (14.50)	0.061 (3.23)	0.032 (1.21)	0.148 (7.39)	-0.014 (0.11)	-0.078 (0.49)	4638	1493.030	0.80

LTA = natural logarithm of total assets (£'000);

Sub = square root of the number of subsidiaries;

Current = ratio of current assets to current liabilities;

Quick = ratio of current assets less stock to current liabilities;

DTA = ratio of long-term debt to total assets;

ROI = ratio of earnings before interest and tax to total assets;

Foreign = proportion of subsidiaries that are foreign operations;

YE = dummy variable, fiscal year end between December and March inclusive = 1;

Loss = dummy variable, operating loss reported in prior 3 years;

Brand = dummy variable, Big Six auditor = 1, 0 otherwise;

Specialist = dummy variable, industry specialist = 1, 0 otherwise;

B6Spec = dummy variable, Big Six specialist = 1, 0 otherwise.

Table 6 Panel C Multivariate audit fee regression models for small clients (Assets <£35,329,000) with AFSI specialists

Year	Intercept Sign	LTA +	Sub +	Current -	Quick +	DTA +	ROI -	Foreign +	YE +	Loss +	Brand +	Specialist +	B6snec	N	F	R sq
1985	0.258 (0.25)	0.276 (2.24)	0.377 (5.01)	-0.033 (0.18)	0.026 (0.13)	1.622 (0.77)	-1.082 (1.85)	0.379 (1.29)	-0.244 (1.72)	-0.440 (2.51)	0.023 (0.16)	0.066 (0.41)		44	7.306	0.61
1985	-0.322 (0.34)	0.324 (2.91)	0.409 (6.01)	0.055 (0.33)	0.033 (0.19)	-0.910 (0.44)	-1.478 (2.74)	0.668 (2.39)	-0.318 (2.47)	-0.542 (3.39)	0.251 (1.70)	0.814 (2.84)	-1.124 (3.02)	44	9.160	0.69
1986	0.277 (0.23)	0.324 (2.59)	0.230 (3.48)	-0.318 (1.37)	0.184 (0.82)	1.430 (1.14)	-1.444 (1.85)	0.314 (0.96)	0.045 (0.34)	-0.121 (0.73)	0.034 (0.23)	0.281 (2.03)		60	4.853	0.42
1986	0.135 (0.11)	0.340 (2.66)	0.229 (3.45)	-0.370 (1.51)	0.226 (0.97)	-1.633 (1.26)	-1.513 (1.91)	0.345 (1.04)	0.055 (0.41)	-0.111 (0.66)	0.128 (0.64)	0.383 (1.88)	-0.201 (0.69)	60	4.438	0.41
1987	-1.165 (1.29)	0.428 (4.61)	0.292 (5.69)	0.026 (0.18)	-0.046 (0.29)	-0.890 (0.89)	-1.264 (1.79)	0.284 (1.26)	-0.091 (0.85)	-0.024 (0.18)	0.173 (1.50)	0.075 (0.68)		85	7.339	0.45
1987	-1.116 (1.19)	0.424 (4.46)	0.291 (5.59)	0.020 (0.13)	-0.037 (0.23)	-0.900 (0.89)	-1.274 (1.79)	0.284 (1.25)	-0.091 (0.84)	-0.032 (0.23)	0.146 (0.83)	0.054 (0.36)	0.048 (0.20)	85	6.643	0.45
