Auditor Choices and Audit Fees: Do clients select their audit firms or do audit firms choose their clients?

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ABSTRACT

This study provides the first evidence of audit choices and audit fees among listed companies in the Stock Exchange of Thailand where has the limited number of the choices. In doing so, the analysis of 399 companies' auditor choices during 2014-2017 is conducted. Evidence from Thailand indicates that clients are willing to pay more, on average, 37 percentage for Big 4 audit firms. The bigger gap of audit fee premium in Thailand because of their increased costs of audits and greater unforeseeable costs under the greater audit risks from the country's weaker investor protection, more pervasiveness of earnings management, and more pervasiveness of corruption. Big 4 audit firms in Thailand sometimes accept smaller clients with high audit risk and charge them for lower audit fee premium than their usual clients, approximately 19 percentage. In the worst case, clients see audit service as a commodity goods and look only for the audit firms that offer them lower audit fees without the concern for audit quality and their own competencies. The stock market would be harmed because of lower quality of financial reporting supplied.

Keywords: Auditor Choice, Audit Fee, Thailand

บทความวิจัย

การเลือกผู้สอบบัญชีและค่าสอบบัญชี : ลูกค้าเลือกผู้สอบบัญชีหรือผู้สอบบัญชีเลือกลูกค้า

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สภาวิชาชีพบัญชีในพระบรมราชูปถัมภ์

บทคัดย่อ

การศึกษานี้ ให้หลักฐานใหม่สำหรับการเลือกผู้สอบบัญชีและค่าสอบบัญชีของบริษัทจดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย ในสถานการณ์ที่จำนวนผู้สอบบัญชีที่ขึ้นทะเบียนกับสำนักงานคณะกรรมการกำกับหลักทรัพย์และตลาดหลักทรัพย์ยังมีจำนวนค่อนข้างน้อย การวิเคราะห์ข้อมูลประกอบด้วยการวิเคราะห์การเลือกผู้สอบบัญชีของบริษัทในตลาดหลักทรัพย์จำนวน 399 บริษัทในระหว่างปี พ.ศ. 2557-2560 หลักฐานจากประเทศไทยแสดงให้เห็นลูกค้าเต็มใจที่จะจ่ายค่าสอบบัญชีที่สูงกว่าโดยเฉลี่ยร้อยละ 37 ให้สำนักงานสอบบัญชีบิ๊กโฟร์ ทั้งนี้ เนื่องจากต้นทุนการสอบบัญชีและต้นทุนที่ไม่สามารถมองเห็นได้ในอนาคตที่มีมากกว่า ภายใต้ความเสี่ยงในการสอบบัญชีที่สูงกว่าอันเป็นผลมาจากระดับการปกป้องนักลงทุนของประเทศไทยที่ค่อนข้างน้อย การแพร่กระจายของการจัดการกำไรและการคอรัปชั่น ในบางครั้งสำนักงานสอบบัญชีขนาดใหญ่บิ๊กโฟร์ในประเทศไทยตอบรับงานสำหรับลูกค้าที่มีขนาดกิจการขนาดเล็กและมีความเสี่ยงในการสอบบัญชีสูง ในขณะที่พรีเมี่ยมของค่าสอบบัญชีที่ต่ำกว่าลูกค้าทั่วไปของสำนักงานประมาณร้อยละ 19 กรณีที่น่ากังวลมากที่สุด คือการที่บริษัทจดทะเบียนเห็นว่าการสอบบัญชีเป็นสินค้าโภคภัณฑ์จึงมองหาสำนักงานสอบบัญชีที่คิดค่าสอบบัญชีต่ำ โดยที่ไม่คำนึงถึงคุณภาพการสอบบัญชีและศักยภาพของบริษัทตนเอง ในกรณีนี้จะส่งผลเสียต่อตลาดหลักทรัพย์ เนื่องจากได้รับรายงานทางการเงินที่มีคุณภาพต่ำ

คำสำคัญ: การเลือกผู้สอบบัญชี ค่าสอบบัญชี ประเทศไทย

1. Introduction

The understanding of demand for and supply of audit is crucial to gain the better understanding of how clients value audit service and choose their audit firms and how audit firms select their clients and charge audit fee. For the demand side, auditor choice and audit fee depend on how the clients see and value audit service. "Good clients" generally use high-quality audit firms (Francis, 2004) because they see audit service as an economic good and value it. Therefore, they are willing to pay more for higher audit quality. Contrary to the good clients, "bad clients" see it as a commodity good and seek for the audit firms that offer them lower audit fees without the concern for audit quality and their own competencies. The latter case lowers quality of financial reporting and harm stock markets. For the supply side, the auditor choice is theoretically consisted of Big 4 and non-Big 4 audit firms. With their greater motivation to maintain reputation (Eshleman & Guo, 2014) and to avoid dire consequence of litigation exposure (Khurana & Raman, 2004), Big 4 audit firms supply higher quality audit to the market. They also have a big advantage over non-Big 4 audit firms in terms of their resources, thereby enjoying their rosy audit fees and are dominant in the audit market.

