The effects of managerial shareholding and the financial crisis on audit fees: evidence from US listed companies.

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Abstract

This study investigates the effects of managerial shareholding and the financial crisis on audit fees for large US listed firms. The agency theory is used to examine the effects of managerial shareholding on audit fees. Managerial shareholding is divided into the regions low, intermediate and high managerial shareholding. A divergence-of-interests effect is expected to be present when there is low and high managerial shareholding, an entrenchment effect is expected to dominate when there is intermediate managerial shareholding. An increase in managerial shareholding when the divergence-of-interests effect dominates is expected to lead to lower agency costs. An increase in managerial shareholding leads to higher agency costs when the entrenchment effect dominates. As agency costs are positively related to audit fees, a non-linear effect of managerial shareholding on audit fees is expected. To investigate the effects of managerial shareholding on audit fees a study by Lin and Liu (2012) is replicated. Variables to test the effect of the financial crisis on audit fees are added in the linear regression model. Results provide evidence for a negative relation between managerial shareholding and audit fees when there is low managerial shareholding and a positive relation when there is intermediate managerial shareholding. The financial crisis does not affect the relation between managerial shareholding and audit fees, however the financial crisis does affect audit fees negatively. The negative effect of the financial crisis is ongoing until at least the year 2011. Since the sample used in this study differs from the sample used by Lin and Liu (2012), new insights are provided in the relationships between managerial shareholding and audit fees for a US setting. Furthermore results provide evidence for strong bargaining power of US firms towards auditors.

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Introduction

A recent study by Lin and Liu (2012) provides insights in the relation between managerial shareholding and audit pricing for a sample of Hong Kong listed firms. However, as indicated by Lin and Liu (2012), the results may not hold in other countries due to differences in corporate governance systems, regulatory issues and variations in ownership structures. Therefore this study replicates the study by Lin and Liu (2012) by investigating the relation between managerial shareholding and audit fees using large US listed firms. Additionally, the financial crisis is expected to influence the relation between managerial shareholding and audit fees and therefore the effects of the financial crisis on the relation between managerial shareholding and audit fees is tested. Finally the direct effect of the financial crisis on audit fees is investigated.

Due to separation of ownership of a firm and control over the firm, agency costs arise (Jensen and Meckling 1976). Managerial shareholding can be used as a control mechanism to align interests of managers and shareholders (Fama and Jensen 1983). Previous literature provides evidence on managerial shareholding influencing agency costs in two different manners, namely by a divergence-of-interests effect and an entrenchment effect (Morck et al. 1988; Lennox 2005). The divergence-of-interests effect inclines that interests of managers and shareholders are poorly aligned due to little or no managerial shareholding. Raising managerial shareholding when the divergence-of-interests effect dominates leads to better alignment of interests and therefore to a decline in agency costs. The entrenchment effect inclines that managers with more shares, and thus greater control, have more power and opportunity to act opportunistically (Lennox 2005). Raising managerial shareholding when the entrenchment effect dominates leads to deeper entrenchment and therefore higher agency costs (Morck et al. 1988). Prior research finds that the divergence-of-interests effect dominates when there is low and high managerial shareholding, and that the entrenchment effect dominates when there is intermediate managerial shareholding (Lennox 2005; Lin and Liu 2012).

Simunic and Stein (1996) state that audit fees equal the economic costs of an efficient auditor that performs an audit. Audit fees are influenced by, amongst others, company size, complexity, riskiness of the business the company is operating in, the accompanying riskiness

of the company and other characteristics. Simunic and Stein (1996) find that agency costs at audit firms' clients positively affect inherent risk for auditors. The increase in inherent risk leads to an increase in the execution of audit procedures and therefore it leads to an increase in audit fees (Simunic and Stein 1996).

Due to the dominance of the divergence-of-interests effect when there is low or high managerial shareholding, managerial shareholding is negatively related to audit fees when there is low or high managerial shareholding. Managerial shareholding positively affects audit fees when there is intermediate managerial shareholding due to the dominating entrenchment effect (Lin and Liu 2012).

In order to test the effect of managerial shareholding on audit fees a similar regression model as in Lin and Liu (2012) is used. Three test variables for managerial shareholding are used to test whether there is low, intermediate or high managerial shareholding. Furthermore the model is tested using multiple thresholds for the transitions between the levels of managerial shareholding. Data from the databases Execucomp, Compustat North-America, Compustat Segments and Audit Analytics is used. All collected data are S&P 1500 firms. A recent publication by the IRRC Institute on the S&P 1500 companies, states that less than eight percent of the S&P 1500 firms are controlled and managed by one person or group of persons. Furthermore the Hong Kong sample is characterized by high managerial shareholding and a strong variation in managerial shareholding (Lin and Liu, 2012). Therefore the two samples are expected to be different, which may result in different results.

