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Big 4 Audit Fee Premiums for National and Office-Level Industry Leadership in the United Kingdom

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SUMMARY: The pricing of Big 4 industry leadership is examined for a sample of U.K. publicly-listed companies, and adds to the evidence from the Australian and U.S. audit markets that city-specific industry leadership commands a fee premium. There is a significant fee premium for city-specific industry leaders relative to other Big 4 auditors, but *no* evidence that either the top-ranked or second-ranked firm nationally commands a fee premium relative to other Big 4 auditors, after controlling for city-level industry leadership. We also test for Big 4 fee premiums relative to non-Big 4 auditors and the U.K. data suggest a three-level hierarchy based on audit fee differentials: (1) Big 4 city-specific industry leaders have the largest fees; (2) other Big 4 auditors (noncity leaders) and second-tier national firms have comparable fees that are lower than Big 4 city leaders but larger than third-tier firms; and (3) third-tier accounting firms have the lowest fees.

INTRODUCTION

The purpose of this study is to investigate if there is evidence of a Big 4 premium for industry leadership in the U.K.[1] There is no prior study of industry leadership and audit pricing in the U.K., although there is evidence from Australia and Hong Kong that a Big 4 accounting firm's national-level industry leadership results in higher fees relative to other Big 4 auditors (Craswell et al. 1995; DeFond et al. 2000). More recent research has begun exploring if industry reputations of Big 4 accounting firms are the result of office-level industry leadership in specific cities rather than a firm's national-level industry leadership based on its total clientele (Ferguson et al. 2003; Francis et al. 2005). The lead engagement office on an audit is typically located in the same city as the client's

[1] The term "Big 4" is used because data in the study are from 2002–2003 which is after the collapse of Arthur Andersen. The Big 4 accounting firms are Deloitte Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers.

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corporate headquarters and the audit is administered by professional staff based in the lead engagement office. Thus the underlying issue is whether Big 4 industry expertise is a firm-wide phenomenon or a more localized office-specific phenomenon.

Ferguson et al. (2003) argue that reputations are more likely to be firm-wide if the industry expertise of office-based professionals can be captured and distributed to other offices of the firms through knowledge sharing practices (Vera-Munoz et al. 2006). Alternatively, reputations are more likely to be office-specific if industry expertise is indelibly local in character, and closely tied to office-based professionals who primarily service clients headquartered in the same locale. So the ultimate question is whether human capital with respect to industry knowledge/expertise resides solely with office-based professionals or if it is captured and distributed more widely throughout the firm. Assuming that industry leadership measures a Big 4 auditor's industry expertise, the pricing implications would be as follows: a premium for city-specific leadership *alone* would support the argument that industry expertise is office-specific, while a fee premium for national leadership *alone* would support the firm-wide view that there is effective knowledge sharing across offices leading to the development of a firm's overall national reputation for industry expertise.

Evidence from both the U.S. and Australian audit markets indicates that there is no premium for national industry leadership *alone*; however, there is a premium when auditors are jointly the city-specific industry leader and the national-level industry leader. The premium averages 24 percent in Australia, and 17 percent in the U.S. (Ferguson et al. 2003; Francis et al. 2005). Thus the pricing of industry reputation in both Australia and the U.S. is affected at least to some extent by national-level industry leadership. This suggests that some knowledge transfer may occur between offices, but certainly not "strong" knowledge transfers since national leadership alone is not priced. Results differ between the two countries with respect to the pricing of city-specific industry leadership *alone*. In Australia, there is no premium for city leaders who are not also national leaders (Ferguson et al. 2003); while in the U.S., there is evidence of premium (Francis et al. 2005). Thus city-specific industry leadership in the U.S., either alone or in conjunction with national leadership, is a sufficient condition for a pricing premium which suggests there is no knowledge transfer between offices. On the other hand, the fact that fees are higher for joint city-national leaders rather than for city leaders alone (17 percent versus 7 percent) raises the possibility of at least weak knowledge transfers across offices.

So there are subtle differences in the pricing evidence from Australia and U.S., with slightly stronger evidence of knowledge transfer across offices in Australia than in the U.S. The contrasting evidence from the Australian and U.S. audit markets on city-specific industry leadership illustrates there is not necessarily a singular global effect and that the interplay of national-level versus city-specific reputations for industry expertise can play out differently in different countries. For this reason, the study of additional countries has the potential to shed light on the nature of reputations for industry expertise in the multi-office practice structure of Big 4 accounting firms. Our study undertakes such an analysis for the U.K. by investigating the pricing of Big 4 industry leadership using the above city-national framework.

There are two reasons why pricing of Big 4 industry expertise in the U.K. might play out differently than either the U.S. or Australian audit markets. First, the U.K. is a smaller country which makes it easier and less costly to travel to offices around the country. This could lead to greater flexibility in assigning staff to different offices, on an "as needed" basis, and would make it easier to distribute the industry expertise of specific staff to multiple offices. In the limit, the local office might be little more than a "shop front" for

the firm compared to the situation in Australia and the U.S. where local offices have considerable autonomy and where professional staff normally work out of a single office servicing clients in the local region. A second and related feature of the U.K. audit market is the dominance of one large commercial center (London). In contrast, there are two dominant and competitive cities in Australia (Melbourne and Sydney), and the U.S. has many large cities and is a more geographically decentralized economy than either Australia or the U.K. As a result of the prominence of London, it might be feasible for audits to be staffed primarily out of a central London labor pool in which case local offices would play a less important role in administering audit engagements (including the assignment of professional staff) relative to Australia and the U.S. If these conjectures are correct, then industry expertise in the U.K. is more likely to be driven by the firm's total client base (national clientele) rather than city-specific expertise based on office-specific clienteles.

What do we find? It turns out that corporate locations are far more decentralized than we expected as U.K. companies are headquartered in 62 different cities. There are 351 sample firms (39 percent) headquartered and audited in London. So most U.K. companies in the sample are located outside of London in 61 different cities and are audited by non-London offices of accounting firms. There are 39 cities in the U.K. with two or more company headquarters, and the five largest audit markets after London (351) are Birmingham (71), Leeds (70), Manchester (59), Bristol (33), and Nottingham (29). Despite being a smaller country with a single large city, the U.K. audit market is not dominated by London to the extent that was expected.[2]

Industries are defined in our study using the London Stock Exchange industry categories, and industry leadership is based on the accounting firm with the largest audit fees measured in two ways: national-level industry leadership, which is based on fees of all clients of accounting firms, and city-specific industry leadership, which is based on fees of all clients in an industry for a particular office (e.g., Birmingham). The top-ranked auditor per industry has a national market share of 45 percent of total industry audit fees, and the second-ranked firm has a national market share of 22 percent, averaged across all 28 industries in the study. While the top two auditors nationally are clearly dominant, there is no evidence that either of the top two firms command a premium relative to other Big 4 auditors. However, it is a different story when we examine the pricing of city-specific industry leadership. The city-level industry leader has an average market share of 68 percent of city-specific industry fees, and the second-ranked firm has a market share of only 26 percent. On average, Big 4 city-specific industry leaders earn a premium of 16 percent relative to other Big 4 auditors. We conclude that U.K. audits are priced as if Big 4 reputations for industry expertise are based *solely* on office-level industry leadership in city-specific audit markets. This result implies there is *no* knowledge sharing across Big 4 offices in the U.K. with respect to industry expertise.

