

The Determinants and Consequences of Auditor Choice in Indonesia

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EXECUTIVE SUMMARY

One important prerequisite for sustainable economic growth – which is an important goal for many emerging countries – is access to finance (Ayyagari, Demirguc-Kunt, & Maksimovic, 2008; Demirguc-Kunt & Maksimovic, 1998). Unfortunately, access to financing for companies in emerging countries is often hindered by severe information asymmetry (Atkins & Glen, 1992). Auditing is one of the monitoring mechanisms used by firms to reduce agency problems between managers and company's stakeholders (Jensen & Meckling, 1976; Watts & Zimmerman, 1983). By verifying the validity of financial statements and providing assurance that financial statements faithfully reflect a company's underlying economics, auditors play a role as financial intermediaries enhancing the credibility of financial information (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; DeFond & Zhang, 2014) and reducing information asymmetry.

All the three studies in this dissertation use Indonesia as a research setting. Indonesia is one of the emerging countries where the litigation risk is considered to be low. The international audit firms can only enter to the Indonesian market by affiliation with local audit firms.

The first study examines whether the affiliation of local audit firms with a Big4 audit firms can reduce the cost of debt for listed companies in Indonesia. This study demonstrates that companies audited by local audit firms affiliated with a Big4 audit firm enjoy significantly lower interest rates even in a less-litigious environment like Indonesia. This finding is consistent with the idea that creditors perceive the choice of a reputable high quality auditor as a signal of credible financial information.

The second study investigates whether the potential impact of foreign investors and board members might have on auditor choice depends on whether they originate from a developed

versus from another emerging country. This study highlights that in an emerging country like Indonesia especially ownership and board membership from developed foreign countries is positively associated with the selection of Big4 audit firms. This finding supports the view that cultural differences drive different tendencies of auditor choice. Foreign investors and board members from developed countries probably attach more importance on the assurance from high quality Big4 audit firms, as compared to foreign investors from emerging countries.

The third study examines whether in Indonesia, a company's choice of a local audit firm affiliated with a Big4 audit firm affects its capital structure. The study documents that companies audited by local audit firms affiliated with a Big4 audit firm display lower debt ratios than those audited by other audit firms. This finding consistent with the idea that local audit firms affiliated with a Big4 audit firm are perceived to have higher quality, thus potentially reduced information asymmetry that affects the capital structure of the companies.

NEDERLANDSTALIGE SAMENVATTING (DUTCH SUMMARY)

Een belangrijke voorwaarde voor duurzame economische groei - een belangrijk doel voor veel opkomende landen - is toegang tot financiering (Ayyagari, Demirgüec-Kunt, & Maksimovic, 2008; Demirgüec-Kunt & Maksimovic, 1998). Helaas wordt de toegang tot financiering voor bedrijven in opkomende landen vaak gehinderd door ernstige informatieasymmetrie (Atkins & Glen, 1992). Auditing is een van de monitoringmechanismen die door bedrijven worden gebruikt om agency-problemen tussen managers en bedrijfsbelangen te verminderen (Jensen & Meckling, 1976, Watts & Zimmerman, 1983). Door de geldigheid van jaarrekeningen te verifiëren en de garantie te geven dat jaarrekeningen getrouw de onderliggende economie van een bedrijf weergeven, spelen auditors een rol als financiële intermediairs die de geloofwaardigheid van financiële informatie vergroten (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; DeFond & Zhang, 2014) en het verminderen van informatieasymmetrie.

Alle drie de studies in deze dissertatie gebruiken Indonesië als onderzoeksomgeving. Indonesië is een van de opkomende landen waar het procesvoeringsrisico laag is. De internationale auditkantoren kunnen alleen toetreden tot de Indonesische markt door aansluiting bij lokale accountantskantoren.

De eerste studie onderzoekt of de aansluiting van lokale auditkantoren bij een Big4-accountantsorganisatie de kosten van schulden voor beursgenoteerde ondernemingen in Indonesië kan verminderen. Deze studie toont aan dat bedrijven die zijn gecontroleerd door lokale auditkantoren die zijn aangesloten bij een Big4-accountantskantoor, aanzienlijk lagere rentetarieven genieten, zelfs in een minder litigieuze omgeving zoals Indonesië. Deze bevinding

strookt met het idee dat schuldeisers de keuze van een achtenswaardige hoogkwalitatieve auditor zien als een signaal van geloofwaardige financiële informatie.

In de tweede studie wordt onderzocht of de potentiële impact van buitenlandse investeerders en bestuursleden op de keuze voor de accountant afhangt van de vraag of deze afkomstig zijn uit een ontwikkeld versus uit een ander opkomend land. Deze studie benadrukt dat, in een opkomend land als Indonesië, met name eigendom en bestuurslidmaatschap van ontwikkelde buitenlandse landen positief geassocieerd is met de selectie van Big4-accountantskantoren. Deze bevinding ondersteunt de opvatting dat culturele verschillen verschillende tendensen van auditorkeuze beïnvloeden. Buitenlandse investeerders en bestuursleden uit ontwikkelde landen hechten waarschijnlijk meer belang aan de zekerheid van Big4-accountantskantoren, die van hoge kwaliteit zijn, in vergelijking met buitenlandse investeerders uit opkomende landen.

De derde studie onderzoekt of de keuze van een bedrijf voor een lokaal auditkantoor dat is geassocieerd met een Big4-accountantskantoor in Indonesië van invloed is op zijn kapitaalstructuur. De studie documenteert dat bedrijven die zijn gecontroleerd door lokale auditkantoren die zijn aangesloten bij een Big4-accountantskantoor, lagere schuldratio's hebben dan die welke zijn gecontroleerd door andere auditkantoren. Deze bevinding komt overeen met het idee dat lokale accountantskantoren die zijn aangesloten bij een Big4-accountantskantoor een hogere kwaliteit hebben, waardoor de informatieasymmetrie mogelijk afneemt die de kapitaalstructuur van de bedrijven beïnvloedt.

CHAPTER 1:

GENERAL INTRODUCTION

1.1 Positioning

One important prerequisite for sustainable economic growth – which is an important goal for many emerging countries - is access to finance (Ayyagari, Demirgüec-Kunt, & Maksimovic, 2008; Demirgüec-Kunt & Maksimovic, 1998). Unfortunately, obtaining external financing for companies in emerging countries is often hindered by severe information asymmetry (Atkins & Glen, 1992). The information asymmetry is partly stemmed from low level of accounting transparency and disclosure quality and weak corporate governance (Claessens & Fan, 2002). The quality of accounting information might be improved with the application of high quality international accounting standards (Barth, Landsman, & Lang, 2008; Barth, Landsman, Young, & Zhuang, 2014). Many emerging countries have witnessed a transformation to IFRS over the years. However, conformity with international accounting standards alone would not be sufficient to increase the transparency and accountability of financial information in emerging countries because financial information quality also depends on managers and auditors, who involve in the preparation of financial statements (Ball, Robin, & Wu, 2003).

Auditing is one of the monitoring mechanisms used by companies to reduce agency problems between managers and company's stakeholders (Jensen & Meckling, 1976; Watts & Zimmerman, 1983). By verifying the validity of financial statements and providing assurance that financial statements reflect faithfully company's underlying economics, auditors play a role as financial intermediaries enhancing the credibility of financial information (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; DeFond & Zhang, 2014), thus reducing information asymmetry. Higher quality audit provides more assurance on the credibility of financial statements (DeFond & Zhang, 2014). Choosing high quality audit could also be considered as a signal that the owners/managers genuinely commit to accounting transparency (Guedhami, Pittman, & Saffar, 2009).

Since the argument for providing high quality audit depends partly on the strength of litigation, most evidence has been observed in developed countries where the litigation is relatively strong. Whether the variation of audit quality and the consequences of high quality audit in reducing information asymmetry can also be seen in less-litigious emerging countries are worth to be examined.

This dissertation aims to provide evidence on what determine a company choice of a high quality audit and what are the consequences of that choice. Study of the auditing role in emerging countries context – through their specific institutional features – might shed light on our knowledge of the role of auditing in reducing information asymmetry in less-litigious setting.

Practically, this study is important for several reasons. First, despite the fact that emerging countries economic growth rate is high and potentially attract investors' interests, companies in emerging markets often face severe information asymmetry problems that make external capital is relatively costly and less accessible. In such an environment, decreases in information asymmetries from increases in the perceived credibility of financial statements could be very relevant. The role of financial intermediaries, such as external auditors, and especially their quality may be matter. Second, many emerging countries are considered to have weak accounting and audit environment that may contribute to the perception of poor transparency and accountability and low disclosure quality in their financial information. Empirical evidence on what drives companies choosing their external auditor – thus auditor quality - may open the way on how to strengthen corporate governance in these countries.

1.2 Prior Literature

Prior literature suggests that large audit firms have incentive to provide high quality audit to protect their reputation (Beatty, 1989; DeAngelo, 1981; Simunic & Stein, 1987) and to minimize litigation risks (Dye, 1993). Reputation protection suggests that large audit firms build their reputation by developing perceived competence and independence (Beatty, 1989). The perceived competence is built through investing on sophisticated audit technology, human capital and knowledge, which allows them to perform higher quality audits whereas the perceived independence stems from their size and large portfolio of clients which give them ability to walk away if necessary (Beatty, 1989). Raman and Wilson (1994) argue that reputation protection is important for Big4 audit firms for retaining current clients, attracting new clients, hiring talented employees, and obtaining potential non-audit services (Elliot, 1998). The failure to perform high quality audit will impair audit firm's reputational capital and will damage firm's ability to attract new client and maintain current clients (DeFond & Zhang, 2014). In international perspective, Big4 as international organization, have incentive to maintain their reputation around the world by having standard quality control in application of audit methodologies and the recruitment mechanism, training, and knowledge sharing practices for their employee (Francis & Wang, 2008; Simunic & Stein, 1987). In addition, Magnan (2008)'s informal survey with large audit firms' partners reveals the similar conclusion that large international audit firms have relatively uniform quality since they maintain standard audit procedures and effort across country and standard professional training program.

The litigation concerns suggests that larger audit firms face a relatively higher risk of litigation and larger economic costs in case of litigation, which gives them more incentives to increase audit quality. The relatively larger probability of litigation for Big4 audit firms stems from the "deep

pockets theory” (Dye, 1993). This means that, if there is a probability that an audited financial report contains misstatements that are due to fraud or management error, there is a relatively higher chance that large audit firms will be prosecuted by investors for the simple reason that they have more financial means. The larger costs in case of litigation are related to the potential loss of reputation and brand-related fee premia (DeAngelo, 1981). As a consequence, large audit firms have more economic incentives to avoid litigation by performing higher quality audits and may therefore provide (or may at least be perceived to provide) higher audit quality.

There exists mixed result on whether high quality audit (or perceived high quality audit) of Big4 can be observed in less-litigious environment. Several empirical studies report evidence support the view that Big4 audit quality depends on the country legal environment. Khurana and Raman (2004), for example, report that large audit firms are associated with a lower cost of equity capital in the United States, but not in other less-litigious Anglo-American countries such as Canada, the United Kingdom and Australia. They argue that differences in litigation exposure drive perceived audit quality. Using larger country sample (42 countries), Francis, Khurana, and Pereira (2005) document evidence that the association between Big4 audit firms and earnings quality is stronger for litigious countries than in less-litigious countries. Gul, Zhou, and Zhu (2013) investigate the association between Big4 and cost of debt in cross-country setting document consistent result with Francis and Wang (2008). Other studies find that the quality of Big4 audit firms are perceived even stronger in less litigious environment with high information asymmetry and play a role as firm-level governance substitute in a weak governance environment (Choi & Wong, 2007; Claessens & Yurtoglu, 2013; Fan & Wong, 2005). Fan and Wong (2005) document that firms subject to agency problems imbedded in their ownership structure are more likely to employ Big4 audit firms for sample of East Asian firms.

1.3 Indonesia setting

Indonesia is one of the emerging countries with the highest economic growth during the last decade. The annual growth rate of real GDP is about 5.9% (Oliver Wyman & Mandiri Institute, 2015). To maintain its growth the country needs to rely on external capital. Similar to other emerging countries, Indonesia is also characterized to have weak litigation environment. In addition, Indonesian companies are well-known to have issues with weak corporate governance and suffer a reputation of low transparency and disclosure quality (Claessens & Yurtoglu, 2013; Fan & Wong, 2002), weak investor protection (Leuz, Nanda, & Wysocki, 2003) and under-developed capital markets (Biddle & Hilary, 2006).

Below are several important elements in the financial system in Indonesia.

1.3.1 Indonesian accounting and audit environment

The Limited Liability Company Law No. 40 of 2007 requires corporate entities to prepare financial statements in accordance with the Indonesian financial accounting standards (SAKs) issued by the Indonesian Financial Accounting Standard Board (DSAK) of the Institute of Indonesia Chartered Accountants (IAI) (IFAC, 2016). In 2012, as part of the ongoing convergence process, the DSAK substantially aligned SAKs with the IASs and IFRSs as they existed in 2009. By January 1, 2015, at the end of a second phase of the convergence process, SAKs were substantially aligned with IASs and IFRSs as they existed in 2014.

The financial reports of publicly listed companies should be audited¹. The Indonesian Institute of Public Accountants or IAPI regulates public accountants and is legally empowered to set auditing standards (SPAPs) for the public accountancy profession. In 2012, International Standards on

Auditing (ISAs) (2010) were adopted. These standards are effective for listed companies for audits of financial statements for periods beginning on or after January, 2013 (IFAC, 2016).

To pursue auditor profession career, one should through the following steps. Firstly, ones should be graduated in accounting from a university and continue their education through Professional Accounting Education Program (PPAk)². This step lead to the title of accountant and are eligible to be registered in the Ministry of Finance (MoF). In the next step, a registered accountant should pass the qualifying exams held by IAPI which permit them to hold a Certified Public Accountant (CPA) title. To practice as an auditor (i.e. signing audit reports), a CPA should obtain license from the MoF once certain minimum requirements are fulfilled. These requirements are that the accountant has passed the CPA exam held by IAPI, has sufficient audit experience, is a member of professional association, is domiciled in Indonesia, and has a tax identification number. An auditor can open an audit office or joint the existing audit office. To open an audit office, several requirements should be met: have a license from the MoF, an office located in Indonesia, a quality-control system in place and employ at least two employees who have adequate knowledge of accountancy³. To be eligible to provide professional audit services to listed firms in the Indonesian capital markets, an auditor must also be registered with OJK, an independent institution that has the authority to regulate and supervise the financial service sector in Indonesia.

There are several indicators suggesting serious quality issues within the local Indonesian audit context (Dunakhir, 2016). With few exceptions, local audit firms in Indonesia are relatively small and capacity-constrained. Due to lack of adequate resources, they face challenges in providing high-quality auditing services (The World Bank, 2010a). Anecdotal evidence from interviews with practicing auditors reveals high levels of compliance gaps with respect to audit planning, documentation, related party investigation and fraud detection (The World Bank, 2010a).

Furthermore, similar to many emerging markets, regulations are not fully enforced (Ball, 2001; Chan & Hameed, 2006). This is also found in Indonesia. Cases where companies, shareholders or third parties sue public accounting firms are very rare as a result of costly and time consuming courts processes, lack of experienced judges and laws and regulations that are perceived to be ambiguous (The World Bank, 2010a, 2010b). Brown, Preiato, and Tarca (2014) classified countries based on their audit environment and accounting enforcement and ranked Indonesia as 46th of 51 countries.

1.3.2 Foreign audit firms

During the Dutch colonial era, after Indonesian independence 1945, and up to 1957 (about twelve years after independence), Indonesian economy was dominated by Dutch companies and also by Dutch accounting and audit firms (Murwanto, Kanna, & Van Zijl, 2011; Reid, 2003). Local professional accountant was very rare. The first indigenous Indonesian accountant was graduated from Rotterdam in 1932 (Murwanto et al., 2011). The University of Indonesia was the first to open accountancy education in 1954 (Murwanto et al., 2011). The law number 34 of the year 1954 was the first regulation that regulate the education system, the certification, and the authority of accounting profession. This law stated that one could open audit firm he or she has the accounting title and graduate from Indonesian state university that have been certified by the government.

In 1958, government of Indonesia nationalized all Dutch-owned companies and prohibited trading securities issued by Dutch companies in Indonesia. This policy ended Jakarta securities exchange and closed all Dutch companies offices in Indonesia including the Dutch accounting and audit firms (Bachtiar, 2001; Murwanto et al., 2011). From the period of 1958 to 1967, there was no foreign accounting and audit firms operated in Indonesia (Bachtiar, 2001). Nonetheless, local audit

firms business was not growing since they only audit state-owned companies as assignment given by Ministry of Finance (Kartikahadi, 2010).

In 1967, Indonesia began to open the door for foreign investment. The coming of foreign investment also brought with them foreign audit firms (Bachtiar, 2001; Irmawan, Haniffa, & Hudaib, 2013). This was the period when the foreign audit firms started to enter to Indonesian market again. Those which came in the first wave and establish cooperation with local accounting firms in the early 1971 were Arthur Young with Santoso Harsokusumo; Sycip, Gorres & Velayo with Utomo Jososudirjo; Torquand Young with Go Si Tiem; Price Waterhouse with Tan Eng Oen; Peat Marwick Mitchell & Co with Soedjendro & Co; and Coopers & Lybrand with Suparman.

Since then, the regulation about how foreign audit firms can enter and operate in Indonesia has evolved. But basically, foreign audit firms can only enter Indonesian audit markets through cooperation with the local firms. According to the regulation (Law Number 5 the year of 2011, and also stated in previous regulation Finance Ministry Decree KMK 17/KMK. / 2008) the international audit firms partnering with local firms should provide training program, have standards on quality control, and perform periodic quality control. Kartikahadi (2010) describes that the Big4 audit firms use tight selection and evaluation procedure in choosing their local partners. The evaluation of the local business partner covers factors such as the firm's compliance of professional standards, business plan, the completeness and balance of professional services offered, the quality and quantity of professional staffs, organization structure, and office and infrastructure. The international audit firms facilitates consulting workshop, annual meeting, and quality review among others for their member firms. Informal interview with several employees of local firms affiliated with Big4 audit firms reveals that the employee have to follow standard

training program in their professional career and apply standard audit procedures in performing audits.

1.3.3 The financing environment

Indonesian capital markets are still considered underdeveloped. Companies are generally be reluctant to go public despite available tax incentives because they perceive that listed companies should follow more strict regulatory requirement and provide more disclosure to the public that can lead to higher tax obligation (Oliver Wyman & Mandiri Institute, 2015).

The number of listed companies in equity market is 506 in 2014 (IDX, 2016) with market capitalization 47% of GDP (The World Bank, 2016). The percentage of companies that have free float above 40% is relatively low in Indonesian equity market (IMF, 2010). The public debt market is also underdeveloped. The number of companies that issued bonds is very small since it is dominated by government bonds, which represent 70% of the funds raised (IDX & IBPA, 2014). Equity and bond market liquidity is generally quite low (Oliver Wyman & Mandiri Institute, 2015; Rhee & Wang, 2009). Thus, Indonesian companies rely on private debt financing, mainly of bank loans when in need of external capital.

In the aftermath of Asian financial crisis, the Indonesian financial authorities re-regulated the banking industry in order to build banking industry as proper intermediation role. Prudential regulation for banks were tightened around 2003 and 2004, for example, by increasing the minimum capital adequacy ratio from 4% to 8%, lowering the legal lending limit for companies in the same group to less than 20% of the total bank assets, and prohibiting dispensation of favors to specific companies.

Studies find that tight monetary policy and prudential regulation issues after the crisis impact on banks unwillingness to supply loan especially to the new borrowers and only willing to extend or supply to “good” borrowers (Zulverdi, Gunadi, & Pramono, 2007) and that Indonesian banking is not efficient in distributing loans although they are liquid, solvent, and profitable (Rosengard & Prasetyantoko, 2011).

Banks in Indonesia setting can be classified as commercial banks, rural banks, and sharia banks, where commercial banks dominates the markets. Four state-owned banks are part of the major banks and are included in the top ten based on their total assets. Bank loans are classified into three categories according to the usage; working capital loan, investment loan, and consumers loan (Defung, 2014). Working capital loans is accounted as the highest proportion of the total bank loans, followed by investment and consumption (Defung, 2014).

1.3.4 Ownership structure of Indonesian public listed companies

Unlike most companies from developed countries which have diffuse ownership, companies in emerging countries, including Indonesia, are characterized by highly concentrated ownership in public listed (Claessens, Djankov, & Lang, 2000; Claessens & Yurtoglu, 2013). Family controlled is the most significant in numbers (Claessens, Djankov, and Lang (2000); Carney and Hamilton-Hart (2015), followed by foreign entities, and state controlled. Foreign controlling shareholders are not only from developed countries but also from other emerging countries. State-owned companies listed in the Indonesian Stock Exchange is small in numbers, they consist or several large state-owned banks and other non-financial companies.

1.4 Brief overview of individual article

The aim of this dissertation is to explore factors that impact the choice for Big4 audit firms and the consequences of choosing Big4 audit firms Indonesia.

The first article examines whether, in Indonesia where litigation is weak and Big4 audit firms can only enter the market through affiliation with a local audit firm, the choice for Big4 audit firms can be benefited for the clients in terms of lower cost of debt. Financial statements credibility is important for lenders to assess borrowers' quality (Kim, Song, & Tsui, 2013) and to monitor debt contracting (J. R. Booth, 1992). The decrease on information asymmetry from appointing a large audit firm reduces perceived risks and monitoring costs which should translate into lower cost of debt. We argue that local audit firm affiliated with a Big4 audit firm increases the credibility of financial statements as perceived by creditors because of several reasons. Firstly, the reputational concern of Big4 audit firms provides incentives to standardize audit quality which translate into pressure on local firms affiliated with a Big4 audit firm to increase audit effort. Secondly, local firms affiliated with a Big4 audit firm are able to access to expertise and better resources of Big4 audit firms. Thirdly, Big4 audit firms use tight selection and evaluation procedures in choosing their local partners and only team up with better local audit firms (Kartikahadi, 2010).

The second article investigates the link between foreign involvement, more specifically foreign ownership and board membership, and auditor choice. It examines whether the potential impact of foreign ownership and board membership on the likelihood of choosing Big4 audit firms depends on whether the foreign involvement originates from a developed or an emerging country. Hope, Kang, Thomas, and Yoo (2008) suggest that cultural differences drive different tendencies of auditor choice. We argue that foreign investors and board members from developed countries probably attach more importance on the assurance from high quality Big4 audit firms, as

compared to foreign investors from emerging countries. To the best of our knowledge, this article is the first to differentiate between developed and emerging countries when considering the effect of foreign involvement on auditor choice.

The third article studies the relationship between the choice of high quality audit firms and companies capital structure. The pecking order theory suggests that equity would be the finance source of last resort, after internal finance and debt, as it is the most sensitive to information asymmetry (Myers & Majluf, 1984). Following this idea, prior studies argue that firms characterized by higher information asymmetry would be more likely to have higher leverage ratios (Bharath, Pasquariello, & Wu, 2009; Petacchi, 2015). As hiring high quality external audit firms – most often refers to Big4 audit firms – can enhance the credibility of financial statements thereby mitigating information asymmetry problem, companies that choose a Big4 audit firm will be more likely to have lower debt ratio (Bharath et al., 2009; Petacchi, 2015). Whether this argument can be applied in emerging countries is the central question in the third article. L. Booth, Aivazian, Demircug-Kunt, and Maksimovic (2001) suggest that while some of the capital structure theories in developed countries are applied to emerging countries, specific institutional features which characterize emerging countries might require country-specific evidence. One of the arguments on why Big4 audit firms provide high quality audit is to minimize litigation risks and costs (DeAngelo, 1981; Dye, 1993). This prerequisite is barely met in most emerging countries since most of them are considered to have low litigation environment and weak investor protection (Claessens & Fan, 2002; Shleifer & Vishny, 1997). To the best of our knowledge, there exist no studies that have empirically investigated the relation between auditor choice and capital structure in emerging countries.

1.5 Data source

In all articles we apply a regression procedure using non-financial Indonesian listed firms. All financial data were retrieved from Worldscope. Since Worldscope only provides data on the auditor of the latest year available, we hand-collected the data on the auditors over the years of the study through the ICMD. We also hand-collected ownership data from the ICMD in combination with data from the annual reports. We used the annual reports to identify membership of the board of directors and board of commissioners. We followed the United Nations in classifying developed and emerging countries.