1988	-1.589 (1.70)	0.459 (4.98)	0.286 (5.21)	-0.013 (0.07)	-0.028 (0.15)	-0.651 (0.78)	0.300 (0.44)	0.304 (1.59)	-0.020 (0.19)	0.128 (1.04)	0.082 (0.78)	0.006 (0.06)		106	8.402	0.44
1988	-1.559 (1.64)	0.458 (4.92)	0.284 (5.10)	-0.014 (0.08)	-0.026 (0.14)	-0.643 (0.77)	0.288 (0.42)	0.301 (1.56)	-0.022 (0.21)	0.124 (0.98)	0.063 (0.46)	-0.022 (0.13)	0.044 (0.21)	106	7.627	0.43
1989	-1.502 (1.43)	0.477 (4.49)	0.243 (4.55)	-0.132 (1.14)	0.058 (0.41)	0.319 (0.45)	-0.246 (0.51)	0.197 (0.95)	0.091 (0.84)	-0.080 (0.05)	0.087 (0.85)	0.010 (0.09)		97	9.187	0.48
1989	-1.591 (1.49)	0.499 (4.48)	0.239 (4.40)	-0.141 (1.20)	0.081 (0.54)	0.379 (0.53)	-0.251 (0.52)	0.183 (0.88)	0.081 (0.73)	-0.019 (0.11)	0.032 (0.22)	-0.072 (0.39)	0.119 (0.53)	97	8.374	0.48
1990	1.319 (1.50)	0.202 (2.39)	0.349 (8.10)	-0.174 (1.46)	-0.044 (0.30)	0.441 (0.77)	-0.668 (1.43)	0.258 (1.56)	-0.050 (0.56)	-0.050 (0.40)	0.015 (0.17)	0.016 (0.19)		118	14.985	0.57
1990	1.465 (1.65)	0.184 (2.13)	0.348 (8.07)	-0.172 (1.44)	-0.049 (0.33)	0.428 (0.75)	-0.700 (1.50)	0.279 (1.67)	-0.044 (0.49)	-0.055 (0.44)	0.082 (0.75)	0.141 (0.93)	-0.182 (1.00)	118	13.821	0.57
1991	0.136 (0.21)	0.326 (4.81)	0.289 (7.24)	-0.221 (2.51)	0.170 (1.59)	0.688 (2.10)	-1.179 (3.72)	0.518 (3.07)	0.021 (0.27)	-0.032 (0.32)	-0.001 (0.02)	0.044 (0.58)		139	18.954	0.59
1991	0.108 (0.16)	0.333 (4.85)	0.289 (7.24)	-0.231 (2.59)	0.179 (1.66)	0.694 (2.12)	-1.179 (3.72)	0.507 (3.00)	0.014 (0.18)	-0.030 (0.30)	-0.042 (0.42)	-0.032 (0.24)	0.111 (0.68)	139	17.338	0.59
1992	0.559 (0.87)	0.274 (4.12)	0.333 (8.14)	-0.144 (1.50)	0.000 (0.00)	0.534 (2.15)	-0.236 (3.34)	0.329 (2.08)	0.020 (0.25)	0.026 (0.32)	0.019 (0.24)	0.084 (1.07)		138	17.794	0.57
1992	0.560 (0.86)	0.273 (4.08)	0.333 (8.10)	-0.142 (1.46)	-0.001 (0.01)	0.533 (2.13)	-0.237 (3.33)	0.330 (2.07)	0.020 (0.25)	0.026 (0.31)	0.026 (0.26)	0.099 (0.67)	-0.020 (0.12)	138	16.185	0.57
1993	-0.243 (0.37)	0.355 (5.23)	0.332 (7.96)	-0.156 (1.85)	0.041 (0.42)	0.672 (1.66)	0.096 (0.53)	0.303 (1.95)	-0.091 (1.14)	0.118 (1.30)	0.043 (0.52)	0.013 (0.16)		144	16.900	0.55
1993	-0.196 (0.30)	0.345 (5.08)	0.324 (7.72)	-0.141 (1.66)	0.035 (0.36)	0.714 (1.77)	0.077 (0.42)	0.328 (2.10)	-0.095 (1.18)	0.101 (1.08)	0.128 (1.27)	0.192 (1.31)	-0.255 (1.45)	144	15.798	0.55