Thus the U.K. results provide a sharp contrast to U.S. and Australia where there is some evidence of at least "weak" knowledge sharing across Big 4 offices since audit premiums are jointly affected by city and national leadership. The U.K. results reinforce that there are important differences in the pricing of Big 4 industry expertise across countries, even among a group of countries that is viewed as being relatively similar in nature. Most importantly, the study adds to the literature by providing evidence from another country that city-specific office reputations do seem to matter and to affect the pricing of

[2] We do include a London indicator variable to control for systematic "London" effects on audit pricing due to higher cost of living. As expected, audit fees are significantly higher in London.

auditor industry expertise, even in a smaller more centralized country like the U.K. where *ex ante* we might expect national-level industry leadership to be relatively more important than city-specific reputations. We conclude that the "city versus national" framework is useful for studying auditor industry expertise even in smaller countries with relatively centralized economies.

For completeness we also compare Big 4 fees with those of non-Big 4 auditors, in part because prior U.K. evidence is mixed with respect to the pricing of Big 4 brand name reputation.[3] Our tests show that Big 4 city-specific industry leaders have a premium relative to both second-tier national auditors and smaller third-tier auditors. Big 4 noncity leaders have a premium over third-tier auditors but do *not* have a premium over second-tier firms. These results exploit our city-level industry leadership data and may explain the mixed results in prior U.K. research with respect to the pricing of Big 4 brand name reputation.

Audit pricing research is important because systematically higher audit fees by specific classes of accounting firms provide evidence (indirectly) that higher quality audits are provided by these firms, *ceteris paribus*. Companies that voluntarily purchase higher-priced audits are presumably paying for a better quality audit since any licensed auditor can legally provide an audit. Corroborating this is a substantial body of empirical evidence mainly from the U.S. that the large (Big 4) international accounting firms do provide higher quality audits, a viewpoint that has long been advanced in the research literature (Francis 2004; Watkins et al. 2004).[4] With respect to Big 4 industry expertise, companies that voluntarily purchase higher-priced audits are also presumably paying for a higher-quality service and there is U.S. evidence that earnings are of higher quality when audited by Big 4 industry experts (measured by national clienteles) relative to other Big 4 firms (Balsam et al. 2003; Krishnan 2003). More recently, Francis et al. (2006) document that U.S. clients of Big 4 city-specific industry leaders have higher earnings quality than clients of other Big 4 auditors. We discuss the broader implications of differential audit quality at the end of the paper.[5]

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[3] Prior U.K. studies have investigated large-firm pricing relative to other auditors, but no studies have examined differential pricing of industry expertise among the dominant large firms. U.K. studies have reported mixed results on whether or not the large international accounting firms (now Big 4) earn a premium relative to other accounting firms. For example, Chan et al. (1993), Pong and Whittington (1994), and Ezzamel et al. (1996) report fee premiums, but other studies by Brinn et al. (1994), Che-Ahmad and Houghton (1996), and Ezzamel et al. (2002) fail to find evidence of a large-firm premium.

[4] For example, the large international accounting firms are sued less frequently and have fewer sanctions by the Securities and Exchange Commission, both of which suggest a lower rate of audit failure (Palmrose 1988; Feroz et al. 1991); auditors of the largest accounting firms are more likely to issue nonclean audit reports which suggests a more cautious and conservative reporting model (Francis and Krishnan 1999), and there is evidence that modified audit reports issued by the large accounting firms are more informative to investors (Weber and Willenborg 2003). In addition, the earnings of companies audited by the largest auditors show less evidence of discretionary earnings management (Becker et al. 1998; Francis et al. 1999). Companies with higher agency costs have a greater need for credible monitoring and are more likely to be audited by the largest accounting firms (Francis and Wilson 1988; DeFond 1992), and companies going public have severe information asymmetry problems, and there is evidence the largest accounting firms reduce information asymmetry and IPO underpricing (Beatty 1989). Finally, the stock market response to earnings surprises is significantly higher for companies audited by the largest accounting firms (Teoh and Wong 1993).

[5] These arguments are not pejorative to non-Big 4 accounting firms or to Big 4 auditors that are not industry leaders. Presumably, all auditors of publicly-listed companies meet minimum professional and legal standards. However, mandated minimum standards do not preclude individual accounting firms from developing reputations for expertise that exceed minimum standards. In addition, there is no reason to presume all companies have a uniform demand (and willingness to pay) for higher audit quality which explains observed cross-sectional differences in the demand for and supply of audits by different accounting firms such as the Big 4 or industry experts. In addition, the argument does not mean that all audits by Big 4 firms or Big 4 industry experts are necessarily of higher quality; rather, the argument simply means that "on average" these audits are likely to be of higher quality.

The remainder of the paper is organized as follows. The sample, data, and audit fee model are described in the next section, followed by results of the Big 4 industry leadership tests. Sensitivity analyses are reported and show that the results are robust to various econometric and sample selection issues. However, the results are not robust to alternative specifications of industry leadership based on the number of clients audited, and market share leadership based on client assets or client sales rather than audit fees. The Big 4 versus non-Big 4 tests are then reported, and the paper concludes with a discussion of the study's implications.

Sample, Data, and Audit Fee Model

Our sample comprises companies listed on the London Stock Exchange in the 2002–2003 financial year. Global Access and FAME databases provide the required data.[6] This is the first U.K. study of audit pricing following the collapse of Arthur Andersen and the absorption of Andersen clients by other accounting firms. The initial sample includes approximately 2,200 companies before imposing any screens. After excluding listed companies that provide financial and other services, and companies with missing data, the final sample consists of 907 publicly-listed companies and is summarized in Table 1.[7]

TABLE 1
Audit Fees in GB Pounds and Sample Distribution Based on 2002–2003 U.K. Data

	n	%	Audit Fees (GBP 000s)	%
Big 4	631	69.6%	108,709	86.3%
Second Tier[a]	114	12.6%	8,665	6.9%
Third Tier[b]	162	17.9%	8,533	6.8%
KPMG	175	19.3%	37,911	30.1%
PWC	197	21.7%	34,503	27.4%
DT	155	17.1%	22,293	17.7%
EY	104	12.0%	14,002	11.1%
GT	59	6.5%	4,130	3.3%
BDO	55	6.1%	4,535	3.6%
	907	100%	GBP125,908	100%

[a] Second-tier firms are GT and BDO.
[b] There are 58 small third-tier firms in the sample.
Definitions of Big 4 and Second-Tier Accounting Firms:
DT = Deloitte & Touche
EY = Ernst & Young
KPMG = KPMG
PWC = PricewaterhouseCoopers
GT = Grant Thornton
BDO = BDO International (BDO Stoy Hayward in the U.K.)

