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AUDIT MARKET SHARE AND AUDITORS' INDUSTRY SPECIALISATION: EFFECTS OF DIFFERENT BASES OF MEASUREMENT¹

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ABSTRACT

Past studies have examined audit market concentration and auditors' industry specialisation within different countries including the US (Zeff & Fossom, 1967; Rhode, Whitsell & Kelsey, 1974; Schiff & Fried, 1976; Eichenseher & Danos, 1981; Danos & Eichenseher, 1982), Australia (Craswell & Taylor, 1991; Craswell, Francis & Taylor, 1994), and Malaysia (Iskandar, Maelah & Aman, 2000). These studies have employed different bases to measure audit market concentration and auditors' industry specialisation. It is argued that, due to the different bases used to measure audit market share, results of the studies may not be comparable. The differences in research findings may be driven by the differences in the bases of measurement. Hence, the results do not reflect the actual market distribution and industry expertise of the auditor. The objective of this study is to provide evidence to support the argument that differences in research results are due to differences in the methods used to measure audit market concentration and auditors' industry specialisation. Results show that, based on Malaysian empirical data, audit market share and industry specialisation vary significantly with different bases of measurement employed.

INTRODUCTION

There has been a number of studies on audit service market concentration in the US (Fried & Schiff, 1981; Mc Connel, 1986), in Australia (Craswell & Taylor, 1988; Craswell, Francis & Taylor, 1994), in the UK (Moizer & Turley, 1987), and in Malaysia (Iskandar, Maelah & Aman, 2000). Generally, the results of the studies indicate the predominance of audit service market share by Big 8 firms. However, the percentage of audit market concentration among audit firms differs between different countries. For instance, the percentage of concentration of audit market among Big 6 firms in Malaysia is found to be lower (i.e. about 60%) than that in the US (i.e. more than 90%). In addition, studies in Australia, found that industry specialisation is an important dimension to audit service market (Craswell et al., 1994). However, a similar dimension of industry specialisation among audit firms does not exist in Malaysia (Iskandar et al., 2000).

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Inconsistencies of the results between different countries may be due to differences in the basis used to determine auditors' market share and their industry specialisation. The choice of measurement base was made based on the availability of information, mainly those published in annual reports. The availability of data differs between countries as a result of different disclosure requirements by accounting bodies in each country. For instance, studies in Australia use the size of audit fee to determine auditors' market share and their industry specialisation. This is because, in Australia, information on audit fee is disclosed separately as a line item in the financial statements in accordance with its disclosure requirements. However, similar information on audit fee is not found in the financial statements in the US because such disclosures are not mandatory in that country. Hence, studies on audit market in the US use the number of audit clients to determine the audit market share. In Malaysia, the determination of audit market share and auditors' industry specialisation is based on the number of audit clients (Iskandar et al.) although information on audit fee is also available in annual reports. In Malaysia, the amount of audit fee is separately disclosed as a line item in the financial statement as required by the Companies Act 1965 in its Ninth Schedule.

The use of different measurement bases to determine audit market share and auditors' industry specialisation in the past may pose interpretation problems in making comparison of results between countries. It is argued that the number of audit firms does not correspond with the size of the audit fee. Hence, the use of number of clients as a basis may result in an audit firm with fewer audit clients paying larger amounts of audit fee being ranked lower in the audit market share than another firm that has a larger number of clients but paying smaller audit fee. The use of audit fee base in this situation may produce different results. Hence, it is argued that the choice of measurement bases, either the number of audit clients or the amount of audit fee affects the determination of audit market share and auditors' industry specialisation. As to which measure is better, it is subject to further investigation.

The objective of this study is, therefore, to examine both measures to see if they provide consistent results in determining audit market distribution among audit firms and in ascertaining industry specialisation of Big 6 audit firms. This study uses data extracted from annual reports of companies listed in the Kuala Lumpur Stock Exchange (KLSE).