Year	Intercent Sign	LTA +	Sub +	Current -	Quick +	DTA +	ROI -	Foreign +	YE +	Loss +	Brand +	Specialist +	B6spec	N	F	R sq
1994	-0.005 (0.01)	0.356 (5.67)	0.242 (6.13)	-0.263 (2.84)	0.093 (0.92)	0.539 (1.25)	-0.236 (0.92)	0.626 (3.10)	-0.076 (0.96)	-0.036 (0.40)	0.127 (1.62)	0.178 (2.18)		112	19.104	0.64
1994	0.030 (0.05)	0.351 (5.48)	0.240 (6.01)	-0.266 (2.85)	0.101 (0.98)	0.573 (1.31)	-0.237 (0.92)	0.635 (3.12)	-0.070 (0.87)	-0.038 (0.41)	0.152 (1.66)	0.248 (1.59)	-0.097 (0.52)	112	17.408	0.64
1995	-1.046 (1.50)	0.426 (5.86)	0.245 (5.51)	-0.065 (0.67)	-0.018 (0.16)	0.858 (1.92)	-0.499 (2.22)	0.534 (2.87)	0.030 (0.37)	-0.088 (0.89)	0.201 (2.25)	0.193 (2.16)		114	18.241	0.63
1995	-1.186 (1.69)	0.437 (5.99)	0.234 (5.19)	-0.077 (0.79)	0.004 (0.03)	0.916 (2.05)	-0.541 (2.39)	0.549 (2.95)	0.037 (0.45)	-0.107 (1.07)	0.272 (2.61)	0.367 (2.29)	-0.250 (1.31)	114	16.980	0.62
Pool	-0.335 (1.44)	0.359 (14.92)	0.293 (20.67)	-0.138 (4.05)	0.013 (0.36)	0.583 (4.11)	-0.355 (6.55)	0.345 (5.97)	-0.004 (0.13)	0.029 (0.90)	0.107 (3.75)	0.045 (1.62)		1113	125.006	0.55
Pool	-0.337 (1.45)	0.357 (14.82)	0.293 (20.66)	-0.134 (3.94)	0.011 (0.31)	0.584 (4.12)	-0.355 (6.56)	0.351 (6.05)	-0.001 (0.04)	0.029 (0.92)	0.135 (3.84)	0.098 (2.05)	-0.080 (1.37)	1113	114.834	0.55

LTA = natural logarithm of total assets (£'000);
Sub = square root of the number of subsidiaries;
Current = ratio of current assets to current liabilities;
Quick = ratio of current assets less stock to current liabilities;
DTA = ratio of long-term debt to total assets;
ROI = ratio of earnings before interest and tax to total assets;

Foreign = proportion of subsidiaries that are foreign operations;
YE = dummy variable, fiscal year end between December and March inclusive = 1;
Loss = dummy variable, operating loss reported in prior 3 years;
Brand = dummy variable, Big Six auditor = 1, 0 otherwise;
Specialist = dummy variable, industry specialist = 1, 0 otherwise;
B6Spec = dummy variable, Big Six specialist = 1, 0 otherwise.

Table 6 Panel D Multivariate audit fee regression models: estimation of the industry specialisation premium for AFSI non Big Six auditors over non Big Six non specialist auditors