[6] Global Access is a product of Thomson Financial Inc., and FAME is an acronym for "Financial Analysis Made Easy," a comprehensive database for U.K. private and publicly-listed companies maintained by Bureau Van Dijk.
[7] Companies that provide financial services are typically excluded from audit fee studies because financial statement data and related ratios used in audit fee models are qualitatively different for this sector than for other companies.

Table 1 reports that Big 4 auditors performed 70 percent of audits in the sample and received 86 percent of audit fees. KPMG and PricewaterhouseCoopers (PWC) are the two leading firms auditing 41 percent of clients and earning 57.5 percent of audit fees in the sample. The two second-tier auditors, BDO International (BDO Stoy Hayward in the U.K.), and Grant Thornton conducted 13 percent of audits and received 7 percent of audit fees, and 58 third-tier firms audited 17 percent of the sample firms and received 7 percent of audit fees.

Table 2 reports the sample distribution and national industry leaders based on the 28 London Stock Exchange industry codes used in the study. We use these particular industry categories because they are commonly used in the U.K. to define broad industry sectors. On average, the national industry leader has 45 percent of industry fees while the second-ranked auditor has 22 percent of industry fees. These percentages are comparable to the U.S. audit market where the top-ranked firm has an average of 50 percent of industry audit fees (based on two-digit SIC codes) and the second-ranked firm has 22 percent (Francis et al. 2005). A Big 4 accounting firm is the top-ranked auditor in all industries except for three industries with small numbers of observations: SIC codes 1 (n = 11), 40 (n = 3), and 80 (n = 3). In these three industries, there is no designated Big 4 national industry leader in the study.

As noted above, KPMG and PWC are the two leading firms in the U.K. market with a combined market share of 57.5 percent of sample audit fees. Therefore, it is not surprising that KPMG or PWC are the top-ranked firm in 19 of 28 industries, and the second-ranked firm in 18 of 28 industries. Despite their overall market and industry dominance, there is no evidence of a firm-specific audit fee premium for KPMG and PWC relative to other Big 4 auditors.[8]

There are 39 cities in the sample having two or more audits (n = 884), and 23 observations are located in cities having only one observation. City-specific industry leadership is based on an accounting firm's share of aggregate industry audit fees for each unique city. A sensitivity analysis is also reported using the largest number of clients to measure industry leadership, as well as client assets and sales rather than audit fees to measure market share. As indicated before, the lead engagement office is normally in the same locale as the client's corporate headquarters. Following Reynolds and Francis (2000), the accounting firm's lead engagement office is identified from the office-specific letterhead used for the audit report. This data was hand collected in order to accurately measure each office's share of city-specific industry fees and to determine the city-level industry leader. There are 139 unique city-industry combinations in the sample: the top-ranked auditor per industry has an average market share of 68 percent of fees, and the second-ranked auditor averages 26 percent. As with the national market share data, these city-level percentages are comparable to the U.S. where the top-ranked auditor has an average market share of 69 percent and the second-ranked firm has 22 percent (Francis et al. 2005).

Descriptive statistics are reported in Table 3 for the full sample (n = 907), clients of Big 4 auditors (n = 631), clients of second-tier national firms (n = 114), and clients of third-tier accounting firms (n = 162). Big 4 firms have larger clients (*LTA* and *SQRTSUBS*), issue fewer modified audit reports (*OPINION*), have relatively more nonaudit fees (*LNAF*),

[8] This conclusion is based on an audit fee regression using all 907 observations in which we create separate auditor indicator variables for each Big 4 firm and a variable for second-tier auditors, along with the set of control variables in Equation (1) discussed later in the paper. We find that Deloitte Touche has a significantly smaller premium than the other Big 4 firms, but coefficients for the remaining three Big 4 firms are not significantly different from one another.

TABLE 2
National Industry Leadership Based on 2002–2003 U.K. Audit Fees

SIC	London Stock Exchange Industry Name	Observations per SIC	Audit Fees (000 GBP) per SIC	Industry Leader (#1) and Market Share of Audit Fees		Industry Leader (#2) and Market Share of Audit Fees	
1	Farming	11	1,334.00	MS	(45.58%)	EY	(20.01%)
11	Mining	39	3,887.62	PWC	(43.24%)	EY	(20.89%)
15	Manufacturing—Food	29	9,218.00	KPMG	(79.02%)	EY	(8.27%)
17	Manufacturing—Clothing	29	3,851.35	DT	(47.26%)	PWC	(21.40%)
20	Manufacturing—Wood	9	2,179.00	KPMG	(37.45%)	PWC	(28.59%)
22	Printing & Publishing	37	6,241.11	DT	(47.11%)	PWC	(21.71%)
24	Chemicals	30	5,651.00	KPMG	(38.08%)	PWC	(31.87%)
25	Manufacture—Plastics	14	2,107.09	KPMG	(39.77%)	PWC	(25.96%)
26	Manufacture—Ceramics	11	1,091.50	PWC	(67.89%)	KPMG	(15.67%)
27	Manufacture—Metals	74	9,307.13	KPMG	(30.39%)	PWC	(29.82%)
30	Manufacture—PC, TV	21	2,003.78	KPMG	(29.64%)	DT	(29.44%)
31	Manufacture—Electrical	34	5,642.28	DT	(25.56%)	PWC	(19.58%)
33	Manufacture—Medical instruments	31	3,345.00	PWC	(33.33%)	DT	(27.62%)
34	Manufacture—Transport	14	4,668.00	PWC	(57.20%)	DT	(13.97%)
36	Manufacture—Other	28	4,384.00	KPMG	(47.81%)	DT	(18.75%)
40	Utility—Electricity	3	224.00	AK	(89.29%)	PWC	(8.48%)

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TABLE 2 (continued)

SIC	London Stock Exchange Industry Name	Observations per SIC	Audit Fees (000 GBP) per SIC	Industry Leader (#1) and Market Share of Audit Fees		Industry Leader (#2) and Market Share of Audit Fees	
41	Utility—Water	7	498.00	DT	(31.93%)	PWC	(28.11%)
45	Construction	47	10,084.00	KPMG	(45.30%)	PWC	(16.06%)
50	Wholesale	98	13,527.13	PWC	(28.25%)	KPMG	(27.92%)
52	Retail	61	5,943.38	PWC	(35.74%)	DT	(27.90%)
55	Leisure—Hotels, Restaurants	35	3,480.00	KPMG	(31.84%)	PWC	(28.74%)
60	Transport	26	5,326.50	PWC	(40.29%)	KPMG	(22.27%)
64	Utility—Telecommunications	14	994.00	DT	(44.16%)	PWC	(21.43%)
71	Support activities—Advert, Rent	56	8,786.75	PWC	(45.19%)	KPMG	(33.96%)
72	Software publishing	84	7,716.06	EY	(26.85%)	PWC	(19.79%)
80	Education	3	149.75	P K F	(59.43%)	KPMG	(33.39%)
83	Health activities	9	625.04	PWC	(79.67%)	EY	(4.80%)
92	Media—TV, Radio, Sport Stadiums	53	3,642.43	KPMG	(36.78%)	DT	(18.61%)
	Total (Mean)	907	GBP125,908		(45.14%)		(22.32%)