Up to now, there has been none of evidence of auditor choice and audit fee from Thailand. Extant evidence of auditor choice is, for example, from the U.S. (e.g., Dhaliwal, Lamoreaux, Lennox, & Mauler, 2015; Hsu, Troy, & Huang, 2015), China (e.g., K. He, Pan, & Tian, 2017; X. He, Rui, Zheng, & Zhu, 2014; Liu, Li, Zeng, & An, 2017), and Taiwan (e.g., Chi & Weng, 2014). Hay and Knechel (2017) review more 200 papers on audit fee premium of Big N audit firms in 30 countries which were published in more than 40 accounting and auditing journals from 1980 onwards. Much of evidence are from the U.S. and U.K. For Southeast Asia, the extant evidence is from Malaysia, Indonesia, and Singapore. It is therefore worth to broaden evidence to Thailand.

The remainder of this study organizes as follows. Section 2 gives a short summary of Thailand's institutional environment. Section 3 provides review literature on audit choices whilst section 4 provides the discussion on the linkage between auditor choice and audit fee and states hypotheses. Section 5 presents the research methodology and section 6 reports empirical results. Section 7 finally concludes the study.

2. Institutional Environment

The Transparency International (2017) reports that Thailand's corruption perception index for the year 2017 is 30 of the total 100 and is ranked as high corruption as the 96th of 180 countries. Political issues have been unsolved since 2005 and led to the suspension of the economic growth. Thailand's legal system is common law based on the English one (Leuz, Nanda, & Wysocki, 2003). It is labelled as an "insider country" with weak investor protection, high shareholder concentration, small stock market, low level of disclosure, weak enforcement, pervasiveness of earnings management, and low democracy (Leuz

et al., 2003). Fan and Wong (2002) indicate that the high concentration of shareholders in Thailand as well as Hong Kong, Malaysia, Taiwan, leads to the opportunistic behaviors of controlling shareholders. The controlling shareholders have high motivations to manage earnings to take advantage over non-controlling shareholders and they are able to do it easily. To conceal their opportunistic behaviors, they report less informative earnings to outsider investors. Choi, Choi, and Sohn (2018) also report that Thailand has mild discretionary accruals but high real earnings management.

The supply chain of financial reporting in Thailand has been continuously developed. Especially, the enactments of the Accounting Act B.E. 2543 (2000) and the Accounting Professions Act B.E. 2547 (2004) lead to the development of accounting professions in Thailand in the line with other countries. According to the Accounting Professions Act B.E. 2547 (2004), the Federation of Accounting Professions (hereafter FAP), the professional self-regulator, was established to regulate, monitor, and develop accounting professions. The development of accounting professions is also incorporated by the Revenue Department, the Bank of Thailand, the Ministry of Finance, the Ministry of Commerce, the Securities and Exchange Commission (hereafter SEC), and educational institutions.

The Auditing Committee Board of the FAP is responsible for adopting auditing standards, certifying, regulating, and monitoring certified public accountants (hereafter CPAs). The CPAs of companies traded on the stock exchange of Thailand have also to be registered with the SEC. The SEC strictly regulates and controls the registered auditors. Since 2006, the listed companies are regulated by the SEC to rotate their audit partners once every five years. In 2014, the SEC registered as a member of the International Forum of Independent Audit Regulators (IFIAR) and started having the program of audit firm inspection for quality control. Currently, there has been 206 registered auditors from 29 audit firms (The Securities and Exchange Commission, 2018) that provide the service to more than 700 listed companied. Approximately 150 of them are from Big 4 audit firms. This indicates the limited number of audit firm choices.

3. Auditor Choice

It is highly debatable whether audit service is a commodity or an economic good. As a commodity good, clients perceive the audit service provided by each audit firm not to be different from each other; therefore, the audit firms need to use price competition strategy to maintain their clients' royalty (Dillard & Yuthas, 2002). On the other hand, as an economic good, clients see audit firms provide different levels of audit quality, hence the clients' demand for and auditors' supply of audit impact auditor choice (DeFond & Zhang, 2014). DeFond and Zhang (2014) point out that factors impact the demand side are clients' motivations (e.g., regulation and agency costs) and competencies (e.g., internal audit system, audit committee). On the supply side, auditor independence, auditor reputation,

auditor specialization, and litigation risk are the key determinants.

"Good clients" generally use high-quality audit firms. The use of audit firms with higher quality is effective in helping them reduce agency costs (Francis, 2004) and information asymmetry (Chou, Zaiats, & Zhang, 2014). Clients with higher agency costs need a high monitoring function; thereby choosing high-quality audit firms (Francis, 2004). In addition, using high-quality audit firms is a high credibility mechanism for managers to prove that they do not behave opportunistically to outside shareholders (Chi & Weng, 2014), especially to foreign shareholders who prefer high-quality audit firms (Xu. He et al., 2014). Using high-quality audit firms also helps clients improve earnings quality and reported information's reliability and objectivity; with the result that market is able to derive more useful information (Lai, Srinidhi, Gul, & Tsui, 2017). In other words, using high-quality audit firms is a signal of high quality disclosure to the market (Kang, 2014).

Unlike the good clients, "Bad clients" avoid using high-quality audit firms. They prefer audit firms that always agree with their preferences (Brown & Knechel, 2016). They do not allow the audit firms to have their desired accounting choices if they not are very closely related (Bamber & Iyer, 2007). In general, the clients select the audit firms with the highest net benefit (Guo et al., 2017); however, the bad clients see audit service is a commodity good and select the audit firms that offer them lower audit fees. When switching audit firms is also the signal of audit quality (Bagherpour, Monroe, & Shailer, 2014), the bad clients switch to lower-quality audit firms with lower audit fees.