We start our sample from 2008 up to the year available in the database for the analysis. For the first article we exploit 1,807 company-year observations of non-financial Indonesian listed companies over the 2008 – 2015 time horizon. In the second article extends the period to 2016, resulting the final sample of 2,378 observations. The third article exploits 1,977 company-years of non-financial Indonesian listed companies between 2008 and 2015.

1.6 Structure of the dissertation

The remainder of this dissertation is organized as follows. The next chapter is the first article that examine the relationship between affiliation local audit firms with a Big4 audit firm choice and cost of debt. It is followed by the second article that investigates whether foreign ownership and board membership country of origin affect the likelihood to choose an affiliated Big4 audit firm. The fourth chapter is on the third article which is about the impact of an affiliated Big4 audit firm choice on the capital structure of the company. The final chapter concludes this dissertation and provides the major findings and contributions together with some practical implications, limitations and avenue for future research.

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Notes

¹ The requirement of audited financial statements are regulated in the Limited Liability Company Law and the Capital Market Law.

² PPAk is a one-year program for individuals who wish to enter the accounting profession. This program is run by accredited universities and under supervision of the Ministry of the higher education.

³ The smallest audit firm needs at least three persons, one chief/partner that holds a registered public accountant and two employees.

CHAPTER 2:

AFFILIATION OF INDONESIAN AUDIT FIRMS WITH THE BIG4 AND THE COST OF DEBT*

*The work in this chapter is co-authored by Philippe Van Cauwenberge and Heidi Vander Bauwhede. The authors gratefully acknowledge the valuable comments of the participants at the 2017 Annual Congress of the European Accounting Association Conference (EAA) and 2017 FEB Research Day at Ghent University. This chapter is currently under review (second round) for the International Journal of Auditing.

Abstract

This paper documents that in Indonesia, where litigation risk is low and Big4 audit firms can only enter the market through affiliation with a local audit firm, the appointment of a Big4-affiliated local audit firm reduces the cost of debt for listed companies significantly. This effect turns out to be stronger for companies with a higher risk profile. We also find that the appointment of a local audit firm that is affiliated with a second-tier audit firm has a similar effect on the cost of debt. The appointment of a local audit firm that is affiliated with an international audit firm other than a Big4 or second-tier firm seems to have no effect. This evidence is in line with the idea that Big4 audit firms are perceived as applying uniform quality criteria around the world, regardless of the local circumstances in which they operate.

Keywords: audit quality, Big4, cost of debt, emerging market, Indonesia.

JEL classification: G21, G32, M41, M42, O16

2.1 Introduction

This paper investigates whether the affiliation of local Indonesian audit firms with one of the Big4 reduces the cost of debt for listed companies in Indonesia. Foreign audit firms are allowed to enter the Indonesian audit market but can only do so by partnering with a local audit firm. There are several indicators suggesting serious quality issues within the local Indonesian audit context (Dunakhir, 2016). With few exceptions, local audit firms in Indonesia are relatively small and capacity-constrained. Due to lack of adequate resources, they face challenges in providing high-quality auditing services (The World Bank, 2010a). Anecdotal evidence from interviews with practicing auditors reveals high levels of compliance gaps with respect to audit planning, documentation, related party investigation and fraud detection (The World Bank, 2010a).

We hypothesize that the affiliation of local audit firms with a Big4 firm reduces the cost of debt for the client. Our argumentation is based on the idea that cooperation of a local audit firm with a Big4 increases the quality of the audit as perceived by the creditors. International Big4 firms are widely viewed as producing higher quality audits than non-Big4 firms (Francis, Maydew & Sparks, 1999). One of the reasons is that the brand name reputation of the Big4 audit firms provides them with an incentive to increase their audit effort. When a local Indonesian audit firm affiliates with a Big4 audit firm to perform the audit of an Indonesian company, we expect that the reputational concerns of the Big4 firm will translate into pressure on the local audit firm to increase its efforts. A second reason why Big4 firms are viewed as producing higher audit quality is that they have more and better resources (DeFond and Zhang, 2014). We argue that through affiliation, local Indonesian audit firms can expand their access to expertise and tap into the resources of the well-equipped and more sophisticated Big4 firms. The transfer of professionalism is even embedded in the Indonesian regulation, according to which an international audit firm

partnering with a local audit firm should provide training programs, impose standards on quality control and perform periodic quality controls. Another reason that creditors may perceive audit services performed by local audit firms affiliated with a Big4 firm as being of higher quality is that there is evidence that Big4 firms use tight selection and evaluation procedures in choosing their local partners (Kartikahadi, 2010) and only team up with the better local audit firms. Collectively, these arguments suggest that local audit firms that are affiliated with a Big4 provide higher quality audits compared to other audit firms. Lenders typically rely on the financial statements to assess borrower quality (Kim, Song, & Tsui, 2013).

Based on the argumentation above, we argue that lenders perceive financial statements of borrowers that are audited by a local Indonesian audit firm that is affiliated with a Big4 firm as being of higher quality, hereby strengthening their beliefs regarding the accuracy of their assessment of borrowers' credit risk and their perceived efficiency of lender monitoring (Booth, 1992). We expect that this will be translated in a lower cost of debt.

We test our hypothesis on a sample of Indonesian listed companies between 2008 and 2015. We regress these companies' cost of debt on a dummy variable indicating whether or not the local Indonesian audit firm is affiliated with a Big4 audit firm and various control variables, including interest coverage, profitability, leverage, asset tangibility, size, the occurrence of negative equity, age, growth and cash flow performance. In line with prior studies (J. Francis, LaFond, Olsson, & Schipper, 2005; Minnis, 2011; Vander Bauwhede, De Meyere, & Van Cauwenberge, 2015), we proxy the cost of debt by the effective interest cost, i.e. the ratio of the interest expense to the average amount of financial debt.

Endogeneity concerns stemming from auditor self-selection might yield inconsistent coefficient estimates when estimating the model using ordinary least squares estimation (Heckman, 1976,

1978). To address this concern, we estimate a so-called Heckman treatment effect regression, which is a Heckman selection model (Heckman, 1979) using full maximum likelihood (Greene, 2000; Maddala, 1983). We model auditor choice as a function of firm-specific variables that have appeared in previous literature (Chaney, Jeter, & Shivakumar, 2004; Choi & Wong, 2007; Fan & Wong, 2005; Guedhami, Pittman, & Saffar, 2014) and variables that reflect unique features of the Indonesian setting that are likely to impact auditor choice. This selection model is estimated simultaneously with the main regression model.

Our findings are the following. First of all, the Wald test confirms that endogeneity is indeed a relevant concern and that straightforward application of ordinary least squares would have been inappropriate. Taking into account the endogeneity concern with the Heckman treatment effect approach, we find that hiring a local audit firm affiliated with a Big4 is associated with a lower cost of debt. This negative association is not only statistically significant but also economically relevant. The decrease from affiliation with a Big4 firm in cost of debt is 4.8 percentage points.

In a second instance, we investigate whether affiliation with a second-tier or another international audit firm also has an effect on the cost of debt. While we observe in our sample that a significant percentage of the audits was performed by audit firms affiliated with a Big4 (38%), an even bigger percentage (49.81%) was performed by auditors partnering with an international audit firm other than a Big4. More in particular, 9.96% of the audits were performed by second-tier international partner audit firms, while in 39,85% of the case, the partners were other international audit firms. Substituting the Big4 variable with an ordered categorical variable that can include four categories: Big4, second-tier, other international and local audit firms, we find not only that the effect of Big4 remains, but also that the affiliation with a second-tier audit firm has a negative

effect which is of approximately the same size as the effect of Big4. For the affiliation of an audit firm with other international audit firms, we find no significant effect.

Next, we investigate whether the relation between the affiliation of an audit firm with a Big4 audit firm and the effective interest cost varies with firm characteristics. For lenders, the additional assurance provided by an audit firm that is affiliated with a Big4 audit firm compared to a non-affiliated audit firm might be more pertinent for high risk borrowers. We define subsamples of high versus low risk borrowers partitioned on the median of the Altman Z-score (Altman, 1968) and the level of debt respectively. Our results show that the negative relation between affiliation with Big4 auditors and the cost of debt cost is only present in the high risk subsample, regardless of how risk is defined.

Our work has contributions both from a theoretical and a practical point of view. First of all, our results are relevant from the point of view of managers, who are concerned about their cost of capital in general and the cost of debt in particular (Gul, Zhou, & Zhu, 2013). Our results show that in Indonesia, the appointment of a local audit firm that is affiliated with a Big4 or second-tier international audit firm is valued by lenders and has a negative effect on the cost of debt which is economically significant. For the country as a whole, external financing is vital to boost economic growth (Atkins & Glen, 1992) and debt is the main source of finance even for listed companies (Patrick, 2002). In the aftermath of Asian financial crisis, the Indonesian financial authorities tightened the prudential regulations in order to strengthen the banking industry. In response, the Indonesian banking industry expressed risk averse behaviour supplying finance only to well-known borrowers and denying funds to new or more risky borrowers (Rosengard & Prasetyantoko, 2011; Zulverdi, Gunadi, & Pramono, 2007). In such an environment, decreases in information asymmetries from increases in the perceived credibility of financial statements could

be very relevant. Our research shows that this effect turns out to be even stronger for more risky companies.

From a theoretical point of view, our findings are related to and add to other work that investigated the economic consequences of the appointment of large international audit firms. For example, an international study by (Gul et al., 2013) – which does not include Indonesia – shows that the appointment of a Big4 auditor decreases the cost of debt especially in countries with high litigation risk and to a lesser extent in low litigation risk countries. Our study indicates that in a country with low litigation risk like Indonesia, the reduction in the cost of debt can be of economic importance. Furthermore, this reduction exists even when the large international firm can only enter the market through affiliation with a local firm that performs the audit.

In our opinion, the fact that the appointment of a Big4-affiliated audit firm is valued in a low litigious environment may stem from the fact that large international audit firms apply relatively uniform standard audit procedures, training program and efforts across countries (Magnan, 2008) and care about their relatively high potential worldwide reputational loss wherever in the world misreporting is revealed. The magnitude of the effect that we found on the costs of debt can probably be attributed in part to the weakness of the Indonesian local audit environment, where the affiliation with a big international audit firm sends a relatively stronger signal to the lenders about the credibility of the financial statements than in other countries.

The rest of this paper is organized as follows. The next section provides some background on the Indonesian auditing and financial setting. Section three provides a literature review and develops our hypothesis. Next, we present our sample selection, descriptive statistics and empirical findings. The last section concludes.

2.2 The Indonesia setting

2.2.1 The local accounting and audit environment

The Limited Liability Company Law of 2007 requires corporate entities to prepare financial statements in accordance with the Indonesian financial accounting standards (SAKs) as issued by the Indonesian Financial Accounting Standard Board (DSAK) of the Institute of Indonesia Chartered Accountants (IAI) (IFAC, 2016). In 2012, as part of an ongoing convergence process, the DSAK substantially aligned SAKs with the IASs and IFRSs as they existed in 2009. By January 2015, at the end of a second phase of the convergence process, SAKs were substantially aligned with IASs and IFRSs as they existed in 2014.

The financial reports of publicly listed companies should be audited. The Indonesian Institute of Public Accountants or IAPI regulates the audit profession and is legally empowered to set auditing standards (SPAPs). In 2012, the International Standards on Auditing (ISAs) were adopted. These standards are effective for audits of financial statements of listed companies for periods beginning on or after January, 2013 (IFAC, 2016).

To pursue an audit profession career, there are several conditions that need to be fulfilled. First, a university graduate should pass the Professional Accounting Education Program (PPAk)¹ to obtain the title of accountant and should register in the Ministry of Finance (MoF). Next, a registered accountant has to obtain a license from the MoF to practice as an auditor but can only do so once certain minimum requirements are satisfied. These requirements are that the accountant has passed the CPA exam held by IAPI, has sufficient audit experience, is a member of a professional association, is domiciled in Indonesia, and has a tax identification number. An auditor can open an audit office or join an existing audit office. To open an audit office, several requirements have to be met: a license from the MoF, an office located in Indonesia, the application of a quality-control

system and the employment at least two employees who have adequate knowledge of accountancy². To provide professional audit services to listed firms in the Indonesian capital markets, an auditor must also be registered with OJK, an independent institution that has the authority to regulate and supervise the financial service sector in Indonesia. In 2010, there were 424 MoF-registered audit firms which are eligible to perform assurance service in Indonesia. 168 of them are eligible to perform audit service to listed companies (The World Bank, 2010a).

There are several indicators suggesting that there are serious quality issues within the local Indonesian accounting and audit context (Dunakhir, 2016). With few exceptions, most audit firms in Indonesia are relatively small (The World Bank, 2010a). Many firms are audited by capacity-constrained audit firms. The local audit firms, due to lack of adequate resources, face challenges in providing high-quality auditing services for entities with complex business transactions. Figures from the World Bank (The World Bank, 2010a) show that the majority of OJK registered audit firms have only one registered public accountant. Anecdotal evidence from interviews with practicing auditors revealed high levels of compliance gaps with respect to audit planning, documentation, related party investigation and fraud detection (The World Bank, 2010a). Membership of the IAI is not mandatory for preparers of financial statements and auditors, and the majority of registered accountants did not apply for IAI membership. Consequently, this majority is excluded from the professional training programs that the IAI organizes, which is not beneficial for quality improvement (The World Bank, 2010a).

Furthermore, similar to many emerging markets, regulations are not fully enforced (Ball, 2001; Chan & Hameed, 2006). This is also found in Indonesia. Cases where companies, shareholders or third parties sue public accounting firms are very rare as a result of costly and time consuming courts processes, lack of experienced judges and laws and regulations that are perceived to be

ambiguous (The World Bank, 2010a, 2010b). Brown, Preiato, and Tarca (2014) classified countries based on their audit environment and accounting enforcement and ranked Indonesia as 46th of 51 countries.

2.2.2 Foreign audit firms

During the Dutch colonial era, and up to a decade after the declaration of independence in 1945, the Indonesian economy was dominated by Dutch companies. Also the accounting firms were Dutch and the local accountant profession was almost nonexistent (Murwanto, Kanna, & Van Zijl, 2011; Reid, 2003). In 1958, the Indonesian government nationalized all Dutch-owned companies and prohibited trading securities issued by Dutch companies in Indonesia. Consequently, all Dutch accounting firms closed their offices in Indonesia (Bachtiar, 2001; Murwanto et al., 2011). During the period 1958 to 1967, there were no foreign accounting firms operating in Indonesia (Bachtiar, 2001). At that time audit requirements were restricted to state-owned companies (Kartikahadi, 2010).

Since 1967, Indonesia opened up its financial market to attract foreign investment, which heralded the re-entry of foreign audit firms (Bachtiar, 2001; Irmawan, Haniffa, & Hudaib, 2013). However, foreign audit firms are not allowed to open their own offices and can only enter the Indonesian audit market through cooperation with a local audit firm (Rosser, 1999). According to Indonesian regulation, an international audit firm partnering with a local firm should provide training programs, impose standards on quality control, and perform periodic quality controls. Kartikahadi (2010) describes that the Big4 audit firms use tight selection and evaluation procedures in choosing their local partners. The evaluation of a local business partner covers factors such as the firm's compliance with professional standards, its business plan, the completeness of the professional services offered, the quantity and quality of the professional staff, the organization

structure and the infrastructure. The affiliating international auditor is required to organize consulting workshops, annual meetings and quality reviews for its local partners.

2.2.3 The financing environment

Indonesia's capital markets are still relatively underdeveloped (Rhee & Wang, 2009). Companies are generally reluctant to go public as the higher regulatory requirements for listed companies involve more disclosure obligations (Oliver Wyman & Mandiri Institute, 2015). The public debt market is also limited. The number of companies that issue bonds is very small and the bond market is dominated by government issues, which represent 70% of the funds raised (IDX & IBPA, 2014). Equity and bond market liquidity is generally quite low (Oliver Wyman & Mandiri Institute, 2015; Rhee & Wang, 2009). Consequently, Indonesian companies depend to a large extent on bank financing.

Banks in Indonesia can be classified as either commercial banks, rural banks or sharia banks, the former being the largest. Bank loans are classified into three categories according to the usage: working capital loans, investment loans, and consumers loans (Defung, 2014). Working capital loans account for the highest proportion of the total bank loans, followed by investment and consumption loans (Defung, 2014).

In the aftermath of Asian financial crisis, the Indonesian financial authorities tightened the prudential regulations in order to strengthen the banking industry. In response, Indonesian banks expressed risk averse behaviour supplying finance only to well-known borrowers and denying funds to new or more risky borrowers (Rosengard & Prasetyantoko, 2011; Zulverdi et al., 2007).

2.3 Literature review and hypothesis development

Large auditors are generally expected to have stronger incentives and greater competencies to provide high audit quality (DeAngelo, 1981). Audits of higher quality provide more assurance on the credibility of the financial statements (DeFond & Zhang, 2014). Lenders typically rely on these statements to assess borrower quality (Kim et al., 2013) and to monitor debt contracting (Booth, 1992). The decrease in perceived information asymmetry from appointing a large audit firm reduces perceived risks and monitoring costs which should translate into to lower interest rates.

A number of empirical studies has already provided evidence of this relation. Pittman and Fortin (2004) and Causholli and Knechel (2012) investigate US IPO's and find that retaining a big auditor enables firms to lower their borrowing cost. Mansi, Maxwell, and Miller (2004) show that audit firm size is negatively related to the return for a sample of US corporate bonds. Using a large sample of U.S. bank loan data, (Kim et al., 2013) find that the loan interest rate is significantly lower for borrowers with Big4 auditors. The theoretical argumentation for the relation between audit size and quality in these studies depends in part on litigation. In a litigious environment, larger audit firms face a relatively higher risk of litigation and larger economic costs in case of litigation (DeAngelo, 1981; Dye, 1993), which gives them more incentives to increase audit quality. As the above evidence was gathered in a high litigation risk environment, it leaves the question unanswered about the existence and strength of a relationship between auditor size and the cost of debt in less litigious environments. An international study – which does not include Indonesia – by Gul et al. (2013) provides some insight into this matter. They show that the appointment of a Big4 audit firm decreases the cost of debt especially in countries with high litigation risk and to a lesser extent in low ligation risk countries.

Weak litigation also characterizes the Indonesian audit environment. Indonesian cases where companies, shareholders, or third parties sued auditing firms related to professional liability in the court are very rare (The Worldbank, 2010a). Therefore, the issue of whether the affiliation of a local audit firm with a Big4 firm in a country like Indonesia reduces the cost of debt is not straightforward. We argue however that even in such an environment audits by local companies affiliated with Big4 audit firms can be perceived as being of higher quality. The underlying rationale is that Big4 audit firms have incentives to increase their audit effort in order to protect their reputation. Moreover, Big4 audit firms have incentives to maintain this reputation around the world by applying standard quality procedures for audit methodologies, recruitment mechanisms, training, and knowledge sharing practices for their employee (J. R. Francis & Wang, 2008; Simunic & Stein, 1987). Most Big4 firms have active staff exchange programs between countries, which stimulate international homogeneity between staff members. In addition, Magnan (2008) finds in an informal survey with audit partners of four large audit firms that, for all countries in which they are involved, and for all audit engagements, International Auditing Standards are the minimum criterion. This implies that Big4 firms' values, professional standards, and training programs probably override country differences in educational backgrounds and that the level of audit effort is likely quite similar across countries, irrespective of legal regime differences. For Indonesia, this implies that the reputational concerns of the Big4 will translate into pressure on the local affiliated audit firm to increase its efforts.

A second reason why Big4 affiliated audit firms can be perceived as producing higher quality is that Big4 audit firms have more and better resources (DeFond & Zhang, 2014) and that through affiliation with such a firm, local Indonesian audit firms can expand their expertise and tap into the resources of these firms. The transfer of professionalism is even embedded in the Indonesian

regulation, according to which an international audit firm partnering with a local firm should provide training programs, impose standards on quality control and perform periodic quality controls.

Another reason that creditors may perceive audit services performed by local firms that are affiliated with Big4 firms as being of higher quality is that there is evidence that the international audit firms use tight selection and evaluation procedures in choosing their local partners (Kartikahadi, 2010) and only team up with the better local audit firms.

In conclusion, notwithstanding that litigation risk in Indonesia is low, there are various reasons to believe that creditors perceive audit services provided by Big4-affiliated local firms as being of higher quality. Moreover, that there are serious quality issues within the local Indonesian accounting and audit context (Dunakhir, 2016), creditors may attach special value to higher quality audit services. Therefore, we formulate the following hypothesis:

H: Indonesian companies with a local audit firm affiliated with a Big4 audit firm have a lower cost of debt than companies audited by another audit firm.

2.4 Research design and data collection

2.4.1 Research design

To test our hypothesis, we estimate the regression below where j and t index companies and years respectively:

$$\begin{aligned}
COD_{j,t+1} &= \beta_0 + \beta_1 * BIG4_{j,t} + \beta_2 * ICOV_{j,t} + \beta_3 * PROF_{j,t} + \beta_4 * LEV_{j,t} + \beta_5 \\
&* TANGIB_{j,t} + \beta_6 * SIZE_{j,t} + \beta_7 * NEGEQ_{j,t} + \beta_8 * AGE_{j,t} + \beta_9 \\
&* GROW_{j,t} + \beta_{10} * CFPERF_{j,t} + \text{Industry and time fixed effects} \\
&+ \varepsilon_{j,t} \qquad (1)
\end{aligned}$$

In line with prior empirical studies (J. Francis et al., 2005; Minnis, 2011; Vander Bauwhede et al., 2015) we measure the cost of debt (*COD*) as the ratio of a company's interest expense over the average amount of financial debt over the year. We use the one-year ahead value in order to mitigate the concern stemming from the staleness of the cost of debt variable (Minnis, 2011). *BIG4* is a dummy variable indicating whether the local audit firm that performed the audit was affiliated with a Big4 audit firm.

In accordance with the empirical literature (J. Francis et al., 2005; Kim, Simunic, Stein, & Yi, 2011; Minnis, 2011; Vander Bauwhede et al., 2015), we include the following control variables: interest coverage, profitability, leverage, asset tangibility, size, the occurrence of negative equity, age, growth and cash flow performance. Interest coverage (*ICOV*) is calculated as operating income divided by interest expense. Higher values of interest coverage imply less financial risk, so a negative coefficient on this variable is expected. Profitability (*PROF*) is measured as earnings before interest and taxes scaled by total assets. More profitable companies are better able to service their debt, thus, lenders are likely to charge lower interest rates (Kim et al., 2011). Leverage (*LEV*) is calculated as the ratio of total debt to total assets. As companies with higher leverage have higher financial risk, they are expected to pay higher interest rates. Based on this argument, a positive coefficient is expected. Some studies however (Beatty, Ramesh, & Weber, 2002; J. Francis et al., 2005; Minnis, 2011) argue that companies which are offered attractive

interest rates borrow larger amounts, which would imply a negative association between leverage and cost of debt. Asset tangibility (*TANGIB*) is measured as net property, plant and equipment divided by total assets. It is a measure of a company's ability to repay outstanding debt in the event of default (Minnis, 2011). Higher values correspond to less financial risk, so a negative coefficient on this variable is expected. *SIZE* is defined as the natural logarithm of total assets. Larger companies are viewed as having a better reputation and less information asymmetry (Berger & Udell, 1995). Hence, a negative association is expected. Negative equity (*NEGEQ*) is a dummy variable which takes the value of one if total liabilities exceed total assets and is zero otherwise. As negative equity indicates poor performance in the past, it signifies higher risk. Therefore a positive coefficient on this variable is expected. *AGE* is measured as the natural logarithm of one plus the difference between the year *t* and the year of incorporation. Older companies have established relationships with their lenders and have developed a reputation. On the other hand, relationship lending potentially allows lenders to exploit monopolistic information and charge higher interest rates. Growth (*GROW*) is calculated as the year-over-year percentage growth in sales. Companies with higher growth opportunities are viewed to have higher expected costs of financial distress and so a positive coefficient on this variable is expected (Garcia-Teruel, Martinez-Solano, & Sanchez-Ballesta, 2010). Cash flow performance (*CFPERF*) is computed as cash flow from operations scaled by total assets. Companies that generate strong cash flows are perceived to have lower financial risk as they are more able to meet their debt obligations which suggests a negative association between this variable and the cost of debt (Anderson, Mansi, & Reeb, 2003). However, companies with higher interest rates are expected to generate higher cash flows as more debt puts pressure on companies to generate enough cash flow to meet obligations and avoid default (Hernandez-Canovas & Martinez-Solano, 2010). The latter reasoning would

lead to a positive association. Finally, we include a vector of industry dummies and time dummies to control for industry and time effects. The largest industry, consumer goods, and the earliest year, 2008, serve as the base categories.