Accounting Firm Definitions:
DT = Deloitte & Touche
EY = Ernst & Young
KPMG = KPMG
PWC = PricewaterhouseCoopers
P K F = Pannell Kerr Forster
MS = Moore Stephens
AK = A K & Co

TABLE 3
Descriptive Statistics for 2002–2003 Sample Data

	Total Sample (n = 907)					Big 4 Sample (n = 631)				
	Mean	**Median**	**Std. Dev.**	**Q1**	**Q3**	**Mean**	**Median**	**Std. Dev.**	**Q1**	**Q3**
LAF	4.262	4.234	1.120	3.526	5.017	4.540	4.543	1.072	3.761	5.298
LTA	10.657	10.640	1.711	9.546	11.855	11.090	11.128	1.581	10.044	12.216
SQRTSUBS	3.559	3.000	2.420	2.000	4.690	3.933	3.464	2.548	2.236	5.196
CATA	0.534	0.545	0.263	0.340	0.741	0.534	0.537	0.250	0.360	0.729
QUICK	3.032	0.990	16.708	0.620	1.650	2.576	0.990	14.001	0.670	1.580
DE	0.156	0.097	0.248	0.019	0.237	0.164	0.119	0.180	0.025	0.257
ROI	−0.238	0.014	1.872	−0.153	0.073	−0.125	0.029	0.935	−0.106	0.084
FOREIGN	0.238	0.022	0.325	0	0.437	0.250	0.033	0.330	0.000	0.482
OPINION	0.071	0	0.256	0	0	0.060	0	0.238	0	0
BUSY	0.599	1	0.490	0	1	0.623	1	0.485	0	1
LOSS	0.555	1	0.497	0	1	0.512	1	0.500	0	1
LNAF	4.013	4.078	1.512	2.944	5.056	4.322	4.511	1.469	3.296	5.298
LONDON	0.387	0	0.487	0	1	0.331	0	0.471	0	1
INITIAL	0.161	0	0.368	0	0	0.158	0	0.365	0	0

	Second Tier Sample (n = 114)					Third Tier Sample (n = 162)				
	Mean	**Median**	**Std. Dev.**	**Q1**	**Q3**	**Mean**	**Median**	**Std. Dev.**	**Q1**	**Q3**
LAF	3.753	3.689	0.996	3.219	4.201	3.539	3.497	0.921	2.944	4.208
LTA	9.789	9.829	1.486	9.085	10.626	9.583	9.709	1.652	8.538	10.642
SQRTSUBS	2.688	2.343	1.880	1.414	3.672	2.713	2.449	1.804	1.653	3.464

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TABLE 3 (continued)

	Second Tier Sample (n = 114)					Third Tier Sample (n = 162)				
	Mean	**Median**	**Std. Dev.**	**Q1**	**Q3**	**Mean**	**Median**	**Std. Dev.**	**Q1**	**Q3**
CATA	0.536	0.556	0.285	0.291	0.755	0.536	0.553	0.293	0.258	0.788
QUICK	3.910	1.015	14.398	0.530	1.893	4.188	0.925	25.604	0.588	1.730
DE	0.116	0.059	0.152	0.003	0.159	0.152	0.053	0.450	0.010	0.182
ROI	−0.665	−0.034	4.416	−0.311	0.044	−0.380	−0.032	1.555	−0.325	0.060
FOREIGN	0.179	0	0.302	0	0.272	0.231	0.041	0.315	0.000	0.394
OPINION	0.096	0	0.297	0	0	0.093	0	0.291	0	0
BUSY	0.544	1	0.500	0	1	0.543	1	0.500	0	1
LOSS	0.649	1	0.479	0	1	0.654	1	0.477	0	1
LNAF	3.385	3.296	1.381	2.303	4.527	3.251	3.314	1.360	2.463	4.178
LONDON	0.474	0	0.502	0	1	0.543	1	0.500	0	1
INITIAL	0.096	0	0.297	0	0	0.216	0	0.413	0	0

Variable Definitions:

LAF = natural log of audit fees in thousands of GB Pounds;
LTA = natural log of total assets in thousands of GB Pounds;
SQRTSUBS = square root of total subsidiaries;
CATA = ratio of current assets to total assets;
QUICK = ratio of current assets (less inventories) 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 total sales from foreign operations;
OPINION = indicator variable, 1 = qualified audit report;
BUSY = indicator variable, 1 = December 31st or March 31st year-end;
LOSS = indicator variable, 1 = loss in any of the past three years;
LNAF = natural log of nonaudit fees (in thousands of GP Pounds) paid to the auditor;
LONDON = indicator variable if observation is a London-based company; and
INITIAL = indicator variable, 1 = if the audit engagement is in either the first or second year.

and proportionately fewer clients in London (*LONDON*). The audit clients of non-Big 4 firms have lower liquidity risk (*QUICK*) but are less profitable (*ROI*) and make more losses (*LOSS*) compared to Big 4 clients. The remaining variables (*CATA*, *DE*, *FOREIGN*, *BUSY*) are comparable across auditor groups.

The primary analysis is based on companies with Big 4 auditors and tests if Big 4 industry leaders have a fee premium relative to other Big 4 firms. To accomplish this, the sample of 631 companies having Big 4 audits is further reduced to 506 observations by requiring a minimum of two city-specific observations per industry to be included in the sample. The reason for this additional screen is that cities with only one listed company in an industry may not have a competitive audit market, although the results are comparable if the full sample of 631 observations is used. The reduced sample of 506 observations has 21 unique cities and 125 unique city-industry combinations with an average of four observations per city-industry combination, and is comparable to the six observations per city-industry combination in the U.S. reported in Francis et al. (2005). City-specific industry leadership in these 125 city-industry combinations is distributed among the Big 4 firms as follows: Deloitte Touche (25), Ernst & Young (17), KPMG (38), and Pricewaterhouse-Coopers (45).

The sample of 506 Big 4 audited companies is partitioned into the following three groups based on city-specific and national-level industry leadership:

(1) companies audited by the national industry leader alone, without also being the city-specific industry leader (n = 52);
(2) companies audited by the city-specific industry leader alone, without also being the national industry leader (n = 119); and
(3) companies audited by auditors that are both the national leader and the city-specific industry leader (n = 118).

In other words, companies with auditors that are national industry leaders (n = 170), can be decomposed into those audited by national leaders alone (n = 52), plus those whose auditors are both national-level and city-specific industry leaders (n = 118). Similarly, companies with auditors that are city-specific industry leaders (n = 237) can be decomposed into those audited by city leaders alone (n = 119), plus those whose auditors are joint national-city leaders (n = 118). The purpose of these three partitions is to test for the separate effects of national and city leadership on audit pricing, as well as to isolate the joint effect of national and city-specific leadership on pricing. The default comparison group is companies whose Big 4 auditors are neither national nor city-specific industry leaders (n = 217).

Audit Fee Model

A cross-sectional audit fee regression model is used to estimate audit fee premia for industry leadership (Craswell et al. 1995; Ferguson and Stokes 2002). Audit fee regression models use a set of variables to control for cross-sectional differences in factors that affect fees such as client size, audit complexity, and auditor–client risk sharing (Simunic 1980). These models have good explanatory power (adjusted R-squares of 0.70 and higher) and have been robust across different samples, time periods, countries, and sensitivity analyses for model misspecification (Francis and Simon 1987; Chan et al. 1993).