The main stream of recent archival studies provide new empirical evidence of the demand side's factors which affect auditor choice between Big 4 and non-Big 4 audit firms. Liu et al. (2017) expand evidence to the auditor choice of private companies in China. They report that 17 percentage of these companies select Big 4 audit firms and clients with the strong political connection measure by their managers' current or previous position in the government are less likely to employ Big 4 audit firms. He et al. (2017) observe auditor choice between state-owned enterprises (SOEs) and non-SOEs in China. With the pressure of seeking ways to access to resources controlled by the government, non-SOEs look for the political connection. K. He et al. (2017) found that non-SOEs with the connection with corrupt government officers employ local audit firms. However, they switch to Big 4 audit firms after the connection ended in order to provide a positive signal to the public. Owing to their weaker agency problems, the auditor selection of SOEs with the connection remains unchanged. They select the local audit firms even when the connection ended.

In sum, as audit service is able to be seen as a commodity or an economic good, it is still opened to question as to where clients select their audit firms or whether audit firms select their clients. As seeing audit service as a commodity good, clients are more likely to be a shopper and select the ones who offers them lower audit fees. On the one hand, as seeing it as an economic

good, auditor choice is influenced by client demand for and auditor supply of audit. Client incentives, e.g., agency problems, market, political concern, familiarity are the key determinants for the demand side whilst auditor motivations, e.g., reputation, litigation risk, quality of audit are the key determinant for the supply side.

4. Auditor Choice and Audit Fee

Auditor choice impacts on audit fees. Audit fees also reflect client risk (Demirkan & Zhou, 2016) and audit effort (Lai et al., 2017). Clients have the right to select their audit firms with their preferable audit fee. They look for the ones that match with them (Gerakos & Syverson, 2015) in terms of their incentives and competencies (DeFond & Zhang, 2014). They value audit firms (Gerakos & Syverson, 2015) and select the ones that are able to deliver them the highest net benefit (Guo et al., 2017). The net benefit occurs when valuable benefit delivered by the audit firms greater than audit fees paid (Gerakos & Syverson, 2015). Such benefits are, for example, saving costs of debts (Vanstraelen & Schelleman, 2017), being the signal of the good corporate governance (Chi & Weng, 2014), being the signal of the more transparency disclosure (Kang, 2014), mitigating agency problem (Francis, 2004), and reducing information asymmetry (Chou et al., 2014). The clients may select the high-quality audit firms even when these audit firms charge them the higher audit fees because they pay for the audit firms' quality audit or reputation (Bradbury, 2017; Swanquist & Whited, 2015) or for longer audit service (Gerakos & Syverson, 2015).

Both Big 4 and non-Big 4 audit firms employ a variety of pricing strategies in different circumstances. They may charge higher audit fees for risky clients, especially, for those with internal control weakness (Badertscher, Jorgensen, Katz, & Kinney, 2014), high real earnings managements (Greiner et al., 2017), or tax aggressive (Donohoe & Knechel, 2014). To be at an advantage under the intense market competition, they may give the fee discount for the first year audit to get new clients (Huang, Raghunandan, Huang, & Chiou, 2015) or give the fee cuts during the financial crisis to maintain existing clients (Beck & Mauldin, 2014). In the worst case, they may be come under their clients' fee reduction pressure; thereby lowering the audit fees and audit quality (Ettredge, Fuerherm, & Li, 2014).

In this study, audit service is assumed to be an economic good and audit fees represent the equilibrium point of client demand for and auditor supply of audits. Clients have the right to choose their audit firms with their preferable fees whilst audit firms also have the right to select their clients. Clients choose the audit firms that match with them; on the other hand, audit firm also select clients that match with them. The client-auditor match leads to the agreed audit fee. From this assumption, four hypotheses are developed as follows:

H1: Clients with client-Big 4 mismatch pay higher audit fees;

H2: Clients with client-non-Big 4 mismatch pay lower audit fees;

H3: Big 4 audit firms charge client-Big 4 mismatch for lower audit fees

H4: Non-Big 4 audit firms charge client-non-Big 4 mismatch for higher audit fees.

H1 and **H2** capture the impact of client demand on auditor choice and audit fee. On the other hand, **H3** and **H4** capture the impact of auditor supply on auditor choice and audit fee.

5. Methodology

5.1 Test Procedure

Following the current studies on auditor choice and audit fee (e.g., Bradbury, 2017; Guo et al., 2017; Hsu et al., 2015), two stages procedure is used to mitigate the selection bias (Hsu et al., 2015) and endogeneity problems (Guo et al., 2017). In this study, two stages consist of (1) prediction of client demand and (2) hypothesis testing on the model of audit fee.

