

# **Auditor Industry Specialization and Quality Status: Do Both “Premium” and “Discount” Suppliers Exist?**

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# **Auditor Industry Specialization and Quality Status: Do Both “Premium” and “Discount” Suppliers Exist?**

## **ABSTRACT**

The economics of auditing literature has long recognised the existence of audit industry specialization. However there are two sets of opposing arguments that potentially explain the effects of industry specialization. One argument is that industry specialization has the effect of driving higher audit quality. What underlies this quality might vary from case to case but it may include advanced expertise or industry specific knowledge, resulting in a higher standard of work; this will **raise** the audit fee. An alternative proposition is that industry specialization gives rise to economies of scale and therefore, through competitive pressures, this will **lower** audit fees.

This paper tests the proposition that industry specialization gives rise to not just one or other of these alternatives but to **both**. This proposition is tested by interacting auditor status and auditor specialization. We argue that high quality specialists will earn a fee premium and non-high quality specialists will offer a discount. We also expect differences in production characteristics (audit hours worked) to reflect differences in high and non-high quality audit specialists. The audit fee and production function data is drawn from local government audits within Australia where there exists a range of audit firms of varying quality.

The results show that audit industry specialists (ASPEC) exist in this market as well as high and non-high status auditors (ASTAT). ASPEC and ASTAT significantly interact both in explaining variability of fees and audit hours worked. The results show the need to reassess the current usage of the concept of audit industry specialist since both “premium” and “discount” specialists appear to exist, indeed co-exist, in the same market.

**Keywords:** *Audit Markets, Audit Specialization, Economies of Scale, Audit Quality, Production Function*

# **Auditor Industry Specialization and Quality Status: Do Both “Premium” and “Discount” Suppliers Exist?**

## **INTRODUCTION**

There is a substantial and growing literature on audit markets which focuses on the presence and effect of what has come to be known as industry specialist auditors. Gramling and Stone (2001) in their review of US empirical studies on the relation between audit firm industry expertise and audit fees conclude that “research provides contradictory results” (p. 20). The literature does however, acknowledge that two (competing) theories may apply to the “industry specialist” auditors’ effect on fees (e.g., Pearson and Trompeter; 1994; Craswell, Francis and Taylor, 1995). One theory recognizes the reasons for the existence of **fee premiums** through specialist expertise, knowledge or audit technology and the other **fee discounts** through economies of scale, which come from servicing many clients in the one industry. While both theories exist in the literature, the second of the two is rarely tested. This study seeks to examine if industry specialist auditors can either earn fee premiums or fee discounts, or, more particularly, **both** within the same audit market.

The study is important in several ways. First, if each of the theories does have an effect then we will seek to show the individual effect of the two. Second, if there are two effects, unpicking them will perhaps go some way in explaining why some studies find a fee premium effect and others find none. Third, a major reason why little or no research is undertaken on the economies of scale theory may be because the most direct measure of this particular effect is not on fees but on the auditor production function, in particular auditor hours. This study, unlike almost all

others, has access to production function data so that a more direct assessment of the economies of scale effect can be assessed.

## **LITERATURE REVIEW**

Studies that examine the fee effects of auditor industry specialization provide one of the best sources of evidence that auditees in both the public and private sectors particularly value the services such auditors provide and are willing to pay a premium to Big 6 (Craswell et al, 1995) and perhaps to even non-Big 6 specialists to acquire those services (Ward, Elder and Kattelus 1994; Cullinan, 1998; Thorne et al., 2001). Yet, findings of premium pricing to auditor industry specialists are not universal. Some studies have found no significant relationship between fees and specialization (e.g., Palmrose, 1986; Pearson and Trompeter, 1994; Menon and Williams, 2001) while others have found a negative relationship (e.g, Ettredge and Greenberg, 1990; Simon, 1995; De Fond, Francis and Wong, 2000). Of those studies that report no relationship, it is possible the conflicting effects of the simultaneous presence of both returns to investment and economies of scale (see, for instance, Ettredge and Greenberg, pp. 208-209), depending on the brand recognition, prestige, class or status of the auditor within the market examined, mask the true underlying relationship between fees and specialization.