The experimental indicator variable in Equation (1) below is denoted *AUDITOR* and represents various codings of city and national industry leadership. The research design in Equation (1) tests for differential audit fees after controlling for other factors affecting fees.

Formally, the test determines if there is a significant positive intercept shift (higher fees) in the fitted regression model for observations audited by industry leaders.

The OLS regression model is formally specified as follows in Equation (1):

$$LAF = b_0 + b_1 LTA + b_2 SQRTSUBS + b_3 CATA + b_4 QUICK + b_5 DE + b_6 ROI + b_7 FOREIGN + b_8 OPINION + b_9 BUSY + b_{10} LOSS + b_{11} LNAF + b_{12} LONDON + b_{13} INITIAL + b_{14} AUDITOR + e \quad (1)$$

where:

LAF = natural log of audit fees in thousands of GB Pounds;
LTA = natural log of total assets in thousands of GB Pounds;
SQRTSUBS = square root of total subsidiaries;
CATA = ratio of current assets to total assets;
QUICK = ratio of current assets (less inventories) 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 total sales from foreign operations;
OPINION = indicator variable, 1 = qualified audit report;
BUSY = indicator variable, 1 = December 31st or March 31st year-end;
LOSS = indicator variable, 1 = loss in any of the past three years;
LNAF = natural log of nonaudit fees (in thousands of GP Pounds) paid to the auditor;
LONDON = indicator variable, 1 = London-based company;
INITIAL = indicator variable, 1 = new auditor in the current or prior year;
AUDITOR = experimental indicator variable, 1 = industry leader (specification varies); and
e = error term.

Equation (1) is estimated as an industry fixed-effects model to control for systematic differences in fees across the 28 industries in the sample. To the extent there are systematic differences across industries with respect to company size, risk or audit complexity, and if these characteristics are also associated with audit fees, then an industry fixed-effects model also provides a control for omitted variables. For brevity, industry indicator variables are not reported in the tables.

With respect to the 13 control variables in the model, as in prior research, higher fees are expected (positive signs) for larger clients (*LTA*), for clients with greater audit complexity (*SQRTSUBS* and *FOREIGN*) and greater audit risk (*CATA*, *DE*, and *LOSS*), and for London-based companies (*LONDON*) due to higher costs. A positive sign is also expected for *OPINION* because prior studies document higher fees associated with modified opinions, possibly due to more investigative efforts in such circumstances. Given prior research, a positive association is also expected between nonaudit fees (*LNAF*) and audit fees (Whisenant et al. 2003). Clients with December 31st or March 31st fiscal year-ends (*BUSY*) are expected to have higher fees because these are the predominant busy seasons in the U.K. Lower fees (negative signs) are expected for higher values of the risk variables *QUICK* and *ROI*. *QUICK* is a risk variable and clients with a larger *QUICK* ratio are less risky (more liquid) and, therefore, expected to have smaller audit fees. Prior studies find that

clients with higher *ROI* also have lower fees, which is consistent with auditor–client risk sharing, i.e., more profitable clients pose less risk to the auditor, resulting in lower fees. Finally, lower fees are expected due to lowballing effects if an audit represents the first or second year of engagement (*INITIAL*).

National and City-Specific Industry Leadership Tests

The sample comprises 506 companies with Big 4 auditors and three models test if Big 4 industry leaders (defined in various ways) have higher fees than other Big 4 firms. The models are estimated using the three specifications in Ferguson et al. (2003). Model 1 tests the effect of national-level industry leadership *per se* on differential Big 4 audit pricing for n = 170 observations in which the Big 4 auditor is the national industry leader, and the default comparison group is all of the remaining 336 observations not having Big 4 national industry leaders. Model 2 tests the effect of city-specific leadership *per se* for n = 237 observations in which the Big 4 auditor is the city-specific industry leader, and the default comparison group is the remaining 269 observations not audited by city-specific industry leaders. Models 1 and 2 are provided for completeness but are not the primary models of interest because they do not control for the joint effect of national and city-specific industry leadership on audit pricing.

Model 3 is the estimation of Equation (1) and is the primary model of interest because it controls explicitly for the joint effect of national and city leadership through the use of three auditor indicator variables: Big 4 auditors that are jointly national industry leaders and city-specific industry leaders (n = 118); Big 4 auditors that are national leaders but are not city-specific industry leaders (n = 52); Big 4 auditors that are city-specific leaders but are not national industry leaders (n = 119). The default comparison group is Big 4 auditors that are neither national nor city-specific industry leaders (n = 217).

Results of the three model estimations are reported in Table 4. Significance levels for model coefficients are reported as two-tailed p-values. All models are significant at $p < .001$ with adjusted R-squares of around 0.77. The control variables *LTA*, *SQRTSUBS*, *DE*, *FOREIGN*, *BUSY*, *LNAF*, *LONDON*, and *INITIAL* are significant at $p < .05$ in the expected direction, while the variables *CATA*, *QUICK*, *ROI*, *OPINION*, and *LOSS* are insignificant at $p > .10$.

Model 1 tests the effect of national leadership on audit pricing, without controlling for joint national-city leadership, and the auditor indicator variable is insignificant (p = .74). A second specification (not tabulated) is estimated with an additional auditor indicator variable for the second-ranked auditor in the industry. In this model, neither the top-ranked nor second-ranked auditor indicator variable is significant at conventional levels. We conclude that national industry leadership *per se* does not result in an audit fee premium in the U.K. audit market.

Model 2 tests the effect of city-specific industry leadership on audit pricing, without controlling for joint national-city leadership. The auditor indicator variable is positive and significant (p = .01). The coefficient value is .145 which equates to an average audit fee premium of 16 percent.[9] We also test if the second-ranked auditor in city-specific industries has a fee premium (not tabulated), but the second-ranked auditor variable is insignificant. While Model 2 provides evidence that office-level industry leadership in specific cities

[9] Following Craswell et al. (1995, 307), the percentage magnitude of the positive intercept shift on the dependent variable (natural log of audit fees) is defined as $e^z - 1$, where z is the auditor coefficient value in the regression model.