	Predicted	Intercent	LTA +	Sub +	Current -	Quick +	DTA +	ROI -	Foreign +	YE +	Loss +	Specialist +	N	F	R sq
1987	Specialist	-1.883	0.464	0.264	0.161	-0.026	0.192	0.053	0.143	-0.142	0.128	-0.203	120	36.378	0.75
	Auditors	(3.54)	(9.68)	(6.98)	(1.24)	(0.15)	(0.26)	(0.06)	(0.56)	(1.25)	(0.75)	(1.15)			
1988	Specialist	-2.061	0.519	0.226	-0.033	0.025	-0.152	0.220	0.174	-0.028	0.078	-0.058	133	48.797	0.78
	Auditors	(4.22)	(11.95)	(7.43)	(0.30)	(0.18)	(0.26)	(0.29)	(0.79)	(0.28)	(0.48)	(0.34)			
1989	Specialist	-2.010	0.523	0.221	0.025	-0.088	-0.590	-0.393	0.299	-0.016	0.132	0.016	132	49.843	0.79
	Auditors	(4.07)	(11.74)	(7.25)	(0.25)	(0.71)	(1.07)	(0.53)	(1.32)	(0.16)	(0.72)	(0.11)			
1990	Specialist	-1.095	0.426	0.263	-0.089	0.071	0.525	0.325	0.463	-0.085	0.053	-0.096	131	62.267	0.83
	Auditors	(2.37)	(10.15)	(9.03)	(1.09)	(0.58)	(1.13)	(0.43)	(2.33)	(0.93)	(0.31)	(0.67)			
1991	Specialist	-0.300	0.353	0.268	-0.130	0.124	1.026	-0.539	0.445	0.024	0.045	0.372	131	51.338	0.79
	Auditors	(0.64)	(7.79)	(8.27)	(1.32)	(0.95)	(2.38)	(1.31)	(2.20)	(0.25)	(0.29)	(1.72)			
1992	Specialist	-0.122	0.344	0.278	-0.030	-0.067	0.526	-0.256	0.512	-0.062	0.079	0.059	117	41.582	0.78
	Auditors	(0.27)	(7.98)	(7.79)	(0.31)	(0.61)	(1.03)	(3.34)	(2.44)	(0.62)	(0.60)	(0.41)			
1993	Specialist	-1.015	0.419	0.221	-0.127	0.163	0.811	0.605	0.675	-0.016	0.209	0.158	110	50.849	0.82
	Auditors	(2.27)	(9.62)	(6.44)	(1.41)	(1.34)	(1.65)	(1.99)	(4.78)	(0.17)	(1.65)	(1.11)			
1994	Specialist	-1.302	0.465	0.219	-0.090	0.008	0.649	0.149	0.688	-0.105	0.136	0.223	96	37.686	0.79
	Auditors	(2.73)	(10.00)	(5.50)	(0.85)	(0.06)	(0.88)	(0.40)	(2.93)	(0.90)	(0.85)	(1.23)			
1995	Specialist	-1.230	0.443	0.238	0.002	0.011	0.637	0.148	0.408	-0.107	-0.110	0.199	90	49.716	0.85
	Auditors	(2.73)	(9.75)	(6.23)	(0.02)	(0.07)	(0.85)	(0.42)	(2.58)	(0.99)	(0.66)	(1.14)			
Pool	Specialist	-1.220	0.442	0.243	-0.044	0.042	0.484	-0.291	0.485	-0.066	0.092	0.044	1046	408.813	0.80
	Auditors	(7.87)	(29.85)	(22.08)	(1.33)	(0.99)	(2.67)	(4.34)	(7.53)	(1.94)	(1.90)	(0.84)			

LTA = natural logarithm of total assets (£'000);

Sub = square root of the number of subsidiaries;

Current = ratio of current assets to current liabilities;

Quick = ratio of current assets less stock to current liabilities;

DTA = ratio of long-term debt to total assets;

Specialist = dummy variable, specialist non Big Six auditor = 1, non-specialist non Big Six auditor = 0.

Foreign = proportion of subsidiaries that are foreign operations;

YE = dummy variable, fiscal year end between December and March inclusive = 1;

Loss = dummy variable, operating loss reported in prior 3 years;

ROI = ratio of earnings before interest and tax to total assets;

Table 6 Panel E

Audit fee regression model: estimation of the Big Six premium across sub-samples of client size (Total assets = £95,055,000)