There have been a number of studies of large audit firm specialisation and the existence of audit fee premia. A number of these studies examine audit markets dominated by large auditors. In the Australian market for audit services two studies are of particular relevance in the fees to specialization context. Craswell and Taylor (1991) examine all listed companies in Australia (using 1987 data) and find evidence of industry specialization within the (then) Big 8. In a later

study, (Craswell et al, 1995) using the same data, the authors report that, on average, industry specialist Big 8 auditors earn a 34 per cent premium over non-specialist Big 8 auditors. Both these studies use an arbitrary 10% fee market share in industry classifications where at least thirty companies are present to indicate the presence of a specialist. It is interesting to note that a recent study of the Australian market (Ferguson and Stokes 2002) provides evidence that this premium appears to have dissipated post the Price Waterhouse and Coopers and Lybrand merger. Menon and Williams (2001) in a comprehensive study of the US market also fail to find a fee effect for specialization.

Using a market leader approach to measuring specialization, Pearson and Trompeter (1994) find no evidence of a premium accruing to industry specialists. Among switching clients, there is evidence of significant fee cutting among market leaders for each other's clients but no evidence of fee reductions for clients switching from non-leaders to market leaders. Interestingly, fees were significantly negatively associated with auditor industry concentration.

In a study not primarily focused on specialization Ettredge and Greenberg (1990) develop two specialisation concepts. The first concept of auditor industry expertise is that of technological efficiency in which the auditor will be able to complete the audit quickly and pass on the benefits of this efficiency in a competitive market. The second concept is that industry auditor expertise is associated with auditor reputation for which the client will pay an audit fee premium (Ettredge and Greenberg, 1990, p. 202). Ettredge and Greenberg found empirical support for both concepts in their study of auditor switches. An important contribution of this study is that the

two concepts of auditor specialisation may help to explain contradictory results in auditor specialisation/audit fee studies.

In one of the few studies to examine Big 6 and non-Big 6 audit specialists De Fond, Francis and Wong (2000) examine the market for audit services in Hong Kong. In this market, a local non-Big 6 audit firm, Kwan Wong Tan and Fong (KWTF)<sup>1</sup>, was a market leader (industry specialist) in the property industry and an important supplier in other industry categories. De Fond et al (2000) find that Big 6 industry specialists earn a premium of 29 per cent over Big 6 non-specialists. However, De Fond et al (2000) also find that KWTF rather than attracting a premium, earned a significantly reduced fee for clients in the specialist (property) industry as compared with either Big 6 or other non-Big 6 auditors. The authors interpret this finding as relating to economies of scale for that auditor; that is, KWTF is a high-volume low-cost specialist supplier to the property industry. Indeed this result is consistent with KWTF being a specialist in the sense of providing technologically efficient audits whereas the other specialist suppliers are high status specialists.

A number of single industry studies also provide conflicting results studies of the relation between auditor expertise and audit fees. In a highly specialized niche market (retirement funds), Cullinan (1998) finds evidence of non-Big 6 specialization and fee premiums for auditor specialization. These premia are perceived to represent the price for higher audit quality. Evidence of differential industry experience also exists in the public sector. Ward et al (1994) report a fee premium for a market leader based on industry experience in the municipal audit market in the US. In another study of the US municipal market indicate Thorne et al, 2001 examine contract

type and audit fees and find a positive association between auditor industry expertise and audit fees.

Gramling and Stone (2001, p. 21) suggest that resolving the existing ambiguous relation between audit firm industry expertise and audit fees requires greater attention to audit firm costs and production processes. Information on audit hours can give some insights into an audit firm's production process.

In one of the few studies to employ audit hours information Deis and Giroux (1996) investigated Texas School districts audits. They measured auditor industry experience as number of school district clients for an auditor. Deis and Giroux found that auditor industry experience was negative and significantly associated with audit fees in their full audit fee model and with audit hours in the audit hours model. Deis and Giroux suggest that auditor industry experience generates audit efficiency which in this case was passed on to clients as lower audit fees.

To date, the literature has not unambiguously defined what is meant by audit industry specialization. The fact that industry specialization has often been measured by reference to market share (generally the number of clients or proportion of fees pertaining to an industry, e.g., Craswell et al., 1995), without any finer subtleties or conditional relationships being recognized, adds to some of the difficulty and ambiguity in the literature. Industry specialization can be a function of any number of underlying causal reasons. Measuring specialization by reference to market share or number of clients potentially masks the variability in these reasons. As stated or implied in the literature, one possible reason is that high quality suppliers command considerable

industry-relevant or other specialized expertise in audit (see, for instance, Bonner and Lewis, 1990; Wright and Wright, 1997; Solomon, Shields and Whittington, 1999; Simnett, Lockett and Wright, 2000; Taylor, 2000).