Prior research has argued that auditor choice by companies is non-random and related to company characteristics. Furthermore, audit firms themselves decide whether they will accept or reject clients (Eshleman & Guo, 2014). Big4 firms might avoid low-quality or high-risk clients (DeFond, Erkens, & Zhang, 2017; Johnstone, 2000; Johnstone & Bedard, 2004) to minimize litigation and reputation risk. Given the endogenous nature of auditor choice, estimating equation (1) using ordinary least squares may result in inconsistent coefficient estimates (Heckman, 1976, 1978). In order to control for this problem, we estimate a so-called Heckman treatment effect regression, which is a Heckman selection model (Heckman, 1979), using the full maximum likelihood method (Greene, 2000; Maddala, 1983) as suggested by Peel (2014). In a first instance, we model auditor choice as a function of both firm-specific variables that have been used in previous literature (Chaney et al., 2004; Choi & Wong, 2007; Fan & Wong, 2005; Guedhami et al., 2014) and variables that reflect the unique features of the Indonesian setting.

More specifically, our auditor selection model specification is as follow:

$$\begin{aligned}
 BIG4_{j,t} = & \gamma_0 + \gamma_1 * FOREIGN_{j,t} + \gamma_2 * OWN_{j,t} + \gamma_3 * CROSS_{j,t} + \gamma_4 * STATE_{j,t} + \gamma_5 \\
 & * SIZE_{j,t} + \gamma_6 * ATURN_{j,t} + \gamma_7 * CURR_{j,t} + \gamma_8 * LLEV_{j,t} + \gamma_9 * LLOSS_{j,t} \\
 & + \gamma_{10} * ROA_{j,t} + v_{j,t} \quad (2)
 \end{aligned}$$

Equation (1) and equation (2) are run simultaneously using the maximum likelihood version of the Heckman treatment effect model.

In the selection regression the dependent variable is *BIG4*. To take into account the effect of foreign ownership, we create a dummy variable *FOREIGN*, which takes the value of 1 if the largest shareholder is a foreign company. Companies from foreign countries demand higher financial reporting quality (He, Rui, Zheng, & Zhu, 2014). Firms are expected to respond to this demand by appointing a Big4 audit firm.

The variables *OWN*, *CROSS* and *STATE* are intended to capture the influence of agency conflicts on audit demand. *OWN* stands for concentrated ownership and is calculated as the percentage of closely held shares, i.e. shares by insiders, as defined in Worldscope. Highly concentrated ownership creates agency conflicts between controlling and minority shareholders (Fan & Wong, 2005). Big4 audit firms can serve as a signal to mitigate agency conflicts (Choi & Wong, 2007). Fan and Wong (2005) document that high ownership concentration firms are more likely to choose Big4 audit firms. Therefore, we expect a positive coefficient on this variable. *CROSS* is a dummy variable indicating that a company is cross-listed in US. Previous literature (Fan & Wong, 2005; Guedhami et al., 2014) suggests that cross-listing may affect the company's choice for a Big4 audit firm. Again, we expect a positive sign on this coefficient. *STATE* is a dummy variable indicating that a company is state-owned. Chen, Chen, Lobo, and Wang (2011) argue that state-owned companies are less likely to choose high quality auditors since audit quality plays less of a role in constraining earnings management in those companies. Accordingly, we expect a negative sign for this coefficient.

The audit effort is proxied by *SIZE*, *ATURN* and *CURR*. *SIZE* is measured as the natural logarithm of total assets while *ATURN* is calculated as the proportion of total sales to total assets. *SIZE* and

ATURN proxy for the size and the level of economic activity of the company respectively and are expected to indicate the level of audit effort to achieve a sufficient level of assurance (Choi & Wong, 2007; J. R. Francis, Maydew, & Sparks, 1999; Piot, 2001; Simunic & Stein, 1996). Following Chaney et al. (2004), we also include the ratio of current asset to total assets (*CURR*) in the regression due to the complexities of inventory and receivables which may require specific audit procedures. We expect a positive coefficient on all three variables.

To control for financial risk, we use *LLEV*, *LLOSS* and *ROA*. *LLEV* is measured as long term debt scaled by total assets. *LLOSS* is a dummy variable indicating the occurrence of negative net income before extra items in the previous year. *LLEV* and *LLOSS* are associated with the probability of a client's financial distress which is related to audit risk (Choi & Wong, 2007). Hence, a negative relation is expected. However, *LLEV* also captures potential agency conflicts. Chaney et al. (2004) argue that highly leveraged firms may prefer to hire high quality auditors to reduce agency costs. Therefore, the direction of *LLEV* is unclear. Regarding *ROA*, previous studies (Chaney et al., 2004; Guedhami & Pittman, 2011) suggest that auditor choice might be influenced by a firm's profitability. We expect a positive coefficient of *ROA* since more profitable firms tend to have less audit risk. The variable definitions is presented on Table 2.1

[Insert Table 2.1 about here]

2.4.2 Data collection

Except for the Big4 dummy, all data were retrieved from Worldscope. Since Worldscope only provides data on the auditor of the latest year available, we hand-collected the data on audit firm over the years of the study from the Indonesian Capital Market Directory (ICMD).

Table 2.2 summarizes our sample selection process. We began with the set of Indonesian listed non-financial companies that existed between 2008 and 2015. Initially, we have 2,573 company-years of observations. From the initial sample, we excluded companies that experienced an asset growth rate of more than 100 percent in any year (64 company-years)³, as the latter is an indication of significant restructuring activities (Duchin, Ozbas, & Sensoy, 2010). Further, to guarantee independent observations, we excluded subsidiary companies when the parent company was included in our sample (138 company-years). Companies without debt were excluded (15 company-years). Finally, we dropped 549 company-years for which there were missing values. This resulted in a final sample of 1,807 company-years (315 unique companies) over the 2008 – 2015 period.

[Insert Table 2.2 about here]

Table 2.3 provides a breakdown of the sample by year, industry and age. From this table, it is clear that between our sample and the initial sample, there are no problems with respect to over- or underrepresentation of certain years, sectors or ages.

[Insert Table 2.3 about here]

2.5 Empirical results

2.5.1 Descriptive statistics

Table 2.4, Panels A and B presents the descriptive statistics of the variables for our complete sample and for the sample partitioned by whether a company was audited by a local audit firm affiliated with a Big4 or not (Big4 vs. non-Big4) respectively. We winsorized all continuous variables at the 1st and 99th percentiles. Table 2.4, Panel A shows that the cost of debt is on average about 9.06%. The 10th and 90th percentile values for cost of debt are 2.76% and 14.73%

respectively. For comparison, the average corporate credit prime rate from the Bank of Indonesia for the period of 2011 to 2015 ranged between 6% and 14.70%. Leverage in on average about 31%, indicating the importance of debt financing for the companies in our sample.

From Table 4, Panel 2.A, we can also infer that the percentage of audits that were performed by local audit firms affiliated with Big4 audit firms is around 38%. This percentage is quite stable over time. The lowest percentage is in 2008 (37.57%) and the highest is in 2012 (39.58%) (not reported). It is worth noting that the number of companies using Big4 audit firms in Indonesia is relatively low compared to other countries. J. R. Francis, Michas, and Seavey (2013), for example, report that the percentages of firms audited by Big4 audit firms for the United States, Australia, the United Kingdom, Singapore and Malaysia are 61%, 71%, 50%, 72% and 53% respectively.

In Table 2.4, Panel B, we present the descriptive statistics for the sample partitioned on Big4 affiliation. With respect to our research hypothesis, firms audited by a local audit firm affiliated with a Big4 firm seem to have a lower cost of debt, higher interest coverage and profitability. Also, they are larger in size, less likely to have negative equity and older. Further, they display higher cash flow performance.

[Insert Table 2.4 about here]

The Pearson and Spearman correlations are presented in Table 2.5. Consistent with our expectation, BIG4 is negatively related to the cost of debt (*COD*). Concerning the control variables, *LEV*, *TANGIB*, *SIZE* and *NEGEQ* are negatively correlated with the cost of debt while *PROF* is positively correlated.

[Insert Table 2.5 about here]

2.5.2 Regression analysis

Table 2.6 presents the regression results. First of all, the Wald test shows that the endogeneity problem is indeed a relevant concern. After taking into account the endogeneity problem using the treatment regression, we find that the coefficients of *ICOV* and *LEV* are significantly negative. The negative coefficient of *ICOV* indicates that companies having higher interest coverage, represent less financial risk, which translates into lower costs of debt. The negative coefficient of *LEV* is consistent with the idea that companies which are offered lower interest rates borrow larger amounts (Beatty et al., 2002; J. Francis et al., 2005; Minnis, 2011). *NEGEQ* is significantly positive. This is consistent with the expectation that firms with negative equity bear more financial risk, which translates into a higher cost of debt financing. Contrary to our expectation, the coefficient of *PROF* turns out to be significantly positive. Other control variables turn out to be insignificant. Regarding our variable of interest, we find that appointment of a local audit firm affiliated with a Big4 auditor is associated with a significantly lower cost of debt. This association is also economically relevant. On average, the reduction in the cost of debt for a client firm that is audited by an Indonesian local audit firm affiliated with a Big4 firm is around 4.8 percentage points.

[Insert Table 2.6 about here]

2.5.3 Additional Analyses

Some additional tests were run to check the robustness of our result. Firstly, while we observed in our sample that a significant percentage of audits was performed by a Big4-affiliated audit firm (38%), an even bigger percentage (49.8%) was performed by audit firms partnering with an international audit firm other than one of the Big4 audit firms. More in particular, Table 2.4, Panel A shows that 9.96% of the firms were audited by local audit firms affiliated with second-tier

international audit firms and 39.85% by local audit firms affiliated with other (non-Big4, non-second-tier) international audit firms. Therefore, we are interested to find out whether an effect of international audit affiliation – other than with Big4 firms – also exists. We follow Hogan & Martin (2009) in defining second-tier audit firms and detect Grant Thornton, Crowe, and BDO Seidman as international second-tier audit firms that have affiliations with local Indonesian audit firms. The category ‘other’ international auditors was defined as the residual category, i.e. local auditors affiliated with international auditors that are not Big4 and not second-tier. We run a Heckman treatment effect model with an endogenous ordered categorical variable. We substitute the *BIG4* variable with a newly created ordered categorical variable (*AUD*) that is ordered as follows: the base level category represents companies audited by local audit firms that are not affiliated with an international audit firm, the next category is *INTL*, that represents those audited by a local audit firm affiliated with an international audit firm other than a second-tier or Big4 firm, followed by *2NDTIER* that represents those audited by local audit firms affiliated with an international second-tier audit firm and the final category, *BIG4*, represents local audit firms affiliated with a Big4 audit firm. The results of the estimation of the Heckman treatment effect regression using an endogenous categorical ordered variable are presented in Table 2.7, Panel A. The coefficients of the control variables of the treatment regression are relatively similar to those in the main regression (see Table 2.6). The coefficient of *INTL* turns out to be insignificant, indicating that the appointment of a local audit firm affiliated with an international audit firm other than a second-tier or Big4 firm is not associated with a significantly lower interest rate. The coefficients of *BIG4* and *2NDTIER* however are both negative and significant. This indicates that companies that choose a local audit firm affiliated with an international reputable audit firms (either a Big4 or a second-tier) tend to have a significantly lower cost of debt.

Secondly, we investigate whether the relation between the affiliation of an audit firm with a Big4 audit firm and the cost of debt varies with firm characteristics. For lenders, the additional assurance provided by an audit firm that is affiliated with a Big4 audit firm might be more pertinent for high risk borrowers. We define subsamples of high versus low risk borrowers partitioned on the median of the Altman Z-score (Altman, 1968) and the level of debt respectively. We calculate the Z-score and divide our sample into two groups based on the median of this score. Lower values for the Altman Z-score indicate higher risk companies. Similarly, we divide our sample into two groups based on the median of leverage. Observation with a higher than median leverage have a higher risk profile. For each group of high and low risk, we rerun our treatment effect regression. Table 2.7, Panel B shows the regression results. The impact of Big4 audit firms is significantly negative for the high risk subsample but less significant for the low risk subsamples. These results indicate that the effect of an affiliation of a local Indonesian audit firm with a Big4 on the cost of debt is more outspoken for companies of relatively higher risk.

[Insert Table 2.7 about here]

2.6 Conclusion

This paper documents that in Indonesia, where litigation risk is low and Big4 audit firms can only enter the market through affiliation with a local audit firm, the appointment of a Big4-affiliated local audit firm reduces the cost of debt of listed companies significantly. This effect turns out to be stronger for companies with a higher risk profile, as measured by the Altman Z-score and the level of debt. We also find that the appointment of an audit firm that is affiliated with a second-tier audit firm has a similar effect on the cost of debt. The appointment of an audit firm that is affiliated with an international audit firm other than a Big4 or second-tier firm seems to have no

effect. The economic magnitude of the appointment of a Big4-affiliated audit firm is quite significant, i.e. a reduction in the cost of debt with 4.8 percentage points. Our conclusions are robust to endogeneity concerns stemming from auditor choice.

These findings have practical relevance for managers of Indonesian companies as they are highly dependent on debt financing and the Indonesian banking industry expresses risk averse behaviour. As a consequence of tight prudential regulations that were established in the aftermath of the Asian financial crisis, the banking industry supplies finance only to well-known borrowers and denies funds to new or more risky borrowers. Our findings suggest that auditor choice plays an important role in providing assurance on the credibility of the financial statements, which may help in the further development of the Indonesian credit market.

From a theoretical point of view, our findings are relevant as they demonstrate that even in a low litigious environment like Indonesia, Big4 auditors are perceived to improve audit quality. This evidence is in line with the idea that Big4 audit firms apply uniform quality criteria around the world, regardless of the local circumstances in which they operate. The specific nature of the Indonesian context, where foreign auditors are forbidden to enter the audit market directly, allows us to draw the conclusion that even affiliation of a local audit firm with a Big4 audit firm is sufficient to generate this positive effect on the cost of debt.

This study uses firm-level instead of loan-level data to assess the cost of debt. An advantage of this approach is that it enables us to conduct a large-sample study, which enhances the external validity of the results. A limitation however is that it does not allow to link negotiated loan terms with firm characteristics at the same moment in time. An interesting avenue for future research would be to use loan-specific information since this would allow a more precise measure of the cost of debt. In addition, information on individual loans would permit to further extend the set of

control variables like, for instance, other characteristics of the loan contract that might influence the interest rate.

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Notes

¹ PPAk is a one-year program for individuals who wish to enter the accounting profession. This program is run by accredited universities and is under the supervision of the Ministry of Higher Education.

² The smallest audit firm needs at least three persons, one chief/partner that holds a license of public accountant and two employees

³ Including those high-growth companies in our analyses provides qualitatively similar results.

Tables

Table 2. 1 :Variable definitions

| Variable | Definition |
|-----------------|--|
| COD | : Cost of debt; Interest expense /average debt |
| BIG4 | : Dummy variable taking the value of 1 if the company was audited by a local audit firm affiliated with a Big4 audit firm and 0 otherwise |
| AUD | : Categorical variable that consists of four categories: the base level category represents companies audited by local audit firms that are not affiliated with international audit firms, INTL category represents those audited by local audit firms affiliated with international audit firms other than a second-tier or Big4, 2NDTIER represents those audited by local audit firms affiliated with international second-tier audit firms and BIG4, represents firms audited by local audit firms affiliated with Big4 audit firms. |
| ICOV | : Interest coverage; Earnings before interest, taxes, depreciation and amortization/interest expense |
| PROF | : Profitability; Earnings before interest and taxes/ total assets. |
| LEV | : Leverage; Debt/total assets |
| TANGIB | : Asset tangibility; Net property, plant, & equipment/ total assets |
| SIZE | : Company's size; The natural log of total assets |
| NEGEQ | : Negative equity; Dummy variable taking the value of 1 if the book value of equity is negative and 0 otherwise |

Table 2.1 (continued)

| Variable | Definition |
|------------------------------------|---|
| AGE | : Company's age; The natural log of (1 + [year of observation – year of incorporation]) |
| GROW | : Year over year percentage growth in sales |
| CFPERF | : Cash flow performance; Cash flow from operations/total assets |
| Auditor selection variables | |
| FOREIGN | : Dummy variable taking the value of 1 if the largest shareholder is a foreign company and 0 otherwise |
| OWN | : Percentage of closely held shares. |
| CROSS | : Dummy variable taking the value of 1 if the company is cross-listed in the US and 0 otherwise |
| STATE | : Dummy variable taking the value of 1 if a company is state-owned and 0 otherwise |
| SIZE | : Company's size; The natural log of total assets |
| ATURN | : Asset turnover; Total sales/total assets |
| CURR | : Current assets/total assets |
| LLEV | : Long term debt/total assets |
| LLOSS | : Dummy variable taking the value of 1 if the company experienced negative net income before extraordinary items in the prior year, and 0 otherwise |
| ROA | : Return on assets; Net income before extraordinary items/ total assets. |

Table 2. 2 : Sample selection method

| | drop | company- years |
|--|-------|-------------------|
| Initial sample* | | 2,573 |
| Companies that had total assets growth >100% | (64) | |
| Subsidiary companies | (138) | |
| Companies without debt | (15) | |
| Companies with missing values | (549) | |
| Final sample | | 1,807 |

* Initial sample of all Indonesian listed *non-financial* companies over the 2008-2015 period

Table 2. 3: Sample breakdown by year, industry and age

| Panel A: by year | Sample | | Initial sample* | | % Final sample to initial sample |
|------------------|--------|-------|-----------------|-------|----------------------------------|
| | # | % | # | % | |
| 2008 | 173 | 9.57 | 274 | 10.65 | 63.14 |
| 2009 | 181 | 10.02 | 280 | 10.88 | 64.64 |
| 2010 | 182 | 10.07 | 297 | 11.54 | 61.28 |
| 2011 | 226 | 12.51 | 313 | 12.16 | 72.20 |
| 2012 | 240 | 13.28 | 329 | 12.79 | 72.95 |
| 2013 | 252 | 13.95 | 349 | 13.56 | 72.21 |
| 2014 | 274 | 15.16 | 361 | 14.03 | 75.90 |
| 2015 | 279 | 15.44 | 370 | 14.38 | 75.41 |
| Total | 1,807 | 100 | 2,573 | 100 | |

| Panel B: by industry | Sample | | Initial sample* | | % Final sample to initial sample |
|----------------------|--------|-------|-----------------|-------|----------------------------------|
| | # | % | # | % | |
| Basic materials | 399 | 22.08 | 562 | 21.84 | 71.00 |
| Consumer goods | 509 | 28.17 | 682 | 26.51 | 74.63 |
| Consumer services | 271 | 15.00 | 451 | 17.53 | 60.09 |
| Health care | 63 | 3.49 | 92 | 3.58 | 68.48 |
| Industrials | 401 | 22.19 | 547 | 21.26 | 73.31 |
| Oil & gas | 46 | 2.55 | 58 | 2.25 | 79.31 |
| Technology | 55 | 3.04 | 109 | 4.24 | 50.46 |
| Telecommunication | 49 | 2.71 | 57 | 2.22 | 85.96 |
| Utilities | 14 | 0.77 | 15 | 0.58 | 93.33 |
| Total | 1,807 | 100 | 2,573 | 100 | |

* Initial sample of all Indonesian listed *non-financial* companies over the 2008-2015 period.

Industry groups are based on Industry Classification Benchmark (ICB) universe retrieved from Worldscope/Datastream.

| Panel C: by age in years | Sample | | Initial sample** | | % Final sample to initial sample |
|--------------------------|--------|-------|------------------|-------|----------------------------------|
| | # | % | # | % | |
| up to 10 years | 137 | 7.58 | 222 | 8.63 | 61.71 |
| 11 - 15 years | 119 | 6.59 | 207 | 8.05 | 57.49 |
| 16 - 20 years | 220 | 12.17 | 342 | 13.29 | 64.33 |
| 21 - 25 years | 218 | 12.06 | 335 | 13.02 | 65.07 |
| 26 - 30 years | 245 | 13.56 | 320 | 12.44 | 76.56 |
| 31 - 35 years | 258 | 14.28 | 321 | 12.48 | 80.37 |
| 36 - 40 years | 254 | 14.06 | 365 | 14.19 | 69.59 |
| 41 - 45 years | 177 | 9.80 | 241 | 9.37 | 73.44 |
| 46 - 50 years | 52 | 2.88 | 61 | 2.37 | 85.25 |
| 51 - 55 years | 24 | 1.33 | 25 | 0.97 | 96.00 |
| more than 55 years | 103 | 5.70 | 134 | 5.21 | 76.87 |
| Total | 1,807 | 100 | 2,573 | 100 | 70.23 |

* Initial sample of all Indonesian listed *non-financial* companies over the 2008-2015 period

Table 2. 4: Descriptive statistics

| Panel A: Full sample | | | | | | | |
|------------------------------------|---------|---------|---------|---------|---------|----------|----------|
| | Mean | SD | p10 | Median | p90 | Min | Max |
| COD | 0.0906 | 0.0644 | 0.0276 | 0.0795 | 0.1473 | 0.0045 | 0.3673 |
| BIG4 | 0.3846 | 0.4866 | 0 | 0 | 1 | 0 | 1 |
| 2NDTIER | 0.0996 | 0.2996 | 0 | 0 | 0 | 0 | 1 |
| INTL | 0.3985 | 0.4897 | 0 | 0 | 1 | 0 | 1 |
| ICOV | 25.1565 | 69.6927 | -0.1575 | 5.0688 | 44.5610 | -17.3065 | 393.7243 |
| PROF | 0.0761 | 0.1115 | -0.0435 | 0.0729 | 0.1975 | -0.2377 | 0.4209 |
| LEV | 0.3110 | 0.2313 | 0.0360 | 0.2842 | 0.5775 | 0.0016 | 1.1286 |
| TANGIB | 0.4056 | 0.2368 | 0.0889 | 0.3823 | 0.7468 | 0.0190 | 0.9033 |
| SIZE | 21.3703 | 1.6843 | 19.1483 | 21.3429 | 23.6591 | 17.7670 | 24.8776 |
| NEGEQ | 0.0487 | 0.2153 | 0 | 0 | 0 | 0 | 1 |
| AGE | 3.2884 | 0.5463 | 2.5649 | 3.4012 | 3.8067 | 1.7918 | 4.4308 |
| GROW | 0.1170 | 0.2728 | -0.1808 | 0.1061 | 0.4270 | -0.5195 | 1.0038 |
| CFPERF | 0.0604 | 0.0989 | -0.0457 | 0.0505 | 0.1855 | -0.1595 | 0.3483 |
| AUDITOR SELECTION VARIABLES | | | | | | | |
| FOREIGN | 0.2667 | 0.4424 | 0 | 0 | 1 | 0 | 1 |
| OWN | 0.6825 | 0.1951 | 0.4291 | 0.7075 | 0.9194 | 0.1428 | 0.9795 |
| CROSS | 0.1284 | 0.3346 | 0 | 0 | 1 | 0 | 1 |
| STATE | 0.0620 | 0.2412 | 0 | 0 | 0 | 0 | 1 |
| ATURN | 1.0181 | 0.7373 | 0.2211 | 0.8703 | 2.0198 | 0.0655 | 3.2990 |
| CURR | 0.4796 | 0.2340 | 0.1572 | 0.4705 | 0.8015 | 0.0628 | 0.9252 |
| LLEV | 0.1491 | 0.1683 | 0 | 0.0900 | 0.3866 | 0 | 0.7048 |

Table 2.4 (continued)

| | Mean | SD | p10 | Median | p90 | Min | Max |
|--------------|-------------|-----------|------------|---------------|------------|------------|------------|
| LLOSS | 0.1826 | 0.3865 | 0 | 0 | 1 | 0 | 1 |
| ROA | 0.0331 | 0.0931 | -0.0620 | 0.0311 | 0.1285 | -0.2604 | 0.3027 |
| N | 1,807 | | | | | | |

Panel B: By audit firm type

| | BIG4 | | | NON-BIG4 | | | t-test | | z-test | |
|---------------|---------|---------|---------|----------|---------|---------|--------|-----|--------|-----|
| | Mean | SD | Median | Mean | SD | Median | | | | |
| COD | 0.0769 | 0.0554 | 0.0679 | 0.0992 | 0.0680 | 0.0888 | -7.63 | *** | -9.30 | *** |
| ICOV | 33.1803 | 77.1296 | 7.3368 | 20.1415 | 64.1398 | 4.1053 | 3.72 | *** | 9.72 | *** |
| PROF | 0.1083 | 0.1161 | 0.0893 | 0.0559 | 0.1036 | 0.0630 | 9.71 | *** | 8.16 | *** |
| LEV | 0.2974 | 0.2061 | 0.2741 | 0.3196 | 0.2454 | 0.2883 | -2.07 | ** | -0.99 | |
| TANGIB | 0.4158 | 0.2144 | 0.3885 | 0.3991 | 0.2497 | 0.3784 | 1.51 | | 2.00 | ** |
| SIZE | 22.2663 | 1.4378 | 22.2373 | 20.8104 | 1.5825 | 20.8528 | 20.14 | *** | 18.17 | *** |
| NEGEQ | 0.0245 | 0.1546 | 0 | 0.0638 | 0.2446 | 0 | -4.19 | *** | -3.78 | *** |
| AGE | 3.3607 | 0.5892 | 3.4340 | 3.2433 | 0.5128 | 3.3673 | 4.32 | *** | 5.05 | *** |
| GROW | 0.1219 | 0.2366 | 0.1095 | 0.1139 | 0.2932 | 0.1038 | 0.64 | | 0.85 | |
| CFPERF | 0.0846 | 0.1098 | 0.0752 | 0.0452 | 0.0881 | 0.0356 | 7.98 | *** | 8.34 | *** |
| N | 695 | | | 1112 | | | | | | |

For variable definitions: see Table 1.