5.1.1 Prediction of Client Demand

For the first stage, the logistic regression is developed to predict client demand for audit firm choice. The model is developed based on Hsu et al. (2015) and Bradbury (2017). The model is:

$$\begin{aligned} Big4 = {} & \alpha + \beta_1 LogA + \beta_2 ATurn + \beta_3 Log\#YTrade \\ & + \beta_4 \%InsS + \beta_5 \%BlockS + \beta_6 Log\#AC \\ & + \beta_7 QuaOpi + \beta_8 EoM\&OthM \\ & + YearFixedeffect \\ & + IndustryFixedeffect + \varepsilon_t, \end{aligned} \quad (1)$$

Big4 is dummy variable and is equal to 1 if audit choices are Big 4 audit firms, 0 otherwise. LogA, ATurn, and Log#YTrade are used control client's specific characteristics which affect auditor choice. LogA is the natural logarithm of total assets. Larger size clients are more likely to selected Big 4 audit firms (Bradbury, 2017; Chi & Weng, 2014). ATurn is assets turn overs and is computed as sales divided by total assets. ATurn is used to capture clients' performance on auditor choice. In generally, clients with better performance are more likely to select Big 4 audit firms (Chi & Weng, 2014). Log#YTrade is the natural logarithm of number of years the clients have been traded on the stock exchange. The younger clients with the shorter length of their trading periods are more likely to select Big 4 audit firms (Eshleman & Guo, 2014).

%InsS, %BlockS, and Log#AC are controlled for the impact of clients' corporate governance on auditor choice. The better corporate governance the more probability of selecting Big 4 audit firms. %InsS is the percentage of shares held by institutional investors. The clients with the larger proportion of shares held by institutional investors have milder agency problem (Raghunandan, Read, & Whisenant, 2003) and are more likely to select Big 4 audit firms. %BlockS is the percentage of shares held by block shareholders. The clients with the large proportion of shares held by block shareholders (e.g., family shareholders) suffer more from agency problems and information asymmetry. As the block shareholders are more likely to behave opportunistically, they are less likely to select Big 4 audit firms to improve the informativeness of their reported earnings. Log#AC is the natural logarithm of the number of audit committee members. It is used to control the impact of the diversity of audit committee members on audit choice. Lai

et al. (2017) found that the gender diversity of board influence audit firm selection. The greater number of audit committee members may either increase or decrease the probability of selecting Big 4 audit firms.

QuaOpi and EoM&OthM are introduced into the model. QuaOpi is the dummy variable and is equal to 1 if the audit opinions are qualified opinion (e.g., going-concern opinion), 0 otherwise. EoM&OthM is also the dummy variable and is equal to 1 if the auditors add emphasis of matters and/or other matters into audit reports, 0 otherwise. Clients that do not prefer the unqualified opinion, especially going-concern one, and the explanatory language are less likely to select Big 4 audit firms. Big 4 audit firms are more likely to issue going-concern audit reports (Berglund, Eshleman, & Guo, 2018) which are more accurate red flag of future bankrupt (Myers, Schmidt, & Wilkkins, 2014). Explanatory language, specifically about transaction with related parties, merger, and accounting estimate, added into the audit reports are the precursor of subsequent financial restatements (Keith, Schmidt, & Thompson, 2014).

To predict clients' auditor choices, data of all variables in Model 1 of each observation are plugged into the model. By using the estimated coefficients, the model generates each client's probability of selecting Big 4 audit firms Pr(Big4). Pr(Big4)s are between 0 to 1. Pr(Big4)s that are close to 1 indicate the clients' high probability of selecting Big 4 audit firms. On the other hand, Pr(Big4)s that are close to 0 indicate the clients' high probability of selecting non-Big 4 audit firms.

Next, matching score between clients and audit firms (hereafter M-score) of each observation is computed. The computation of M-score follows the computation of F-score proposed by Dechow, Ge, Larson, and Sloan (2011) who develop the model for predicting the probability of misstatement. They use 1.00 as the cutoff point to consider whether the model incorrectly labels firms with misstatement. The greater F-score the more possibility of misstatement.

M-score is computed separately for each group. For the group audited by Big 4 audit firms, M-score is computed as $\frac{\Pr(\text{Big4})}{\%\text{Big4}}$ where %Big4 is the actual percentage of observations audited by Big 4 audit firms. The greater M-score the more correctness of the classification of the model. In contrast to the greater M-score, the lesser M-score indicates the mismatch between clients and audit firms. The clients' choices are non-Big 4 audit firms but select Big 4 audit firms.

For the group audited by non-Big 4 audit firms, M-score is computed as $\frac{\Pr(\text{Big4})}{\%\text{nonBig4}}$ where %nonBig4 is the actual percentage of observations audited by non-Big 4 audit firms. Unlike the former group, M-score is interpreted inversely. The lesser M-score the more correctness of the classification of the model. In contrast to the lesser M-score, the greater M-score indicates the mismatch between clients and audit firms. The clients' choices are Big 4 audit firms but select non-Big 4 audit firms.

After M-scores were computed, all observations are ranked into 10 portfolios according to their value of M-scores. The correct and incorrect classifications of auditor choices of each portfolio is computed in order to select which portfolios are the cutoff point for the classification. By considering the cutoff point, the observations are further classified into four groups: B&B, S&S, SbutB, and BbutS. B&B and S&S are the groups with the correct auditor choices but SbutB and BbutS are the groups with the incorrect auditor choices. SbutB is the group that should select non-Big 4 audit firms but select Big 4 audit firms. BbutS is the group that should select Big 4 audit firms but select non-Big 4 audit firms.

5.1.2 Hypothesis Testing on the Model of Audit Fee

The second stage is to perform hypothesis testing on the model of audit fee. In this stage, there are two tests: the test on client pricing audit service and the test on auditors' charging audit fees.