Neal and Riley (2004) observe that there are two specialization metrics used in previous studies (market share and portfolio share). Studies using market share assume that the firm with the largest market share in an industry has differentiated itself from its competitors and has the largest knowledge base within the industry, reflecting a significant investment in industry specific knowledge. Portfolio share is a measure of the firm's devotion of resources to an industry. The industries from which a firm derives the largest share of its revenue are those in which it has invested the most in developing industry technologies. Both differentiation (market share) and devotion of substantial resources (portfolio share) are important as measures of specialization as the two measures are complementary (Neal and Riley, 2004).

We argue that being an auditor industry specialist does not necessarily mean that the dominant effect is a higher quality audit. Being a major supplier in a market may be a necessary but, we argue, not sufficient condition for higher quality. There are obvious examples in a number of (non-audit) commercial markets where large size is not highly correlated with increased quality. For example, in the airline and hospitality industries there are suppliers that have significant market shares but are not seen as high quality and do not attract prices that represent a premium over other suppliers. Southwest Airlines is one such example and many of the fast food suppliers are a second. While these suppliers may be and often are financially successful, the price or fee charged per product or service provided does not contain a premium but, in fact, may include a

discount. In the audit market, the existence of local firms that rival the size and/or prestige of the Big 6 have been acknowledged in several jurisdictions. For example, Lee (1996) and as previously mentioned, De Fond et al (2000) include such a variable for a local firm in the Hong Kong market. Eichenseher (1995) does similarly in the Malaysian audit market. These studies demonstrate also that a price premium does not always accompany the enhanced recognition these firms attract.

Whilst this selective review confirms the contradictory results of audit specialisation/audit fee research, the studies of DeFond et al. (2000) and Ettredge and Greenberg (1990) provide insights into the two different ways that auditor industry specialisation can impact on audit fees. Thus, we argue that high volume auditors (which by a frequently used definition are often recognised as industry specialist auditors) will not, by necessity be “premium” suppliers earning a fee premium.

## **RESEARCH FRAMEWORK**

While the forgoing assists in understanding the key variable auditor industry specialization, a further key variable in the study (auditor status) is discussed below. This is followed by a description of the method employed in the current study.

### **Auditor Status**

Auditor status is a key concept used in this study. We use this as our measure of auditor quality. As is well documented in the literature, there is no direct measure of auditor or audit quality. Quality tends to be linked to reputation given quality’s unobservable status. Auditor quality and

perhaps more importantly reputation for quality is commonly measured by reference to auditor size (although this is by reference to total firm size – not size in any given market segment [see De Angelo, 1981]). It has been very common to find that Big 5 (6 or 8 depending on the time period) have been perceived as higher quality auditors and attract a fee premium. Typically, in some markets, this measure separates out the high quality (prestigious or premium) from others, although niche suppliers in a particular market might also be seen as high quality or premium suppliers (eg Ward et al., 1994; Cullinan, 1998).

There are two key issues here. First, the high quality auditors are designated as high “status” if they have the reputation as a quality supplier (as quality is not observable). Second, while auditor size is an important element in the differentiation of high status auditors from others, it is the reputation of the auditor that is the more valid measure.

### **Interacting auditor status and specialization**

We expect that insight can be gained by interacting auditor status in terms of prestigious or premium suppliers and non-prestigious suppliers with auditor specialization. It is our contention that high status auditors that are specialists will earn a fee premium. In contrast, those that are not high status, but are nevertheless specialists, will give fee discounts. The primary research question addressed in this study is:

Does audit industry specialization interact with auditor status to give rise to either audit fee premiums and/or discounts, controlling for other factors?

Formally, the model to be initially tested is:

$$\text{Ln Audit Fee} = f \text{ Auditor Specialist (ASPEC)} + \text{Auditor Status (ASTAT)} + \\ \text{ASPEC} \times \text{ASTAT} + \text{Control Variables}$$

The research design allows for us to attempt to unravel the differential effect of the factors underlying the enhanced product of auditor industry specialists (expertise, audit technology, experience and the like) and those relating to economies of scale. As Menon and Williams (2001) point out, auditor industry market share may represent both the premium earned by the auditor from specialization and the specialized auditor's cost advantages and so the use of a single variable to capture the construct of specialization potentially masks conflicting associations.