This paper is divided into four sections. The first section provides the literature review and hypothesis development followed by the description of research methodology in the second section. Results of the study are discussed in the third section. The analysis is divided into two parts. The first part provides the analysis of audit market distribution and the second part analyses the auditors' industry specialisation. The analysis in each part uses both measurement approaches and compares results of both methods. The final section provides conclusions and implications of research findings.

PRIOR RESEARCH

There has been a number of studies on concentration of audit market and auditors' industry specialisation particularly among the Big 8 firms in a number of countries such as the US, UK, Australia, and Malaysia. Zeff and Fossum (1967) examined the audit profile of 639 large companies from 38 industrial categories in the US. They found that 92.7% of companies that obtained 94.8% of the total industry revenue, were audited by Big 8 firms. On the basis of the number of audit clients, the study concluded that Big 8 public accounting firms predominate large US industries. The study also found that each Big 8 firm specialises in certain industries. For example, Price Waterhouse & Co. was the leader in food products, machinery-industrial, meat and dairy products, office equipment, oil, rubber fabricating and steel, while Haskins & Sells was the leader in autos, chemicals and containers. It was shown that Price Waterhouse & Co. has the largest number of audit clients. Rhode et al. (1974) used the same basis to replicate the study and found that large public accounting firms continued to dominate the market, in terms of the number of clients, over the period between 1964 and 1971. Big 8 firms audited about 93.87% of large US industrial companies comprising 96.45% of the total revenue of all companies. The number of clients audited by non-Big 8 firms has declined. With a more comprehensive measurement of concentration across industries, Schiff and Fried (1976) confirmed the dominance of the Big 8 audit firms in the US. Big 8 firms audited about 91.6% of those companies whose revenues represent 95.5% of the total operating revenues. In all these studies, Price Waterhouse continued to maintain the first in terms of the number of audit clients. Eichenseher and Danos (1981) expanded the client population sevenfold and used the percentage of total activity in an industry to determine market concentration and found the levels of concentration were not as high as those suggested in earlier works. It was found that over 90% of the industries observed have four or fewer CPA firms receiving at least 50% of the revenues derived from clients in the industry. The discussion shows that all US studies were based on the number of audit clients to determine audit market share among audit firms. On this basis, Big 8 firms were found to dominate a large percentage of audit clients, with Price Waterhouse in the lead position.

In Australia, Craswell and Taylor (1991) reexamined concentration in the audit market. The objective was to provide additional evidence on the market structure for audit services with a specific concern for specialisation by auditors. The study used audit fee data for companies listed on the Australian Stock Exchange during the period 1982 to 1987 to examine market share of individual audit firms across industries. Industry specialisation is an important aspect of audit practice which improves the quality of audit services and hence influences the share of audit market. Industry specialists were determined on the basis of the accounting firm's total industry audit fee. The variation in market share across different types of client groups would be consistent with client-industry specialisation. The results revealed that the Australian market displayed a market variation in audit firm concentration across groups of relatively homogeneous clients. On the basis of the audit firms total industry fee, Craswell, Francis and Taylor (1994) evaluated industry

specialisation for 14 industries over the period 1982 to 1987. The study separated two distinct components of audit pricing: a brand name (Big 8 audit firms) premium representing returns on brand name development and maintenance; and a premium representing positive returns on investments in industry specialisation or expertise. The authors argued that industry-specific audit specialisation represented an investment in expertise above and beyond the general expertise of an audit. In order to isolate the separate effects of brand name and industry specialisation, the study used a large sample consisting of 1,484 publicly listed companies across 23 Australian Stock Exchange industry codes. The study found strong evidence of an audit fee premium as positive returns to investment in industry specialisation in addition to a general Big 8 or brand name effect. It was concluded that the demand for, and the supply of, industry specialisation represent a further dimension of Big 8 audits. A threshold of 10% of market share was used to designate an auditor as an industry specialist.