5.1.2.1 Test on Clients' Pricing Audit Service

H1 and **H2** are to test the demand side of audit service. Clients have the right to select their auditors. They value the audits, price them according to their value, weigh costs and benefits, and eventually select the auditors. Theoretically, they have two choices with different levels of audit quality and prices. To explore the clients' selections of their auditors, the Model 2 is developed. The Model 2 is the ordinary least square regression and is used for pool sample. The model is as follows:

$$\begin{aligned} LogFee = {} & \alpha + \beta_1 BbutS + \beta_2 B\&B + \beta_3 SbutB \\ & + \beta_4 \%InsS + \beta_5 LogA + \beta_6 Inv \\ & + \beta_7 ROA + \beta_8 CurA + \beta_9 QuiR \\ & + \beta_{10} EoM\&OthM + \beta_{11} QuaOpi\&Exp \\ & + YearFixedeffect \\ & + IndustryFixedeffect + \varepsilon_t, \end{aligned} \quad (2)$$

LogFee is the natural logarithm of audit fees. BbutS, B&B, and SbutB are variables of interest and were defined in the previous section. S&S is excluded from the model to use as the base case. β_1 should have negative sign. BbutS is clients that should select Big 4 audit firms but select non-Big 4 audit firms because they look for lower audit fees. They may even see audit service as a commodity good. β_2 should have positive sign as in general Big 4 audit firms' clients pay higher audit fee than non-Big 4 audit firms. β_3 should have positive sign. SbutB is clients that should select non-Big 4 audit firms but select Big 4 audit firms because they are willing to pay higher audit fees for Big 4 audit firms' audit quality or reputation.

%InsS is used to control for clients' corporate governance whilst LogA, Inv, ROA, CurR, and QuiR are used to control for clients' specific characteristics. Institutional shareholders may suffer from managers' opportunistic behaviors; thereby demanding for higher audit quality and being willing to pay higher audit fees. Following Stewart, Kent, and Routledge (2016), Krishnan and Zhang (2014), and Demirkan and Zhou (2016), the natural logarithm of total assets is used to control client size and larger size clients pay higher audit fees. Inv is inventories scale by total assets.

Since inventories are required to be physically counted, the clients pay higher audit fees for the inventory count (Lai et al., 2017). Inventories are also the indicator of client complexity (Huang et al., 2015). ROA captures clients' profitability (Guo et al., 2017). Clients with better profitability pay for lower audit fees because they pose lesser litigation risk and lesser reputational risk to audit firms (Lai et al., 2017).

CurR and QuiR reflect clients' financial risk. CurR is the proportion of current assets to total assets whilst QuiR is quick ratio computed as current assets minus inventories divided by current liabilities. The greater CurR indicates ineffective inventory or accounts receivable management whilst the greater QuiR indicates the better liquidity. Therefore, clients with greater current assets pay higher audit fees because they are riskier clients. Clients with greater QuiR pose lower risk to audit firms so that they pay lower audit fees. EoM&OthM and QuaOpi&Exp capture audit risk. EoM&OthM was defined previously in the Model 1.Qul&Exp is the dummy variable and is equal to 1 if audit reports are qualified opinions with explanatory language. Explanatory language and unqualified opinion increase auditors' litigation risk and reputational risk. Therefore, the clients pay higher audit fees for the risks.

5.1.2.2 Auditors' Charging Audit Fees

Audit firms also have the right to select the clients with different levels of risk and different audit fee strategies. They may take the risk of accepting high risk clients, with dire consequences, e.g., litigation exposure, loss of reputation. The consequences are magnified in cases of Big 4 audit firms, for example the case of Arthur Andersen. Big 4 audit firms' pricing strategies are significantly different from non-Big 4 audit firms because they have greater motivation to maintain their reputation. The Model 3 is developed and is used only for the observations audited by Big 4 audit firms. The model is as follows:

$$\begin{aligned} LogFee = {} & \alpha + \beta_1 SbutB + \beta_2 \%InsS + \beta_3 LogA \\ & + \beta_4 Inv + \beta_5 ROA + \beta_6 CurA + \beta_7 QuiR \\ & + \beta_8 EoM\&OthM + \beta_9 QuaOpi\&Exp \\ & + \beta_{10} IVM + YearFixedeffect \\ & + IndustryFixedeffect + \varepsilon_t, \end{aligned} \quad (3)$$

SbutB is the variable of interest and B&B is used as the base case. β_1 is expected to have a negative sign. Big 4 audit firms are expected to charge clients with client-Big 4 mismatch for lower audit fees in comparison to those with client-Big 4 match. This is because this group of clients may have lower risks and lesser costs of audits. IVM is the inverse Mill's ratio which estimated from Model 1. Controlling IVM help reduce the self-selection (Hsu et al., 2015) and endogeneity problems (Guo et al., 2017).