### **Audit production function**

In addition and in particular in respect of the economies of scale arguments, we also expect to see an effect in the audit hours worked. There is an expectation that non-high status specialist auditors will use fewer hours in the execution of the audit work than the same status of firms that are non-specialists. We also expect that high auditor status specialists will use more hours than other high status non-specialist firms. In this comparison the different hours comes from the quality derived from the status of the firm<sup>2</sup>

The model tested for this second hypothesis is:

$$\text{LnAuditHours} = f \text{ Auditor Specialist (ASPEC)} + \text{Auditor Status (ASTAT)} + \\ \text{ASPEC} \times \text{ASTAT} + \text{Control Variables}$$

Few studies in either the private or public sectors have access to both fee and audit production function data (important exceptions being Palmrose, 1989; Davis, Ricchiute and Trompeter, 1993 in the private sector and Deis and Giroux, 1996 in the public sector). This paper, by examining both audit hours and audit fee data in the context of auditor industry specialization and auditor status, aims to provide evidence with respect to the quality differentiation *and* economies of scale conflict.

The next section discusses measurement of the key variables, with Section 5.0 explaining sample and data issues. Sections 6.0 and 7.0 deal with testing of the fee hypothesis and Section 8.0 deals with the production function hypothesis. Further tests are explored in Section 9.0 with concluding remarks, including limitations and potential future research in Section 10.0.

## **Hypothesis Variables**

### ***Specialist auditors***

Apropos the previous literature, the specialist auditor variable is measured by reference to the number of audit clients in the market. We use a measure that captures both differentiation in the market and devotion of resources (Neal and Riley, 2004) in this single market setting. In all, as will be explained in more detail in Section 5.0 dealing with data, some 19 auditors participate in the market of 132 auditees analysed in this study. An auditor is designated a specialist if 12<sup>3</sup> or more auditees are audited by that auditor. This designation gives rise to four suppliers<sup>4</sup> being classified as specialists and 18 as non-specialists. The sensitivity of this classification is tested

under section 8.1, and the application of a continuous variable is used to test the validity of the specialization measure.

### *Auditor status*

Of the 19 suppliers in the market under investigation, only three of the Big 6 firms participate: Deloitte, Ernst & Young and KPMG. Of the 16 other firms, most are non-Central Business District (CBD) headquartered firms, often in suburban localities with some located in regional (country) areas. The only “large” firms in the market are CBD located firms; Deloitte, Ernst & Young, Hendry Rae and Court and KPMG. Of these four firms, Hendry, Rae and Court (HRC), is the only non-Big 6 firm. HRC displays many characteristics associated with the Big 6. It has offices in the CBD, it is a large firm with many partners and other staff, well known and respected in the community; it is a firm perceived as having prestige and is a supplier that provides a wide range of both audit and non-audit services. In terms of local connections, it is the audit firm linked to a particular family that has significant business and political ties in the jurisdiction from which data for this study is drawn. Within the audit services market in this State, intrastate business does not distinguish between HRC and Big 6 firms in the time period relevant to this study. O’Keefe and Westort (1992) and Deis and Giroux (1996) utilize similar arguments to recognize brand-name auditors in other specific audit markets.

Based on this, the first tier of suppliers (high auditor quality or status, coded 1) in the market includes Deloitte, Ernst & Young, HRC and KPMG. All other 15 suppliers are classified as “Other Suppliers” (non-high status, coded 0).

## **Control variables**

Control variables used in this study relate to alternative explanations in the variation of audit fees of local government auditees. They are auditee size, audit complexity, auditee risk and auditee financial mismanagement (FRAUD). These variables constitute adaptations for the public sector to the original Simunic (1980) private sector audit fee model in the spirit of other public sector fee studies such as Rubin (1988), and Ward, et al. (1994). The theory for each of these variables and the measures used is explained.

### ***Auditee size***

An audit engagement, whether in the public or private sector, requires review of financial transactions and compliance with statutory regulations. Larger organisations engage in relatively more transactions requiring additional audit hours resulting in higher audit fees. Prior research (see Simunic, 1980) confirms that auditee size is the most significant variable in determining audit fees.

Both population and total revenue can measure auditee size for local government clients. Given that total revenue is more likely to be associated with the audit task than population, and consistent with Copley (1989) and Ward et al. (1994), total revenue (log transformation) is used in this study. The transformation is invoked since fees are likely to increase at a decreasing rate with auditee size.