The student test (t-stat) is used to compare the mean values.

The Mann-Whitney test (z-stat) addresses the null hypothesis that both distributions are homogeneous, i.e. drawn from the same population. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively (two-tailed tests).

Table 2. 5: Pearson and Spearman correlation matrix

| | COD | BIG4 | 2NDTIER | INTL | ICOV | PROF | LEV | TANGIB | SIZE | NEGEQ | AGE | GROW | CFPERF |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| COD | 1 | -0.2188 *** | 0.0594 ** | 0.1439 *** | -0.1018 *** | 0.0976 *** | -0.2335 *** | -0.1152 *** | -0.1962 *** | -0.0704 *** | -0.0155 | 0.0659 *** | -0.0183 |
| BIG4 | -0.1689 *** | 1 | -0.2630 *** | -0.6434 *** | 0.2288 *** | 0.1920 *** | -0.0234 | 0.0471 ** | 0.4276 *** | -0.0890 *** | 0.1188 *** | 0.0200 | 0.1962 *** |
| 2NDTIER | 0.0103 *** | -0.2630 *** | 1 | -0.2707 *** | -0.0400 * | -0.0061 | -0.0165 | -0.0397 * | -0.1015 *** | -0.0152 | 0.0080 | 0.0225 | -0.0606 ** |
| INTL | 0.1217 *** | -0.6434 *** | -0.2707 *** | 1 | -0.1009 *** | -0.0797 *** | 0.0246 | -0.0302 | -0.1925 *** | 0.0154 | -0.0492 ** | 0.0029 | -0.0835 *** |
| ICOV | 0.0253 *** | 0.0910 *** | -0.0268 | -0.0278 | 1 | 0.7022 *** | -0.5541 *** | -0.1392 *** | 0.0724 *** | -0.2190 *** | 0.1318 *** | 0.2035 *** | 0.4500 *** |
| PROF | 0.0476 ** | 0.2284 *** | -0.0307 | -0.1024 *** | 0.3748 *** | 1 | -0.2651 *** | -0.1886 *** | 0.1247 *** | -0.1620 *** | 0.1343 *** | 0.2627 *** | 0.4662 *** |
| LEV | -0.2794 *** | -0.0468 * | -0.0190 | 0.0324 | -0.3228 *** | -0.2726 *** | 1 | 0.2407 *** | 0.1645 *** | 0.2757 *** | -0.0866 *** | -0.0392 * | -0.2022 *** |
| TANGIB | -0.0902 *** | 0.0344 | -0.0322 | -0.0267 | -0.1257 *** | -0.1683 *** | 0.2194 *** | 1 | 0.1196 *** | 0.0346 | -0.0771 *** | -0.0748 *** | 0.1164 *** |
| SIZE | -0.1841 *** | 0.4206 *** | -0.0981 *** | -0.1789 *** | 0.0150 | 0.1442 *** | 0.0928 *** | 0.1078 *** | 1 | -0.1054 *** | 0.1085 *** | 0.1030 *** | 0.1584 *** |
| NEGEQ | -0.0494 ** | -0.0890 *** | -0.0152 | 0.0154 | -0.0558 ** | -0.1847 *** | 0.5270 *** | 0.0511 ** | -0.1361 *** | 1 | 0.0146 | -0.1446 *** | -0.0641 *** |
| AGE | -0.0030 *** | 0.1045 *** | -0.0198 | -0.0300 | 0.0853 *** | 0.1401 *** | -0.0664 *** | -0.0596 ** | 0.0634 *** | 0.0248 | 1 | -0.0916 *** | 0.1114 *** |
| GROW | 0.0339 | 0.0143 | 0.0222 | 0.0038 | 0.0571 * | 0.2212 *** | -0.0770 *** | -0.0760 *** | 0.0944 *** | -0.1324 *** | -0.1129 *** | 1 | 0.0447 * |
| CFPERF | 0.0194 | 0.1938 *** | -0.0657 *** | -0.0883 *** | 0.2607 *** | 0.4999 *** | -0.1877 *** | 0.1089 *** | 0.1572 *** | -0.0400 * | 0.1425 *** | 0.0266 | 1 |

Pearson and Spearman correlations are reported below above the diagonal respectively.
 N = 1,807. For variable definitions: see Table 1.
 *, **, *** denote statistical significance at 10% , 5% and 1% level respectively

Table 2. 6: Regression result

| Treatment model augmented regression | | |
|---|----------|-----------------------------------|
| CONSTANT | | 0.140 (4.87)*** |
| BIG4 | (-) | -0.048 (6.39)*** |
| ICOV | (-) | -0.000 (2.27)** |
| PROF | (-) | 0.047 (2.09)** |
| LEV | (±) | -0.101 (9.63)*** |
| TANGIB | (-) | -0.004 (0.62) |
| SIZE | (-) | 0.000 (0.10) |
| NEGEQ | (+) | 0.040 (3.81)*** |
| AGE | (±) | 0.001 (0.24) |
| GROW | (+) | 0.007 (0.93) |
| CFPERF | (±) | 0.004 (0.22) |
| Industry dummies | | Yes |
| Time dummies | | Yes |
| First stage probit regression | | |
| BIG4 | CONSTANT | -10.921 (15.30)*** |

Table 2.6 (continued)

| | | |
|--|-----|---------------------|
| FOREIGN | (+) | 0.303 (3.95)*** |
| OWN | (+) | 1.162 (6.33)*** |
| CROSS | (+) | 0.250 (2.23)** |
| STATE | (-) | -0.339 (2.75)*** |
| SIZE | (+) | 0.446 (14.52)*** |
| ATURN | (+) | 0.392 (6.87)*** |
| CURR | (+) | -0.564 (2.79)*** |
| LLEV | (±) | -0.783 (2.90)*** |
| LLOSS | (-) | 0.162 (1.55) |
| ROA | (+) | 2.374 (5.08)*** |
| Selectivity correction | | |
| Wald test of indep. eqns. (rho = 0) | | 18.01 |
| Prob > chi2 | | 0.0000 |
| Wald chi2 for sig. of augmented regression | | 330.99 |
| | | 0.000 |
| N | | 1,807 |

N = 1,807. For variable definitions: see Table 1.

*, **, *** denote statistical significance at 10%, 5% and 1% level respectively

Table 2. 7: Additional analyses

Panel A Regression with second-tier and other international audit firm dummies using endogenous ordered categorical variable

| Treatment model augmented regression | | | |
|--------------------------------------|------------------|-----|-----------------------------------|
| | CONSTANT | | 0.164 (4.56)*** |
| AUD | BIG4 | (-) | -0.058 (2.63)*** |
| | 2NDTIER | (-) | -0.043 (2.46)** |
| | INTL | (-) | -0.015 (1.32) |
| | ICOV | (-) | -0.000 (2.34)** |
| | PROF | (-) | 0.049 (1.86)* |
| | LEV | (±) | -0.099 (9.34)*** |
| | TANGIB | (-) | -0.005 (0.75) |
| | SIZE | (-) | -0.000 (0.14) |
| | NEGEQ | (+) | 0.037 (3.48)*** |
| | AGE | (±) | 0.000 (0.07) |
| | GROW | (+) | 0.008 (1.06) |
| | CFPERF | (±) | 0.003 (0.19) |
| | Industry dummies | | Yes |
| | Time dummies | | Yes |

Table 2.7 Panel A (continued)

| First stage ordered probit regression[†] | | | |
|--|--|-----|---------------------|
| AUD | FOREIGN | (+) | 0.381 (5.90)*** |
| | OWN | (+) | 0.939 (6.51)*** |
| | CROSS | (+) | 0.300 (2.65)*** |
| | STATE | (-) | -0.397 (3.10)*** |
| | SIZE | (+) | 0.367 (15.06)*** |
| | ATURN | (+) | 0.292 (6.00)*** |
| | CURR | (+) | -0.311 (2.04)** |
| | LLEV | (±) | -0.580 (2.75)*** |
| | LLOSS | (-) | 0.122 (1.49) |
| | ROA | (+) | 2.208 (5.56)*** |
| Selectivity correction | | | |
| | Corr. (e.aud, e.cod) | | -0.259 (2.05)** |
| | Wald chi2 for sig. of augmented regression | | 325.31 0.000 |
| | N | | 1,807 |

N = 1,807. For variable definitions: see Table 1. *, **, *** denote statistical significance at 10%, 5% and 1% level respectively

[†]The dependent variables on the first stage ordered probit regression is a categorical variable that consists four categories as follow: the base level represents local audit firms that are not affiliated with an international audit firm, *INTL* represents those audited by a local audit firm affiliated with an international audit firm other than a second-tier or Big4 firm, *2NDTIER* represents those audited by a local audit firm affiliated with a second-tier or Big4 firm and *BIG4* represents those audited by a local audit firm affiliated with a Big4 audit firm.

Panel B : Z-Score and Leverage using endogeneous treatment model

| | | Z-score [‡] | | Leverage | |
|---|-----|--------------------------------|-----------------------------------|---------------------------------|------------------------------------|
| | | LOW RISK | HIGH RISK | LOW RISK | HIGH RISK |
| Treatment model augmented regression | | | | | |
| CONSTANT | | 0.317 (3.85)*** | 0.111 (2.90)*** | 0.266 (4.29)*** | 0.036 (1.30) |
| BIG4 | (-) | -0.008 (0.39) | -0.042 (3.80)*** | -0.032 (1.86)* | -0.047 (10.17)*** |
| ICOV | (-) | -0.000 (1.41) | -0.000 (4.16)*** | -0.000 (4.27)*** | -0.000 (3.13)*** |
| PROF | (-) | -0.007 (0.15) | 0.061 (2.38)** | 0.039 (0.98) | 0.086 (3.83)*** |
| LEV | (±) | -0.165 (8.05)*** | -0.077 (5.30)*** | -0.341 (9.16)*** | -0.050 (4.78)*** |
| TANGIB | (-) | -0.004 (0.36) | -0.005 (0.55) | 0.002 (0.13) | -0.007 (1.00) |
| SIZE | (-) | -0.007 (1.90)* | 0.001 (0.43) | -0.004 (1.47) | 0.004 (3.17)*** |
| NEGEQ | (+) | 0.155 (3.46)*** | 0.029 (2.34)** | -0.049 (1.49) | 0.028 (3.51)*** |
| AGE | (±) | -0.002 (0.39) | 0.001 (0.28) | 0.000 (0.06) | 0.000 (0.13) |

Table 2.7 Panel B (continued)

| | | Z-score [‡] | | Leverage | |
|--------------------------------------|----------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | LOW RISK | HIGH RISK | LOW RISK | HIGH RISK |
| GROW | (+) | 0.027 (1.97)** | -0.000 (0.04) | 0.023 (1.84)* | -0.006 (1.02) |
| CFPERF | (±) | 0.010 (0.29) | 0.016 (0.57) | 0.013 (0.40) | -0.011 (0.66) |
| Industry dummies | | Yes | Yes | Yes | Yes |
| Time dummies | | Yes | Yes | Yes | Yes |
| First stage probit regression | | | | | |
| BIG4 | CONSTANT | -12.569 (10.53)*** | -12.009 (10.40)*** | -12.543 (10.39)*** | -10.779 (11.02)*** |
| | FOREIGN | 0.573 (4.54)*** | 0.105 (0.90) | 0.657 (5.19)*** | 0.173 (1.83)* |
| | OWN | 0.282 (1.00) | 2.176 (7.59)*** | 0.352 (1.33) | 1.766 (6.95)*** |
| | CROSS | 0.479 (2.41)** | -0.215 (1.17) | 0.745 (3.39)*** | -0.083 (0.62) |
| | STATE | -0.283 (1.37) | -0.434 (2.17)** | -0.665 (4.07)*** | 0.191 (0.85) |
| | SIZE | 0.562 (10.58)*** | 0.446 (9.19)*** | 0.545 (10.06)*** | 0.415 (10.21)*** |

Table 2.7 Panel B (continued)

| | Z-score [‡] | | Leverage | | |
|---|----------------------|--------------------|--------------------|---------------------|--------------------|
| | LOW RISK | HIGH RISK | LOW RISK | HIGH RISK | |
| ATURN | (+) | 0.265 (3.59)*** | 0.864 (6.71)*** | 0.473 (5.93)*** | 0.279 (3.02)*** |
| CURR | (+) | -0.688 (2.29)** | -0.634 (1.96)* | -0.978 (3.11)*** | 0.062 (0.20) |
| LLEV | (±) | -1.300 (2.35)** | -0.432 (1.20) | 0.393 (0.40) | -0.668 (1.96)** |
| LLOSS | (-) | 0.064 (0.24) | 0.245 (1.92)* | 0.047 (0.22) | 0.185 (1.54) |
| ROA | (+) | 1.894 (2.32)** | 1.158 (1.56) | 2.462 (3.12)*** | 2.437 (3.23)*** |
| Selectivity correction | | | | | |
| Wald test of indep. eqns. (rho = 0) | | 0.00 | 3.41 | 1.37 | 39.93 |
| Prob > chi2 | | 0.9829 | 0.0648 | 0.2424 | 0.000 |
| Wald chi2 for sig. of augmented regression | | 212.63 | - | 231.38 | 284.79 |
| | | 0.000 | | 0.000 | 0.000 |
| N | | 796 | 796 | 903 | 904 |

N = 1,807. For variable definitions: see Table 1.

*, **, *** denote statistical significance at 10%, 5% and 1% level respectively

[‡]Altman Z-score (Altman, 1968) is calculated using the formula $1.2 A + 1.4 B + 3.3 C + 0.6 D + 0.999 E$, where A = Working capital/Total assets, B = Retained earnings/Total assets, C = EBIT/Total assets, D = market value of equity/Book value of liabilities, E = Net sales/Total assets. The subsamples are divided on the median of Z-score values. Observations that have higher value of the Z-score median observations are classified as low risk.

CHAPTER 3:

FOREIGN OWNERSHIP AND BOARD MEMBERSHIP FROM DEVELOPED VERSUS EMERGING COUNTRIES AND AUDITOR CHOICE: EVIDENCE FROM INDONESIA†

† The work in this chapter is co-authored by Philippe Van Cauwenberge and Heidi Vander Bauwhede. The authors gratefully acknowledge the valuable comments of Marleen Willekens as the discussant and the participants at the 2018 Accounting Research Day held by KULeuven. The authors also thank to the participants at the 2018 International Conference in Accounting and Finance, Yogyakarta.

Abstract

This paper investigates in an emerging country, i.e. Indonesia, whether any impact of foreign investors and board members on auditor choice depends on whether they originate from a developed versus from another emerging country. We document that the likelihood of adopting a local audit firms affiliated with a Big4 audit firm is higher when foreign owners and board members originate from developed countries as compared to from emerging countries. To the best of our knowledge, this study is the first to argue and document evidence consistent with the idea that especially investors and board members from developed foreign countries demand high quality financial reporting and that companies respond to this by appointing local audit firms affiliated with a Big4 audit firm. Our results show that in an emerging country like Indonesia especially ownership and board membership from developed foreign countries is positively associated with the selection of local audit firms affiliated with a Big4 audit firms hereby potentially reducing information asymmetry and enhancing the access to foreign capital necessary to sustain economic growth.

Keywords: auditor selection policy, emerging market economy, board composition, external audit, cross-border ownership

JEL Classification: G21, G32, M41, M42, O16

3.1 Introduction

The aim of this paper is to explore whether foreign ownership and board membership from developed versus emerging countries have a different impact on the choice in favour of Big4 audit firms in an emerging country.

As a result of financial markets integration and liberalization, foreign capital has become an increasingly important source of finance in emerging countries (Bekaert & Harvey, 2002). However, the flow of foreign capital to emerging countries faces many barriers, one of which being information asymmetry (Bekaert, 1995). Foreign investors in emerging countries have a particularly strong demand for transparent and reliable financial information (He, Rui, Zheng, & Zhu, 2014). Previous research has argued (Jensen & Meckling, 1976) and documented (Watts & Zimmerman, 1983) that an external audit can enhance the credibility of financial statements hereby mitigating information asymmetry problems. Especially Big4 audit firms are considered to be helpful in this respect (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; Choi & Wong, 2007; Fan & Wong, 2005).

There already exists some evidence showing that foreign ownership may affect the likelihood of choosing Big4 audit firms (Guedhami, Pittman, & Saffar, 2009; He et al., 2014). Foreign capital flows to emerging countries however do not originate solely from developed countries but also from other emerging countries (Kearney, 2012). We argue that the origin of the foreign involvement – i.e. from developed or emerging countries – should be taken into account when considering the effect of foreign involvement on auditor choice. Ball, Kothari, and Robin (2000) show that differences in institutional context across countries cause differences in demand for accounting properties. It is well-known that there are important institutional differences between emerging and developed countries. Companies from developed countries generally have stronger

corporate governance mechanisms compared to companies from emerging countries (Shleifer & Vishny, 1997). Therefore, when investing in emerging countries, which are already characterized by relatively high information asymmetries, foreign investors from developed countries probably attach more importance on the assurance from high-quality Big4 audit firms, as compared to foreign investors from emerging countries.

A potentially related aspect of foreign involvement, next to foreign ownership, is the presence of foreigners in the board of a company. Foreign board membership might coincide with foreign ownership as a means of aligning the local company's actions with the preferences of the foreign shareholder. Alternatively, foreign board membership might be a means of the local company to import foreign expertise and governance culture, potentially to attract foreign capital. Foreign boards members, and especially those from developed countries, will probably attach relatively more value to high-quality audit since they are accustomed to an environment with higher standards on corporate governance practice (Johnson, Schnatterly, & Hill, 2013). Therefore, we expect companies that have board members from a foreign developed country to be more likely to use a Big4 audit firm as compared to foreign board members from an emerging country.

We test our hypotheses on a sample of Indonesian listed companies, where international audit firms can only enter the audit market through affiliation with a local audit firm, between 2008 and 2016. Using a pooled probit model, we regress a dummy variable indicating whether or not a company chooses a Big4 audit firm on – consecutively – foreign ownership and foreign board membership, together with a set of control variables. To measure the origin of ownership, we create two dummy variables, indicating whether the largest shareholder is from a developed or an emerging foreign country respectively. The base category, where both dummies are zero, representing the case of a local largest shareholder. For board membership we apply the same

approach. However, since Indonesia is characterized by a two-tier system of board organization that consists of “dewan direksi” (board of directors, responsible for performing managerial duties) and “dewan komisaris” (board of commissioners, with a supervisory role) we regress our Big4 audit firms variable consecutively on two pairs of dummies, representing the origin of board foreign membership, one for each type of board.

All financial data were retrieved from Worldscope. However, since Worldscope only provides data on the auditor of the latest year available, we hand-collected the data on the auditors over the years of the study through the ICMD. To identify membership of the boards of directors and commissioners, we used the annual reports. Our classification of developed and emerging countries follows the United Nations classification (United Nation, 2014)

Our findings are generally consistent with our hypotheses. Regarding ownership, when the largest shareholder is from a foreign emerging country, we find no effect of foreign ownership on the probability of selecting a local audit firm affiliated with a Big4 audit firm. On the other hand, the coefficient of the dummy for foreign ownership from a developed country is statistically significant and positive. The latter effect is also economically relevant as the probability of choosing a local audit firm affiliated with a Big4 audit firm increases with 43.0 percentage points moving from a local to a foreign largest shareholder from a developed country. Our hypothesis is also confirmed for membership. When we look at the board of directors, we find a strong effect of moving from a board of directors which is local to a board of directors which contains a foreigner from a developed country. The economic significance is an increase of the probability of selecting a local audit firm affiliated with a Big4 audit firm with 30.7 percentage points. We find a weaker relation when the board only contains a foreigner from an emerging country. With respect to the boards of commissioners, the difference between the effect of foreign board members from

developed and emerging countries is also in the same direction but the difference is less outspoken: The economic effect from moving from the base case with no foreign members in the board of commissioners to including a foreign member is an increase in the probability of choosing a local audit firm affiliated with a Big4 audit firm with 15.7 percentage points for a member of an emerging country and 33.1 percentage points for a member of a developed country.

This study contributes to the literature on the relationship between foreign involvement and auditor choice in an emerging country through differentiating by whether the origin of the foreign involvement is from an emerging versus from a developed country in particular. To our knowledge, we are the first to do so. As such, our study advances the knowledge on the effect of foreign involvement on auditor choice in emerging countries. Our hypothesis is based on the idea that foreign owners, directors and commissioners from emerging versus developed countries use different standards regarding and have different attitudes towards good governance practices which are consistent with those from their home country, hereby generating a different demand for Big4 auditors. Our work is related to Hope, Kang, Thomas, and Yoo (2008), who show how a cultural difference – the tendency to ‘secrecy’ – drives international differences in the tendency to hire a Big4 audit firm. For emerging countries, where information asymmetry is often hindering foreign direct investment, this might be an important issue.

The remainder of this paper is organized as follows. In the following section, we describe the Indonesian accounting and audit environment. Then, we provide a literature review and develop our hypothesis. Next, we describe our research design and data collection procedure. Afterwards, we present our empirical findings. The last section concludes.

3.2 Institutional background

3.2.1 The Indonesian accounting and audit environment

Indonesia is a pertinent context to conduct our investigation several reasons. First of all, Indonesia is one of the emerging countries with the highest economic growth during the last decade. The annual growth rate of real GDP is about 5.9% (Oliver Wyman & Mandiri Institute, 2015). To maintain its growth, the country needs to rely on foreign capital. Foreign ownership is becoming increasingly important in Indonesia. The share of foreign investors in the stock market volume grew from 26.8% in 2008 to 40.58% in 2014, 43.21% in 2015, and 36.89% in 2016 (OJK, 2017). Furthermore, foreign capital from both developed and emerging countries is important in Indonesia. In our sample, the average of foreign ownership from developed countries amounts to 10% of total share capital, while foreign ownership from emerging countries represents 18.5%. Furthermore, foreign board membership, both from developed and emerging countries, is also prevalent in Indonesia. In our sample, the percentage of foreign board members from developed and emerging countries is 17% and 15% for board of directors and 15% and 11% for board of commissioners. Similar to other emerging countries, Indonesian companies are well-known to have issues with weak corporate governance and suffer a reputation of low transparency and disclosure quality (Claessens & Yurtoglu, 2013; Fan & Wong, 2002), weak investor protection (Leuz, Nanda, & Wysocki, 2003) and under-developed capital markets (Biddle & Hilary, 2006). Survey evidence from the Oliver Wyman and Mandiri Institute (2015) reveals that foreign investors are concerned about the lack of investor protection, bankruptcy resolution capabilities and the less-developed financial infrastructure. Hence, if foreign investors and board members from developed and emerging countries have different customs towards corporate governance and

the use of Big4 audit firms, we can expect these differences to be visible in a country like Indonesia.