Next, the Model 4 is developed and is used only for the observations audited by non-Big 4 audit firms. The model is as follows:

$$\begin{aligned} LogFee = {} & \alpha + \beta_1 BbutS + \beta_2 \%InsS + \beta_3 LogA \\ & + \beta_4 Inv + \beta_4 ROA + \beta_5 CurA + \beta_6 QuiR \\ & + \beta_7 EoM\&OthM + \beta_8 QuaOpi\&Exp \\ & + \beta_9 IVM + YearFixedeffect \\ & + IndustryFixedeffect + \varepsilon_t, \end{aligned} \quad (4)$$

BbutS is the variable of interest and S&S is used as the base case. β_1 is expected to have a positive sign. Non-Big 4 audit firms are expected to charge clients with client-non-Big 4 mismatch for higher audit fees in comparison to those with client-non-Big 4 match. This is because this group of clients may have higher risks and greater costs of audits.

5.2 Sample Selection and Data Source

Table 1 shows sample selection. Final sample is 399 listed companies in the Stock Exchange of Thailand with 1,316 firm-year observations covering the period from 2014–2017. The observations are mainly from services, property and constructions, and industrials sectors. The data sources of all variables defined in the previous section are the companies' financial statements, annual reports, and 56-1 forms which have been published on the website www.sec.or.th, and the companies' websites.

Table 1 Sample selection and distribution.

Panel A: Sample selection.

	Companies	Obs
Total number of listed companies on the main board (SET)	580	
Less: Financials	(58)	
Non-performing companies	(7)	
Companies with incomplete data for computing necessary variables	(116)	
	399	1,596
No data on audit committee		(23)
Outliers*		(257)
Final sample	**399**	**1,316**

* Observations with value of main variables below the 1st percentile and above the 99th percentile are defined as the outliers and are excluded from the sample.

Table 1 Sample selection and distribution. (Cont.)

Panel B: Sample distribution by industry by year.

	YEAR				
Industry	**2014**	**2015**	**2016**	**2017**	**Total**
Agro & Food Industry	38	40	40	40	158
Resources	29	32	33	29	123
Technology	26	26	29	27	108
Services	65	71	76	68	280
Industrials	61	62	69	65	257
Consumer Products	26	32	35	30	123
Property & Construction	63	60	68	76	267
Total	**308**	**323**	**350**	**335**	**1,316**

6. Results

6.1 Descriptive statistic

Untabulted results of testing different characteristics of clients audited by Big 4 and non-Big 4 audit firms report that 64.36 percentage of clients audited by Big 4 audit firms. Big 4 audit firms' clients are larger size and pay higher audit fee than non-Big 4. On average, total assets of Big 4 audit firms' clients are 22.60 billion Thai Baht ($678 million) and they pay 3.77 million Thai Baht ($0.113 million) for their audit fees. Total assets of non-Big 4 audit firms' clients are 22.60 billion Thai Baht ($161 million) and they pay 2.04 million Thai Baht ($0.061 million) for their audit fees. Big 4 audit firms' clients are less risky and lower agency costs because they have more profitability and higher percentage of institutional shareholders. Non-Big 4 audit firms' clients have longer length of trading periods. They suffer more from agency problem with the higher percentage of shares held by block shareholders. They also have more diversity of audit committee and are more likely to receive unqualified audit opinion and their audit reports are more likely to have explanatory language. The financial risks of the clients of Big 4 and non-Big 4 audit firms are not significantly different.

6.2 Correlation

Untabulated results of Pearson correlation matrix indicate that Big4 has positive correlations with Fee, A, ATurn, ROA, Inv, and %InsS but negative correlations with CurR, %BlockS, #AC, QuaOpi, EoM&OthM, and QuaOpi&Exp. The results are identical to those of descriptive statistic test. They also show that big 4 audit firms' clients are larger size, more profitability, larger number of inventories, lesser agency problems, and lesser financially riskier. They pay higher audit fees and are less likely to receive qualified audit reports and audit reports with explanatory language.

6.3 Prediction of Client Demand

6.3.1 Estimation Result for Client's Demand for Big 4 Audit Firms

Table 2 presents the estimation result for clients' demand for Big 4 audit firms from Model 1. The model performs quite well with Pseudo $R^2 = 0.28$ which are not different than those of previous study. Liu et al. (2017) report Pseudo $R^2 = 0.079$ for their base model. Dhaliwal et al. (2015) also report the low Pseudo R^2 which range from 0.01–0.05 for their study of the impact management affiliation on the selection of auditor. However, X. He et al. (2014) report high Pseudo R^2 which are around 0.50. The estimated coefficients of all variables, except for *%BlockS*, are consistent with the expectation. Its coefficient is positive not negative. This is evident that block holders demand for high-quality audit firms.

Table 2 Estimation result for clients' demand for Big 4 audit firms

Big 4	Expected sign	Coef.	p-value
LogA	+	0.796	0.000 ***
Aturn	+	0.651	0.000 ***
Log#Ytrade	–	–0.470	0.000 ***
%InsS	+	3.173	0.000 ***
%BlockS	–	1.008	0.011 **
Log#AC	–	–3.270	0.000 ***
QuaOpi	–	–0.868	0.025 **
EoM&OthM	–	–0.539	0.001 ***
IndustryFixedeffct	?	Included	Included
YearFixeffect	?	Included	Included
_cons		–12.68	0.00 ***
N	1,316		
Log likelihood	–621.1321		
Chi square	471.98***		
Pseudo R^2	0.2753		

***, **, * are significant at the 1%, 5%, and 10%, respectively, one-tailed when predicted signs are made and two-tailed when they are not

6.3.2 Client-audit Firm Match/Mismatch

Table 3 shows the result of the classification of client-audit firm match/mismatch. The 5th percentile is used as the cutoff point for Non-Big 4 audit firms whilst the 3rd percentile is used as the cutoff point for Non-Big 4 audit firms. The correct classification is 69 percentage which does not significant deviate from previous. Therefore, the classification is reliable.