### ***Audit complexity***

The complexity of local government and cities can be measured in a number of ways. One way (which relates more directly to the amount of work undertaken to complete the audit and is unlikely to be highly positively correlated with size) relates to the source of revenue. Where an auditee receives a large proportion of revenue from government grants (as opposed to government service fees and charges from a variety of other sources), the easier the audit process and, therefore, the lower the audit effort and fee. This measure is used here.

### ***Auditee risk***

Any audit exposes the auditor to potential losses both financial and reputational. Auditors can respond to risk by planning for increased audit effort and/or adding a risk premium to the audit fee. Either way, audit fees will be set to compensate for differences in loss exposure. Given that the risk of financial loss is small in a context where local government is monitored by the Local Government Auditors Board and the paucity of litigation in this sector, the major risk is reputational. Rubin (1988) suggests that in a municipal environment the amount of municipal debt outstanding is an appropriate measure of the risk of loss. Debt *per capita* is used as a measure of loss exposure consistent with Baber, Brooks and Ricks (1987), Rubin (1988) and Ward et al. (1994).

### ***Financial mismanagement within the auditee***

Financial mismanagement (alleged fraud) can have a profound effect on the amount of audit work undertaken. In the population of auditees used in this study there are cases where such actions were widely believed to exist and information was publicly available. The variable

FRAUD is used as a control variable, which is coded 1 if alleged financial mismanagement was present, otherwise 0.

### *Audit qualification*

The existence of an audit qualification normally involves both additional effort and audit fees. Therefore, the presence of a qualified opinion (of any type) is expected to have a positive effect on fees (and hours). The variable is coded 1 if there is a qualification in the current year, otherwise zero.

## **DATA**

Data for the tests are derived from information collected from Western Australian local governments in the mid 1990's<sup>5</sup> together with data supplied by the Western Australian Department of Local Government. The data set covers all of the 138 municipalities in the State. Eight municipalities were deleted from the data set because of missing information for one or more variables. In a further two municipalities no information on audit hours data was available. Audit fee information is based on returns by auditors to the Department of Local Government and as such includes the actual audit fee. The year 1993 was the first year of a limited three-year contract period. The fact that the audit contracts were limited in duration means that there was limited scope for "low balling" in order to recover foregone fee revenue over a longer term. Also note that all audits in this market are subject to quality oversight by the Local Government Auditors Board. Thus, in this market (and potentially more so in than in private sector markets where there is not active detailed quality oversight function), it is reasonable to assume that each audit is undertaken to (at least) a required minimum level.

## **RESULTS: AUDIT FEES**

The classification of a specialist supplier as one with 12 or more auditees in the one (industry) specific market produced four specialists: Ernst & Young and Hendry Rae & Court are both seen as prestigious suppliers in the Western Australian market generally (i.e., in both public and private sectors). The other two designated specialists, Banks & Co. and Lincoln are not seen as “prestigious” firms. Neither firm is located in the “high rent” CBD area; both firms are smaller suppliers with few partners and offer a limited range of services. Descriptive statistics are shown in Table 1. The statistics are partitioned between total samples and sub-samples for the specialist and non-specialist groups. Correlations between the independent and dependent variables are shown in Table 2.

PLACE TABLES 1 AND 2 HERE

### **Fee model: auditor specialization and auditor status**

Results from the analysis of the control and (main effect) hypothesis variables (that is without the interaction of ASTAT and ASPEC) are reported in Table 3, Panel A and with the interaction in Panel B. Note all the control variables are significant and in the expected direction.

PLACE TABLE 3 HERE

The hypothesis variable in Panel A shows Auditor Status as positive and significant with no significant effect of the specialization variable. Interacting the two variables (Panel B) shows the importance of the relationship between the two variables. The interaction term is positive and

significant. To reveal the interaction effect, the regressions were re-run with the two sub-samples, high and non-high auditor quality. These are shown in Panels A and B in Table 4.

PLACE TABLE 4 HERE

Again, generally control variables are significant and in the expected direction with the hypothesis variable – Auditor Specialization - operating in very different ways in the two sub-samples. In the high auditor quality sub-sample, the variable is **positive** and weakly significant; while for the non-high auditor quality group the variable is negative and significant.

Taken together, we conclude that the concept Auditor Specialization differs markedly between differing status level suppliers. The high status suppliers gain a fee premium while other suppliers engage in fee discounting, possibly in an attempt to gain client volume. The high status audit firms might be thought of as “premium” suppliers, while the non-high status firms could reasonably be thought of a “discounters”.