TABLE 4
Effects of Big 4 National and City-Specific Industry Leadership on Audit Fee Premia Relative to Big 4 Nonleaders[a]

		Model 1			Model 2			Model 3		
	Exp. Sign	Estimate	t	Sig.	Estimate	t	Sig.	Estimate	t	Sig.
Control Variables (Constant)	+/−	−1.381	−4.99	0.00	−1.362	−4.90	0.00	−1.367	−4.93	0.00
LTA	+	0.403	15.65	0.00	0.397	15.19	0.00	0.397	15.24	0.00
SQRTSUBS	+	0.075	4.95	0.00	0.073	4.99	0.00	0.073	4.98	0.00
CATA	+	0.144	1.15	0.25	0.126	0.99	0.32	0.128	1.01	0.31
QUICK	−	−0.005	−1.46	0.15	−0.005	−1.46	0.14	−0.005	−1.46	0.14
DE	+	0.491	3.22	0.00	0.475	3.06	0.00	0.476	3.03	0.00
ROI	−	−0.020	−0.91	0.36	−0.023	−0.96	0.34	−0.022	−0.95	0.34
FOREIGN	+	0.370	4.92	0.00	0.354	4.77	0.00	0.356	4.83	0.00
OPINION	+	0.113	0.90	0.37	0.117	0.92	0.36	0.116	0.92	0.36
BUSY	+	0.113	2.08	0.04	0.111	2.06	0.04	0.115	2.17	0.03
LOSS	+	0.027	0.50	0.62	0.028	0.53	0.60	0.031	0.60	0.55
LNAF	+	0.114	4.93	0.00	0.108	4.74	0.00	0.108	4.70	0.00
LONDON	+	0.330	5.81	0.00	0.376	6.44	0.00	0.384	6.58	0.00
INITIAL	−	−0.133	−2.11	0.04	−0.136	−2.19	0.03	−0.140	−2.24	0.03

(*continued on next page*)

TABLE 4 (continued)

Experimental Variables									
National Leader (n = 170)	+	0.018	0.33	0.74					
City-Specific Industry Leader (n = 237)	+				0.145	2.81	0.01		
Joint National and City-Specific Industry Leader (n = 118)	+							0.117	1.84	0.07
City-Specific Industry Leader but not National Leader (n = 119)	+							0.177	2.50	0.01
National Industry Leader but not City-Specific Industry Leader (n = 52)	+							0.000	0.00	0.99
F statistic (p-value)		100.7 (<0.0001)			102.6 (<0.0001)			88.9 (<0.0001)		
Adjusted R^2		0.775			0.777			0.777		
Sample size		506			506			506		

[a] All p-values are two-tailed. Industry fixed effects are not reported for brevity, and t-statistics and significance levels are calculated using White (1980) corrected standard errors.

Control Variable Definitions:

LAF = natural log of audit fees in thousands of GB Pounds;
LTA = natural log of total assets in thousands of GB Pounds;
SQRTSUBS = square root of total subsidiaries;
CATA = ratio of current assets to total assets;
QUICK = ratio of current assets (less inventories) 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 total sales from foreign operations;
OPINION = indicator variable, 1 = qualified audit report;
BUSY = indicator variable, 1 = December 31st or March 31st year-end;
LOSS = indicator variable, 1 = loss in any of the past three years;
LNAF = natural log of nonaudit fees (in thousands of GP Pounds) paid to the auditor;
LONDON = indicator variable if observation is a London-based company; and
INITIAL = indicator variable, 1 = if the audit engagement is in either the first or second year.

drives the pricing of Big 4 industry expertise in the U.K, the test does not control for the joint effect of national and city leadership on audit pricing.

Model 3 tests the pricing of national and city-specific industry leadership and controls for the joint effect of national and city leadership. Model 3 shows that city-specific industry leadership, both alone and in conjunction with national industry leadership, results in significantly higher audit fees. However, the coefficient is insignificant ($p = .99$) for national leaders alone that are not also city-specific leaders. Thus city-specific leadership is a necessary and sufficient condition for an industry premium which means that city-level industry leadership rather than national leadership explains the U.K. pricing of industry expertise. However, an F-test does indicate there is a significant difference between these two auditor coefficients, with fees being significantly larger when the auditor is the city leader alone. The coefficient for city leadership alone is .177 ($p < .01$) which represents a premium of 19 percent. In contrast, the coefficient is only .117 ($p = .07$) for city leaders that are also national leaders, which represents a premium of only 12 percent.

We conclude from Model 3 that city-level industry leadership drives the pricing of industry expertise. The U.K. results are consistent with the U.S. and Australia in documenting that there is no Big 4 premium for national-level industry leadership alone without also being a city-specific industry leader. However, the U.K. evidence differs from Australia by showing that city leadership alone is a sufficient condition for a premium. In Australia, a premium exists only for auditors that are joint city-national leaders. The U.K. evidence also differs from the U.S. by documenting a larger premium when the auditor is a city leader alone (19 percent) compared to when the auditor is a joint city-national leader (12 percent). In the U.S., the opposite is the case as joint city-national leaders have a larger premium than city leaders alone (17 percent versus 7 percent). We have no explanation for why U.K. premiums are lower for joint city-national leaders, but the result implies that concurrent national industry leadership somehow "diminishes" or lessens the reputation of a city-specific industry leader.

In sum, the U.K. results stand in contrast to both Australia and the U.S. because there is no evidence that national industry leadership has a "positive" impact on audit pricing in the U.K. This finding implies there is no knowledge sharing across offices that positively affects auditor reputations, and is a surprising result given our speculation that national reputations might dominate city reputations in the U.K. because it is a geographically smaller country with a more centralized economy. We offer three conjectures why city effects dominate in the U.K. First, there is less audit litigation in the U.K., and second there is more of a principles-based approach to financial reporting compared to the U.S. or Australia. In these circumstances, there is less need for a Big 4 firm to rigidly enforce uniformity across offices compared to the U.S. or Australia where the litigation and more detailed financial reporting standards create the need for stricter enforcement of uniform policies across offices. In other words, there is less risk to the firm in allowing local practice offices more autonomy and discretion in the U.K. The third factor in the U.K. that may reinforce the importance of local offices relative to the national firm is the fact that outplacement of auditors to high-level executive positions at clients is much more prominent in the U.K. Basioudis (2008) estimates that approximately 25 percent of listed companies have a high-level executive who is also an alumnus of the company's auditor. In contrast, less than 10 percent of U.S. companies have an alumnus of their auditor in high-level executive positions (Menon and Williams 2004; Lennox 2005). The greater rate of outplacement to clients in the U.K. would reinforce local office ties and further explain why city-specific reputations seem to matter more than the national reputations of Big 4 firms.

Sensitivity Analysis and Robustness Tests

The fee premiums in Table 4 are estimated with an industry fixed-effects model. A benefit of this approach is that it controls for potential omitted variables in the fee model that are correlated with company size, risk, and audit complexity, at least to the extent that such characteristics vary systematically by industry and are associated with audit fees. It is likely that profitability and risk could have industry commonalities, and even company size (scale) is likely to be affected by industry structure. Therefore, an industry fixed-effects model gives greater confidence that the fee premiums in Table 4 are due to the auditor's industry leadership rather than an artifact of underlying industry characteristics that are omitted in the audit fee model.

A common measure of risk is market-based stock returns, and market returns have been used in some audit pricing studies (Whisenant et al. 2003). As a sensitivity analysis we include a variable for contemporaneous 12-month market returns in the fee models in Table 4 for a reduced sample of n = 321 observations with available data. The stock return variable is insignificant and the results of re-estimating the models in Table 4 are qualitatively unchanged, so the addition of a market risk variable has no affect on the pricing models.