The results of study indicate that a divergence-of-interests effect dominates within the region of low managerial shareholding. Therefore increasing managerial shareholding within the region of low managerial shareholding leads to lower agency costs and therefore audit fees are lower. Furthermore evidence is found for the dominance of an entrenchment effect within the region of intermediate shareholding. Therefore the increase of managerial shareholding within the region of intermediate shareholding leads to higher agency costs and therefore audit fees are higher. No evidence is found on the existence of a divergence-of-interests effect within the region of high managerial shareholding. Furthermore no evidence is found on the crisis affecting the relationship between managerial shareholding and audit fees. Finally the results indicate that the financial crisis negatively affects audit fees and triggered a cost reduction process that is ongoing until at least the year 2011.

This study contributes to existing literature by providing evidence on the existence of

a divergence-of-interests effect and an entrenchment effect within a sample of large US listed firms. Furthermore a contribution is made by determining the regions of managerial shareholding in which the entrenchment and divergence-of-interests effects are present. Practical relevance of this study includes the results that large US listed firms have strong bargaining power towards auditor, since results indicate that the financial crisis negatively affects audit fees.

The remainder of this paper continues as follows. Section 2 discusses prior literature and develops the hypotheses. Section 3 describes the research method and the definitions of the variables. Section 4 describes the sample and sample selection procedure. Section 5 presents the empirical results and section 6 concludes.

Literature review

The relationship between managerial shareholding and audit fees

Simunic and Stein (1996) state that audit fees equal the economic costs of an efficient auditor that performs an audit. These costs are, amongst others, influenced by company size, complexity, riskiness of the business the company is operating in, the accompanying riskiness of the company and other characteristics. This study focuses on the impact of managerial shareholding and the financial crisis on audit fees. Literature on how these two factors affect audit fees is discussed later in this study.

Bell et al. (2001) find that higher business risk of clients of audit firms does not increase the hourly audit fee, but does increase the number of audit hours per audit. This implies that auditors behold firm-level differences in business risk. Therefore auditors bill additional hours to obtain compensation, they do not obtain compensation by raising the rates per hour (Bell et al. 2001). Audit fees thus depend on the audit activities performed by an efficient auditor in order to make sure audit risk is set at an acceptable level (Simunic 1980; Choi et al. 2007).

Simunic and Stein (1996) find that agency costs at audit firms' clients positively affect inherent risk for auditors. These agency costs are derived from, for instance, information asymmetry between shareholders and managers. The increase in inherent risk leads to an increase in the execution of audit procedures and therefore it leads to an increase in audit fees (Simunic and Stein 1996). Thus an increase in agency costs leads to an increase in audit fees. This statement is confirmed by extend previous literature. Felix et al. (2001), Hackenbrack

and Knechel (1997) and O'Keefe et al. (1994) confirm the positive effect of inherent risk on audit effort. Bell et al. (2001) and Bedard and Johnstone (2006) state that audit effort is strongly related to audit hours, thus when audit effort increases audit hours and therefore fees increase as well. The following paragraphs discuss in what way managerial shareholding affects agency costs. Since agency costs are positively related to audit fees as discussed before, these paragraphs discuss the impact of managerial shareholding on audit fees.

This study will partly replicate a recent study on audit fees by Lin and Liu (2012), using a different sample and a slightly modified research method. Lin and Liu (2012) investigate the effect of managerial shareholding on audit fees using a sample of listed firms from the Hong Kong Stock Exchange, over the period 1999 to 2007. They use an audit fee model in which they divide managerial shareholding in three groups. The three groups low, intermediate and high managerial shareholding are used as test variables. Since evidence from previous literature on the thresholds of these regions is conflicting, they use three different sets of thresholds for the low and high region. The three thresholds are 10-30%, 15-40% and 20-50% respectively. Their Hong Kong sample shows eminent variation in managerial shareholding. Managerial shareholding in their sample varies between 0% and 87%. More than 30% of the observed firm years have managerial shareholding that exceeds 50%. Consisting of 2,785 firm-year observations from 465 firms, their sample is suitable for investigating the effect of the managerial shareholding regions on audit fees. When the Hong Kong companies are compared with their counterparts in the US markets, it is clear that the levels of managerial shareholding are much higher in the Hong Kong firms (Lin and Liu, 2012).