Iskandar, Maelah & Aman (2000) used the number of audit clients as the basis to study the structure of audit market in Malaysia. They found that Big 6 firms dominate about 60% of companies listed in KLSE each year during the period 1991 to 1996. A high concentration of Big 6 firms exists in most industries and the percentage of concentration increases over the period under study. The expansion occurs within an industry and outside the industry. In most industries, between two to five Big 6 firms audit more than 10% of the companies and each Big 6 firm audits more than one industry with at least 10% share in each industry. Results indicate that the market concentration of the Big 6 by industry is lower compared to its counterpart in the US while the industry specialisation in Malaysia is not clear compared to the situation in Australia.

It can be concluded that past studies commonly used two bases to determine audit market structure: (i) the number of clients of an audit firm in an industry as a percentage of the total number of companies within the industry (Zeff & Fossum, 1967; Rhode et al., 1974; Schiff & Fried, 1976; Eichenseher & Danos, 1981); and (ii) the amount of audit fee earned by an audit firm in an industry as a percentage of the total audit fee for all companies within the industry (Craswell & Taylor, 1991; Craswell et al., 1994). The latter represents a size-weight market share (i.e. weighted by audit fee). Thus, high market share in an industry indicates the auditor concentration in that industry, which in turn reflects auditor industry specialisation. Comparisons between these two measures will enable researchers to determine the reliability of the results. Craswell and Taylor (1991, p. 69) suggest that to investigate audit firm specialisation adequately, it is necessary to compare market shares across each of the measurement bases while taking into account both the absolute and relative market share. Unlike the situation in the US, audit market share and industry specialisation in Malaysia are based on audit fee because the information is available in the financial statements since its disclosure is mandatory. A similar regulatory requirement exists in Australia, hence results of similar studies in Australia and Malaysia are expected to be comparable.

A proper measure of industry specialisation is necessary in order to provide clients with a correct indication of the competency of audit firms. Information on auditors' industry specialisation is important for both the client and audit firm. Clients wish to get the best quality service from auditors with the industry expertise. Schockley and Holt (1983) found systematic differences among the Big 8 suppliers of the services based on their industry expertise. Auditors use industry specialisation in their strategic planning in strengthening their market with the objective of providing high quality, cost-efficient audit services (O'Keefe, King & Gaver, 1994). Audit firms acquire industry-specific knowledge through the audit of industry-clients as a result of greater economic incentives as the former enhance audit quality and are more cost effective. However, due to different bases used in ascertaining market concentration and industry specialisation among audit firms in the past, the comparability of results between studies becomes questionable. It is argued that market concentration or industry specialisation would differ depending on the method used.

The above arguments lead to the following hypotheses:

- H1: The market share among audit firms determined by the number of audit clients differs from that determined by the amount of audit fee.
- H2: For each industry, the market share of audit firms determined by the number of audit clients differs from that determined by the amount of audit fee.
- H3: Auditors' industry specialisation determined by the number of audit clients differs from that determined by the amount of audit fee.

RESEARCH METHOD

Sample

This study utilises the data extracted from annual reports of 390 companies listed on the main board of the KLSE between 1991 to 1996. The companies represent all the ten industries in accordance with the KLSE classification. The period is selected in order to be consistent with the earlier study (Iskandar et al., 2000) and to enable comparisons to be made between the two studies.

Data

The auditor for each company is identified from the annual report of the company. This information provides data for the number of audit clients for non-Big 6 firms and each Big 6 audit firm. The amount of audit fee for each year is extracted from the financial statement of each company. The number of audit clients and the amount of audit fee are both used as the bases of measurement to determine the audit market share and auditors' industry specialisation.

Determination of Audit Market Share and Industry Specialisation

The audit market share and auditors' industry specialisation are determined separately by using both methods: (1) the number of audit clients; and (2) the amount of audit fee. The following items are determined in identifying audit market share and industry specialisation:

1. The total number of clients and the amount of audit fee are determined for each Big 6 firm and for non-Big 6 firms.
2. The percentage of audit market share for each Big 6 firm and for non-Big 6 firms is calculated as follows:

- a. Based on the number of audit clients:

$$\frac{\text{The number of audit clients for the firm(s)}}{\text{The number of audit clients for all firms}} \times 100$$