In all cases the models are significant with an adjusted  $R^2$  between 67% and 86%.

### **RESULTS: AUDIT HOURS**

The theory underlying the models shown above is in part derived from implicit beliefs about the underlying audit production function. Thus, we argue that the models are equally valid for modelling the production function (costs) of audits (see for instance, Deis and Giroux, 1996).

The tests that follow are addressed to the questions raised earlier namely: Do specialist auditors work a different number of hours compared with others? If so, does this vary by level of auditor quality?

The models tested here differ only in the dependent variable used. For the audit hours model, the total hours is that reported by the contractors to the appropriate government agency. It is an obligation that such information be disclosed under the contracts in place with the Department of Local Government. The log-transformed reported hours' variable is used as the dependent variable.

#### **Audit hours model**

The result shown in Table 5, Panel A shows the presence of a highly significant interaction between auditor status and specialization. Panels B and C show the audit hours for each of the two auditor status sub-samples. Interestingly, while, in general, the high- status auditors do **not** put more work into these audit tasks, the non-high status auditors do significantly less audit work. This evidence is consistent with there being an economy of scale phenomenon present in certain audit suppliers, those not at the high “quality” end of the market. The results are also consistent with high-status specialists generating the premium services in a way not linked to the number of hours worked. The premium service may be via expertise or audit technologies not available from other suppliers or it may be a return for less tangible advantages such as prestige and reputation.

PLACE TABLE 5 HERE

## **DISCUSSION AND IMPLICATIONS**

We demonstrate that in the public sector market examined in this study there exists not one type of auditor industry specialization but two. The existence of two types of specialists has implications. Fundamentally, we theorise and find that specialization can give rise not just to fee premiums but also to fee discounts. Importantly the evidence is consistent with the presence of **both** theories explaining auditor industry specialization. On the one hand “premium” specialists earn an enhanced fee for their services as a return for a higher quality product delivered. Based on the audit hours data, we conclude that this is not from inputting greater effort but is at least partly related to working “smarter” (or from some other less obvious reason). On the other side of the quality dichotomy, a substantial number of audits undertaken by a supplier results in economies of scale (and resultant efficiencies), which in a competitive market place are passed back to the auditees in the form of lower fees. These suppliers complete these audits to the standard required by the overseer of these audits (the Department of Local Government) in less time taken by other suppliers.

## **FURTHER TESTS: SENSITIVITY ANALYSIS**

As indicated above, the choice of which auditor is or is not a specialist of either type might be argued to be arbitrary. Widening the designation as to which auditors might be regarded as a low-cost specialists makes some difference to the results. There were two low cost suppliers approaching the minimum criteria to be included as specialist suppliers. Reclassifying these firms to non-specialists weakens the results marginally in the results reported above. In addition, the ASPEC variable was re-measured using a continuous measure based on number of clients. This measure resulted in an insignificant result for the hypothesis variable (specialisation) and

the interaction variable. This appears to be caused by the extreme value (number of clients) of Ernst & Young. Both removing the Ernst & Young cases and truncating the extreme value for this supplier (to the same as the next highest supplier with 16 clients) generates results similar to those reported in Table 4. When the measure of the largest supplier (Ernst & Young) was adjusted from 32 to the same as the next highest specialist (the next largest supplier was 16 clients) gives rise to results consistent with those reported in Tables 3 and 4.

Removal of the firm HRC from the high-status auditor group changes the results markedly. The variable Audit Status (now only the international first tier) is positive and significant and the specialization variable is negative and significant. When these two variables are interacted, the interaction term is insignificant.

Re-running the audit fee model without the auditor quality status and specialization variables and including the four specialist firms as dummy variables provides interesting results. The coefficients for both HRC and Ernst & Young are positive and significant (albeit weakly in Ernst & Young's case); those for both Lincoln and Banks & Co. are negative and significant (for Lincoln only weakly). Thus while two of the specialists in this market earn premiums, the two "non-high" status specialists "earn" discounted fees.

### **CONCLUDING REMARKS**

The objective of this study is to examine the fee and production function effects of auditor industry specialization as it interacts with auditor status. It does not merely replicate studies that

demonstrate the existence of fee premiums attributable to such specialists, but seeks to understand more about the underlying attributes within auditor industry specialization.