Dechow et al. (2011) use 1.00 as the cutoff point for predicting misstatements and their percentage of the correctness classification is 68.61. For the study on auditor choice, Chaney, Jeter, and Shivakumar (2004) report the percentage of the correctness classification around 50 percentage. Bradbury (2017) report it approximately 74.5 percentage. Chaney et al. (2004) use 0.50 as the cutoff point.

Table 3 Classification of client-auditor match/mismatch.

M score			Non-Big 4		Big 4		
				Client-auditor		Client-auditor	
Percentile	Min	Max	Obs	match/mismatch	Obs	match/mismatch	Total
1	0.018	0.557	87	S&S	45	SbutB	132
2	0.559	0.768	59	S&S	73	SbutB	132
3	0.769	0.962	48	S&S	83	SbutB	131
4	0.965	1.115	40	S&S	92	B&B	132
5	1.116	1.238	26	S&S	105	B&B	131
6	1.239	1.346	18	BbutS	114	B&B	132
7	1.347	1.446	14	BbutS	118	B&B	132
8	1.447	1.507	17	BbutS	114	B&B	131
9	1.507	1.709	29	BbutS	103	B&B	132
10	1.711	2.648	131	BbutS	0	B&B	131
Total			469		847		1,316
Actual percentage			36%		64%		100%
Prediction result							
Cutoff percentile			**5**		**3**		
Correct classification			**260**		**646**		**906**
Percentage			55%		76%		69%
Incorrect classification			**209**		**201**		**410**
Percentage			45%		24%		31%

Untabulated results of comparing characteristics between group B&B, S&S, BbutS, and SbutB report that B&B client, BbutS clients have a larger number of inventories, a greater number of shares held by block holders, and a greater number of audit committee members. On the average SbutB clients pay higher audit fees more than S&S clients. SbutB clients pay 2.88 million Thai Baht ($0.086 million) whilst S&S clients pay 1.91 million Thai Baht ($0.057 million). SbutB have more profitability. Interestingly, they also have a greater number of audit committee members. In comparison to B&B clients, SbutB clients have a greater proportion of shares held by block shareholders and a larger number of audit committee members, and are more likely to receive unqualified opinion, especially with explanatory language (e.g., emphasis of matters). For the comparison between S&S and BbutS clients, BbutS client are larger size, have more profitability, have a greater number of inventories, and have a greater proportion of shares held by institutional investors.

6.3 Hypothesis Testing on the Model of Audit Fees

Table 4 reports the results of the hypothesis testing. Adjusted R-squared of the Model 2, 3, and 4 are 0.4856, 0.4711, and 0.3754, respectively. The adjusted R-squared are close to those of Chaney et al. (2004) and Hsu et al. (2015) which also use two stages procedures of audit fee models. Chaney et al. (2004) observe the auditor choices among private companies in the U.K. Their adjusted R-squared are 0.46 for non-Big 5 audit firms' clients, and 0.57 for Big 5 audit firms' clients. Hsu et al. (2015) observe the auditor choices among property-liability insurers in the U.S. Their adjusted R-squared are 0.5586 for the full sample, 0.4900 for non-Big 4 audit firms' clients, and 0.5031 for Big 4 audit firms' clients. This indicates that the Model 2, 3, and 4 are reliable.

In the Model 2, the coefficient *BbutB* is positively significant at the 1% (coef. = 0.335, p-value = 0.000). This indicates that clients pay more for selecting Big 4 audit firms. On the average, they pay 40 percentage higher than those in non-Big 4 audit firms' market. The coefficient of SbutB is positively significant at the 1% (coef. = 0., p-value = 0.000). **H1** is then accepted. This is evident that clients that should select non-Big 4 audit firms but choose Big 4 audit fees pay higher audit fees. They pay approximately 33 percentage greater than those in non-Big 4 audit firm' market. The coefficient of *BbutS* is insignificant. **H2** is then rejected. Audit fees paid by clients that should select Big 4 audit firms but choose non-Big 4 are not different from those in non-Big 4 audit firms' market.

In the Model 3, the coefficient of *SbutB* is negatively significant at the 5% (coef. = –0.173, p-value = 0.034). **H3** is then accepted. This is evident that clients that Big 4 audit firms charge clients that should select non-Big 4 audit firms but choose Big 4 audit fees lower than their usual clients. On the average, they charge approximately 19 percentage lower than their usual clients. In

Model 4, the coefficient of *BbutS* is in significant. **H4** is then rejected. Non-Big 4 audit firms do not charge clients that should select Big 4 audit firms but choose non-Big 4 higher than their usual clients.

Interestingly, the coefficients of *%InsS* and *Inv* are negatively significant at the 1% in all models which are contrary to their expected signs. Even through institutional investors are perceived demand for high quality audit firms because they require more transparency financial reporting, they are also less willing to pay high audit fees. Mitra, Hossain, and Deis (2007) found that audit fees increase only when the held by intuitional shareholders are diffused. Each induvial institutional shareholder holds a number of shares lesser than 5 percentage. However, audit fees decrease when there is the high concentration of the block institutional shareholders who individually hold more than 5 percentage of shares.