- b. Based on the amount of audit fee:

$$\frac{\text{The amount of audit fee for the firm(s)}}{\text{The amount of audit fee for all firms}} \times 100$$

3. The audit market share for each Big 6 firm and for non-Big 6 firms in each industry is calculated as follows:

- a. Based on the number of audit clients:

$$\frac{\text{The number of companies audited by the firm(s) in a particular industry}}{\text{Total number of companies audited by all firms in the industry}} \times 100$$

- b. Based on the amount of audit fee:

$$\frac{\text{The amount of audit fee earned by the firm(s) in a particular industry}}{\text{Total amount of audit fee earned by all firms in the industry}} \times 100$$

4. Identification of auditor's industry specialisation that meets the threshold of 10% of audit market share in an industry determined by both methods.

Comparisons are subsequently made between audit market share determined by using the two bases to evaluate their consistency. Similar comparisons are also made between auditors' industry specialisation based on those methods.

RESULTS

The results of the analyses are reported in three parts. The first part presents the comparison of market share determined by the number of audit clients and market share determined by the amount of audit fee for each Big 6 and non-Big 6 audit firms. The second part compares the market share determined by both methods for Big 6 and non-Big 6 firms across different industries. The final part discusses the determination and comparison of industry specialisation of audit firms under both measurement approaches.

Audit Market Share among Big 6 Audit Firms

The market share of audit service is analysed for the period 1991 to 1996, by using both bases: the number of audit clients and the amount of audit fee. Results of the analysis are summarised in Table 1. Comparisons of market share are subsequently made between both bases for each audit firm to see if the results are the same. Differences of market share under both bases exist for non-Big 6 firms and for each Big 6 firms, except for Arthur Anderson. Paired-sample t tests indicate that the differences are significant at $p < 0.05$. Significance values of statistical test of the difference for each firm are stated in Table 1.

The results show mixed findings on the differences in the market share among Big 6 firms determined by the amount of audit fee and that by the number of audit client. Coopers & Lybrand, Price Waterhouse, and Delloite & Tohmatsu each obtains a significantly higher market share based on the amount of audit fee than that based on the number of audit clients. Meanwhile, Peat Marwick and Ernst & Young obtained significantly lower market share based on the amount of audit fee than that based on the number of clients. For non-Big 6 firms, on the other hand, the study finds that the market share based on the number of clients is larger than that based on the amount of audit fee.

Overall, the results show significant differences in the audit market share between firms resulting from the use of different measurement bases. However, directions of the resulting differences are inconsistent. These inconsistencies may be due to the size of audit clients. Further investigation is necessary to provide the explanation. The results support Hypothesis 1, which suggests that the market share among audit firms determined by the number of audit clients differs from that determined by the amount of audit fee.

Industry Audit Market Shares among Audit Firms

The market share of audit service between Big 6 and non-Big 6 audit firms within each industry is analysed for the period between 1991 to 1996. The objective of this analysis is to see whether the use of both bases produces consistent results. These results are summarised in Table 2.

TABLE 1
COMPARISONS OF PERCENTAGE MARKET SHARE BETWEEN AUDIT FIRMS
BY NUMBER OF CLIENTS AND AUDIT FEE

Base	1991	1992	1993	1994	1995	1996
<i>Coopers & Lybrand</i>						
By no. of clients	10.3	9.9	9.9	10.7	11.0	10.8
By audit fee	15.5	11.9	13.7	14.7	10.9	18.9
$P = 0.020$						
<i>Arthur Anderson</i>						
No. of clients	4.7	6.2	9.1	9.3	14.0	14.4
By audit fee	8.3	7.9	7.3	13.1	13.0	7.2
$P = 0.993$						
<i>Peat Marwick</i>						
No. of clients	14.0	14.8	14.0	13.8	13.5	12.2
By audit fee	2.1	1.6	1.6	1.8	1.5	1.0
$P = 0.000$						
<i>Price Waterhouse</i>						
No. of clients	12.3	12.3	12.3	11.3	11.3	11.2
By audit fee	14.4	21.3	16.3	15.7	12.7	12.8
$P = 0.025$						
<i>Ernst & Young</i>						
No. of clients	17.0	16.4	17.5	17.8	15.7	15.5
By audit fee	10.6	10.1	11.8	10.3	10.2	9.5
$P = 0.000$						
<i>Delloitte & Tohmatsu</i>						
No. of clients	0.3	0.3	0.6	0.8	1.4	1.1
By audit fee	17.2	15.1	14.9	12.9	22.2	29.2
$P = 0.001$						
<i>Non-Big 6</i>						
No. of clients	41.3	40.1	36.5	36.2	33.1	34.9
By audit fee	31.9	39.1	34.4	31.5	29.5	31.4
$P = 0.019$						