This study will make use of the Standard and Poor's 1500 companies as a sample. These companies cover approximately 90% of the total US market capitalization. A recent study published by the IRRC Institute on the performance of the SP 1500 index over the years 2003-2012 indicates that only a small part of the SP 1500 companies is controlled and managed by one person or group of persons. The report states that 114 firms are control firms, of which only 35 companies are characterized by ownership of 30 percent or more of single class capital stock by a single group or person. 79 Out of 1500 companies have multiclass capital structures and have stocks with unequal voting rights. As discussed before, recent literature states that Hong Kong listed firms are characterized by high variation in managerial shareholding (Lin and Liu, 2012). Therefore significant differences on the levels of

managerial shareholding could exist between the sample used in this study and the sample used by Lin and Liu (2012). Due to the differences in levels of managerial shareholding and the proportion of control firms, differences in the thresholds of the regions of shareholding could exist between the two samples. A possible limitation of this study could be that the thresholds of different groups of managerial shareholding could be hard to determine, since managerial shareholding is expected to be low for most firms, consistent with the report published by the IRRC Institute. The possible limitations of this study will be discussed in more detail later on. In addition to the research by Lin & Liu (2012) this study also focuses on the effect of the financial crisis on audit fees. Furthermore the effect of the financial crisis on the specific regions of managerial shareholding will be investigated.

Previous literature provides evidence on managerial shareholding influencing agency costs in two different manners, namely by a divergence-of-interests effect and an entrenchment effect (Morck et al. 1988; Lennox 2005). The divergence-of-interests effect is present when there is low and high managerial shareholding. When there is intermediate shareholding an entrenchment effect proves to be present (Morck et al. 1988; Lennox 2005; Lin and Liu 2012).

Whereas Lin and Liu (2012) find evidence for a relationship between managerial shareholding and audit fees differing over different regions of managerial shareholding, other previous studies find evidence for a negative relation between managerial shareholding and audit fees. For instance, compared to other firms, audit effort and fees are lower for the companies majority-owned by their management (Niemi 2005). This is consistent with findings of Peel and Clatworthy (2001), who find that higher managerial shareholding is associated with lower audit fees. However they do not make a division of low, middle and high managerial shareholding in their model, whereas they use the proportion of shares held by directors as a proxy.

When there is low managerial shareholding, managers manage the firm without much self-interest in results of the company. Since firm profits do not directly affect their personal wealth (not considering individual variable remuneration contracts), interests of management and shareholders are poorly aligned. Thus, little or no managerial shareholding results in poor alignment of interests as management pursues its own interests instead of shareholders' interests (Lin and Liu 2012). Managerial shareholding can be used as a control mechanism to align interests of managers and shareholders within the region of low managerial shareholding

(Fama and Jensen 1983). When managerial shareholding increases, managers are more incentivized to act in line with interests of the company and other shareholders. Therefore they are less incentivized to act opportunistically in financial reporting, which results in lower agency costs. Thus raising managerial shareholding within the region of low managerial shareholding leads to a reduction in agency costs. As discussed before, a reduction in agency costs leads to a reduction in inherent risk and therefore results in lower audit effort and lower audit fees (Felix et al. 2001; Hackenbrack and Knechel 1997; O'Keefe et al. 1994; Lin and Liu 2012). Due to differences in variation in managerial shareholding and differences in the ratios of control firms between the US market and the Hong Kong market as discussed earlier, it is not sure a similar relationship exists as is found by Lin and Liu (2012). However no arguments arise that a different relationship can be expected, thus hypothesis 1 is as follows:

Hypothesis 1: Within the region of low managerial shareholding the relationship between managerial shareholding and audit fees is negative.

The idea of entrenchment is the fact that incumbent management makes itself important to outside shareholders and expensive to replace. Thereby management is able to lower the possibility of being replaced, to gain a higher salary and to gain a larger scope in order to have more input in determining the strategy of the firm (Shleifer and Vishny 1989). As described by Shleifer and Vishny (1989) managers entrench themselves in order to counteract on disciplinary outside forces, such as: monitoring by the board of directors (Fama and Jensen 1983), the managerial labor market (Fama 1980), product market competition (Hart 1984) and the threat of a takeover (Jensen and Ruback 1983; Scharfstein 1988). Shleifer and Vishny (1989) state that managers can entrench themselves by making manager specific investments. These investments are investments in management's own specialties and therefore the investments are more valuable under incumbent management. Entrenched managers are able to make manager specific investments since they have more voting rights, less oversight by the board and therefore more power within the firm.

Claessens et al. (2002) and Adams et al. (2005) find that when managerial shareholding increases the board of directors and shareholders decrease their oversight of managers. Findings in previous literature suggest that that the entrenchment effect gives managing shareholders incentives to dispossess corporate assets at the expense of other

shareholders (Lin and Liu, 2012). An increase in managerial shareholding results in deeper entrenchment and larger scope for opportunistic behaviour by management (Cronqvist and Nilsson 2003; Cronqvist and Fahlenbrach, 2009). Therefore managers who hold a higher equity stake within the region of intermediate managerial shareholding, are deeper entrenched and behave more opportunistically (Lin and Liu 2012). Thus increasing managerial shareholding within the region of intermediate managerial shareholding results in an increase in agency costs. As discussed before, agency costs are positively related to inherent risk and therefore to audit fees. Due to differences between the Hong Kong and the US market it is not certain whether a similar relationship exists as in Lin and Liu (2012). However no arguments arise for the fact that a different relationship can be expected, thus hypothesis 2 is as follows:

Hypothesis 2:   Within the region of intermediate managerial shareholding the relationship between managerial shareholding and audit fees is positive.