The Limited Liability Company Law No. 40 of 2007 requires corporate entities to prepare financial statements in accordance with the Indonesian financial accounting standards (SAKs) issued by the Indonesian Financial Accounting Standard Board (DSAK) (IFAC, 2016). By January 1, 2015, at the end of a second phase of the convergence process, the SAKs were substantially aligned with the IASs and IFRSs as they existed in 2014.

The financial reports of the listed companies should be audited¹. The Indonesian Institute of Public Accountants or IAPI regulates public accountants and is legally empowered to set auditing standards (SPAPs) for the public accountancy profession. In 2012, International Standards on Auditing (ISAs) (2010) were adopted. These standards are effective for listed companies for audits of financial statements for periods beginning on or after January, 2013 (IFAC, 2016).

Foreign audit firms can only enter the Indonesian audit market through partnering with a local audit firm. Beside affiliation with international Big4 firms, many local Indonesian audit firms are also affiliated with other international audit firms.

There are several indicators suggesting that there are serious quality issues within the local Indonesian accounting and audit context (Dunakhir, 2016). With few exceptions, most audit firms in Indonesia are relatively small. Many firms are audited by capacity-constrained audit firms (The World Bank, 2010). The local audit firms, due to lack of adequate resources, face challenges in providing high-quality auditing services for entities with complex business transactions. Figures from the World Bank (The World Bank, 2010) show that the majority of OJK registered audit firms have only one registered public accountant. Anecdotal evidence from interviews with

practicing auditors revealed high levels of compliance gaps with respect to audit planning, documentation, related party investigation and fraud detection (The World Bank, 2010). Membership of the Indonesian Institute of Chartered Accountants (IAI) is not mandatory for preparers of financial statements and auditors², and the majority of registered accountants did not apply for IAI membership. Consequently, this majority is excluded from the professional training programs that the IAI organizes, which is not beneficial for quality improvement (The World Bank, 2010).

3.2.2 Board of directors

The Company Law in Indonesia requires firms incorporated under its jurisdiction to follow a two-tier system of board organization that consists of “dewan direksi” (board of directors) and “dewan komisaris” (board of commissioners). The board of directors is responsible for performing managerial duties and is involved in the daily operations of the company while the board of commissioners is liable for monitoring and supervising the board of directors. Both these boards are elected by shareholders, so that both have parallel positions in the organization structure. This two-tier system is expected to clearly separate the management and supervising function as the supervisory board can monitor top management without interfering with management decisions (Piot, 2001).

The appointment of an external audit firm to audit the public listed companies’ financial statements is decided at the shareholders meeting. The board of commissioners, with the help of the audit committee, recommends external audit firms to the shareholders meeting.

3.3 Prior literature review and hypothesis development

The tendency of investors to invest more in the domestic than in the foreign markets relative to what is implied by the standard portfolio theory – the so-called ‘home bias’ – is well documented (e.g. Lewis, 1999). One of the explanations refers to the information asymmetries between foreign and domestic investors: Foreign investors find themselves less informed about a country or a company than domestic investors (Dahlquist & Robertsson, 2001; Lewis, 1999). In emerging markets, the home bias as a result of information asymmetry might even be more severe.

Facing these information asymmetry problems, foreign investors may attach great importance to high-quality external audits as these can serve as monitoring and bonding mechanisms (Becker et al., 1998; Jensen & Meckling, 1976). Prior studies have shown that Big4 audit firms provide high quality audits since they have incentives to maintain their reputation (DeAngelo, 1981) or avoid expensive litigation as a consequence of having “deeper pockets” (Dye, 1993). Empirical evidence supports the idea that Big4 audit firms provide better assurance service to their clients (Francis, 2004) and supply better audits (Choi & Wong, 2007). Choosing Big4 audit firms could be considered as a signal that the owners genuinely commit to accounting transparency (Guedhami et al., 2009).

Foreign owners, who want to reduce information asymmetry and require credible financial statements, may therefore prefer that the local company hires a Big4 audit firms. Prior studies have already documented the relation between foreign ownership and audit choice. Guedhami et al. (2009), using a worldwide sample of privatized firms, document that the higher the percentage of foreign ownership, the more likely the firms are to choose Big4 audit firms. He et al. (2014) exploit the unique setting of B-share stock market in 2001 when the market was opened for

domestic investors. They find that the decrease in foreign ownership caused a significantly decrease of firms audited by Big4 audit firms.

A distinction that has, to our knowledge, not been made in the literature is whether the effect of foreign ownership on the choice for Big4 audit firms differs according to whether foreign owners originate from a developed or an emerging country. Ball et al. (2000) show that differences in institutional context across countries cause a different demand for accounting properties. It is well-known that there are important institutional differences between companies in emerging countries and developed countries. Emerging countries are typically characterized by lower government quality, weak oversight in financial markets and low investor protection (Claessens, Djankov, & Lang, 2000). These institutional differences fundamentally influence business organisations, management behaviour and the culture of corporate governance (Fan, Wei, & Xu, 2011). Companies from developed countries commonly have stronger corporate governance mechanisms compared to companies from emerging countries (Shleifer & Vishny, 1997). Therefore, when investing in emerging countries, which are already characterized by relatively high information asymmetries, foreign investors from developed countries might attach more importance on the assurance from high-quality audit by Big4 audit firms, as compared to foreign investors from emerging countries. This reasoning leads to our first research hypothesis:

H1: The effect of foreign ownership on the choice for a local audit firm affiliated with a Big4 audit firm is more pronounced when the foreign owner originates from a developed versus from an emerging country.

A similar distinction between developed and emerging countries pertains to the origin of foreign board members and their effect of the use of Big4 audit firms. Demand for foreign board members might arise when companies desire to tap into international financial markets (Du, Jian, & Lai, 2017; Giannetti & Simonov, 2006; Oxelheim, Gregoric, Randoy, & Thomsen, 2013). Foreign board members may contribute their expertise and global networks that could lead to better access to foreign resources. Foreign boards members also could be a reflection of existing foreign ownership. As foreign investors become important, the need increases to influence the selection of board members (Oxelheim et al., 2013). Board selection may rely on personal networks and demographic similarities, shared norms and values (Kim & Cannella, 2008). Consequently, foreign owners may prefer to choose board members from their own countries (Oxelheim et al., 2013). We argue that foreign boards members from developed countries will probably attach more value to high quality audit since they are accustomed to an environment with higher standards on corporate governance practice (Oxelheim et al., 2013). Therefore, we expect board members from foreign developed countries to be more likely to use a local audit firm affiliated with a Big4 audit firm as compared to foreign board members from emerging countries. This leads to the following hypothesis:

H2: The effect of foreign board membership on the choice for a local audit firm affiliated with a Big4 audit firm is more pronounced when the foreign board member originates from a developed versus an emerging country.

3.4 Research design

To test our hypotheses, we run the following pooled probit regression consecutively for each of our two research variables of interest; to wit foreign ownership and foreign board membership and where j and t are indexed companies and years respectively:

$$\begin{aligned} \text{BIG4}_{j,t} = & \gamma_0 + \gamma_1 * \text{FOREIGN}_{j,t} + \gamma_2 * \text{OWN}_{j,t} + \gamma_3 * \text{CROSS}_{j,t} + \gamma_4 * \text{STATE}_{j,t} + \gamma_5 * \text{SIZE}_{j,t} \\ & + \gamma_6 * \text{ATURN}_{j,t} + \gamma_7 * \text{CURR}_{j,t} + \gamma_8 * \text{LLEV}_{j,t} + \gamma_9 * \text{LLOSS}_{j,t} + \gamma_{10} * \text{ROA}_{j,t} \\ & + \sum_{i=11}^{17} \gamma_i \text{Industry}_{j,t} + v_{j,t} \quad (1) \end{aligned}$$

BIG4 is a dummy variable indicating whether a company was audited by a local audit firm affiliated with a Big4 audit firm or not. FOREIGN represents our variable of interest, foreign ownership and board membership consecutively. To measure foreign ownership, we create two dummy variables EFSH and DFSH, taking the value of 1 respectively if the largest shareholder is from an emerging foreign country or from a developed foreign country. The base category, with both EFSH and DFSH zero, represents the case where the largest shareholder is Indonesian. For board membership, we apply the same approach. However, since Indonesia knows a two-tier system of board organization that consists of “dewan direksi” (board of directors) and “dewan komisaris” (board of commissioners), we develop and apply consecutively two such measures, one for each board. For the board of directors, we create the dummy variables EFDIR and DFDIR. EFDIR is one when at least one foreigner from an emerging country and no foreigners from developed countries sit in the board of directors, zero otherwise. DFDIR is one if at least at least one foreigner from a developed country sits in the board of directors, zero otherwise. The base

case, with both EDFIR and DFDIR zero, represents the situation where no foreigners are part of the board of directors. For the board of commissioners, we create the variables EFCOM and DFCOM which are defined accordingly.

The variables OWN, CROSS, and STATE are expected to capture the influence of agency conflicts on audit demand. OWN stands for concentrated ownership and is calculated as the percentage of closely held shares, defined by Worldscope as shares held by insiders. Concentrated ownership creates agency conflicts between controlling and minority shareholders (Fan & Wong, 2005). Big4 audit firms can serve as a signal to mitigate agency conflicts especially in a weak legal environment (Choi & Wong, 2007). Fan and Wong (2005) document that high ownership concentration firms are more likely to choose Big4 audit firms. Therefore, we expect a positive coefficient on this variable. CROSS is a dummy variable indicating that a company is cross-listed abroad. Previous literature (Fan & Wong, 2005; Guedhami, Pittman, & Saffar, 2014) suggests that cross-listing may increase the company's choice for a Big4 audit firm. STATE is a dummy variable indicating that a company is state-owned. Chen, Chen, Lobo, and Wang (2011) argue that state-owned companies are less likely to choose high quality auditors since audit quality plays less of a role in constraining earnings management in those companies. Accordingly, we expect a negative sign for this coefficient.

The audit effort is proxied by SIZE, ATURN and CURR. Size is measured as natural logarithm of total assets while ATURN is calculated as proportion of total sales to total assets. SIZE and ATURN proxy for the size and the level of economic activity of the company respectively and are expected to indicate the level of auditors' effort to achieve a sufficient level of assurance (Choi & Wong, 2007; Francis, Maydew, & Sparks, 1999; Piot, 2001; Simunic & Stein, 1996). Following Chaney, Jeter, and Shivakumar (2004), we also include the ratio of current assets to total assets

(CURR) in the regression due to the complexities of inventory and receivables which may require specific audit procedures. We expect a positive coefficient on all three variables.

To control for financial risk, we use LLEV, LLOSS and ROA. LLEV is measured as long term debt scaled by total assets. LLOSS is a dummy variable indicating the occurrence of negative net income before extra items in the previous year. ROA, return on assets of the year, is calculated as net income before extra items scaled by total assets. LLEV and LLOSS are associated with the probability of a client's financial distress which is related to audit risk (Choi & Wong, 2007). Hence, a negative relation is expected. However, LLEV also captures potential agency conflicts. Chaney et al. (2004) argue that highly leveraged firms may prefer to hire high quality auditors to reduce agency costs. Therefore, the direction of LLEV is unclear. The variable ROA captures profitability. Previous studies (Chaney et al., 2004; Guedhami & Pittman, 2011) suggest that auditor choice might be influenced by firm's profitability. We expect a positive relation on ROA.

[Insert Table 3.1 about here]

3.5 Data collection and sampling procedure

All financial data were retrieved from Worldscope. Since Worldscope only provides data on the auditor of the latest year available, we hand-collected the data on the auditors over the years of the study through the ICMD. We also hand-collected ownership data from the ICMD in combination with data from the annual reports. We used the annual reports to identify membership of the board of directors and board of commissioners. We followed the United Nations in classifying developed and emerging countries. The developed countries in our samples are Canada, France, Germany, Japan, the Netherlands, Switzerland, UK, and US while the emerging countries include

British Virgin Islands, Cook Islands, Hong Kong, India, Korea, Malaysia, Mauritius, Philippines, Qatar, Seychelles, Singapore, Thailand, Turkey and United Emirate Arab.

[Insert Table 3.2 about here]

Table 3.2 summarizes our sample selection procedure. We began with the set of non-financial Indonesian listed companies that existed between 2008 to 2016. Initially, we have 2,953 company-year observations. From the initial sample, we excluded companies that experienced an asset growth rate of more than 100 percent in any year (69 company-years), as the latter is an indication of significant restructuring activities (Duchin, Ozbas, & Sensoy, 2010). Further, to guarantee independent observations, we excluded subsidiary companies when the parent company was also included in our sample (164 company-years). Finally, we dropped 342 company-years for which there were missing values. Our final sample consists of 2,378 company-years over the 2008-2016 period. Table 3.3 provides a breakdown of the sample by year and industry. Comparing our sample with the initial sample, there appear to be no major problems with respect to over- or underrepresentation of certain years or sectors.

[Insert Table 3.3 about here]

3.6 Empirical result

3.6.1 Descriptive statistic

Table 3.4 presents the descriptive statistics of the variables. We winsorized all continuous variables at the 1st and 99th percentiles. From the table, we can infer that the percentage of audits that were performed by Big4 audit firms is around 38%. The number of companies using Big4

audit firms in Indonesia is relatively low compared to other countries. Francis, Michas, and Seavey (2013), for example, report that the percentages of firms audited by Big4 audit firms for the United States, Australia, the United Kingdom, Singapore and Malaysia are 61%, 71%, 50%, 72% and 53% respectively.

18.5% (9.8%) of the companies in our sample have a largest shareholder from an emerging (developed) foreign country. Accordingly, 71.7% of the companies have a local largest shareholder. The percentage for foreign directors from an emerging country without a foreigner from a developed country is 15.1%. 17.5% of the boards of directors count at least one foreigner from a developed country. Accordingly, 67.4% have no foreign members in the board or directors. The percentage of the boards of commissioners with at least one foreign member from an emerging country, but no members from developed countries is 11.3%. 15.5% of the companies have at least one foreigner from a developed country. 73.2% of the boards of commissioners only consist of local members.

[Insert Table 3.4 about here]

The Pearson and Spearman correlations are presented in Table 3.5. BIG4 is positively related to DFSH, EFDIR, DFDIR, EFCOM and DFCOM. All the control variables, except long term debt and the proportion of current assets to total assets, are correlated with BIG4.

[Insert Table 3.5 about here]

3.6.2 Regression result

Table 3.6 presents the results of our consecutive regressions on the relation between foreign ownership, foreign directors and foreign commissioners respectively and the choice of Big4 audit firms. We estimate our regression using pooled probit regression with industry dummies. Our control variables behave as expected. The coefficients of OWN, SIZE, ATURN, and ROA are significantly positive. The negative coefficient of LLEV is significant at the conventional level.

Regarding our variables of interest, our hypothesis on the effect of foreign ownership is confirmed. The regression coefficient of EFSH is not significant: Having the largest shareholder from an emerging foreign country (EFSH) does not increase the probability of choosing a local audit firm affiliated with a Big4 audit firm as compared to the base case where the largest shareholder is local. On the other hand, the coefficient of DFSH is statistically significant and positive: a largest shareholder from a developed foreign country increases the probability of choosing a local audit firm affiliated with a Big4 audit firm significantly. The p-value of the Chi-square statistic on the difference between the coefficients of EFSH and DFSH is 8.2 ($p < \chi^2_{0.0042}$) while between the coefficient of EFSH and the base level is not significant. The economic significance of the effect of a foreign largest shareholder from a developed country is an increase of 43.0 percentage points of choosing local audit firms affiliated with a Big4 audit firm compared to the base case of a local largest shareholder.

Considering the effect of foreign membership of board of directors, we also see our hypothesis confirmed. While foreign membership from emerging countries weakly increase the probability of choosing local audit firms affiliated with a Big4 audit firm, there is a significant positive effect of foreign membership from developed countries. The p-value of the Chi-square statistic on the difference between the coefficients of EFDIR and DFDIR are 0.057 and 3.61 respectively, and

between EFDIR and base level are 0.07 and 3.28. The effect of a foreign director from a developed country is economically significant: compared to a board of directors with no foreigners, inclusion of at least one foreigner from a developed market increases the probability of a Big4 audit firm with 30.7 percentage points.

With respect to boards of commissioners, the difference between of effect of foreign board members from developing and emerging countries is less outspoken: both the coefficients of EFCOM and DFCOM are significant (although the significance for EFCOM is lower). The p-value of the Chi-square statistic on the difference between the coefficients of EFCOM and DFCOM are 0.1024 and 2.67. However, the difference of foreign members of commissioners (EFCOM and DFCOM) and the base level is significant. The Chi-square statistics on the difference between EFCOM and base level is 3.72 (p-value 0.0538) and between DFCOM and the base level is 17.54 (p-value 0.000). The economic effect from moving from the base case with no foreign members of commissioners to including a foreign member is an increase of probability of BIG4 with 15.7 percentage points for emerging and 33.1 percentage points for developed countries. Overall, our results support the argument that foreign investors and board members especially from developed countries attach more value for high quality audit and they perceive local audit firms affiliated with a Big4 audit firm as being higher quality than other audit firms.

3.7 Conclusions

Using data from Indonesia, a typical emerging country characterized by weak governance and high information asymmetry, this paper provides evidence that foreign ownership and foreign board membership have a different impact on the probability of appointing a Big4 audit firm depending on whether the foreign involvement originates from a developed or an emerging

country. Moreover the effect of foreign involvement from developed countries is more pronounced for foreign ownership than board membership, and is more pronounced for membership of board of directors than for membership of the board of supervisors. These findings are consistent with the argument that foreign investors and board members from developed countries are accustomed to and demand higher-quality corporate governance systems and more financial transparency than those from emerging countries and that companies in Indonesia respond to this demand by appointing a Big4 audit firm. Previous research has shown that external audits by Big4 audit firms are associated with higher quality of financial reports, implying that in an emerging country like Indonesia, foreign involvement from developed countries may reduce information asymmetry.

While previous research has already documented the relationship between foreign involvement and the appointment of Big4 audit firms, our study is, to the best of our knowledge, the first to provide evidence that the origin of the foreign involvement, i.e. from developed versus from other emerging countries, makes a difference and that there is a differential effect of foreign involvement through ownership versus through board membership.

Our findings may be relevant to companies and regulators in emerging markets as they show that especially foreign involvement from *developed* countries may reduce information asymmetry hereby increasing the chances of access to foreign capital necessary to sustain economic growth.

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Notes

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- ¹ The requirement of audited financial statements are regulated in the Limited Liability Company Law and the Capital Market Law.
- ² The membership of the professional association is not mandatory until the issuance of Ministry of Finance regulation No. 25/PMK.01/2014 about State Registered Accountant in 2014 (for chartered accountant) and until the issuance of Public Accountant Law in 2011 (for public accountant).

Tables

Table 3. 1 Variable definitions

| Variable | Definition |
|-----------------------|---|
| BIG4 | : Dummy variable taking the value of 1 if the company was audited by a local audit firm affiliated with a Big4 audit firm and 0 otherwise |
| Foreign ownership | |
| EFSH | : Dummy variable taking the value of 1 if the largest shareholder is from an emerging foreign country and 0 otherwise |
| DFSH | : Dummy variable taking the value of 1 if the largest shareholder is from a developed foreign country and 0 otherwise |
| Foreign directors | |
| EFDIR | : Dummy variable taking the value of 1 if at least one foreigner from an emerging country and no foreigners from developed countries sit in the board of directors and 0 otherwise. |
| DFDIR | : Dummy variable taking the value of 1 if at least one foreigner from a developed country sits in the board of directors and 0 otherwise. |
| Foreign commissioners | |
| EFCOM | : Dummy variable taking the value of 1 if at least one foreigner from an emerging country and no foreigners from developed countries sit in the board of commissioners and 0 otherwise. |
| DFCOM | : Dummy variable taking the value of 1 if at least one foreigner from a developed country sits in the board of commissioners and 0 otherwise. |
| OWN | : Percentage of closely held shares. |
| CROSS | : Dummy variable taking the value of 1 if the company is cross-listed, and 0 otherwise |
| STATE | : Dummy variable taking the value of 1 if a company is state-owned and 0 otherwise |
| SIZE | : The natural log of total assets |
| ATURN | : Asset turnover; total sales/total assets |
| CURR | : Current assets/total assets |
| LLEV | : Long term debt/total assets |

Table 3.1 (continued)

| Variable | Definition |
|-----------------|---|
| LLOSS | : Dummy variable taking the value of 1 if the company experienced negative net income before extra items in the prior year, and 0 otherwise |
| ROA | : Return on assets; net income before extra items scaled by total assets. |
| Industry dummy | : Dummy variable taking the value of 1 for the industry/sector code (ICB on Datastream) sections of interest and 0 otherwise |

Table 3. 2: Sample selection method

| | drop | company-years |
|--|-------|---------------|
| Initial sample* | | 2,953 |
| Companies that had total assets growth >100% | (69) | |
| Subsidiary companies | (164) | |
| Companies with missing values variables | (342) | |
| Final sample | | 2,378 |

* Initial sample of all Indonesian listed *non-financial* companies over the 2008-2016 period

Table 3. 3: Sample breakdown by year and industry

| Panel A: by year | Sample | | initial sample* | | % Final sample to initial sample |
|------------------|--------|-------|-----------------|-------|----------------------------------|
| | # | % | # | % | |
| 2008 | 203 | 8.54 | 274 | 9.28 | 74.09 |
| 2009 | 209 | 8.79 | 280 | 9.48 | 74.64 |
| 2010 | 218 | 9.17 | 297 | 10.06 | 73.40 |
| 2011 | 261 | 10.98 | 313 | 10.60 | 83.39 |
| 2012 | 269 | 11.31 | 329 | 11.14 | 81.76 |
| 2013 | 292 | 12.28 | 349 | 11.82 | 83.67 |
| 2014 | 312 | 13.12 | 361 | 12.22 | 86.43 |
| 2015 | 321 | 13.50 | 370 | 12.53 | 86.76 |
| 2016 | 293 | 12.32 | 380 | 12.87 | 77.11 |
| Total | 2,378 | 100 | 2,953 | 100 | |

| Panel B: by industry | Sample | | Initial sample* | | % Final sample to initial sample |
|----------------------|--------------|------------|-----------------|------------|----------------------------------|
| | # | % | # | % | |
| Basic materials | 532 | 22.37 | 637 | 21.57 | 83.52 |
| Consumer goods | 649 | 27.29 | 778 | 26.35 | 83.42 |
| Consumer services | 372 | 15.64 | 517 | 17.51 | 71.95 |
| Health care | 91 | 3.83 | 107 | 3.62 | 85.05 |
| Industrials | 521 | 21.91 | 636 | 21.54 | 81.92 |
| Oil & gas | 55 | 2.31 | 67 | 2.27 | 82.09 |
| Technology | 85 | 3.57 | 127 | 4.30 | 66.93 |
| Telecommunication | 57 | 2.40 | 66 | 2.24 | 86.36 |
| Utilities | 16 | 0.67 | 18 | 0.61 | 88.89 |
| Total | 2,378 | 100 | 2,953 | 100 | |

* Initial sample of all Indonesian listed *non-financial* companies over the 2008-2016 period

**Industry groups are based on the Industry Classification Benchmark (ICB) universe retrieved from Worldscope/Datastream

Table 3. 4: Descriptive statistics

| | Mean | SD | p10 | Median | p90 | min | max |
|--------------|-------------|-----------|------------|---------------|------------|------------|------------|
| BIG4 | 0.384 | 0.486 | 0 | 0 | 1 | 0 | 1 |
| EFSH | 0.185 | 0.388 | 0 | 0 | 1 | 0 | 1 |
| DFSH | 0.098 | 0.298 | 0 | 0 | 0 | 0 | 1 |
| EFDIR | 0.151 | 0.359 | 0 | 0 | 1 | 0 | 1 |
| DFDIR | 0.175 | 0.380 | 0 | 0 | 1 | 0 | 1 |
| EFCOM | 0.113 | 0.316 | 0 | 0 | 1 | 0 | 1 |
| DFCOM | 0.155 | 0.362 | 0 | 0 | 1 | 0 | 1 |
| OWN | 0.689 | 0.199 | 0.435 | 0.719 | 0.921 | 0 | 1 |
| CROSS | 0.401 | 0.490 | 0 | 0 | 1 | 0 | 1 |
| STATE | 0.056 | 0.230 | 0 | 0 | 0 | 0 | 1 |
| SIZE | 21.238 | 1.723 | 18.981 | 21.246 | 23.560 | 17.258 | 24.791 |
| ATURN | 0.994 | 0.742 | 0.186 | 0.847 | 1.970 | 0.035 | 3.335 |
| CURR | 0.487 | 0.241 | 0.151 | 0.481 | 0.816 | 0.054 | 0.937 |
| LLEV | 0.135 | 0.169 | 0 | 0.066 | 0.377 | 0 | 0.705 |
| LLOSS | 0.205 | 0.404 | 0 | 0 | 1 | 0 | 1 |
| ROA | 0.036 | 0.100 | -0.066 | 0.032 | 0.143 | -0.273 | 0.324 |
| N | 2,378 | | | | | | |

For variable definitions: see Table 1.