The empirical results support the existence of differing types of auditor industry specialization that vary over levels of auditor status. They show that both can be present in the same (relatively small) market. The presence of both “premium” and “discount” auditor industry specialists may explain some of the mixed results in the literature. In particular, one could argue that the results in De Fond et al (2000) simply reflect the presence of two types of auditor industry specialists operating in the Hong Kong market. Similarly, studies that do not include an explicit specialization variable but find differential fee effects to particular auditors (e.g., Balachandran and Simon, 1994; Simon, 1995) might be reflecting differential specialization effects.

It is possible, indeed likely, that both types of industry specialist will not coexist in all or even in many markets. It would be a necessary condition to have some auditees that seek a premium quality product and are willing to pay premium prices as well as auditees that seek a “no frills” product at minimum cost before one is likely to be able to observe the existence of both types of supplier. It may also be a necessary condition for the existence of “discount” specialist suppliers that the number of audits secured is sufficient to generate economies of scale before one would see a discount fee effect.

The study provides some evidence that we need to know more about the structure of industries, markets and even audit firms before being able to explain and predict the fee (and effort) effects of specialization.

This paper seeks to identify that the industry specialist auditor is not the unidimensional construct it has been represented as. We provide evidence that a dimension in the construct revolves around auditor status or class. In illustrating this, it is possible we will cause researchers to ask more questions than we have answered.

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**Table 1.****Descriptive Statistics: Hypotheses, Control and Dependent Variables**

	Full Sample			High Status Suppliers			Non-High Status Suppliers		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Fee (\$A)	4896	3200	4418	6692	4500	5886	3583	2900	2152
Hours	92.4	63	82.7	124.7	93	101.7	68.2	48	54.1
Revenue (\$A000)	3,050	1,525	7,078	6,208	2,818	10,058	2,318	1,268	2,846
Grant Revenue (%)	39	43	19	38	42	24	42	46	12
Debt ( <i>per capita</i> ) (\$A)	486	291	717	546	248	1094	490	340	375
Qualification	7.2%			5.3%			8.9%		
Fraud Indicator	1.5%			1.8%			1.3%		
No. of Observations	132			55			77		

**Table 2.**

**Pearson Correlations (2-tailed significance)**

	Audit Fee (log)	Revenue (log)	Grant	Debt	Fraud	Auditor Status	Qualification	Specialist	Audit Hours
<b>Audit Fee (log)</b>	1								
<b>Revenue (log)</b>	.878 (.000)	1							
<b>Grant</b>	-.617 (.000)	-.655 (.000)	1						
<b>Debt</b>	.188 (.032)	-.284 (.001)	-.329 (.000)	1					
<b>Fraud</b>	.284 (.001)	.130 (ns)	-.046 (ns)	-.024 (ns)	1				
<b>Auditor Status</b>	.377 (.000)	.328 (.000)	-.094 (ns)	.041 (ns)	.020 (ns)	1			
<b>Qualification</b>	-.068 (ns)	-.229 (.009)	.164 (.062)	.026 (ns)	.199 (.022)	-.074 (ns)	1		
<b>Specialist</b>	.092 (ns)	.056 (ns)	.033 (ns)	.062 (ns)	.016 (ns)	.473 (.000)	.021 (ns)	1	
<b>Audit Hours (log)</b>	.837 (.000)	.788 (.000)	-.558 (.000)	-.149 (.091)	.180 (.038)	.405 (.000)	.058 (ns)	-.087 (ns)	1

**Table 3.**

**Regression - Audit Fees as Explained by Auditor Status (ASTAT),  
Auditor Specialist (ASPEC), ASPEC x ASTAT and Control Variables**

		Panel A: Without Interaction			Panel B: With Interaction		
		Standardized Coefficients			Standardized Coefficients		
Model	Expected Sign.	Beta	<i>t</i>	<i>p</i> -value*	Beta	<i>t</i>	<i>p</i> -value*
Size	+	.777	14.136	.000	.779	14.427	.000
Grant	-	-.130	-2.543	.006	-.131	-2.598	.006
Debt	+	.073	1.806	.037	.071	1.804	.037
Fraud	+	.155	3.989	.000	.175	4.470	.000
Qualification	+	.105	2.642	.005	.112	2.857	.003
Auditor Status	+	.122	2.659	.005	-.030	-.383	.352
Auditor Specialization	+	-.009	-0.221	.413	-.076	-1.490	.070
ASPEC x ASTAT	?	-	-	-	.271	2.335	.022
Constant	N/A	-	2.975	.004	-	3.050	.004
		Adj. R <sup>2</sup> = .819			Adj. R <sup>2</sup> = .826		
		F = 84.5			F = 77.3		
		N = 130			N = 130		