As previous literature shows, management does not gain personal advantages from an increase in managerial shareholding when management is already fully entrenched (Claessens et al. 2002; Lennox 2005). A way of reducing costs originated from the entrenchment effect is increasing managerial shareholding to a level at which managements' benefits from managerial shareholding outweigh its benefits from the entrenchment effect (Morck et al. 1988). A high managerial shareholding stake can result in alignment of interests of managing shareholders and other shareholders, thereby lowering incentives for managers to use the company's assets for personal benefit (Claessens et al. 2000; Claessens et al. 2002; Cronqvist and Nilsson 2003; Lin and Liu 2012). Therefore the terms divergence-of-interests effect and alignment-of-interests effect are used simultaneously in this study. Due to the fact that managing shareholders have total control over the firm in the high managerial shareholding region, raising their shareholding does not result in deeper entrenchment. Moreover management is inclined to act in a manner that is beneficial to all shareholders rather than to act opportunistically (Claessens et al. 2002; Lennox 2005). Therefore, within the region of high managerial shareholding, an increase in managerial shareholding results in lower agency costs. As discussed before, a decrease in agency costs leads to lower inherent risk and therefore lower audit fees. Due to differences between the Hong Kong and the US market it is

not certain whether a similar relationship exists as in Lin and Liu (2012). However no arguments arise for the fact that a different relationship can be expected, therefore hypothesis 3 is as follows:

Hypothesis 3: Within the region of high managerial shareholding the relationship between managerial shareholding and audit fees is negative.

The relationship between the financial crisis and audit fees

This section discusses the relationship between the financial crisis and audit fees. Based on previous literature, three potential effects of the financial crisis on audit fees can be distinguished. First, the fact that the financial crisis may lead to lower audit fees is discussed. Second, the fact that the financial crisis does not lead to a change in audit fees is discussed. Third, the fact that the financial may lead to higher audit fees is discussed. Finally the effect of the financial crisis on the individual groups of managerial shareholding is discussed.

One could expect that during times of financial crises firms may endure economic circumstances in which it is more difficult to persist than in times of no financial crises. Due to these difficult economic circumstances firms need to reduce costs in order to stay profitable or, in more difficult times, avoid bankruptcy. Campello et al. (2010) investigate the effect that the 2008 financial crisis has on corporate spending plans of companies during the economic crisis. They question 1050 CFOs to find out whether the financial crisis has affected corporate spending plans of companies. They question the CFOs about plans of firms in the areas of technology expenditures, marketing expenditures, hiring of domestic employees, capital expenditures, dividend payments and cash holdings. Plans of the coming 12 months are studied relative to the previous 12 month period. They find that US firms plan to cut costs on all questioned matters. Thus these findings of Campello et al. (2010) suggest that companies cut costs during a financial crisis. Therefore it can be expected that firms try to cut costs on the financial audit as well, resulting in the fact that the financial crisis could be negatively related to audit fees.

However a high quality financial audit has advantages for companies. Earnings reports are for instance more credible when audited by a high quality auditor, which results in higher earnings response coefficients (Teoh and Wong 1993). Another example of an advantage is additional assurance for stakeholders, which may lead to more sales orders due to additional

trust. When a company decides to cut costs on the audit this could result negative economic consequences for the company.

Furthermore when the auditor and the auditee discuss the price of the services, only the profit margin of the audit is discussed. As professionals performing the audit cannot provide a high quality audit using less hours, only the hourly rates can be discussed. Additionally the audit company needs to pay its employees a competitive salary and all overhead expenses need to be covered. Therefore the only part of the audit fee that can be discussed is the margin on the hourly rate that the audit firm is billing. Using a sample of mainly US firms, Francis (2004) finds that audit fees are smaller than 0.1% of aggregate sales of clients. Therefore it can be concluded that a small part (the profit margin on the hourly rate) of a very small part of the auditee's costs can be discussed. Keeping in mind that switching to a lower quality auditor could entail negative economic consequences, the discussion of the margins on the hourly rate could be not economical beneficial for auditees.