	Predicted	Intercept	LTA	Sub	Current	Quick	DTA	ROI	Foreign	YE	Loss	Brand	N	F	R sq
		+	+	+	-	+	+	-	+	+	+	+			
1985	Large Clients	-1.025 (1.41)	0.387 (5.22)	0.246 (6.30)	0.025 (0.20)	0.174 (1.11)	0.673 (0.71)	-0.419 (0.84)	0.174 (0.84)	-0.023 (0.21)	-0.093 (0.78)	0.206 (1.97)	104	14.445	0.57
1986	Large Clients	-3.870 (5.77)	0.630 (11.90)	0.175 (5.59)	0.397 (2.79)	-0.167 (0.98)	0.213 (0.30)	0.328 (0.55)	0.006 (1.17)	0.217 (1.81)	-0.114 (0.98)	0.083 (0.72)	149	32.556	0.68
1987	Large Clients	-3.311 (4.80)	0.575 (10.71)	0.240 (6.63)	-0.047 (0.36)	0.148 (0.99)	0.515 (0.75)	0.795 (0.81)	-0.004 (0.74)	0.136 (1.13)	0.090 (0.39)	0.299 (2.46)	183	30.755	0.62
1988	Large Clients	-3.238 (5.17)	0.579 (12.42)	0.246 (7.06)	-0.202 (1.79)	0.266 (2.12)	0.504 (0.86)	2.929 (3.18)	-0.006 (1.04)	0.026 (0.23)	-0.491 (2.01)	0.212 (1.79)	204	35.787	0.63
1989	Large Clients	-3.640 (6.53)	0.629 (14.59)	0.219 (6.72)	-0.168 (2.11)	0.147 (1.47)	-0.872 (1.93)	2.877 (3.39)	-0.003 (0.44)	0.096 (0.96)	0.081 (0.32)	0.127 (1.20)	241	47.459	0.66
1990	Large Clients	-2.330 (4.18)	0.523 (12.19)	0.248 (7.16)	0.120 (1.70)	0.145 (1.30)	0.032 (0.08)	1.234 (1.67)	-0.005 (0.84)	0.138 (1.36)	0.058 (0.23)	0.147 (1.38)	236	41.565	0.63
1991	Large Clients	-1.388 (2.59)	0.459 (11.05)	0.248 (6.99)	-0.177 (2.31)	0.200 (1.75)	-0.104 (0.29)	0.114 (0.21)	-0.001 (0.18)	0.175 (1.78)	-0.011 (0.06)	0.208 (1.95)	237	39.609	0.62
1992	Large Clients	-1.808 (3.37)	0.478 (11.38)	0.238 (6.60)	-0.086 (1.16)	0.202 (1.88)	0.049 (0.14)	0.236 (0.42)	0.001 (0.22)	0.169 (1.68)	0.046 (0.28)	0.217 (1.90)	233	42.075	0.65
1993	Large Clients	-1.424 (2.67)	0.482 (11.60)	0.235 (6.31)	-0.181 (2.19)	0.229 (2.23)	-0.150 (0.39)	-0.362 (0.60)	0.002 (0.30)	0.119 (1.13)	0.045 (0.26)	-0.012 (0.10)	229	42.075	0.65
1994	Large Clients	-1.523 (3.00)	0.474 (12.05)	0.269 (8.12)	-0.211 (3.16)	0.369 (3.60)	-0.699 (2.17)	-0.247 (0.37)	-0.004 (0.95)	0.179 (1.86)	0.172 (1.10)	-0.019 (0.16)	236	50.262	0.68
1995	Large Clients	-1.750 (3.70)	0.475 (13.18)	0.241 (7.14)	-0.179 (2.94)	0.532 (4.90)	-0.428 (1.85)	-0.748 (1.39)	-0.000 (0.04)	0.218 (2.51)	0.095 (0.68)	0.118 (0.99)	251	62.400	0.71
Pool	Large Clients	-1.973 (11.71)	0.502 (37.52)	0.213 (28.29)	-0.111 (4.43)	0.160 (4.43)	-0.125 (1.06)	0.204 (1.07)	0.543 (9.84)	0.125 (3.85)	0.017 (0.32)	0.134 (3.79)	2145	428.171	0.67
1985	Small Clients	-4.671 (6.83)	0.708 (13.47)	0.159 (5.78)	0.290 (1.87)	0.235 (1.06)	1.547 (2.09)	-0.687 (0.64)	0.147 (0.85)	-0.097 (0.83)	-0.142 (1.31)	0.089 (0.79)	121	32.460	0.73
1986	Small Clients	-1.171 (1.70)	0.395 (5.70)	0.304 (6.35)	0.108 (0.94)	-0.081 (0.64)	-0.537 (0.71)	-0.207 (0.44)	0.029 (1.73)	-0.080 (0.83)	0.121 (1.03)	0.168 (1.74)	139	19.246	0.57
1987	Small Clients	-1.095 (1.99)	0.397 (7.11)	0.256 (6.20)	0.054 (0.58)	0.074 (0.65)	0.234 (0.37)	-0.488 (0.84)	0.068 (3.99)	-0.093 (1.19)	0.082 (0.66)	0.154 (1.94)	175	28.545	0.61
1988	Small Clients	-0.959 (2.00)	0.396 (8.79)	0.266 (8.28)	-0.015 (0.21)	0.023 (0.25)	1.061 (2.45)	0.270 (0.59)	0.055 (3.98)	-0.003 (0.05)	0.060 (0.62)	0.061 (0.99)	226	37.27	0.62
1989	Small Clients	-1.151 (2.19)	0.430 (8.15)	0.221 (6.32)	-0.059 (0.84)	0.064 (0.67)	-0.163 (0.39)	-0.323 (0.81)	0.040 (2.93)	0.015 (0.21)	0.062 (0.58)	0.181 (2.72)	205	30.56	0.59
1990	Small Clients	-0.473 (1.04)	0.374 (8.60)	0.283 (9.83)	-0.100 (1.92)	0.036 (0.44)	-0.036 (0.09)	-0.436 (1.15)	0.038 (3.47)	-0.019 (0.32)	0.006 (0.06)	0.118 (1.97)	237	47.158	0.66