Table 3. 5 : Pearson and Spearman correlation

| | BIG4 | EFSH | DFSH | EFDIR | DFDIR | EFCOM | DFCOM | OWN | CROSS | STATE | SIZE | ATURN | CURR | LLEV | LLOSS | ROA |
|--------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|------------|--------------|--------------|-------------|--------------|-------------|-------------|--------------|------------|
| BIG4 | 1 | 0.018 | 0.2966 | 0.0863 | 0.3113 | 0.0768 | 0.3125 | 0.0767 | 0.2331 | 0.0788 | 0.4265 | 0.1417 | -0.0193 | 0.0037 | -0.0971 | 0.2176 |
| | | | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | | | *** | *** |
| EFSH | 0.018 | 1 | -0.1574 | 0.2671 | -0.0308 | 0.2514 | 0.0896 | 0.0625 | -0.0317 | -0.0783 | -0.0398 | 0.0337 | -0.0243 | -0.0166 | 0.0502 | 0.0008 |
| | | | *** | *** | | *** | *** | *** | | *** | * | | | | ** | |
| DFSH | 0.2966 | -0.1574 | 1 | -0.0686 | 0.5251 | -0.0686 | 0.5652 | 0.2096 | -0.0339 | -0.0804 | 0.0948 | 0.1559 | 0.0867 | -0.1445 | -0.035 | 0.1554 |
| | *** | *** | | *** | *** | *** | *** | *** | * | *** | *** | *** | *** | *** | * | *** |
| EFDIR | 0.0863 | 0.2671 | -0.0686 | 1 | -0.1942 | 0.3726 | 0.0042 | 0.0406 | 0.0616 | -0.0977 | 0.0714 | 0.0098 | -0.0295 | -0.0094 | 0.0062 | 0.0046 |
| | *** | *** | *** | | *** | *** | | ** | *** | *** | *** | | | | | |
| DFDIR | 0.3113 | -0.0308 | 0.5251 | -0.1942 | 1 | -0.0412 | 0.5477 | 0.0599 | 0.092 | -0.0782 | 0.226 | 0.072 | 0.0052 | -0.01 | -0.0334 | 0.1062 |
| | *** | | *** | *** | | ** | *** | *** | *** | *** | *** | *** | *** | | | *** |
| EFCOM | 0.0768 | 0.2514 | -0.0686 | 0.3726 | -0.0412 | 1 | -0.1525 | 0.0451 | 0.0043 | -0.0867 | 0.0042 | 0.0009 | -0.0362 | -0.0734 | -0.0329 | 0.0548 |
| | *** | *** | *** | *** | ** | | *** | ** | | *** | | | * | *** | | *** |
| DFCOM | 0.3125 | 0.0896 | 0.5652 | 0.0042 | 0.5477 | -0.1525 | 1 | 0.1008 | 0.0368 | -0.0637 | 0.2034 | 0.1068 | 0.0707 | -0.0567 | -0.0332 | 0.1384 |
| | *** | *** | *** | | *** | *** | | *** | * | *** | *** | *** | *** | *** | *** | *** |
| OWN | 0.0922 | 0.0307 | 0.1704 | 0.0269 | 0.0386 | 0.028 | 0.0789 | 1 | -0.259 | -0.0363 | -0.1576 | 0.1461 | 0.048 | -0.1732 | -0.0564 | 0.0984 |
| | *** | | *** | | * | | *** | | *** | * | *** | *** | ** | *** | *** | *** |
| CROSS | 0.2331 | -0.0317 | -0.0339 | 0.0616 | 0.092 | 0.0043 | 0.0368 | -0.2297 | 1 | 0.2416 | 0.5485 | -0.1115 | -0.0746 | 0.1742 | -0.082 | 0.1003 |
| | *** | | * | *** | *** | | * | *** | | *** | *** | *** | *** | *** | *** | *** |
| STATE | 0.0788 | -0.0783 | -0.0804 | -0.0977 | -0.0782 | -0.0867 | -0.0637 | -0.0025 | 0.2416 | 1 | 0.275 | -0.0162 | 0.0622 | 0.0064 | -0.0829 | 0.1113 |
| | *** | *** | *** | *** | *** | *** | *** | | *** | | *** | | *** | | *** | *** |
| SIZE | 0.4207 | -0.0229 | 0.1025 | 0.0692 | 0.2305 | 0.0037 | 0.2222 | -0.1291 | 0.5421 | 0.2829 | 1 | -0.1705 | -0.2449 | 0.3769 | -0.105 | 0.1271 |
| | *** | | *** | *** | *** | | *** | *** | *** | *** | | *** | *** | *** | *** | *** |
| ATURN | 0.1241 | 0.0566 | 0.1335 | 0.0285 | 0.0446 | -0.0042 | 0.0732 | 0.1178 | -0.1439 | -0.046 | -0.1775 | 1 | 0.5976 | -0.3302 | -0.2732 | 0.3714 |
| | *** | *** | *** | | ** | | *** | *** | *** | ** | *** | | *** | *** | *** | *** |
| CURR | -0.0173 | -0.0191 | 0.0849 | -0.0248 | 0.0019 | -0.033 | 0.0678 | 0.0585 | -0.0733 | 0.0651 | -0.225 | 0.5481 | 1 | -0.5055 | -0.2372 | 0.2783 |
| | | | *** | | | | *** | *** | *** | *** | *** | *** | | *** | *** | *** |

Table 3.5 (continued)

| | BIG4 | EFSH | DFSH | EFDIR | DFDIR | EFCOM | DFCOM | OWN | CROSS | STATE | SIZE | ATURN | CURR | LLEV | LLOSS | ROA |
|--------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|------------|--------------|--------------|-------------|--------------|-------------|-------------|--------------|------------|
| LLEV | 0.0026 | 0.0052 | -0.0964 | -0.0146 | 0.0342 | -0.0495 | -0.0095 | -0.1373 | 0.1313 | -0.0225 | 0.2812 | -0.2814 | -0.4657 | 1 | 0.1276 | -0.2263 |
| | | | *** | | * | ** | | *** | *** | | *** | *** | *** | | *** | *** |
| LLOSS | -0.0971 | 0.0502 | -0.035 | 0.0062 | -0.0334 | -0.0329 | -0.0332 | -0.0788 | -0.082 | -0.0829 | -0.1235 | -0.2212 | -0.2361 | 0.2088 | 1 | -0.4547 |
| | *** | ** | * | | | | | *** | *** | *** | *** | *** | *** | *** | | *** |
| ROA | 0.2365 | -0.0068 | 0.1831 | 0.0158 | 0.1337 | 0.0292 | 0.1735 | 0.116 | 0.0814 | 0.0955 | 0.1485 | 0.2701 | 0.2444 | -0.227 | -0.4238 | 1 |
| | *** | | *** | | *** | | *** | *** | *** | *** | *** | *** | *** | *** | *** | |

Pearson and Spearman correlations are reported below above the diagonal respectively.

N = 2,378. For variable definitions: see Table 1.

*, **, *** denote statistical significance at 10% , 5% and 1% level respectively

Table 3. 6: Regression result

| | Expected | (1) | | (2) | | (3) | |
|----------|----------|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|
| | Sign | BIG4 | Marginal effects | BIG4 | Marginal effects | BIG4 | Marginal Effects |
| CONSTANT | | -10.403 (6.68)*** | | -10.172 (6.71)*** | | -10.141 (6.35)*** | |
| EFSH | (+) | 0.183 (0.97) | 0.066 (0.95) | | | | |
| DFSH | (+) | 1.137 (3.75)*** | 0.430 (4.25)*** | | | | |
| EFDIR | (+) | | | 0.353 (1.81)* | 0.129 (1.75)* | | |
| DFDIR | (+) | | | 0.803 (4.08)*** | 0.307 (4.11)*** | | |
| EFCOM | (+) | | | | | 0.423 (1.93)* | 0.157 (1.85)* |
| DFCOM | (+) | | | | | 0.863 (4.19)*** | 0.331 (4.27)*** |
| OWN | (+) | 0.922 (2.75)*** | 0.341 (2.76)*** | 1.033 (3.02)*** | 0.381 (3.04)*** | 1.032 (3.05)*** | 0.381 (3.06)*** |
| CROSS | (+) | 0.215 (1.17) | 0.079 (1.17) | 0.123 (0.67) | 0.045 (0.67) | 0.202 (1.10) | 0.074 (1.1) |
| STATE | (-) | -0.293 (0.95) | -0.108 (0.95) | -0.157 (0.50) | -0.058 (0.5) | -0.212 (0.68) | -0.078 (0.68) |
| SIZE | (+) | 0.436 (6.02)*** | 0.161 (6.07)*** | 0.420 (5.94)*** | 0.155 (5.98)*** | 0.418 (5.63)*** | 0.154 (5.67)*** |
| ATURN | (+) | 0.384 (3.15)*** | 0.142 (3.17)** | 0.386 (3.18)*** | 0.143 (3.19)** | 0.409 (3.40)*** | 0.151 (3.42)** |

Table 3.6 (continued)

| | Expected Sign | (1) | | (2) | | (3) | |
|---------------------|------------------|--------------------|---------------------|--------------------|---------------------|--------------------|---------------------|
| | | BIG4 | Marginal effects | BIG4 | Marginal effects | BIG4 | Marginal Effects |
| CURR | (+) | -0.593 (1.60) | -0.219 (1.61) | -0.551 (1.49) | -0.203 (1.49) | -0.630 (1.73)* | -0.233 (1.74)* |
| LLEV | (±) | -0.836 (1.92)* | -0.309 (1.92)* | -0.882 (2.04)** | -0.325 (2.04)** | -0.817 (1.91)* | -0.302 (1.9)* |
| LLOSS | (-) | 0.148 (1.18) | 0.055 1.17 | 0.195 (1.56) | 0.072 (1.55) | 0.174 (1.42) | 0.064 (1.41) |
| ROA | (+) | 2.182 (3.69)*** | 0.807 (3.74)*** | 2.200 (3.86)*** | 0.811 (3.94)*** | 2.021 (3.59)*** | 0.746 (3.65)*** |
| Industry dummies | | YES | | YES | | YES | |
| Pseudo R2 | | 0.274 | | 0.271 | | 0.2729 | |
| N | | 2,378 | | 2,378 | | 2,378 | |

For variable definitions: see Table 1.

*, **, *** denote statistical significance at 10% , 5% and 1% level respectively

CHAPTER 4:

AUDITOR CHOICE AND CAPITAL STRUCTURE: EVIDENCE FROM INDONESIA‡

‡ The work in this chapter is co-authored by Philippe Van Cauwenberge and Heidi Vander Bauwhede. The authors gratefully acknowledge the valuable comments of Annelies Roggeman as discussant and the participants at the 2018 FEB Research Day held by Faculty of Economics and Business, Ghent University.

Abstract

This paper investigates for a set of listed companies in an emerging country, i.e. Indonesia, whether the choice for local audit firms affiliated with a Big4 audit firm affects the capital structure. Explicitly taking into account the potential for auditor choice selection bias we document that companies audited by local audit firms affiliated with a Big4 audit firm display lower debt ratios than those audited by local audit firms affiliated with non-Big4 audit firms. To the best of our knowledge, this study is the first to provide evidence from an emerging country that is consistent with the idea that reduced information asymmetry through appointment of high quality auditors affects the capital structure. For companies in emerging countries, access to external capital is important for facilitating growth but is often hindered by severe information asymmetry. Our results indicate that the appointment of a local audit firm affiliated with a Big4 audit firm might be useful to alleviate these problems.

4.1 Introduction

Access to finance is an important prerequisite for companies to grow (Ayyagari, Demirguc-Kunt, & Maksimovic, 2008; Demirguc-Kunt & Maksimovic, 1998). The pecking order theory argues that because of information asymmetry, companies will be financed using internal financing first, and when external financing is needed, debt financing will be preferred over equity financing (Myers & Majluf, 1984). Since information asymmetry is central in this theory, the degree of information asymmetry might influence companies' financing choices (Bharath, Pasquariello, & Wu, 2009; Petacchi, 2015). Previous literature has shown that one of the mechanisms to reduce information asymmetry is the appointment of high quality – most often Big4 – auditors, as these are expected to increase the credibility of the financial statements (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; Choi & Wong, 2007; Fan & Wong, 2005; Jensen & Meckling, 1976; Watts & Zimmerman, 1983). Therefore, one could expect that auditor choice affects the relative attractiveness of debt as a financing means and influences the debt-equity mix (Chang, Dasgupta, & Hilary, 2009). The basic intuition is the following: given that debt offers more protection than capital to the providers of finance, debt is – compared to equity – less sensitive to problems of information asymmetry. Accordingly, one might expect that hiring a Big4 auditor lowers, through its effect on information asymmetry, the optimal debt ratio.

Previous research has already provided evidence consistent with this idea (Chang et al., 2009). However, these studies were conducted in developed countries. While some of the capital structure theories tested in developed markets are transferable to emerging countries, specific institutional features which characterize emerging countries might require country-specific evidence (Booth, Aivazian, Demirguc-Kunt, and Maksimovic (2001). For instance, one argument to expect higher quality from Big4 auditors relies on the higher risks and costs of litigation facing

Big4 firms (L. E. DeAngelo, 1981; Dye, 1993). The question whether this theory also holds in an environment of low litigation, which characterizes most emerging countries, is an empirical matter. To the best of our knowledge, there exist no studies that have empirically investigated the relation between auditor choice and capital structure in emerging countries.

From a pragmatic point of view, the issue of information asymmetry, its effect on the finance structure and the role of auditors therein is especially pertinent for emerging countries as these suffer a reputation of low transparency and inferior disclosure quality (Claessens & Yurtoglu, 2013; Fan & Wong, 2002) coupled with weak investor protection (Leuz, Nanda, & Wysocki, 2003). Moreover, unlike most companies from developed countries which have diffuse ownership, companies in emerging countries are characterized by highly concentrated family ownership (Claessens, Djankov, & Lang, 2000; Claessens & Yurtoglu, 2013). Given that companies in emerging countries are relatively more dependent on external funds to boost their economic growth (Atkins & Glen, 1992), the relatively high information asymmetry is a restriction with potentially material negative consequences for the development of companies and the country as a whole.

We test our hypothesis on a sample of Indonesian listed companies between 2008 and 2015 and regress consecutive measures of the debt ratio on a dummy variable representing audit by Big4 audit firms and a set of control variables. We take into account potential endogeneity concerns arising from self-selection. Prior research has argued that the auditor choice by companies is non-random and related to company-characteristics but also that audit firms themselves decide whether they will accept or reject clients (Eshleman & Guo, 2014). Big4 firms might avoid low-quality or high-risk clients (DeFond, Erkens, & Zhang, 2017; Johnstone, 2000; Johnstone & Bedard, 2004) to minimize litigation risk. Accordingly, potential clients with significant risk of financial distress

as a result of high leverage might be avoided by Big4 audit firms. The endogenous nature of auditor choice may render standard linear regression inappropriate resulting in inconsistent coefficient estimates (Heckman, 1976, 1978). In order to control for this problem, we estimate a “Heckman treatment effect” regression which is a Heckman selection model (Heckman, 1979) estimated using the full maximum likelihood method (Greene, 2000; Maddala, 1983). In a first instance, we model auditor choice as a function of firm-specific variables that have been shown in previous literature (Chaney, Jeter, & Shivakumar, 2004; Choi & Wong, 2007; Fan & Wong, 2005; Guedhami, Pittman, & Saffar, 2014) and those that reflect the unique features of Indonesian setting that are important determinants of auditor choice, i.e. foreign ownership from emerging countries, foreign ownership from developed countries, closely held shares, cross-listing, whether or not the company is owned by the state, company size, assets turnover, the proportion of current to total assets, long term leverage, loss occurrence in the previous year and return on assets. In our main regressions, we consecutively regress several debt ratios on a dummy variable representing whether the auditor was a Big4 audit firm, together with a set of control variables as suggested by prior studies (Booth et al., 2001; J. Z. Chen, Lim, & Lobo, 2016; Rajan & Zingales, 1995) (company size, return on assets, industry median leverage, growth and investment opportunities, stock return, tangible assets, debt-tax and non-debt-tax shield, and the volatility of return on assets). Our findings first of all show that the endogeneity problem is indeed a relevant concern in our sample as our Wald test result on the test whether there is correlation on the error term between our main regression and auditor selection regression is significantly rejected. Taking into account the endogeneity problem using the treatment regression, we find that the evidence is consistent with our hypothesis: appointment of local audit firms affiliated with a Big4 audit firm significantly negatively affects all of our leverage measures. The implication is that, even in a low

litigation environment like Indonesia, the observed finance patterns are consistent with the idea that Big4 audit firms increase the quality of the financial reports.

This study contributes to the empirical literature on the link between information asymmetry and companies' capital structure in emerging countries through investigating the appointment of Big4 audit firms as a mechanism to reduce information asymmetry. For emerging countries, where external capital is important but achieving an optimal financial mix is often hindered by severe information asymmetry, our results might be of interest of policy makers, as well as managers and financial stakeholders. Indonesia provides a pertinent context for this research. First of all, Indonesia is one of the emerging countries with the highest economic growth. For instance, during the period 2004 to 2014, the annual growth rate of real GDP was about 5.9% (Oliver Wyman & Mandiri Institute, 2015). To maintain this growth, the Indonesian companies rely heavily on external financing, hence the choice among external financing instruments is a matter of material importance. Secondly, similar to other emerging countries, in Indonesia, severe information asymmetries often hamper the access to finance. The major causes of information asymmetry in Indonesia – and also other East Asian countries – is highly concentrated ownership (Claessens et al., 2000; Fan & Wong, 2002). In addition, Indonesia suffers a reputation of low transparency and disclosure quality (Claessens & Yurtoglu, 2013; Fan & Wong, 2002) and weak investor protection (Leuz et al., 2003). In such an environment the potential impact of auditor choice on financing access and hence economic growth might be economically very important and worthwhile of study.

The remainder of this paper is organized as follows. In the following section, we provide a literature review and develop our hypothesis. Then, we describe the Indonesian background

including its accounting and audit environment. Next, we describe our research design and data collection procedure. Afterwards, we present our empirical findings. The last section concludes.

4.2 Prior literature review and hypothesis development

Central in the pecking order theory is that information asymmetry drives a hierarchical financing strategy: a company will prefer internal financing, and when external financing is needed, debt financing is preferred over equity financing (Myers & Majluf, 1984). Debt is less information-sensitive because by issuing debt, companies offer pre-commitment that serves as a protective mechanism for the holders such as interest and principal payments, debt covenants and the possibility to force liquidation (Grossman & Hart, 1982). Equity would be the finance source of last resort as it is the most sensitive to information asymmetry. Consequently, firms characterized by higher information asymmetry would be relatively more likely to choose debt financing over equity, demonstrating higher leverage ratios. There exists already empirical evidence – mainly from the US – consistent with this idea (Bharath et al., 2009; Petacchi, 2015).

One particular mechanism to reduce information asymmetry is by appointing a high quality external auditor. Previous research has argued (Jensen & Meckling, 1976) and documented (Watts & Zimmerman, 1983) that an external audit can enhance the credibility of financial statements thereby mitigating information asymmetry problems. Especially Big4 audit firms might be helpful in enhancing the credibility of financial statements (Becker et al., 1998; Choi & Wong, 2007; Fan & Wong, 2005) as it is argued that they provide higher-quality external audit services in order to maintain their valuable reputation (L. E. DeAngelo, 1981) or to avoid expensive litigation as a consequence having “deeper pockets” (Dye, 1993). Companies hiring Big4 audit firms would therefore be relatively more inclined to finance with equity over debt, and would thus display

lower leverage ratios. For the US, Chang et al. (2009) already provided evidence of a negative relation between audit quality and the debt ratio.

Previous research has shown that in emerging countries external financing is relatively more important than internal financing (Atkins & Glen, 1992). However, compared to the knowledge on the effect of information asymmetry on firms capital structure in developed countries, much less is known about this relation in emerging countries. Booth et al. (2001) find that, although some of the insights in capital structure theory in developed countries can be applied in emerging countries, different institutional features may cause different financing patterns. Therefore we find it worthwhile to empirically test the following hypothesis in the context of an emerging country like Indonesia:

H: Companies audited by local audit firms affiliated with a Big4 audit firm display lower leverage ratios than those audited by other audit firms.

4.3 Institutional background

The Indonesian capital markets, both for equity and debt, are relatively under-developed (Biddle & Hilary, 2006). In 2014, the market capitalization of listed domestic companies in percentage of GDP was 47% (The World Bank, 2016) and the number of companies listed is 506 (IDX, 2016). The public debt market in Indonesia is dominated by government bonds, which represent 70% of the funds raised, corporate bonds representing only 30% (IDX & IBPA, 2014). Bond market liquidity is generally quit low (Oliver Wyman & Mandiri Institute, 2015). The number of companies with listed corporate bonds in 2014 is 102 (IDX, 2016). Debt financing, through bank loans, is an important financial source (Oliver Wyman & Mandiri Institute, 2015). In 2014, bank loan funding amounted to about 58% of total corporate funding in Indonesia (Oliver Wyman &

Mandiri Institute, 2015). For our sample of listed firms, the average total debt ratio is about 32% using the market value of equity and 37% using the book value of equity while the average long term debt ratio is 23% and 25.5% respectively.

The Limited Liability Company Law No. 40 of 2007 requires corporate entities to prepare financial statements in accordance with the Indonesian financial accounting standards (SAKs) issued by the Indonesian Financial Accounting Standard Board (DSAK) of the Institute of Indonesia Chartered Accountants (IAI) (IFAC, 2016).

The financial reports of publicly listed companies should be audited¹. The Indonesian Institute of Public Accountants or IAPI regulates public accountants and is legally empowered to set auditing standards (SPAPs) for the public accountancy profession.

To pursue an audit profession career, there are several conditions that need to be fulfilled. First, a university graduate should pass the Professional Accounting Education Program (PPAk)² to obtain the title of accountant and should register in the Ministry of Finance (MoF). Next, a registered accountant has to obtain a license from the MoF to practice as an auditor but can only do so once certain minimum requirements are satisfied. These requirements are that the accountant has passed the CPA exam held by IAPI, has sufficient audit experience, is a member of a professional association, is domiciled in Indonesia, and has a tax identification number. An auditor can open an audit office or join an existing audit office. To open an audit office, several requirements have to be met: a license from the MoF, an office located in Indonesia, the application of a quality-control system and the employment at least two employees who have adequate knowledge of accountancy³. To provide professional audit services to listed firms in the Indonesian capital markets, an auditor must also be registered with OJK, an independent institution that has the authority to regulate and supervise the financial service sector in Indonesia. In 2010, there were

424 MoF-registered audit firms which are eligible to perform assurance service in Indonesia. 168 of them are eligible to perform audit service to listed companies (The World Bank, 2010a).