Paired-sample t tests were performed to see if the differences were significant. Results of the tests for each industry are stated in Table 2. The results show that audit market shares determined by both methods are significantly different (at $p < 0.05$) for all industries except the mining industry. For the properties industry the difference, although not significant, is high (i.e. $p = 0.094$). In almost all industries, the audit market share of Big 6 firms determined by the amount of audit fee is larger than that determined by the number of clients. On the other hand, the audit market share of non-Big 6 firms determined by the amount of audit fee is smaller than that determined by the number of audit clients. The results suggest that Big 6 firms have relatively fewer audit clients but the clients are bigger firms, hence, paying higher audit fee. On the other hand, non-Big 6 firms have more clients consisting of smaller firms, thus, receiving lower amounts of audit fee.

TABLE 2
COMPARISON OF PERCENTAGE OF INDUSTRY-AUDIT MARKET SHARE OF BIG 6 (B6) AND
NON-BIG 6 (NB6) AUDIT FIRMS BY NUMBER OF CLIENTS AND AMOUNT OF AUDIT FEE

Base	1991		1992		1993		1994		1995		1996	
	B6	NB6	B6	NB6	B6	NB6	B6	NB6	B6	NB6	B6	NB6
<i>Consumer</i>												
No. of client	53.5	46.5	54.2	45.8	57.1	42.9	63.3	36.7	64.6	35.4	62.5	37.5
Audit fee	73.7	26.3	74.6	25.4	78.1	21.9	83.2	16.8	82.8	17.2	70.4	29.6
<i>P = 0.000</i>												
<i>Industrial</i>												
No. of client	69.8	30.2	70.1	29.8	70.0	30.0	77.6	23.4	77.6	22.4	71.7	28.3
Audit fee	83.6	16.4	83.8	16.2	81.5	18.5	81.3	18.7	79.9	20.1	79.6	20.4
<i>P = 0.008</i>												
<i>Construction</i>												
No. of client	62.5	37.5	60.0	40.0	45.2	34.8	66.7	33.3	69.6	30.4	64.7	35.3
Audit fee	68.4	31.6	88.6	11.4	67.3	32.7	77.4	22.6	83.9	16.1	84.3	15.7
<i>P = 0.004</i>												
<i>Trading</i>												
No. of client	64.6	35.4	69.2	30.8	68.4	31.6	66.1	33.9	75.0	25.0	78.7	21.3
Audit fee	93.2	6.7	92.4	7.6	90.2	9.8	88.9	11.0	91.9	8.1	94.2	5.8
<i>P = 0.000</i>												
<i>Finance</i>												
No. of client	40.0	60.0	40.0	60.0	42.5	57.5	38.5	61.5	48.9	51.1	46.9	53.1
Audit fee	38.9	61.1	27.0	73.0	30.7	69.3	33.6	66.4	28.4	71.6	21.2	78.8
<i>P = 0.019</i>												
<i>Hotels</i>												
No. of client	25.0	75.5	40.0	60.0	50.0	50.0	60.0	40.0	50.0	50.0	40.0	60.0
Audit fee	30.8	69.2	22.5	77.5	30.9	69.1	29.9	70.1	30.9	69.1	29.0	71.0
<i>P = 0.027</i>												
<i>Properties</i>												
No. of client	54.5	45.5	56.5	43.5	63.3	36.7	59.3	40.7	57.1	42.9	54.3	45.7
Audit fee	65.3	34.7	71.8	28.2	66.9	33.1	62.9	37.1	62.4	37.6	49.9	50.1
<i>P = 0.094</i>												
<i>Plantation</i>												
No. of client	61.1	38.9	62.9	37.1	62.9	37.1	64.9	35.1	72.2	27.8	78.3	21.7
Audit fee	79.8	20.2	74.0	26.0	74.2	25.8	78.9	21.1	72.9	27.1	79.8	20.2
<i>P = 0.019</i>												
<i>Mining</i>												
No. of client	62.5	37.5	62.5	37.5	62.5	37.5	62.5	37.5	75.0	25.0	66.7	33.3
Audit fee	83.2	16.8	84.6	15.4	79.8	20.2	76.6	23.4	76.6	23.3	55.0	45.0
<i>P = 0.104</i>												
<i>Trust</i>												
No. of client	66.7	33.3	66.7	33.3	66.7	33.3	66.7	33.3	66.7	33.3	50.0	50.0
Audit fee	67.0	33.0	73.1	26.9	67.0	33.0	70.0	30.0	69.0	31.0	54.6	45.5
<i>P = 0.034</i>												