Given that two accounting firms (KPMG and PWC) dominate the U.K. audit market, it is possible that the premium for industry leadership might simply be capturing a premium for these two firms. In order to assure that our industry leadership variables are measuring something beyond the firm-specific reputations of KPMG and PWC, we add indicator variables to Model 2 in Table 4 for KPMG and PWC. We use Model 2 (rather than Model 3) since it is a more parsimonious model and because Model 3 demonstrates that city leadership *per se* results in a fee premium. The result of this additional estimation is qualitatively the same as that reported in Table 4. The city-specific indicator variable remains at significantly positive at p = .01 with a coefficient of 0.133, while the coefficients on the indicator variables for KPMG and PWC are insignificant (p > .10).

Another concern is that the premium for city-specific industry leadership may be caused by the differential effects of company size on audit fees. This could occur if the relation between company size and audit fees is not sufficiently controlled by the variable *LTA* (log of assets) and if companies audited by city-specific industry leaders in the sample are larger on average than other companies in the sample. To assess if there are systematic size differences we compare the mean value of total assets (*LTA*) for companies with city-specific leaders (n = 237) versus all other companies (n = 269), and we cannot reject a null hypothesis of no size difference (p = 0.18). We conclude there is no reason to believe systematic size differences explain the results in Table 4.

A further sensitivity analysis is conducted to address the concern that nonlinearities and misspecification of company size may drive the results in Table 4. We estimate a regression model in which the dependent variable is based on ranked values of *LAF* (log of fees) and which may be less sensitive to potential nonlinearities than continuous values of *LAF*. In a second regression model, we rank both the dependent variable (*LAF*) and the size variable (*LTA*) to further mitigate the effects of potential nonlinearities between audit fees and company size. These two results affirm that city leadership drives audit pricing and that there is no premium for national leadership alone. We conclude that there is no reason to believe that model misspecification or nonlinearities with respect to company size explain the results in Table 4.

Finally, our sample screening process stipulates a minimum of two observations per unique city-industry combination in order to assure there is competitive audit market. However, if both companies are audited by the same auditor, it is still possible that fee premiums represent the monopoly pricing power of a single auditor. Therefore, as an additional sensitivity analysis we require a minimum of two auditors in supplying audits to each unique city-industry combination. This reduces the sample from 506 to 469 observations, but the models in Table 4 are qualitatively the same when re-estimated on this reduced sample.

Alternative Specifications of Industry Leadership

We believe that audit fees are the correct measure of industry leadership because fees measure the value of the auditing industry's economic output. However, we test three alternative specifications of industry leadership. The first alternative specification is based on the accounting firm with the largest number of clients, rather than the largest amount of audit fees. This turns out to be a problematic measure at the city level because there are "ties" in 53 of the 125 unique city-industry combinations, i.e., two or more accounting firms have the same number of audit clients. Given the large audit fee market share differential between the first and second ranked auditors across all city-specific industries (68 percent versus 26 percent), treating the top two firms as co-leaders could potentially induce large measurement error and this appears to be the case because we find no evidence of a fee premium for industry leadership when the number of clients is used to measure industry leadership and firms with "ties" are coded as co-industry leaders.

The second and third specifications define industry leadership based on the sum of client assets and client sales, respectively, rather than audit fees.[10] While audit fees are positively related to both client sales and assets, the association is only moderately strong. When audit fees are regressed on sales (assets) the R-square is only 13.5 percent (29.8 percent). Therefore, client assets and sales are noisy proxies for audit fees which we believe to be the correct basis for measuring industry leadership. When Table 4 is re-estimated using clients assets and client sales to measure industry leadership, none of the experimental auditor variables is significant at $p = .10$. We obtain similar results if log of assets and log of sales are used to measure market shares and industry leadership.

To sum up, the results in Table 4 that use audit fees to measure industry leadership, are robust to various econometric and sample selection issues. However, we conclude that the results in Table 4 are not robust to alternative definitions of industry market share leadership based on the number of clients audited, the assets of clients, or the sales of clients.

Big 4 versus Non-Big 4 Tests

Table 5 compares Big 4 and non-Big 4 audit fees and builds on the evidence in Table 4 that Big 4 city-specific industry leaders have systematically higher fees than other Big 4 auditors (noncity leaders).[11] Three models are reported in Table 5. Model 1 uses all observations in the original sample of 907 companies in which there are a minimum of two

[10] Francis et al. (2005, 130, footnote 11) point out that audit fees include the effect of an industry premium and, therefore, could potentially bias the measure of industry leadership, although this seems unlikely given the magnitude of the premium (19 percent) relative to the large fee spread between the first and second ranked auditor for city-specific industries (68 percent minus 26 percent, or a 42 percent spread).

[11] Selection is a potential concern in estimating models with companies audited by both Big 4 and non-Big 4 auditors (Chaney et al. 2004). However, as Francis and Lennox (2007) point out, there is no consensus in the econometrics literature concerning the reliability of the Heckman two-stage procedure that is typically used to control for selection bias (Puhani 2000), and there is simulation evidence that OLS actually produces more reliable estimators (Manning et al. 1987).

TABLE 5
The Effect of Big 4 Industry Leadership on Audit Fee Premia Relative to Non-Big 4 Auditors[a]

	Model 1			Model 2			Model 3		
	Estimate	t	Sig.	Estimate	t	Sig.	Estimate	t	Sig.
Control Variables									
(Constant)	−1.254	−4.93	0.00	−1.222	−4.18	0.00	−1.287	−5.18	0.00
LTA	0.382	14.62	0.00	0.387	12.86	0.00	0.379	14.27	0.00
SQRTSUBS	0.086	7.06	0.00	0.079	6.14	0.00	0.087	7.13	0.00
CATA	0.348	3.19	0.00	0.368	3.26	0.00	0.349	3.24	0.00
QUICK	−0.007	−1.86	0.06	−0.006	−1.72	0.08	−0.007	−1.86	0.06
DE	0.257	2.02	0.04	0.234	1.66	0.10	0.263	2.07	0.04
ROI	−0.031	−1.21	0.22	−0.023	−1.07	0.28	−0.030	−1.19	0.23
FOREIGN	0.371	5.63	0.00	0.378	5.19	0.00	0.382	5.76	0.00
OPINION	0.169	1.94	0.05	0.074	0.75	0.46	0.159	1.79	0.07
BUSY	0.068	1.48	0.14	0.093	1.83	0.07	0.068	1.47	0.14
LOSS	0.163	3.48	0.00	0.139	2.78	0.01	0.157	3.37	0.00
LNAF	0.113	5.48	0.00	0.121	5.20	0.00	0.113	5.47	0.00
LONDON	0.277	6.37	0.00	0.318	6.45	0.00	0.278	6.38	0.00
INITIAL	−0.152	−2.71	0.01	−0.106	−1.72	0.09	−0.144	−2.59	0.01

(continued on next page)

TABLE 5 (continued)[a]

	Model 1			Model 2			Model 3		
	Estimate	t	Sig.	Estimate	t	Sig.	Estimate	t	Sig.
Experimental Variables									
Big 4 City-Specific Industry Leaders (n = 237)	0.265	3.67	0.00	0.141	1.77	0.08	0.338	3.97	0.00
All Other Big 4 Auditors (n = 269)	0.134	2.22	0.03	0.011	0.15	0.88	0.207	2.76	0.01
Second-Tier Auditors (n = 78)							0.186	2.20	0.03
F statistic (p-value)	129.6 (.<001)			105.4 (.<001)			124.7 (.<001)		
Adjusted R^2	0.768			0.778			0.775		
Sample size	693			575			693		

[a] All p-values are two-tailed. Industry fixed-effects are not reported for brevity, and t-statistics and significance levels are calculated using White (1980) corrected standard errors.