The difference between the auditee and the auditor side of the discussion of audit fees is that the profit margin in an audit is a small part of the costs for the auditee and the main source of profit for the auditor. Therefore the auditor may not be willing to reduce the fees since it means losing profit. The auditee however, is reducing only a very small amount of total costs when the fee is reduced. Furthermore reduction of the fee may bring along negative economic consequences, such as less credible earnings reports which results in lower earnings responses by investors (Teoh and Wong 1993). Thus due to the small cost reduction and negative economic consequences that arise when switching from a high quality to a low quality auditor, the switch may not be beneficial for companies.

Whereas arguments exist for fees to change during periods of financial crises, other literature suggests a financial crisis does not lead to a change in audit fees. Johnstone (2000) states that proactive risk-adaption methods are not used by partners of accounting firms. Methods of proactive-risk adaption include increasing the audit fees and making additional plans about the necessity of audit evidence in order to make clients more acceptable (Johnstone 2000). Audit partners state that the client acceptance procedures are not based on adapting to risk but rather on avoiding risk (Johnstone 2000). In other words, audit fees will not increase due to increased risk but clients won't be accepted anymore.

However, the study of Johnstone (2000) is conducted in a non-crisis period. Therefore it is not investigated whether partners do adapt their audit fees during a period of financial

crisis in order to be compensated for increased firm risks. Due to the occurrence of the financial crisis partners might have changed their client acceptance model to a model in which they do adapt to firm risk.

During economic crises more firms are expected to be in financial distress which in case leads to higher firm risk for individual companies and higher inherent risk for auditors. Zhang and Huang (2013) state that firm risk increases during the financial crisis, using a sample of Chinese firms during the 2008 financial crisis in China. Furthermore more firms are expected to be failing during the financial crisis. Product demand declines and bank tighten their credit lines. Due to decreasing demand of products for instance, companies end up with higher inventory stocks which may lead to impairment of inventories. Furthermore due to the crisis customers can become less creditworthy, which may lead to uncollectable accounts receivables. Due to all these events going concern issues may arise (Zhang and Huang 2013). A recent study by Zhang and Huang (2013) provides evidence for a relation between increase in firm risk during a crisis and audit fees. Zhang and Huang (2013) state that firms' operating risks increase during a crisis due to tightening monetary policies and declining demand for products. They investigate auditors' reaction to an increase in firm risk during a crisis. They use the 2008 financial crisis to examine the increased risk premium on audit fees. Using a sample of Chinese listed companies of the years 2007 and 2008 Zhang and Huang (2013) find that accounting firms charge more for their auditing services when firm risk gets higher during the crisis. The effect of managerial shareholding on audit fees is not considered. Their evidence supports expectations that audit fees increase during a financial crisis due to an increase in risk.

Schwartz and Menon (1985) state that stakeholders of failing firms are in need of additional assurance. As discussed earlier the financial crisis is expected to lead to more failing firms. Large audit firms provide greater assurance than small audit firms (Francis and Wilson, 1988; DeFond, 1992; Schartz and Menon, 1985). High quality auditors charge premium audit fees (DeFond et al. 2000; Abbott et al. 2003; Lennox and Pittman 2010). Thus a positive relation may exist between the financial crisis and audit fees, since the financial crisis leads to failing firms and failing firms tend to switch to higher quality auditors and therefore pay a premium audit fee.

Furthermore Bell et al. (2001) find that the relation between business risk and the number of audit hours per audit is positive. As stated before, this implies that auditors behold

firm-level differences in business risk and bill additional hours to obtain compensation and do not by raise the rates per hour (Bell et al. 2001). During economic crises more firms are expected to be in financial distress which in case leads to higher business risk for individual companies and higher inherent risk for auditors. As discussed before, higher inherent risk leads to an increase in execution of audit procedures and therefore it leads to an increase in audit fees (Simunic and Stein, 1996).

When concluding the before stated relationships, the financial crisis may result in a double positive relation on audit fees. First additional insurance is perceived to be necessary by companies, thus a high quality auditor charging a premium fee is hired. Second, due to the financial distress inherent risk for auditors increases, resulting in additional audit activities that in case result in higher audit fees.

Other previous literature confirms the existence of a positive relation between firms in financial distress and audit fees. As discussed earlier, it is expected that during a financial crisis to more financial distress is present at firms and more firms are failing, than in a non-crisis period. Client financial distress provides window dressing incentives for management and therefore is expected to be positively related with the likelihood of misleading financial statements (Kinney and McDaniel 1989; Krishnan and Krishnan 1997). Additionally, distress at clients of audit firms causes losses for investors which can result in lawsuits against auditors in attempts to recover the losses (Krishnan and Krishnan 1997). Krishnan and Krishnan (1997) reason that auditors improve audit quality and planning, issue more modified audit opinions and increase audit fees, when litigation risk increases. The improvement of audit quality in this case leads to higher audit effort. Audit effort is strongly related to audit hours, thus an increase in audit effort leads to an increase in audit hours and thus to higher audit fees (Bell et al. 2001; Bedard and Johnstone, 2006). These findings suggest that the financial crisis, which leads to more financial distress for firms, is positively related to litigation risk and thus to audit fees.