Note: Each cell contains the number of audit clients for Big 6 and non-Big 6 firms for each respective industry for the years 1991 to 1996.

The results support Hypothesis 2 suggesting that the market share between Big 6 and non-Big 6 audit firms for each industry determined by the number of audit clients differs from that determined by the amount of audit fee. This finding suggests that the selection of the basis is important in any study of audit market share. The question of which basis gives a better picture of the situation to reflect the auditors' market share needs to be thought out very carefully.

Industry Specialisation

Further analysis is performed to examine whether the different methods of determining industry specialisation among audit firms produce similar results. Industry specialisation is defined as the concentration of auditors' work within specific industries (Iskandar et al., 2000). In this section, industry specialisation is firstly analysed based on the number of audit clients, and then based on the amount of audit fees. Subsequently, comparisons are made to see if auditors' industry specialisation resulting from both bases is the same.

Auditors' industry specialisation is determined by identifying audit firms that have 10% or more of market share in any particular industry.² The summary of each firm's position in industry specialisation determined by both methods, for the period between 1991 to 1996, is presented in Table 3 which denotes audit firms with 10% or more of the market share in an industry. The table shows that, based on the number of audit clients, two to five Big 6 audit firms provide audit services to more than 10% of companies in most industries, except in the construction and hotel industries in 1991 and in the hotel industry in 1996. Similarly, based on the amount of audit fee, more than two Big 6 audit firms have more 10% of the market share in most industries, except in the finance, hotel, and mining industries. In these three industries only one Big 6 audit firm gets more than 10% market share in terms of audit fee.

The results of the comparisons of audit market share and auditors' industry specialisation determined by the two bases have similarities as follows:

1. Diversity of auditors' industry specialisation

The results indicate that, regardless of the basis, Big 6 audit firms do not concentrate only on a few industries but are involved in the audit of a number of industries. The results suggest that the industry specialisation of Big 6 firms in Malaysia seems to be diverse. Each of the Big 6 firm, except Delloite Tohmatsu, audits at least five industries with more than 10% clients in each industry. Delloite Tohmatsu does not seem to serve more than 10% clients in any industry. In 1991, Ernst & Young had more than 10% market share in the consumers, industrial, trading, properties, plantation, and mining industries, while Price Waterhouse had more than 10% of clients in the consumer, trading, and finance industries. In most industries, more than one audit firm gets more than 10% share of the industry audit market. The results also show that each Big 6 firm has more than the 10% share of clients in three to five industries. This finding suggests that Big 6 firms do not specialise in any one industry.

² The 10% benchmark was used to identify industry specialisation in previous studies (Craswell et al., 1994).