There are several indicators suggesting that there are serious quality issues within the local Indonesian accounting and audit context (Dunakhir, 2016). With few exceptions, most accounting firms in Indonesia are relatively small. Many firms are audited by capacity-constrained accounting firms (The World Bank, 2010a). The local accounting firms, due to lack of adequate resources, face challenges in providing high-quality auditing services for entities with complex business transactions. Figures from the World Bank (The World Bank, 2010a) show that the majority of OJK registered audit firms have only one registered public accountant. Anecdotal evidence from interviews with practicing auditors revealed high levels of compliance gaps with respect to audit planning, documentation, related party investigation and fraud detection (The World Bank, 2010a). Membership of the IAI is not mandatory for preparers of financial statements and auditors⁴ and the majority of registered accountants did not apply for IAI membership. Consequently, this majority is excluded from the professional training programs that the IAI organizes, which is not beneficial for quality improvement (The World Bank, 2010a).

Foreign audit firms can only enter the Indonesian audit market through partnering with a local audit firm. Beside affiliation with international Big4 firms, many local Indonesian audit firms are also affiliated with other international audit firms.

Furthermore, in many emerging markets, regulations are not fully enforced (Ball, 2001; Chan & Hameed, 2006). This is also the case in the Indonesian audit environment. Cases where companies, shareholders or third parties sue public accounting firms are very rare. This is assumed to be the result of costly and time consuming courts processes, lack of experienced judges and laws and regulations that are perceived to be ambiguous (The World Bank, 2010b). Brown,

Preiato, and Tarca (2014) classified countries based on their audit environment and accounting enforcement and ranked Indonesia as 46th of 51 countries.

4.4 Research design

To test our hypothesis we basically ran consecutive regressions of a set of debt ratio's on a dummy indicating whether a company was audited by a local audit firm affiliated with a Big4 or not and a set of controls. However, to take into account potential endogeneity problems, we run a treatment regression using a full maximum likelihood version of the Heckman model (Heckman, 1976, 1978) as suggested by (Maddala, 1983).

The potential endogeneity problems arises because it can be argued that auditor choice by the company is not random but related to certain company characteristics which are also related to the debt rate. Also the audit firms themselves decide whether they will accept or reject clients (Eshleman & Guo, 2014). Big4 audit firms might avoid low-quality and risky clients (DeFond et al., 2017) to minimize litigation risk (Johnstone, 2000; Johnstone & Bedard, 2004). According to this reasoning, clients with risk of financial distress due to high indebtedness might find it more difficult to attract a Big4 audit firms.

The self-selection bias can potentially result in biased coefficients from OLS (Maddala, 1983). The classical approach to control for such a selection bias is by using a Heckman selection model (Heckman, 1979). The Heckman approach uses a two-step procedure. The first step is to estimate a selection regression, where the choice variable is modelled and from which the Inverse Mills Ratio (IMR) can be calculated. The second step is by incorporating the IMR into the actual regression of interest, the so-called 'the treatment effect model'. Alternatively, the Heckman model can be estimated using full maximum likelihood estimation (FIML) to achieve more

efficient estimation (Greene, 2000; Maddala, 1983) since the FIML method uses all information at once rather than in two steps as under the IMR approach. We follow the estimation procedure using the maximum likelihood treatment effects estimation as suggested by Peel (2014).

Our selection regression is as follows:

$$\begin{aligned}
 \text{BIG4}_{j,t} = & \gamma_0 + \gamma_1 * \text{EFSH}_{j,t} + \gamma_2 * \text{DFSH}_{j,t} + \gamma_3 * \text{OWN}_{j,t} + \gamma_4 * \text{CROSS}_{j,t} + \gamma_5 * \text{STATE}_{j,t} \\
 & + \gamma_6 * \text{SIZE}_{j,t} + \gamma_7 * \text{ATURN}_{j,t} + \gamma_8 \text{CURR}_{j,t} + \gamma_9 * \text{LLEV} + \gamma_{10} * \text{LLOSS}_{j,t} \\
 & + \gamma_{11} * \text{ROA}_{j,t} + v_{j,t} \quad (1)
 \end{aligned}$$

In the selection regression our dependent variable is BIG4, a dummy variable indicating whether the auditor was a local audit firm affiliated with a Big4 firm or not. The explanatory variables are in line with the literature (Chaney et al., 2004; Choi & Wong, 2007; Fan & Wong, 2005; Guedhami et al., 2014). To take into account the effect of foreign ownership, we create two dummy variables: EFSH and DFSH, taking the value of 1 respectively if the largest shareholder is from an emerging foreign country or from a developed foreign country respectively. The base category represents the case where the largest shareholder is Indonesian. Investors from foreign countries, and especially those from developed foreign countries demand higher quality financial reporting (He, Rui, Zheng, & Zhu, 2014). Firms are expected to respond to this demand by appointing a Big4 audit firm.

The variables OWN, CROSS, and STATE are intended to capture the influence of agency conflicts on audit demand. OWN stands for concentrated ownership and is calculated as the percentage of closely held shares, defined by Worldscope as shares held by insiders. Highly concentrated ownership creates agency conflicts between controlling and minority shareholders (Fan & Wong, 2005). Big4 audit firms can serve as a signal to mitigate agency conflicts (Choi &

Wong, 2007). Fan and Wong (2005) document that high ownership concentration firms are more likely to choose Big4 audit firms. Therefore, we expect a positive coefficient on this variable. CROSS is a dummy variable indicating that a company is cross-listed abroad. Previous literature (Fan & Wong, 2005; Guedhami et al., 2014) suggests that cross-listing may affect the company's choice for a Big4 audit firm. Again, we expect a positive sign on this coefficient. STATE is a dummy variable indicating that a company is state-owned. H. W. Chen, Chen, Lobo, and Wang (2011) argue that state-owned companies are less likely to choose high quality auditors since audit quality plays less of a role in constraining earnings management in those companies. Accordingly, we expect a negative sign for this coefficient.

The audit effort is proxied by SIZE, ATURN and CURR. Size is measured as the natural logarithm of total assets while ATURN is calculated as the proportion of total sales to total assets. SIZE and ATURN proxy for the size and the level of economic activity of the company respectively and are expected to indicate the level of auditors' effort to achieve a sufficient level of assurance (Choi & Wong, 2007; Francis, Maydew, & Sparks, 1999; Piot, 2001; Simunic & Stein, 1996). Following Chaney et al. (2004), we also include the ratio of current asset to total assets (CURR) in the regression due to the complexities of inventory and receivables which may require specific audit procedures. We expect a positive coefficient on all three variables.

To control for financial risk, we use LLEV, LLOSS and ROA. LLEV is measured as long term debt scaled by total assets. LLOSS is a dummy variable indicating the occurrence of negative net income before extra items in the previous year. ROA, return on assets of the year, is calculated as net income before extra items scaled by total assets. LLEV and LLOSS are associated with the probability of a client's financial distress which is related to audit risk (Choi & Wong, 2007). Hence, a negative relation is expected. However, LLEV also captures potential agency conflicts.

Chaney et al. (2004) argue that highly leveraged firms may prefer to hire high quality auditors to reduce agency costs. Therefore, the direction of LLEV is unclear. The variable ROA captures profitability. Previous studies (Chaney et al., 2004; Fan, Wei, & Xu, 2011; Guedhami & Pittman, 2011) suggest that auditor choice might be influenced by a firm's profitability. We expect a positive coefficient of ROA since more profitable firms tend to have less audit risk.

Our so-called treatment effect regression is as follows:

$$\begin{aligned}
 DR_{j,t+1} = & \beta_0 + \beta_1 * BIG4_{j,t} + \beta_2 * SIZE_{j,t} + \beta_3 * ROA_{j,t} + \beta_4 * INDLEV_{j,t} + \beta_5 * MTB_{j,t} + \beta_6 \\
 & * RET_{j,t} + \beta_7 * PPE_{j,t} + \beta_8 * DEBTAX_{j,t} + \beta_9 * NDEBTAX_{j,t} + \beta_{10} * SDROA_{j,t} \\
 & + \sum_{i=11}^{17} \beta_i * Industry_{j,t} + \varepsilon_{j,t} \quad (2)
 \end{aligned}$$

In the treatment effect regression, our variable of interest is the debt ratio (DR). Prior studies suggest different measures for the debt ratio. Rajan and Zingales (1995) suggest that the effects of past financing decisions are best represented by the ratio of total debt to capital (the sum of total debt and equity). A number of capital structure studies in developing countries (Booth et al., 2001; Demircuc-Kunt & Maksimovic, 1999) however has shown that short term debt in developing countries is relatively more significant than long term debt when compared to developed countries. Accordingly, we use two debt ratio measures, the first measure only considers long term debt while the second considers both short and long term debt. To examine the robustness of the results, each debt ratio is calculated using as denominator either sum of the book value of debt and equity or sum of the market values of equity and debt. Hence we calculate four different debt ratios measures, LTDMEQ and LTDEQ for long term debt and TDMEQ and TDEQ for total debt.

LTDMEQ is defined as the ratio of long term debt to the market value of the capital, while LTDEQ is defined as the ratio of long term debt to book value of capital. The total debt ratios, TDMEQ and TDEQ, are defined accordingly. We use one-year-ahead debt ratio measures as we expect that companies that choose local audit firms affiliated with a Big4 audit firm signaling to outsiders to have high information quality that can decrease information asymmetry, and as a result affect next period companies' capital structure.

The control variables in this regression are consistent with prior literature (Booth et al., 2001; J. Z. Chen et al., 2016; Frank & Goyal, 2009; Rajan & Zingales, 1995).

Regarding SIZE, the trade-off theory predicts that large firms are generally more diversified and have a better reputation, leading to a lower risk of default risk. Therefore, larger firms tend to have higher leverage (Fama & French, 2002; Frank & Goyal, 2009). The next variable is ROA. According to the pecking order theory firms prefer internal over external financing (Myers & Majluf, 1984). An alternative theory, the dynamic trade-off theory, considers that firms accumulate profits passively (Fischer, Heinkel, & Zechner, 1989). Both theories predict a negative relation between profitability and leverage. INDLEV is the industry median of the dependent variable. Hovakimian, Opler, and Titman (2001) provide evidence that firms adjust their debt ratio toward the industry average. MTB or the market to book ratio proxies for growth and investment opportunities. Following Rajan & Zingales, 1995, it is calculated the sum of the book value of debt and the market value of equity, scaled by total assets. The relation between growth opportunities and leverage is unclear (Frank & Goyal, 2009). The trade-off theory predicts that growth reduces leverage since firms with more growth opportunities will rely more on shareholders' investment (Frank & Goyal, 2009). In contrast, the pecking order implies a negative relationship between growth and leverage. Higher growth firms – holding profitability fixed –

need more funds to finance their investments and therefore tend to accumulate more debt (Frank & Goyal, 2009). Following Frank and Goyal (2009), we also include the stock market return over the last year (RET). The market timing theory predicts a negative relation since higher market returns indicate preferable circumstances to issue equity. PPE is measured as property, plant and equipment divided by total assets. Frank and Goyal (2009) suggest a positive relation between tangible assets and leverage since this type of assets is easier to value by outsiders which lowers expected distress costs. Furthermore, the tangible assets can be used as collateral (J. Z. Chen et al., 2016). The variables DEBTAX and NDEBTAX are intended to capture the tax benefits of debt finance. DEBTAX is calculated as current income tax divided by pre-tax income and NDEBTAX is calculated by depreciation expense divided by total assets. Firms have more incentives to increase debt if the marginal tax rate is higher because of the higher tax deductibility of interest expense. The trade-off theory predicts that there is positive relation between leverage and DEBTAX (J. Z. Chen et al., 2016; Frank & Goyal, 2009). Non debt tax shields, like depreciation, on the other hand are a substitute for interest deductibles from debt (H. Deangelo & Masulis, 1980). Firms with high depreciation have less interest in other tax deductibles like interest payments from debt. Therefore, we expect the relation between NDEBTAX and the debt ratio to be negative. Finally, the variable SDROA is defined as the standard deviation of ROA over the previous three years and is a proxy for business risk that captures financial distress. It is expected to have a negative relation with leverage (Booth et al., 2001) as companies with more financial distress have less access to debt.

[Insert Table 4.1 about here]

4.5 Data collection and sampling procedure

All financial data were retrieved from Worldscope. Since Worldscope only provides data on the auditor of the latest year available, we hand-collected the data on the auditors over the years of the study through the ICMD. Also the ownership data were hand-collected from the ICMD. To differentiate foreign ownership from developed and emerging countries, we followed the United Nations classification of emerging countries. The developed countries in our sample are Canada, France, Germany, Japan, the Netherlands, Switzerland, UK, and US while the emerging countries include the British Virgin Islands, the Cook Islands, Hong Kong, India, Korea, Malaysia, Mauritius, the Philippines, Qatar, the Seychelles, Singapore, Thailand, Turkey and the United Arab Emirates.

Table 4.2 summarizes our sample selection procedure. We began with the set of non-financial Indonesian listed companies that existed between 2008 and 2015. Initially, we have 2,573 company-year observations. From the initial sample, we excluded companies that experienced an asset growth rate of more than 100 percent in any year (64 company-years), as the latter is an indication of significant restructuring activities (Duchin, Ozbas, & Sensoy, 2010). Further, to guarantee independent observations, we excluded subsidiary companies when the parent company was also included in our sample (138 company-years). Finally, we dropped 394 company-years for which there were missing values. Our final sample consists of 1,977 company-years over the 2008-2015 period.

[Insert Table 4.2 about here]

Table 4.3 provides a breakdown of the sample by year and industry. Comparing our sample with the initial sample, there appear to be no major problems with respect to over- or underrepresentation of certain years or sectors.

[Insert Table 4.3 about here]

4.6 Empirical results

4.6.1 Descriptive statistics

Table 4.4 presents the descriptive statistics. We winsorized all continuous variables at the 1st and 99th percentiles. From the table in panel A, we can see that the yearly average of LTDMEQ and LTDEQ ranges 23% and 25.5%, while the mean of TDMEQ and TDEQ ranges between 32% and 37% . Booth et al. (2001), calculating total liabilities and long term liabilities in ten developing countries, report total debt ratios ranging from 30% to 70% and long term debt ratios between 8% and 50%.

We can infer that the percentage of audits that were performed by Big4 audit firms is around 38.5%. It is worth noting that the number of companies using Big4 audit firms in Indonesia is relatively low compared to other countries. Francis, Michas, and Seavey (2013), for example, report that the percentages of firms audited by Big4 audit firms for the United States, Australia, the United Kingdom, Singapore and Malaysia are 61%, 71%, 50%, 72% and 53% respectively.

Table 4.4 panel B presents the descriptive statistics of the variables following a partition of our sample based on audit firm type. The companies audited by Big4 audit firms tend to have lower long term and total debt ratio's based on the market value approach, tend to be larger, more

profitable, have higher growth opportunities and lower business risk as measured by the volatility of earnings.

[Insert Table 4.4 about here]

The Pearson and Spearman correlations are presented in Table 4.5. Big4 is positively related to the long term and total debt ratios based on the market value approach.

[Insert Table 4.5 about here]

4.6.2 Regression results

Table 4.6 shows the results from the Heckman treatment-regression model using full maximum likelihood estimation . The table also shows the hazard or selectivity correction. The first Wald test reports whether the error terms from the first and the second term regression are correlated. The Wald test ratio show a p-value of 0.000 for all leverage measures, indicating that we can reject the null hypothesis of no correlation between the treatment errors from equation (2) and the outcome errors from equation (1). This result supports our decision to use the treatment effect approach. The second Wald test indicates whether all the variables in the second stage regression are jointly insignificant. Since the second Wald test show a p-value of 0.000, we can conclude that the terms in the treatment model regression are not jointly equal to zero.

We note that the coefficients of our control variables SIZE and NDEBT are significantly positive and the coefficients of ROA is significantly negative at 1% for all our leverage measures.

The coefficient of PPE is significantly positive for all leverage measures except for the total debt ratio based on the book value. The coefficients of MTB and RET are significantly negative for the

leverage measures based on market value. We also find that the coefficient of DEBTAX is significantly negative for the debt ratios based on the market value.

The Average Treatment Effect (ATE) of being audited by local audit firms affiliated with a Big4 audit firm on our leverage ratio LTDMEQ, LTDEQ, TDMEQ, and TDEQ are all significantly negative. On average choosing local audit firms affiliated with a Big4 audit firm is more likely to lower the LTDMEQ, LTDEQ, TDMEQ and TDEQ by 0.374, 0.379, 0.345 and 0.396 points respectively.

[Insert Table 4.6 about here]

4.7 Conclusion

This paper investigates Indonesia, which is a fast growing emerging country, characterized by weak governance, high information asymmetry and low litigation, whether the choice of Big4 audit firms affects the companies' capital structure. We find that companies audited by local audit firms affiliated with a Big4 audit firm tend to have lower leverage compare to those audited by non-Big4 audit firms. This finding support the idea that local audit firms that affiliated with a Big4 audit firm are viewed to have better quality, thus potentially reduce information asymmetry. The reduced information asymmetry then impact on companies capital structure. Previous research on the relation between high quality audit and financing was conducted in developed countries also found this relation.

For emerging countries, where external capital is important but achieving optimum financing is often hindered by severe information asymmetry, our result might be of interest of policy makers, as well as managers and financial stakeholders that reducing information asymmetry potentially

helps companies to achieve their optimum debt-equity mix, hence increasing the value of the company.

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Notes

¹ The requirement of audited financial statements are regulated in the Limited Liability Company Law and the Capital Market Law.

² PPAk is a one-year program for individuals who wish to enter the accounting profession. This program is run by accredited universities and is under the supervision of the Ministry of Higher Education.

³ The smallest audit firm needs at least three persons, one chief/partner that holds a license of public accountant and two employees

⁴ The membership of the professional association is not mandatory until the issuance of Ministry of Finance regulation No. 25/PMK.01/2014 about State Registered Accountant in 2014 (for chartered accountant) and until the issuance of Public Accountant Law in 2011 (for public accountant)

Tables

Table 4. 1: Variable definitions

| Variable | Definition |
|--------------|--|
| DR | |
| LTDMEQ | : Debt ratio; (long term debt + current portion of long term debt)/market value of equity |
| LTDEQ | : Debt ratio; (long term debt + current portion of long term debt)/book value of equity |
| TDMEQ | : Debt ratio; total debt/market value of equity |
| TDEQ | : Debt ratio; total debt/book value of equity |
| BIG4 | : Dummy variable taking the value of 1 if the company was audited by a Big4 audit firm and 0 otherwise |
| SIZE | : The natural log of total assets |
| ROA | : Return on assets; net income before extra items scaled by total assets. |
| INDLV | |
| INDLTDMEQ | : Industry median leverage; industry median ((long term debt + current portion of long term debt)/market value of equity) |
| INDLTDEQ | : Industry median leverage; industry median ((long term debt + current portion of long term debt)/book value of equity) |
| INDTDMEQ | : Industry median leverage; industry median (total debt/market value of equity) |
| INDTDEQ | : Industry median leverage; industry median (total debt/book value of equity) |
| MTB | : Growth and investment opportunities; market to book value of assets (total assets – book value of equity + market value of equity)/ total assets |
| RET | : Holding period stock return over the fiscal year; (ending year stock price – beginning year stock price)/beginning year stock price |

Table 4.1 (continued)

| Variable | Definition |
|-----------------|---|
| PPE | : Tangible assets; Net Property, Plant and Equipment/total assets |
| DEBTAX | : Debt tax shield; current income tax/pre-tax income |
| NDEBTAX | : Non-debt tax shield; depreciation/total assets |
| SDROA | : Standard deviation of return on assets from the previous three years |
| EFSH | : Dummy variable taking the value of 1 if the largest shareholder is from an emerging foreign country and 0 otherwise |
| DFSH | : Dummy variable taking the value of 1 if the largest shareholder is from a developed foreign country and 0 otherwise |
| OWN | : Percentage of closely held shares. |
| CROSS | : Dummy variable taking the value of 1 if the company is cross-listed, and 0 otherwise |
| STATE | : Dummy variable taking the value of 1 if a company is state-owned and 0 otherwise |
| ATURN | : Asset turnover; total sales/total assets |
| CURR | : Current assets/total assets |
| LLEV | : Leverage; long term debt/total assets |
| LLOSS | : Dummy variable taking the value of 1 if the company experienced negative net income before extra items in prior year, and 0 otherwise |
| Industry dummy | : Dummy variable taking the value of 1 for the industry/sector code (ICB on Datastream) sections of interest and 0 otherwise |

Table 4. 2 : Sample selection method

| | drop | company- years |
|--|-------|-------------------|
| Initial sample* | | 2,573 |
| Companies that had total assets growth >100% | (64) | |
| Subsidiary companies | (138) | |
| Companies with missing values variables | (394) | |
| Final sample | | 1,977 |

Table 4. 3 : Sample breakdown by year and industry

| Panel A: by year | Sample | | initial sample* | | % Final sample to initial sample |
|------------------|--------|-------|-----------------|-------|----------------------------------|
| | # | % | # | % | |
| 2008 | 191 | 9.66 | 274 | 10.65 | 69.71 |
| 2009 | 204 | 10.32 | 280 | 10.88 | 72.86 |
| 2010 | 204 | 10.32 | 297 | 11.54 | 68.69 |
| 2011 | 247 | 12.49 | 313 | 12.16 | 78.91 |
| 2012 | 251 | 12.70 | 329 | 12.79 | 76.29 |
| 2013 | 274 | 13.86 | 349 | 13.56 | 78.51 |
| 2014 | 297 | 15.02 | 361 | 14.03 | 82.27 |
| 2015 | 309 | 15.63 | 370 | 14.38 | 83.51 |
| Total | 1,977 | 100 | 2,573 | 100 | |

| Panel B: by industry | Sample | | Initial sample* | | % Final sample to initial sample |
|----------------------|--------|-------|-----------------|-------|----------------------------------|
| | # | % | # | % | |
| Basic materials | 450 | 22.76 | 562 | 21.84 | 80.07 |
| Consumer goods | 546 | 27.62 | 682 | 26.51 | 80.06 |
| Consumer services | 308 | 15.58 | 451 | 17.53 | 68.29 |
| Health care | 76 | 3.84 | 92 | 3.58 | 82.61 |
| Industrials | 424 | 21.45 | 547 | 21.26 | 77.51 |
| Oil & gas | 44 | 2.23 | 58 | 2.25 | 75.86 |
| Technology | 67 | 3.39 | 109 | 4.24 | 61.47 |
| Telecommunication | 49 | 2.48 | 57 | 2.22 | 85.96 |
| Utilities | 13 | 0.66 | 15 | 0.58 | 86.67 |
| Total | 1,977 | 100 | 2,573 | 100 | |

* Initial sample of all Indonesian listed *non-financial* companies over the 2008-2015 period

Industry groups are based on the Industry Classification Benchmark (ICB) universe retrieved from Worldscope/Datastream.