	Predicted	Intercen	LTA +	Sub +	Current -	Quick +	DTA +	ROI -	Foreign +	YE +	Loss +	Brand +	N	F	R sq
1991	Small Clients	-0.037 (0.09)	0.337 (8.39)	0.295 (10.72)	-0.187 (2.88)	0.121 (1.47)	0.371 (1.32)	-0.720 (92.76)	0.030 (2.79)	0.085 (1.47)	-0.052 (0.56)	0.110 (1.85)	259	49.87	0.65
1992	Small Clients	-0.009 (0.02)	0.336 (8.76)	0.292 (10.39)	-0.105 (1.63)	-0.006 (0.09)	0.309 (1.65)	-0.288 (4.56)	0.035 (3.36)	0.035 (0.63)	0.021 (0.31)	0.119 (2.02)	255	53.679	0.67
1993	Small Clients	-0.409 (1.02)	0.377 (9.66)	0.278 (9.44)	-0.149 (2.29)	0.045 (0.60)	0.350 (1.07)	0.095 (90.55)	0.029 (2.83)	-0.005 (0.08)	0.076 (1.04)	0.155 (2.49)	259	46.997	0.64
1994	Small clients	-0.388 (0.93)	0.396 (9.86)	0.249 (7.91)	-0.172 (2.29)	-0.037 (0.46)	0.448 (1.75)	-0.439 (2.09)	0.026 (2.15)	-0.058 (0.94)	0.000 (0.01)	0.236 (3.60)	225	41.978	0.65
1995	Small clients	-0.107 (0.26)	0.357 (8.68)	0.221 (7.49)	-0.094 (1.45)	-0.050 (0.70)	0.381 (3.25)	-0.569 (3.19)	0.062 (5.74)	-0.027 (0.46)	-0.103 (1.26)	0.197 (2.93)	234	50.651	0.68
Pool	Small clients	-0.525 (3.62)	0.370 (25.72)	0.298 (32.71)	-0.102 (4.58)	0.011 (0.43)	0.380 (4.66)	-0.382 (7.26)	0.418 (9.97)	-0.001 (0.07)	0.037 (1.37)	0.169 (7.94)	2202	364.967	0.62

LTA = natural logarithm of total assets (£'000);
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 DTA = ratio of long-term debt to total assets;
 ROI = ratio of earnings before interest and tax to total assets;

Foreign = proportion of subsidiaries that are foreign operations;
 YE = dummy variable, fiscal year end between December and March inclusive = 1;
 Loss = dummy variable, operating loss reported in prior 3 years;
 Brand = dummy variable, Big Six auditor = 1.
 Specialist = dummy variable, industry specialist = 1;

Table 6 Panel F Table showing the aggregate audit, non-audit fees and market capitalisation for a sample of UK clients.