On the supply side, audit firms charge lower audit fees for clients with high percentage of shares held by institutional shareholders because these clients are less risky. With this higher percentage of shares, those institutional shareholders take more involvement in monitoring and control companies (Mitra et al., 2007) and even curb management's opportunistic behaviors, e.g., earnings management (Mitra & Cready, 2005).

The negative coefficient of *Inv* is similar to that of Guedhami, Pittman, and Saffar (2014) who observe pollical connection and audit choices, that of Huang et al. (2015) who observe fee discount and audit quality, and that of Bradbury (2017). For the demand side, clients may not allow their audit firms to additionally charge for the excess inventory growth. They may believe that stock count is the basic procedure of the audits of inventories. For the supply side, audit firms may see inventories as a low risker area in comparison to other areas.

Table 4 Hypothesis testing on the models of audit fees.

	Model 2			Model 3			Model 4		
	Expected	Clients' pricing audit services		Expected	Big 4 audit firms' charging audit fees		Expected	Non-Big 4 audit firms' charging audit fees	
LogFee	Sign	Coef.	P-Value	Sign	Coef.	P-Value	Sign	Coef.	P-Value
BbutS	–	0.007	0.896				+	0.064	0.408
B&B	+	0.335	0.000 ***						
SbutB	+	0.287	0.000 ***	–	–0.173	0.034 **			
%InsS	+	–0.419	0.000 ***	+	–0.336	0.000 ***	+	–0.416	0.001 ***
LogA	+	0.316	0.000 ***	+	0.361	0.000 ***	+	0.256	0.000 ***
Inv	+	–0.406	0.000 ***	+	–0.396	0.003 ***	+	–0.593	0.001 ***
ROA	–	–0.768	0.000 ***	–	–0.776	0.002 ***	–	–0.317	0.227
CurR	+	0.287	0.000 ***	+	0.324	0.001 ***	+	0.215	0.030 **
QuiR	–	–0.037	0.000 ***	–	–0.061	0.000 ***	–	–0.022	0.144
EoM&OthM	+	0.130	0.000 ***	+	0.141	0.003 ***	+	0.104	0.052 *
IVM				?	0.196	0.042 *	?	0.002	0.979
QuaOpi&Exp	+	0.442	0.113 ***	+	0.253	0.203	+	0.579	0.000 ***
IndustryFixedeffect	?	Included	Included	?	Included	Included	?	Included	Included
YearFixedeffect	?	Included	Included	?	Included	Included	?	Included	Included
_cons	?	7.379	0.000 ***	?	6.671	0.000 ***	?	8.809	0.000 ***
Observation			1,316			847			469
Adj R-squared			0.4856			0.4711			0.3754

***, **, * are significant at the 1%, 5%, and 10%, respectively, one-tailed when predicted signs are made and two-tailed when they are not.

7. Conclusion

This study provides the first evidence of audit choices and audit fees among listed companies in the Stock Exchange of Thailand where has the limited number of the choices. It provides evidence indicating that clients see Big 4 audit firms as the choice of high-quality audit firms. Interestingly, block shareholders as well as institutional shareholders demand for high-quality audit firms. The block shareholders value audit services provided by Big 4 audit firms. They believe that the benefits derived from selections of Big 4 audit firms, e.g. saving costs of debts (Vanstraelen & Schelleman, 2017), being the signal of the good corporate governance (Chi & Weng, 2014), being the signal of the more transparency disclosure (Kang, 2014), mitigating agency problem (Francis, 2004), and reducing information asymmetry (Chou et al., 2014), are greater than their audit fees. This evidence is contrary to the previous studies' findings that the block shareholders generally behave opportunistically and avoid disclosing quality earnings, thereby demanding for lower audit quality. However, it is consistent with Cao, Myers, and Omer (2012) who argue that insider owners also represent a good corporate governance structure since they help improve accruals and earnings quality.

Big 4 audit firms' bigger gap of audit fee premium in Thailand because of their increased costs of audits and greater unforeseeable costs. Owing to the greater audit risks from the country's weaker investor protection, more pervasiveness of earnings management (Leuz et al., 2003) (especially real earnings management (Choi et al., 2018)), and more pervasiveness of corruption, Big 4 audit firms in Thailand have to put more effort into their audits which in turn increases current costs of audits. The greater audit risks also lead them to the greater unforeseeable costs (e.g., litigation costs, costs of losing reputation). As a result of these, their audit fees increase. Xu, Dao, and Petkevich (2018) also document that under high corruption circumstance auditors face with higher audit risks and increase more effort; therefore, they charge their clients for higher audit fees.

Owing to the following limitations, the interpretations of this study's results should be done with caution. First, unlike other countries, the number of registered audit firms in Thailand are quite limited, with the result that clients' demand for and auditors' supply of audits may different from those in other countries and may be more complexity. Second, the validity of the findings hinges on the reliability of the model used to estimate the companies' probabilities of selecting Big 4 audit firms and on the procedure used to match clients with their audit firms. Future study should use other models and procedures to do so. Third, there remain omitted variables of this study's audit fee model. Future study should also develop more effective models and explore how other factors (e.g., audit firm switching, auditor-client affiliation, audit committee, and shareholders) impact audit fees in Thailand.

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