When considering the evidence for the effect of the crisis on audit fees stated before, evidence supporting an increase in fees during a financial crisis is perceived to be the strongest. Therefore the fourth hypothesis is as follows:

Hypothesis 4:   Audit fees increase in times of a financial crisis

Effects of the financial crisis on audit fees can be present in all three groups of managerial shareholding. Due to the different levels of managerial shareholding per group, and the accompanying fluctuations in agency costs, differences in effects of the crisis on audit fees are expected to exist between the three groups.

As discussed before, due to the crisis fees are expected to increase. When managerial shareholding is low or high, no entrenchment problems are present. Within the region of low managerial shareholding, managers do not have the opportunity to act opportunistically due to high oversight by the board. This is consistent with findings of Claessens et al. (2002) and Adams et al. (2005) who find that oversight over managers decreases when managerial shareholding increases. Furthermore, within the region of high managerial shareholding, managers are not expected to act opportunistically at the expense of other shareholders since interests of managing shareholders and other shareholders are aligned. Therefore no additional effects of the crisis are expected to be present in the regions of low and high managerial shareholding.

Consistent with agency problems described before, the entrenchment effect is expected to be present within the region of intermediate managerial shareholding. In practice this means that raising managerial shareholding within the region of intermediate shareholding leads to higher agency costs. An increase in agency costs leads to higher audit fees, as discussed before. Whenever performance of firms is declining during a crisis, it is more difficult for managers to achieve bonus targets. Therefore managers are more incentivized to manipulate earnings in order to reach forecasts of analysts and bonus targets, which results in a higher likelihood of the financial statements being misrepresented (Zhang and Huang 2013). Thus when the crisis leads to financial distress, management is more incentivized to present misleading financial figures. Due to the entrenchment hypothesis that is present in the region of intermediate managerial shareholding, managers have great opportunity to act opportunistically. Therefore agency problems become greater in the intermediate region of managerial shareholding during the financial crisis. Thus due to the additional incentives to act opportunistically and the great opportunity to do so within the region of intermediate managerial shareholding, an increase in inherent risk for auditors is expected. Auditors must perform additional audit procedures and increase their audit scope in order to avoid the issuance of an incorrect audit opinion (Zhang and Huang, 2013). The additional audit procedures result in a higher audit fee, consistent with the hypotheses of

Simunic (1980) and Choi et al. (2007). Therefore hypothesis 5 is as follows:

Hypothesis 5: During the financial crisis, within the region of intermediate managerial shareholding the positive relation between managerial shareholding and audit fees is stronger than in a non-crisis period.

Research Design

In order to test the effect of managerial shareholding on audit fees a regression model is used. Since a replication study of the study by Lin and Liu (2012) is made, the audit fee model used in this study is based on their audit fee model. Furthermore applicable control variables from Choi et al. (2010) are added in the regression model. Thus audit fee models used by Lin and Liu (2012) and Choi et al. (2010) are combined to investigate the effect of managerial shareholding and the financial crisis on audit fees. The models used in Lin and Liu (2012) and Choi et al. (2010) are constructed referring to audit fee models used in existing literature (Simunic 1980; Simunic and Stein 1996; and Choi et al. 2007; Mitra et al. 2007). The complete model of this study to test the relation between managerial shareholding and audit fees, the effect of the financial crisis on audit fees and the effect of the financial crisis on the relation between managerial shareholding and audit fees within the region of intermediate managerial shareholding is presented below.

$$AFEE\alpha = \alpha_0 + \alpha_1 HMANSH + \alpha_2 IMANSH + \alpha_3 LMANSH + \alpha_4 CRISIS + \alpha_5 CRISISxIMANSH + \alpha_6 LNTA + \alpha_7 NBS + \alpha_8 NGS + \alpha_9 INVREC + \alpha_{10} EMPLOY + \alpha_{11} FOREIGN + \alpha_{12} EXORD + \alpha_{13} LOSS + \alpha_{14} LOSSLAG + \alpha_{15} LEVE + \alpha_{16} ROA + \alpha_{17} LIQUID + \alpha_{18} BIG4 + \alpha_{19} SHORTTEN + \alpha_{20} FISEND + \alpha_{21} AUDOP + \alpha_{22} AUDOPIC + error\ term$$