Table 4. 4 : Descriptive statistics

Panel A: full sample

| | Mean | SD | p10 | Median | p90 | Min | Max |
|------------------|---------|--------|---------|---------|---------|---------|---------|
| LTDMEQ | 0.2331 | 0.2625 | 0 | 0.1291 | 0.6735 | 0 | 0.8802 |
| LTDEQ | 0.2553 | 0.2773 | 0 | 0.1735 | 0.6266 | -0.0285 | 1.1348 |
| TDMEQ | 0.3208 | 0.2791 | 0.0002 | 0.2644 | 0.7583 | 0 | 0.9054 |
| TDEQ | 0.3694 | 0.3194 | 0.0000 | 0.3431 | 0.7262 | 0 | 1.5628 |
| BIG4 | 0.3859 | 0.4869 | 0 | 0 | 1 | 0 | 1 |
| SIZE | 21.2130 | 1.7439 | 18.9436 | 21.2045 | 23.5690 | 17.2326 | 24.7982 |
| ROA | 0.0365 | 0.1030 | -0.0661 | 0.0319 | 0.1448 | -0.2765 | 0.3428 |
| INDLTDMEQ | 0.1398 | 0.0835 | 0.0652 | 0.1298 | 0.2553 | 0.0009 | 0.4330 |
| INDLTDEQ | 0.1831 | 0.0936 | 0.1029 | 0.1671 | 0.2571 | 0.0034 | 0.5632 |
| INDTDMEQ | 0.2620 | 0.0967 | 0.1838 | 0.2531 | 0.3719 | 0.0148 | 0.4732 |
| INDTDEQ | 0.3433 | 0.0887 | 0.2719 | 0.3586 | 0.4268 | 0.0488 | 0.5640 |
| MTB | 1.7065 | 1.5634 | 0.7087 | 1.1468 | 3.2376 | 0.4722 | 9.1356 |
| RET | 0.1494 | 0.6589 | -0.4772 | 0 | 0.9774 | -0.7658 | 2.6297 |
| PPE | 0.3912 | 0.2398 | 0.0762 | 0.3675 | 0.7440 | 0.0139 | 0.9020 |
| DEBTAX | 0.1787 | 0.2122 | 0 | 0.2100 | 0.4010 | -0.3265 | 0.8772 |
| NDEBTAX | 0.0392 | 0.0310 | 0.0082 | 0.0323 | 0.0810 | 0.0011 | 0.1478 |
| SDROA | 0.0486 | 0.0714 | 0.0053 | 0.0245 | 0.1119 | 0.0014 | 0.3774 |
| EFSH | 0.1932 | 0.3949 | 0 | 0 | 1 | 0 | 1 |
| DFSH | 0.1037 | 0.3049 | 0 | 0 | 1 | 0 | 1 |
| OWN | 0.6866 | 0.1957 | 0.4320 | 0.7126 | 0.9217 | 0.1428 | 0.9800 |
| CROSS | 0.4107 | 0.4921 | 0 | 0 | 1 | 0 | 1 |
| STATE | 0.0607 | 0.2388 | 0 | 0 | 0 | 0 | 1 |
| ATURN | 1.0329 | 0.7568 | 0.2047 | 0.8967 | 2.0214 | 0.0404 | 3.4305 |
| CURR | 0.4937 | 0.2396 | 0.1572 | 0.4920 | 0.8206 | 0.0625 | 0.9366 |

Table 4.4 Panel A (continued)

| | Mean | SD | p10 | Median | p90 | Min | Max |
|--------------|--------------|-----------|------------|---------------|------------|------------|------------|
| LLEV | 0.1343 | 0.1674 | 0 | 0.0674 | 0.3752 | 0.0000 | 0.7048 |
| LLOSS | 0.1887 | 0.3913 | 0 | 0 | 1 | 0 | 1 |
| N | 1,977 | | | | | | |

For variable definitions: see Table 1.

Panel B: By audit firm type

| | BIG4 | | | NON-BIG4 | | | t-test | z-test |
|------------------|---------|--------|---------|----------|--------|---------|-----------|-----------|
| | Mean | SD | Median | Mean | SD | Median | | |
| LTDMEQ | 0.2065 | 0.2496 | 0.1068 | 0.2499 | 0.2690 | 0.1460 | -3.66 *** | -3.97 *** |
| LTDEQ | 0.2584 | 0.2728 | 0.1904 | 0.2533 | 0.2802 | 0.1672 | 0.41 | 0.154 |
| TDMEQ | 0.2837 | 0.2711 | 0.2088 | 0.3441 | 0.2816 | 0.2905 | -4.75 *** | -4.73 *** |
| TDEQ | 0.3530 | 0.2911 | 0.3314 | 0.3797 | 0.3357 | 0.3505 | -1.87 | 1.01 |
| SIZE | 22.1474 | 1.4480 | 22.1378 | 20.6257 | 1.6562 | 20.6178 | 21.5 *** | 19.2 *** |
| ROA | 0.0689 | 0.1048 | 0.0530 | 0.0161 | 0.0965 | 0.0238 | 11.25 *** | 10.17 *** |
| INDLTDMEQ | 0.1432 | 0.0887 | 0.1298 | 0.1376 | 0.0800 | 0.1298 | 1.41 | 0.69 |
| INDLTDEQ | 0.1851 | 0.1032 | 0.1647 | 0.1818 | 0.0871 | 0.1671 | -0.75 | -1.21 |
| INDTDMEQ | 0.2630 | 0.0980 | 0.2531 | 0.2614 | 0.0959 | 0.2531 | 0.37 | 0.33 |
| INDTDEQ | 0.3431 | 0.0938 | 0.3522 | 0.3435 | 0.0854 | 0.3586 | -0.08 | -0.54 |
| MTB | 1.9929 | 1.7466 | 1.3657 | 1.5265 | 1.4075 | 1.0734 | 6.21 *** | 8.56 *** |
| RET | 0.1704 | 0.6834 | 0 | 0.1361 | 0.6429 | 0 | 1.11 | 0.79 |
| PPE | 0.4043 | 0.2129 | 0.3773 | 0.3829 | 0.2551 | 0.3547 | 2.01 ** | 2.64 *** |
| DEBTAX | 0.2203 | 0.2089 | 0.2499 | 0.1526 | 0.2101 | 0.1111 | 6.99 ** | 8.65 *** |
| NDEBTAX | 0.0428 | 0.0283 | 0.0374 | 0.0369 | 0.0324 | 0.0285 | 4.27 *** | 7.45 *** |
| SDROA | 0.0426 | 0.0542 | 0.0259 | 0.0524 | 0.0802 | 0.0232 | -3.24 *** | 1.71 * |
| EFSH | 0.1979 | 0.3987 | 0 | 0.1903 | 0.3927 | 0 | 0.41 | 0.42 |
| DFSH | 0.2189 | 0.4138 | 0 | 0.0313 | 0.1742 | 0 | 11.88 *** | 13.31 *** |
| OWN | 0.7139 | 0.1726 | 0.7278 | 0.6695 | 0.2071 | 0.7070 | 5.15 *** | 3.94 *** |
| CROSS | 0.5544 | 0.4974 | 1 | 0.3204 | 0.4668 | 0 | 10.42 *** | 10.29 *** |
| STATE | 0.0865 | 0.2813 | 0 | 0.0445 | 0.2062 | 0 | 3.56 *** | 3.81 *** |
| ATURN | 1.1403 | 0.7468 | 0.9596 | 0.9654 | 0.7555 | 0.8309 | 5.05 *** | 5.92 *** |

Table 4.4 Panel B (continued)

| | BIG4 | | | NON-BIG4 | | | t-test | z-test |
|--------------|------------|--------|--------|-------------|--------|--------|-----------|-----------|
| | Mean | SD | Median | Mean | SD | Median | | |
| CURR | 0.4886 | 0.2142 | 0.4821 | 0.4969 | 0.2543 | 0.5021 | -0.78 | -0.86 |
| LLEV | 0.1346 | 0.1577 | 0.0795 | 0.1341 | 0.1733 | 0.0567 | 0.06 | -0.07 |
| LLOSS | 0.1350 | 0.3419 | 0 | 0.2224 | 0.4160 | 0 | -5.08 *** | -4.84 *** |
| N | 763 | | | 1214 | | | | |

For variable definitions: see Table 1.

The student test (t-stat) is used to compare the mean values

The Mann-Whitney test (z-stat) addresses the null hypothesis that both distributions are homogeneous, i.e. drawn from the same population.

*,** and *** indicate a two-tailed significance at the 0.10, 0.05 and 0.01 threshold, respectively.

Table 4. 5 : Pearson & Spearman correlation

| | LTDMEQ | LTDEQ | TDMEQ | TDEQ | BIG4 | SIZE | ROA | INDLTDMEQ | INDLTDEQ | INDTDMEQ | INDTDEQ | MTB | RET | PPE | DEBTAX | NDEBTAX | SDROA |
|------------------|---------------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| LTDMEQ | 1 | 0.845 *** | 0.808 *** | 0.695 *** | -0.089 *** | 0.303 *** | -0.385 *** | 0.165 *** | 0.147 *** | 0.141 *** | 0.136 *** | -0.221 *** | -0.171 *** | 0.361 *** | -0.151 *** | 0.235 *** | -0.045 ** |
| LTDEQ | 0.777 *** | 1 | 0.608 *** | 0.754 *** | 0.004 | 0.379 *** | -0.260 *** | 0.140 *** | 0.175 *** | 0.110 *** | 0.144 *** | -0.059 *** | -0.081 *** | 0.345 *** | -0.080 *** | 0.209 *** | -0.084 *** |
| TDMEQ | 0.845 *** | 0.593 *** | 1 | 0.820 *** | -0.106 *** | 0.170 *** | -0.453 *** | 0.147 *** | 0.097 *** | 0.149 *** | 0.147 *** | -0.378 *** | -0.189 *** | 0.220 *** | -0.148 *** | 0.103 *** | -0.088 *** |
| TDEQ | 0.641 *** | 0.748 *** | 0.732 *** | 1 | -0.023 | 0.259 *** | -0.361 *** | 0.125 *** | 0.113 *** | 0.122 *** | 0.155 *** | -0.079 *** | -0.083 *** | 0.208 *** | -0.117 *** | 0.113 *** | -0.074 *** |
| BIG4 | -0.081 *** | 0.009 | -0.105 *** | -0.041 * | 1 | 0.432 *** | 0.229 *** | 0.016 | -0.027 | 0.007 | -0.012 | 0.193 *** | 0.018 | 0.060 *** | 0.195 *** | 0.168 *** | 0.039 * |
| SIZE | 0.267 *** | 0.325 *** | 0.163 *** | 0.184 *** | 0.425 *** | 1 | 0.121 *** | 0.114 *** | 0.091 *** | 0.084 *** | 0.123 *** | 0.116 *** | -0.041 * | 0.160 *** | 0.112 *** | 0.084 *** | -0.110 *** |
| ROA | -0.354 *** | -0.272 *** | -0.392 *** | -0.364 *** | 0.250 *** | 0.152 *** | 1 | -0.192 *** | -0.092 *** | -0.177 *** | -0.084 *** | 0.335 *** | 0.322 *** | -0.197 *** | 0.420 *** | -0.089 *** | -0.100 *** |
| INDLTDMEQ | 0.180 *** | 0.164 *** | 0.151 *** | 0.126 *** | 0.033 | 0.177 *** | -0.152 *** | 1 | 0.630 *** | 0.909 *** | 0.611 *** | -0.171 *** | -0.208 *** | 0.117 *** | -0.067 *** | 0.138 *** | 0.037 |
| INDLTDEQ | 0.162 *** | 0.208 *** | 0.105 *** | 0.120 *** | 0.018 | 0.201 *** | -0.106 *** | 0.742 *** | 1 | 0.484 *** | 0.517 *** | -0.017 *** | -0.029 *** | 0.128 *** | 0.004 | 0.175 *** | -0.065 *** |
| INDTDMEQ | 0.166 *** | 0.133 *** | 0.169 *** | 0.137 *** | 0.008 | 0.112 *** | -0.146 *** | 0.863 *** | 0.585 *** | 1 | 0.678 *** | -0.202 *** | -0.222 *** | 0.110 *** | -0.064 *** | 0.103 *** | 0.037 * |
| INDTDEQ | 0.172 *** | 0.178 *** | 0.167 *** | 0.164 *** | -0.002 | 0.167 *** | -0.111 *** | 0.689 *** | 0.703 *** | 0.768 *** | 1 | -0.098 *** | -0.071 *** | 0.140 *** | 0.007 | 0.063 *** | -0.018 |
| MTB | -0.237 *** | -0.126 *** | -0.333 *** | -0.106 *** | 0.145 *** | -0.038 * | 0.301 *** | -0.157 *** | -0.079 *** | -0.179 *** | -0.116 *** | 1 | 0.317 *** | -0.026 *** | 0.060 *** | 0.088 *** | 0.135 *** |
| RET | -0.175 *** | -0.080 *** | -0.184 *** | -0.081 *** | 0.025 | -0.022 | 0.230 *** | -0.149 *** | -0.032 *** | -0.160 *** | -0.057 ** | 0.220 *** | 1 | -0.079 *** | 0.135 *** | -0.029 | -0.067 *** |

Table 4.5 (continued)

| | LTDMEQ | LTDEQ | TDMEQ | TDEQ | BIG4 | SIZE | ROA | INDLTDMEQ | INDLTDEQ | INDTDMEQ | INDTDEQ | MTB | RET | PPE | DEBTAX | NDEBTAX | SDROA |
|----------------|--------|--------|--------|--------|--------|--------|--------|-----------|----------|----------|---------|--------|--------|--------|--------|---------|--------|
| PPE | 0.324 | 0.300 | 0.200 | 0.168 | 0.043 | 0.139 | -0.179 | 0.140 | 0.188 | 0.139 | 0.197 | 0.009 | -0.077 | 1 | -0.172 | 0.551 | 0.044 |
| | *** | *** | *** | *** | * | *** | *** | *** | *** | *** | *** | | *** | | *** | *** | ** |
| DEBTAX | -0.158 | -0.107 | -0.127 | -0.123 | 0.155 | 0.098 | 0.278 | -0.026 | -0.012 | -0.020 | -0.023 | -0.011 | 0.093 | -0.144 | 1 | -0.052 | -0.277 |
| | *** | *** | *** | *** | *** | *** | *** | | | | | | *** | *** | | ** | *** |
| NDEBTAX | 0.204 | 0.205 | 0.109 | 0.169 | 0.093 | 0.015 | -0.182 | 0.177 | 0.267 | 0.105 | 0.123 | 0.118 | -0.032 | 0.456 | -0.076 | 1 | 0.093 |
| | *** | *** | *** | *** | *** | | *** | *** | *** | *** | *** | *** | | *** | *** | | *** |
| SDROA | 0.017 | -0.008 | -0.028 | 0.064 | -0.067 | -0.191 | -0.169 | 0.002 | -0.025 | 0.004 | 0.004 | 0.185 | -0.043 | 0.032 | -0.239 | 0.149 | 1 |
| | | | | *** | *** | *** | *** | | | | | *** | * | | *** | *** | |

Pearson and Spearman correlations are reported below above the diagonal respectively.

N = 1,977. For variable definitions: see Table 1. *, **, *** denote statistical significance at 10% , 5% and 1% level respectively

Table 4. 6 : Regression result

| | | LTDMEQ | LTDEQ | TDMEQ | TDEQ |
|---|------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Treatment model augmented regression | | | | | |
| CONSTANT | | -1.521 (20.06)*** | -1.792 (21.15)*** | -1.090 (11.44)*** | -1.617 (12.72)*** |
| BIG4 | (-) | -0.374 (21.52)*** | -0.379 (24.17)*** | -0.345 (13.28)*** | -0.396 (12.69)*** |
| SIZE | (+) | 0.088 (25.01)*** | 0.102 (25.66)*** | 0.071 (16.39)*** | 0.094 (16.44)*** |
| ROA | (-) | -0.380 (5.49)*** | -0.445 (5.02)*** | -0.531 (6.71)*** | -0.863 (7.37)*** |
| INDLTMDEQ | (+) | 0.015 (0.12) | | | |
| INDLTDEQ | (+) | | -0.049 (0.30) | | |
| INDTDMEQ | (+) | | | 0.274 (2.84)*** | |
| INDTDEQ | (+) | | | | 0.422 (3.50)*** |
| MTB | (±) | -0.021 (6.21)*** | 0.004 (0.78) | -0.037 (9.74)*** | 0.010 (1.43) |
| RET | (±) | -0.025 (3.52)*** | -0.001 (0.08) | -0.027 (3.08)*** | -0.000 (0.01) |

Table 4.6 (continued)

| | | LTDMEQ | LTDEQ | TDMEQ | TDEQ |
|--------------------------------------|----------|----------------------|-----------------------|----------------------|----------------------|
| PPE | (+) | 0.165 (6.37)*** | 0.104 (3.60)*** | 0.078 (2.72)*** | -0.046 (1.28) |
| DEBTAX | (±) | -0.087 (3.26)*** | -0.045 (1.57) | -0.069 (2.50)** | -0.052 (1.77)* |
| NDEBTAX | (±) | 1.085 (5.08)*** | 0.877 (3.28)*** | 0.907 (3.78)*** | 1.366 (3.91)*** |
| SDROA | (-) | 0.054 (0.57) | 0.022 (0.20) | -0.052 (0.46) | 0.186 (1.12) |
| Industry dummies | | Yes | Yes | Yes | Yes |
| First stage probit regression | | | | | |
| BIG4 | CONSTANT | -9.004 (15.92)*** | -10.212 (16.09)*** | -8.823 (13.72)*** | -9.636 (15.06)*** |
| | EFSH | 0.135 (2.32)** | 0.113 (1.71)* | 0.236 (3.60)*** | 0.225 (3.15)*** |
| | DFSH | 0.585 (4.74)*** | 0.445 (3.24)*** | 0.785 (5.92)*** | 0.526 (3.64)*** |
| | OWN | 0.873 (5.79)*** | 0.806 (5.43)*** | 0.870 (5.13)*** | 0.779 (4.50)*** |
| | CROSS | 0.230 (3.64)*** | 0.078 (1.32) | 0.335 (4.90)*** | 0.226 (3.36)*** |
| | STATE | 0.060 (0.73) | -0.196 (2.40)** | 0.048 (0.53) | -0.183 (2.05)** |
| | SIZE | 0.389 (15.67)*** | 0.453 (15.58)*** | 0.377 (13.68)*** | 0.422 (14.94)*** |

Table 4.6 (continued)

| | | LTDMEQ | LTDEQ | TDMEQ | TDEQ |
|--|-----|----------------------|----------------------|---------------------|---------------------|
| ATURN | (+) | 0.269 (6.63)*** | 0.174 (3.71)*** | 0.197 (3.92)*** | 0.133 (2.32)** |
| CURR | (+) | -0.741 (4.27)*** | -0.330 (1.77)* | -0.843 (4.65)*** | -0.567 (3.01)*** |
| LLEV | (-) | -2.736 (10.46)*** | -3.439 (11.32)*** | -2.149 (8.18)*** | -2.465 (8.30)*** |
| LLOSS | (-) | -0.032 (0.35) | -0.091 (1.00) | -0.037 (0.38) | -0.196 (1.82)* |
| ROA | (+) | 1.642 (3.81)*** | 1.179 (2.63)*** | 2.204 (4.88)*** | 1.929 (4.25)*** |
| Selectivity correction | | | | | |
| Wald test of indep. eqns. ($\rho = 0$) | | 241.73 (0.000) | 261.91 (0.000) | 114.83 (0.000) | 102.47 (0.000) |
| Wald chi2 for sig. of augmented regression | | 1439.87 (0.000) | 1447.92 (0.000) | 942.32 (0.000) | 585.62 (0.000) |
| <i>N</i> | | 1,977 | 1,977 | 1,977 | 1,977 |

$N = 1,977$. For variable definitions: see Table 1.

*, **, *** denote statistical significance at 10%, 5% and 1% level respectively

CHAPTER 5

GENERAL CONCLUSION

This dissertation documents the determinants and the consequences of auditor choice in one of emerging countries, Indonesia. Indonesia is characterized by low litigation environment and Big4 audit firms can only enter the market through affiliation of local audit firms. First, it provides evidence that the choice of local audit firms affiliated with a Big4 audit firm is beneficial for companies in term of lowering cost of debt and optimization of debt-equity mix. Second, it provides evidence that the choice of Big4 audit firms is affected by the home country of foreign ownership and foreign board membership, whether they originate from developed or emerging countries.

The main conclusion of this dissertation is that international reputable audit firms is viewed to have high quality and add credibility to financial information, thus, reduce information asymmetry (Datar, Feltham, & Hughes, 1991) even in less-litigious environment. This is in contrast with the view that reputable audit firms will fail to play a role as governance function as weak legal environments may fail to incentivize audit firms to provide high quality audits (Francis, Khurana, & Pereira, 2003; Francis & Wang, 2008). On the other hand, this dissertation supports the view that in weak legal environments, high quality audit firms play stronger role as they may serve as firm-level governance substitutes (Fan & Wong, 2005; Gomes, 2000; Klapper & Love, 2004; LaPorta, LopezDeSilanes, Shleifer, & Vishny, 1997) or they may play a more significant role in signaling to reduce information asymmetry (Datar et al., 1991).

5.1 Summary of the individual article

First article

Based on the idea that high quality auditor may substitute governance role in weak legal environment (Choi & Wong, 2007; Fan & Wong, 2005), the first study investigates whether there

is a relationship between local audit firms affiliated with a Big4 audit firm and cost of debt for listed Indonesian companies.

The main finding in this article provides evidence that companies audited by local audit firms affiliated with a Big4 audit firm enjoy significantly lower interest rate. This finding is consistent with the idea that lenders perceive Big4 audit firms add credibility to financial information as they have good reputation.

This article extends to the prior literature on the role of high quality audit and cost of capital by providing evidence that even in less-litigious environment, the choice of local audit firms affiliated with a Big4 audit firm is valued by lenders in terms of reduced interest rate.

Second article

The second article investigates whether any impact of foreign investors and board members on auditor choice depends on whether they originate from a developed versus from another emerging country. The rationale of this article is derived from the work of Hope, Kang, Thomas, and Yoo (2008) that cultural differences drive different tendencies of auditor choice. Moreover, Ball, Kothari, and Robin (2000) show that differences in institutional context across countries cause differences in demand for accounting properties. We argue that foreign investors and board members from developed countries probably attach more importance on the assurance from high quality Big4 audit firms, as compared to foreign investors from emerging countries. The findings of this article highlight that in an emerging country like Indonesia especially ownership and board membership from developed foreign countries is positively associated with the selection of Big4 audit firms hereby potentially reducing information asymmetry and enhancing the access to foreign capital necessary to sustain economic growth.

This article contributes to the literature on the impact of foreign involvement on the choice of Big4 audit firms through differentiating by whether the origin of the foreign involvement is from an emerging versus from a developed country in particular.

Third article

The third article studies whether the choice of Big4 audit firms affect the capital structure of the company. The basic intuition is that given that debt offers more protection than capital to the providers of finance, debt is – compared to equity – less sensitive to problems of information asymmetry. Accordingly, one might expect that hiring a Big4 auditor, through its effect on information asymmetry, lowers the optimal debt ratio.

The result of the article shows that companies audited by local audit firms affiliated with a Big4 audit firm display lower debt ratios than those audited by other audit firmst. It supports the idea that local audit firms affiliated with a Big4 audit firm are perceived to have higher quality assurance that potentially reduced information asymmetry. The reduced information asymmetry then impact the capital structure of the companies.

This study contributes to the empirical literature on the link between information asymmetry and companies' capital structure in emerging countries through investigating the appointment of Big4 audit firms as a mechanism to reduce information asymmetry.

5.2 Implications for practice

In addition to contributing to the academic literature, the findings in this dissertation may on the interest of practitioners. Firstly, managers from emerging countries can learn from this dissertation that auditor choice is indeed valued by the stakeholders as it is important in decreasing information asymmetry and increase the credibility of financial information. The auditor choice

may help them in lowering cost of capital and set the optimal debt-equity mix to maximize company's value and finance companies' future growth. Secondly, regulators from emerging countries may also have interest in this dissertation as this dissertation shows that in a weak legal environment setting, Big4 audit firms can still maintain, - or at least are perceived to maintain – their high quality audits. This may be attributed to their international reputation (Beatty, 1989; Craswell, Francis, & Taylor, 1995).

5.3 Limitations and avenue for future research

A first limitation of this dissertation is that the benefit of Big4 audit firms in the context of debt-contracting is limited to the effect on the interest rate. It would be interesting to consider other aspects, for instance the debt maturity, the nature of the covenants and the required collateral. This study uses firm-level instead of loan-level data to assess the cost of debt. An advantage of this approach is that it enables us to conduct a large-sample study, which enhances the external validity of the results. A limitation however is that it does not allow to link negotiated loan terms with firm characteristics at the same moment in time. An interesting avenue for future research would be to use loan-specific information since this would allow a more precise measure of the cost of debt. In addition, information on individual loans would permit to further extend the set of control variables like, for instance, other characteristics of the loan contract that might influence the interest rate.

The second limitation is that this dissertation capture high quality audit only on the *perceived* audit quality by user of financial statements. While *actual* audit quality is difficult to measure (Knechel, Krishnan, Pevzner, Shefchik, & Velury, 2013), other aspects of audit quality might be worth to explore. Another venue for future research that could be promising is to explore whether Big4 and

non-Big4 dichotomy is translated into audit quality in different aspects such as tax aggressiveness and effectiveness, earnings quality and disclosure quality.

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