Control Variable Definitions:

LAF = natural log of audit fees in thousands of GB Pounds;
LTA = natural log of total assets in thousands of GB Pounds;
SQRTSUBS = square root of total subsidiaries;
CATA = ratio of current assets to total assets;
QUICK = ratio of current assets (less inventories) 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 total sales from foreign operations;
OPINION = indicator variable, 1 = qualified audit report;
BUSY = indicator variable, 1 = December 31st or March 31st year-end;
LOSS = indicator variable, 1 = loss in any of the past three years;
LNAF = natural log of nonaudit fees (in thousands of GP Pounds) paid to the auditor;
LONDON = indicator variable if observation is a London-based company; and
INITIAL = indicator variable, 1 = if the audit engagement is in either the first or second year.

observations per industry at the city level (n = 711). We delete a further 18 observations from 14 unique city-industry combinations in which a non-Big 4 auditor is the city industry leader since the purpose of our study is to test Big 4 industry leadership, although, the results are comparable if we retain these observations and classify them as having no Big 4 industry leader. This reduces the sample to 693 firms of which n = 237 are Big 4 city-specific industry leaders, n = 269 are other Big 4 auditors (noncity leaders), n = 78 are second-tier accounting firms, and n = 109 are third-tier auditors.

Model 1 compares the fees of Big 4 auditors with fees of all non-Big 4 auditors, both second- and third-tier firms. Model 2 drops observations with third-tier auditors, and thus makes a direct comparison of the fees of Big 4 auditors relative to the second-tier firms Grant Thornton and BDO International. Finally, Model 3 uses the same observations as Model 1 but adds an additional auditor indicator variable for second-tier accounting firms, making the default comparison group the smaller third-tier group of auditors.

The results for Model 1 indicate that Big 4 city-specific industry leaders have a significant premium over non-Big 4 auditors. Other Big 4 auditors (noncity leaders) also have a premium, but the magnitude is only about one-half that of city leaders (30 percent for city leaders versus 14 percent for noncity leaders). Model 2 indicates there is a positive and significant (p = .08) premium for Big 4 city-specific industry leaders relative to second-tier auditors. The coefficient is 0.141 which represents a premium of 15 percent. Importantly, there is no premium in Model 2 for other Big 4 auditors (noncity leaders) relative to second-tier firms. Finally, Model 3 indicates that Big 4 city-specific industry leaders have the largest premium relative to third-tier auditors. The coefficient is 0.338 which represent a premium of 40 percent over the fees of third-tier auditors. There are also premiums for other Big 4 auditors (noncity leaders) and for second-tier auditors: both are significant but smaller in magnitude (23 percent and 20 percent, respectively) than the premium for city leaders. An F-test indicates there is no significant difference in the premiums of Big 4 noncity leaders and second-tier auditors, relative to third-tier auditors.

Based on Table 5, we conclude that all Big 4 accounting firms have a premium relative to third-tier auditors, although, Big 4 city-specific industry leaders have a much larger premium than Big 4 noncity leaders. Second-tier auditors also have premium over third-tier auditors and the magnitude is comparable to that of Big 4 noncity leaders. Finally, Big 4 auditors have a premium over second-tier accounting firms only if they are a city-specific industry leader.

Thus the pricing evidence suggests a three-level hierarchy in which audit fees are largest for Big 4 city leaders, smallest for third-tier auditors, and fees are in between (and equivalent in magnitude) for second-tier firms and Big 4 noncity leaders. As noted earlier, prior U.K. evidence is mixed with respect to a Big 4 premium, and the additional partitions based on city-level industry leadership in our study may help to understand why this has been the case. Specifically, while all Big 4 auditors have a premium over third-tier auditors, it is only the subset of Big 4 firms which are also city-specific industry leaders that have a premium over the second-tier accounting firms Grant Thornton and BDO International.

Discussion and Conclusion

This study illustrates that the effect of national versus city-specific leadership is not uniform around the world and that country-specific studies add to our understanding of the pricing of Big 4 industry expertise. What is different in the U.K. (relative to the U.S. and Australia) is that national industry leadership has no positive effect whatsoever on Big 4 audit fee premia. The U.K evidence indicates that office-specific industry leadership *alone* results in the highest audit fee premia of 19 percent for industry expertise, and a smaller

premium of 12 percent when the city leader is also the national industry leader. As a caveat, we acknowledge the results are not robust to using the number of clients to measure industry leadership, or the use of client sales/assets in lieu of audit fees to measure industry market shares. However, we believe audit fees are the best measure of economic output in the auditing industry and, therefore, the correct basis for inferring auditor industry leadership.

In terms of knowledge sharing, the fee-based results imply that industry expertise in the U.K. is largely office-specific and is not distributed more widely across offices so as to create a broader national reputation for industry expertise. This result contrasts with Australia and the U.S. where there is evidence of at least weak knowledge sharing since audit premiums are largest when auditors are jointly city-specific and national-level industry leaders (Ferguson et al. 2003; Francis et al. 2005). Despite being a smaller country geographically and having a more centralized economy than either the U.S. or Australia, it turns out the city effects dominate national effects in the pricing of industry expertise in the U.K. We conjecture that this could be the result of less litigation and the use of principles-based accounting standards in the U.K. which allows for greater decentralization and autonomy by local practices. In addition, outplacement of auditors to clients occurs at a much higher rate in the U.K., which could also reinforce local ties to specific practice offices.

What are the practical implications of these findings? First, an industry premium for Big 4 city-specific industry leaders implies differential audit quality relative to other Big 4 auditors. There is evidence from U.S. companies that earnings are of higher quality when audited by Big 4 city-specific industry leaders (Francis et al. 2006). This begs the question of whether there is a similar effect on the earnings quality of U.K. companies, and future research is needed to determine if this is the case.

Second, there are implications for accounting firms. If office-level industry leadership drives the reputation for industry expertise, and if this reputation is priced in the audit market, then Big 4 accounting firms have economic incentives to become industry leaders in city-specific audit markets and to market their "local office" reputations for industry expertise. This would be in contrast to current marketing strategies of Big 4 firms which tend to emphasize the uniformity of their national and global operations despite the empirical evidence now from three different countries that local office reputations for industry expertise also matter and may be just as important as national reputations, and perhaps even more important in the U.K., in differentiating among Big 4 firms.

Finally, the implication for regulators and investors is that audits may be of systematically higher quality when conducted by industry experts, which implies earnings may also be of higher quality. If this is the case, it would be more effective for regulators to place greater scrutiny on companies not audited by industry experts because the earnings of such companies could be more likely to be misstated. Finally, the message for investors is that earnings reports may be more credible if audited by industry experts, and this in turn would affect the usefulness of earnings reports in assessing firm performance and pricing equity securities.

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