The dependent variable is the natural logarithm of audit fees (AFEE). The test variables in the model used in this study are three variables for low, intermediate and high managerial shareholding as used by Lin and Liu (2012), a dummy variable for the financial crisis and an interaction term for the effect of the financial crisis on the intermediate managerial shareholding variable. As described before, the relationship between managerial shareholding and audit fees may depend on the level of managerial shareholding. Due to the

existence of both the entrenchment and divergence-of-interests effects, three test variables are used to check for different levels of managerial shareholding. These test variables are constructed in the same manner as in Lin and Liu (2012). Two thresholds are selected to determine the test variables. The first threshold indicates the transition from the region of low managerial shareholding to the region of intermediate managerial shareholding. The second threshold indicates the transition from the region of intermediate managerial shareholding to the region of high managerial shareholding. Between these two thresholds the entrenchment hypothesis is expected to be present. Outside these thresholds the divergence-of-interests effect is expected to be present. Morck et al. (1988) state that it is not defined in the literature at which levels of managerial shareholding the thresholds are located. Previous literature using US data suggests the entrenchment effect dominates within the region 5-25% managerial shareholding region (Lin and Liu 2012). Since this study uses US data as well, the same thresholds of 5-25% are used. However the definite thresholds for the used dataset are uncertain, therefore the 2 additional thresholds 2-15% and 10-35% are added. An example will be given to clarify the use of the test variables LMANSH, IMANSH and HMANSH. For a firm year observation that indicates a managerial shareholding level of 36% the values of the variables LMANSH, IMANSH and HMANSH are 5, 20 and 11 respectively, when using the 5-25% thresholds. When the observation indicates a managerial shareholding level of 3,5%, the values of the variables LMANSH, IMANSH and HMANSH are 3,5, 0 and 0 respectively, when using the 5-25% thresholds again. In accordance with the divergence-of-interests hypothesis it is expected that LMANSH and HMANSH are negatively related to audit fees, consistent with hypotheses 1 and 3 respectively. In accordance with with the entrenchment hypothesis the expected relation between IMANSH and audit fees is positive, consistent with hypothesis 2.

As discussed in the literature section, the financial crisis is expected to affect audit fees. Therefore a dummy variable for the financial crisis (CRISIS) is used as a test variable. In line with the discussion in the literature section of this study, the dummy variable CRISIS is expected to be positive. Following existing literature on the financial crisis of Zhang and Huang (2013) and Campello et al. (2010), it is assumed the crisis starts in 2008 with the bankruptcy of the Lehman Brothers. In the initial model the years 2008 and 2009 are defined as crisis year. The dummy CRISIS obtains the value 1 if a firm-year observation is in the year 2008 or 2009. Since uncertainty is present regarding the time span of the financial crisis,

additional tests are performed to check for different time spans of the effect of the financial crisis on audit fees.

In order to test hypothesis 5, an interaction variable is included in the audit fee model. This variable tests whether the financial crisis influences the expected positive relation between managerial shareholding and audit fees within the region of intermediate shareholding. This interaction variable is defined as CRISIS x IMANSH and is expected to be positive.

Audit fees equal the economic costs of an efficient auditor performing an audit (Simunic and Stein 1996). Simunic and Stein (1996) furthermore state, as mentioned before, that these costs are influenced by the factors size, complexity and riskiness. Control variables to control for these factors are included in the model. Agency costs increase with firm size and larger firms are more in need of wide and effective monitoring and control (Fama and Jensen 1983; Lin and Liu 2012). Similar as in Choi et al. (2010) two control variables for firm size are included. The first control variable is the natural log of total assets (LNTA). The natural log is used to improve linearity (Lin and Liu 2012). The second control variable for size is the square root of the number of employees (EMPLOY), consistent with Choi et al. (2010).The relationship between the two variables EMPLOY and LNTA and audit fees is expected to be positive due to the increase in agency costs with firm size. Chan et al. (1993) confirm the fact that auditee size as an explanatory variable is the most significant variable to determine audit fees, as used in prior research.

To control for complexity the variables number of business segments (NBS), number of geographical segments (NGS), inventory and accounts receivable divided by total assets (INVREC), payment of foreign tax (FOREIGN) and the report of extra ordinary gains or losses (EXORD) are used. All variables are derived from Choi et al. (2010) and Lin and Liu (2012). As discussed before, complexity is positively related to audit effort. Furthermore audit effort is positively related to audit fees. Therefore the relationship between these control variables and audit fees is expected to be positive.

To control for auditees' risk characteristics a dummy for reported loss in the current year (LOSS), a dummy for reported loss in the prior year (LOSSLAG), total liabilities divided by total assets (LEVE), return on assets (ROA) and current assets divided by current liabilities (LIQUID) are used (Choi et al. 2010). Consistent with findings of Simunic and Stein (1980) and Choi et al. (2010) LOSS, LOSSLAG and LEVE are expected to be positive. ROA and

LQUID are expected to be negative.