	Industry		1985-95	Sample	% clients	Market	1995	Annual	Sample	% clients
Industry	Listing	Number	Audit fee	NAS fee	Quoting	Capital	Number	Audit fee	NAS fee	Quoting
Type	2 digit SIC	of clients	£'000	£'000	£0 NAS	£M	of clients	£'000	£'000	£0 NAS
	1	4	798	343	0	660.509	0	0	0	0
Crop and livestock production	2	18	6081	3246	0	8775.118	3	1168	315	0
Forestry, fishing and hunting	8	1	70	300	0	51.195	1	70	300	0
Metal mining	10	4	3900	1160	25	5208.165
Coal mining, oil and gas extraction	13	69	14776	18277	23	36370.3	7	1355	1630	0
Mining and quarry	14	23	21523	5961	30	14566.88	3	1732	794	0
Building and construction	15	298	64484.14	28479	28	35230.88	32	6033	3161	3
Heavy construction	16	27	5005	2346	15	2581.12	2	191	152	0
Special trade	17	37	6313	16663	30	2375.994	4	923	4327	25
Special trade construction	18	19	18128	1621	21	18443.67	2	2100	1326	0
Food and kindred products	20	80	37484.33	22538.67	26	19678.3	6	2170	1098	0
Tobacco products	21	196	119281	23975	29	153136	21	10102	2027	0
Textile mill products	22	55	6827	2647	24	3149.06	6	539	189	0
Apparel products	23	161	40418.4	110152	1	25042.55	19	4804	5574	0
Lumber and wood products	24	40	3742	1987	35	1839.971	4	477	162	0
Furniture and fixtures	25	49	5937	2140	35	2888.992	6	899	312	33
Paper and allied products	26	22	8812	4545	0	9823.998	2	1669	413	0
Printing and publishing	27	135	66509	34778	11	43429.84	16	9855	4723	0
Chemicals and allied products	28	206	108813.5	88281.47	16	269679.6	25	16681	44703	12
Pete refining and related industries	29	64	22278	20859	17	12400.96	7	2886	2705	0
Leather and leather products	31	162	38618.69	41079.31	14	22879.91	19	5459	2897	0
Stone, clay, glass, concrete products	32	47	34128.8	24821.2	2	14994.66	5	2910	2279	0
Primary metal industries	33	120	60242	10934	15	36999.1	13	8203	1504	0
Fabricated metal products	34	100	36383	11224	19	20054.47	10	3973	1953	0
Industrial machinery	35	219	59049.25	96049.75	29	25773.62	17	5047	938	1
Electrical equipment	36	324	107961.1	112609	21	68680.33	28	8414	7459	0
Transportation equipment	37	214	113819.6	28460.41	29	63298.11	23	13033	4461	13
Measurement instruments	38	119	36303.67	11252	24	31680.76	14	4601	2009	1
Miscellaneous manufacturing	39	52	4963.69	7784	29	1653.092	5	411	1604	0
Motor freight transportation	42	28	13806	541	43	11367.86	4	1738	0	100
Water transportation	44	42	19865	14787	29	16333.95	3	124	132	0
Air transportation	45	32	3626	1779	19	8104.221	2	374	135	0

Industry Type	Industry Listing 2 digit SIC	Number Of clients	1985-95 Audit fee £'000	Sample NAS fee £'000	% clients Quoting £0 NAS	Market Capital £'000	1995 Number Of clients	Annual Audit fee £'000	Sample NAS fee £'000	% clients Quoting £0 NAS
Transportation services	47	57	15880	4288	37	7714.665	5	1663	280	20
Communications	48	69	32019.4	10369.6	33	315535.9	7	4145	1049	43
Electric, gas, sanitary services	49	2	61	0	100	232.571	1	30	0	100
Wholesale durable goods	50	143	61629.29	16357	1	35501.49	14	7981	5281	0
Wholesale non-durable goods	51	212	74814.4	14122.13	33	51017.03	22	8146	3331	0
Building materials	52	78	19566.67	7437	12	14802.61	7	2062	1218	14
General merchandising stores	53	33	7790	4789	15	80518.18	3	858	815	0
Food stores	54	82	12060.71	32411	13	114247	9	1642	3712	11
Motor vehicle dealers, petrol station	55	64	10273	8180	0	4367.24	7	1015	957	0
Apparel and accessory stores	56	92	20418.53	10806	28	25490.18	8	1871	1449	0
Furniture and equipment stores	57	41	6236.75	7953	10	20425.18	3	1141	265	0
Eating and drinking places	58	26	3975	408	15	4564.153	4	846	111	25
Miscellaneous retail	59	38	16874	7351	3	43532.35	3	1732	275	0
Hotels	70	61	11261	2691	49	10103.11	6	1567	284	33
Personal services	72	55	8558	2762.793	31	3219.179	5	977	355.065	0
Advertising, radio and TV services	73	82	32176.96	27443	5	6947.862	9	5279	7825	0
IT, renting and leasing services	74	245	36221.35	22754.85	13	53747	29	3312	1906	<1
Motor vehicle repair services	75	20	2057	1392	30	2283.776	2	247	630	0
Miscellaneous repair services	76	17	1444	1142	1	888.088	2	225	36	0
Motion pictures	78	13	5445	1714	8	10322.3	2	646	800	0
Amusement and recreation services	79	46	5207.09	10052.91	13	5968.486	3	447	200	33
Health services	80	29	24513.02	6439.54	14	16120.75	3	2446	2664	0
Legal services	81	29	2393	1684	14	1020.181	3	217	149	0
Educational services	82	12	1326	112	50	625.344	2	256	0	100
Engineering and advisory services	87	115	22966.27	20540	18	6562.622	16	5101.67	1551	0
Non classifiable establishment	100	9	625	300	0	51.189	1	70	300	0