\**p*-values are for one-tailed tests apart from the intercept and ASPEC and ASTAT

**Table 4.**

**Audit Fees as Explained by Auditor Specialization and Control Variables:  
Auditor Status Sub-Samples**

	Panel A: High Audit Status			Panel B: Non-High Audit Status		
	Standardized Coefficients			Standardized Coefficients		
Model	Beta	<i>t</i>	<i>p-value*</i>	Beta	<i>t</i>	<i>p-value*</i>
Size	.838	11.494	.000	.830	10.094	.000
Grant	-.154	-2.120	.020	-.037	-.465	.322
Debt	.077	1.377	.088	.111	1.711	.047
Fraud	.074	1.342	.093	.271	4.085	.000
Qualification	.022	.419	.339	.191	2.806	.004
Auditor Specialization	.071	1.342	.093	-.128	-2.067	.022
Constant	-	1.044	.302	-	2.461	.016
	Adj. R <sup>2</sup> = .865			Adj. R <sup>2</sup> = .726		
	F = 58.9			F = 33.7		
	Sign. = 0.000			Sign. = 0.000		
	N = 55			N = 75		

\**p*-values are for one-tailed tests apart from the intercept.

**Table 5.**

**Audit Hours as Explained by Auditor Specialization (ASPEC), Auditor Status (ASTAT), ASPEC x ASTAT and Control Variables**

Model	Panel A: Total Sample			Panel B: High Status			Panel C: Non-High Status		
	Standardized Coefficients			Standardized Coefficients			Standardized Coefficients		
	Beta	<i>t</i>	<i>p-value*</i>	Beta	<i>t</i>	<i>p-value*</i>	Beta	<i>t</i>	<i>p-value*</i>
Size	.670	10.100	.000	.841	8.479	.000	.563	6.206	.000
Grant	-.130	-2.099	.019	-.084	-.851	.200	-.153	-1.746	.043
Debt	.081	1.670	.049	.138	1.814	.038	-.071	-.997	.162
Fraud	.087	1.804	.037	.014	.192	.425	.121	1.653	.052
Qualification	.145	3.031	.002	-.024	-.325	.373	.273	3.606	.001
Auditor Status	.053	.547	.293	-	-	-	-	-	-
Auditor Specialization	-.390	-6.284	.000	-.056	-.777	.221	-.431	-6.284	.000
ASPEC x ASTAT	.362	3.264	.001	-	-	-	-	-	-
Constant	-	-3.159	.001	-	2.908	.003	-	-1.426	.080
	Adj. R <sup>2</sup> = .741			Adj. R <sup>2</sup> = .751			Adj. R <sup>2</sup> = .676		
	F = 46.5			F = 28.1			F = 26.0		
	Sign. = .000			Sign. = .000			Sign. = .000		
	N = 128**			N = 55			N = 73		

\**p*-values are for one-tailed tests apart from the intercept.

\*\*For two municipalities no audit hours data was available.

## ENDNOTES

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<sup>1</sup> The De Fond et al. study was undertaken using data available shortly before the merger of KWTF and the Big 5 firm Deloitte. Possible future research could examine the effect this merger had on fees and underlying cost structures of both the separate and merged firm.

<sup>2</sup> The high quality can be derived from either or both more effort (i.e., working harder) or more expertise, experience or from enhanced structures or audit technologies (worker smarter). An effect on audit hours is only expected if the enhanced quality comes from working harder.

<sup>3</sup> The number twelve12 was established for several reasons. First, it was a substantial proportion of the population of audits in this market (9%), second, twelve12 audits represented a “natural break” in the data. As is noted, there is further testing of the sensitivity of this number reported later in the paper.

<sup>4</sup> Of the four specialists –, three would have been classed as specialists in the previous tender (in 1990) and one had previously been awarded nine audits (somewhat less than the cut-off used in the study).

<sup>5</sup> While some of the data I publicly available the authors have benefited from availability of privately supplied data over a six year window over the early to mid-1990’s. This six year window represents two three year period. The data used in the study is taken from the first year of the second three year tender period (1993). This year was chosen as it represents a time when the tendering arrangements had reached some degree of maturity.