TABLE 3
AUDITORS' INDUSTRY SPECIALISATION BY NUMBER OF CLIENTS

Industry	1991	1992	1993	1994	1995	1996
Consumer: No. of clients	3 (PM, PW, EY)	3 (PM, PW, EY)	3 (PM, PW, EY)	3 (PM, PW, EY)	3 (PM, PW, EY)	4 (CL, AA, PW, EY)
Audit fee	3 (CL, PW, D)	3 (CL, PW, D)	3 (CL, PW, D)	3 (CL, PW, D)	3 (CL, PW, D)	3 (CL, PW, D)
Industrial: No. of clients	4 (CL, PM, PW, EY)	3 (CL, PM, PW)	4 (CL, PM, PW, EY)	5 (CL, PM, PW, EY)	5 (CL, AA, PM, PW, EY)	5 (CL, AA, PM, PW, EY)
Audit fee	4 (AA, PW, EY, D)	4 (AA, PW, EY, D)	4 (AA, PW, EY, D)	5 (CL, AA, PW, EY, D)	4 (AA, PW, EY, D)	4 (AA, PW, EY, D)
Construction No. of clients	1 (PM)	3 (AA, PM, EY)	3 (AA, PM, EY)	3 (AA, PM, EY)	3 (AA, PM, EY)	3 (AA, PM, EY)
Audit fee	2 (PW, EY)	1 (PW)	1 (PW)	2 (PW, EY)	1 (PW)	2 (PW, EY)
Trading: No. of clients	2 (PW, EY)	2 (PW, EY)	2 (PW, EY)	3 (CL, PW, EY)	5 (CL, AA, PM, PW, EY)	5 (CL, AA, PM, PW, EY)
Audit fee	3 (CL, AA, D)	3 (CL, AA, D)	3 (CL, AA, D)	3 (CL, AA, D)	2 (AA, D)	2 (AA, D)
Finance: No. of client	2 (AA, PW)	3 (AA, PM, PW)	3 (AA, PM, PW)	2 (AA, PW)	2 (AA, PW)	2 (AA, PM)
Audit fee	1 (CL)	1 (CL)	2 (CL, D)	1 (CL)	1 (CL)	1 (CL)
Hotels: No. of client	1 (PM)	2 (AA, PM)	2 (AA, PM)	2 (AA, PM)	2 (AA, PM)	1 (PM)
Audit fee	1 (EY)	1 (EY)	1 (EY)	1 (EY)	1 (EY)	1 (EY)
Properties: No. of clients	2 (PM, EY)	2 (PM, EY)	4 (CL, AA, PM, EY)	3 (CL, AA, EY)	3 (CL, AA, EY)	3 (CL, AA, EY)
Audit fee	4 (CL, PW, EY, D)	4 (CL, PW, EY, D)	5 (CL, AA, PW, EY, D)	5 (CL, AA, PW, EY, D)	5 (CL, AA, PW, EY, D)	5 (CL, AA, PW, EY, D)
Plantation: No. of clients	3 (CL, PM, EY)	3 (CL, PM, EY)	2 (PM, EY)	3 (CL, PM, EY)	4 (CL, AA, PM, EY)	3 (AA, PM, EY)
Audit fee	2 (PW, EY)	2 (PW, EY)	2 (PW, EY)	2 (PW, EY)	2 (PW, EY)	3 (CL, PW, EY)
Mining: No. of clients	3 (CL, PM, EY)	3 (CL, PM, EY)	3 (CL, PM, EY)	3 (CL, PM, EY)	4 (CL, AA, PM, EY)	3 (AA, PM, EY)
Audit fee	1 (EY)	1 (EY)	1 (EY)	1 (EY)	1 (EY)	1 (EY)
Trust: No. of clients	2 (CL, AA)	2 (CL, AA)	2 (CL, AA)	2 (CL, AA)	2 (CL, AA)	1 (CL)
Audit fee	-	-	-	-	-	-

Note: Audit firms with a market share equal to or greater than 10%.