Special trade includes plumbing, heat and air conditioning, painting and paper hanging, electrical work, masonry, stonework, tiling, plastering and insulation work. Special trade construction includes carpentry, floor laying, roofing, excavation, demolition, metal, glass and concrete work.

Table 6 Panel G Multivariate audit fee regression models with AFSI non audit fee defined specialists

Year	Intercent	LTA +	Sub +	Current -	Quick +	DTA +	ROI -	Foreign +	YE +	Loss +	Brand +	Specialist +	B6spec	N	F	R sq
1991	-0.867 (2.87)	0.434 (19.24)	0.256 (13.35)	-0.187 (3.30)	0.122 (1.54)	-0.036 (0.14)	-0.462 (1.36)	0.428 (3.40)	0.175 (2.77)	-0.063 (0.56)	-0.006 (0.04)	-0.064 (1.06)		371	147.500	0.81
1992	-0.655 (2.48)	0.403 (18.57)	0.251 (13.18)	-0.115 (2.08)	0.059 (0.91)	0.258 (1.25)	-0.804 (2.62)	0.594 (5.12)	0.101 (1.60)	-0.142 (1.54)	0.119 (0.99)	-0.044 (0.65)		394	141.171	0.80
1993	-0.507 (1.89)	0.412 (18.93)	0.243 (12.93)	-0.171 (2.92)	0.102 (1.44)	0.205 (0.83)	-0.207 (0.88)	0.623 (5.22)	0.068 (1.05)	0.005 (0.06)	-0.107 (0.80)	-0.068 (1.02)		392	147.369	0.80
1994	-0.498 (1.87)	0.411 (19.33)	0.233 (13.15)	-0.196 (3.71)	0.094 (1.38)	-0.059 (0.28)	-0.600 (2.03)	0.613 (5.49)	0.078 (1.25)	0.013 (0.16)	0.008 (0.06)	0.085 (1.29)		386	143.224	0.80
1995	-0.536 (2.00)	0.389 (19.21)	0.244 (14.26)	-0.139 (3.04)	0.061 (1.00)	0.153 (1.32)	-0.839 (3.84)	0.762 (6.81)	0.132 (2.28)	-0.087 (1.05)	0.090 (0.64)	0.025 (0.38)		414	167.284	0.82
Pool	-0.604 (5.04)	0.408 (42.99)	0.247 (30.45)	-0.161 (6.80)	0.090 (3.04)	0.131 (1.62)	-0.570 (4.87)	0.604 (11.76)	0.113 (4.12)	-0.053 (1.37)	0.023 (0.40)	-0.014 (0.51)		1956	750.380	0.81

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 DTA = ratio of long-term debt to total assets;
 ROI = ratio of earnings before interest and tax to total assets;

Foreign = proportion of subsidiaries that are foreign operations;
 YE = dummy variable, fiscal year end between December and March inclusive = 1;
 Loss = dummy variable, operating loss reported in prior 3 years;
 Brand = dummy variable, Big Six auditor = 1, 0 otherwise.
 Specialist = dummy variable, industry specialist = 1, 0 otherwise;
 B6spec = dummy variable, Big Six specialist = 1, 0 otherwise.