2. Expansion strategy of Big 6 firms

Under either method, results show that audit firms employ intra-industry as well as inter-industry expansion strategy to increase their market share. The number of industries in which each Big 6 firm is specialising in, appears to increase over time. Overall, the number of Big 6 audit firms with more than 10% market share in any one industry has increased from about two to five between 1991 to 1996. In general, the number of industries in which each Big 6 firm has more than 10% client increases over the period. Most Big 6 audit firms have increased their share of audit service market within an industry and moved into another industry in order to expand their market share. For instance, Ernst & Young had six industries with more than 10% total clients in 1991, and has since increased to seven industries with 10% clients.

Although both methods indicate that more than one firm gets more than 10% share of audit market in most industries, results of the comparison indicate that different sets of audit firms may specialise in a particular industry if different bases are being used. For example, based on the number of clients, audit specialists in the trading industry are Price Waterhouse and Ernst & Young for 1991 to 1993, which increased to include Coopers & Lybrand, Arthur Anderson and Peat Marwick in 1996. Based on the amount of audit fee, however, audit specialists of the trading industry are Coopers & Lybrand, Arthur Anderson and Delloite Tohmatsu between 1991 to 1994, and Arthur Anderson and Delloite Tohmatsu in 1995 and 1996. The results indicate that different sets of audit firms specialise in the same industry when determined by different bases.

Similarly, based on the amount of audit fee, Ernst & Young is the only audit firm specialising in the hotel industry. However, based on the number of clients, Arthur Anderson and Peat Marwick are both the audit specialists in the hotel industry between 1992 to 1995. In the construction industry, the number of client base indicates that Arthur Anderson, Peat Marwick, and Ernst & Young are the industry specialists for the period 1992 to 1996. On the other hand, the amount of audit fee base indicates that Price Waterhouse was the industry specialist during 1991 to 1996 and with Ernst & Young in 1991, 1994 and 1996. Details of these sets are presented in Table 3.

In general, based on the number of clients, a larger number of Big 6 audit firms acquire more than 10% market share compared to the other firms based on the amount of audit fee. Also, different sets of auditors appear to be industry specialists based on different methods. The results provide support for Hypothesis 3 which suggests that auditors' industry specialisation determined by the number of audit clients differs from that determined by the amount of audit fee.

CONCLUSION

The study has examined the audit market share of Big 6 and non-Big 6 firms. The study has also attempted to determine industry specialisation of the firms based on two different methods: the number of audit clients and the amount of audit fee. The overall results show that, for most Big 6 firms, the market share based on the amount of audit fee is significantly higher than that based on the number of clients. However, for non-Big 6 firms, the number of client base produces a larger market share compared to the amount of audit fee base. The findings indicate that the share of the audit market is very much influenced by one characteristic of the client namely the size, which is directly related to the magnitude of audit fee. The results suggest that the determination of audit market share among audit firms will produce inconsistent results depending upon the bases used. This will in turn affect the determination of industry specialisation. The results show that different audit firms appear to have specialisation in different industries depending on the bases employed.

Results of the analyses support all hypotheses suggesting that significant differences exist in terms of audit market share among audit firms, audit market share across industries and industry specialisation among the Big 6 audit firms, and between Big 6 and non-Big 6 firms. Hence, any conclusion drawn on audit market share and auditors' industry specialisation should be made with caution with particular attention given to the methods employed in making the analysis.

This study provides evidence that the basis of measuring audit market share affects the determination of auditors' industry specialisation. Past studies suggest that industry specialists are often referred to as experts. Audit firms with industry specialisation are expected to provide higher quality services and therefore gain higher rewards in the form of audit fee. It is therefore necessary to use a proper definition of industry specialisation in order to avoid mislabelling industry specialists. It is noted that the use of client-based definition of industry specialisation may not be able to provide an accurate measure because industry specialist firms may practice economies of scale in trying to attract clients. On the other hand, the use of audit fee to define industry specialisation may be considered to be more appropriate with the assumption that large companies may appoint industry specialist audit firms that provide higher quality audit. Hence, audit firms with industry specialisation are paid higher audit fee. However, further research is required to shed light on this issue.

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