As discussed before, large auditors provide higher quality audits than small auditors and therefore charge a premium audit fee (DeFond et al. 2000; Abott et al. 2003; Lennox and Pittman 2010). Therefore a control variable to indicate whether a Big 4 auditor performs the audit (BIG4) is included in the model. The dummy BIG4 obtains the value 1 when a firm is audited by a Big4 accounting firm. The relation between BIG4 and audit fees is expected to be positive. In accordance with Sankaraguruswamy and Whisenant (2005) the variable SHORTTEN is added to control for a discount in the first two years of an audit engagement. This is in line with the lowballing hypothesis. Lowballing inclines that in order to make sure the initial audit engagement is assured a new auditor is likely to offer a lower audit fee, since overpricing is a common reason for auditor switch (Simon and Francis 1998; Johnstone and Bedard 2001).

A dummy for the fiscal year-end is used as a control variable in the model (Lin and Liu 2012). Since most firms' fiscal year ends in December, this is considered to be the busy season for auditors. An audit conducted during the busy season is more costly, as audit staff has to work overtime at higher pay rates (Lin and Liu 2012). Therefore a dummy for whether the fiscal year-ends in December (FISEND) is used in the model. The relation between FISEND and audit fees is expected to be positive. The dummy that controls for the busy season obtains value 1 whenever the fiscal year-end lies between the 25th of December and the 21st of January, since most year-ends are set at the 31st of December this period is considered to be the busy season.

The issuance of a modified audit opinion indicates that the auditor has doubts over the financial statements. This inclines that next year's audit will require more audit procedures to cover up additional risks (Lin and Liu 2012). Consistent with Lin and Liu (2012) and Hay et al. (2006) a dummy variable for audit opinion that was issued previous year (AUDOP) is included in the model. This dummy equals 1 whenever a non-standard audit opinion is issued in the prior year. When corporate governance is strong within a firm, auditors are likely to rely stronger on the auditee's internal controls and therefore auditors lower their risk assessment (Lin and Liu 2012). This may lead to a reduction of substantive testing during the year-end financial audit which in case leads to a lower audit fee (Bedard and Johnstone 2004; Hay et al. 2006). Lin and Liu (2012) use various control variables to control for corporate governance. Variables include the ratio of independent non-executive directors on the board

of directors and whether there is separation between the chairman of the board of directors and the CEO of a firm. To control for corporate governance this study will not use the same control variables as used by Lin and Liu (2012), since data on these control variables must be hand collected. However the firms in the sample of this study are, due to the Sarbanes-Oxley Act (SOX) of 2002, obliged to issue a report of management on the company's internal controls over financial reporting. This report needs to be attested by a public accounting firm. When a modified opinion is issued by a public accounting firm, corporate governance and the effectiveness of internal controls over financial reporting are assumed to be weak. Hogan and Wilkins (2008) confirm the relationship between effective internal controls and audit fees by finding that audit fees are significantly higher for firms with internal control deficiencies. Thus audit fees increase due to additional audit activities that need to be performed during the year-end financial audit, when corporate governance and internal controls are weak. Therefore the control variable for whether a modified opinion over internal controls is issued (AUDOPIC) is used in the model. The dummy AUDOPIC obtains the value 1 when a modified opinion over internal controls is issued. It is expected that the dummy variable AUDOPIC positively affects audit fees.

The variables and the predicted signs are defined in Table 1. Furthermore Table 1 indicates from which existing model the variables are derived.

Table 1: Variable definitions

Variables	Description	Originating from
Dependent variable		Simunic (1980)
AFEE	Natural log of audit fees	
Test variables		
LMANSH	MANSH if <L percent	- Lin and Liu (2012)
	L if MANSH >/= L percent	
IMANSH	0 if MANSH <L percent	+ Lin and Liu (2012)
	MANSH – L percent if L percent < MANSH < H percent	
	0 if MANSH > H percent	
HMANSH	0 if MANSH < H percent	- Lin and Liu (2012)
	MANSH – H percent if MANSH > H percent	
CRISIS	1 if the year of observation is 2007, 2008, 2009, 2010 or 2011	+ -

Table 1 (continued): Variable definitions

Variables	Description		Originating from
CRISISxIMANSH	Interaction of the dummy CRISIS and the variable IMANSH	+ -	
Control variables			
LNTA	Natural log of total assets in thousands of dollars	+	Lin and Liu (2012)
NBS	Natural log of 1 plus the number of business segments.	+	Lin and Liu (2012)
NGS	Natural log of 1 plus the number of geographic segments.	+	Lin and Liu (2012)
INVREC	Inventory and receivables, divided by total assets	+	Lin and Liu (2012)
EMPLOY	square root of the number of employees	+	Choi et al. (2010)
FOREIGN	1 if the firm pays any foreign income tax, 0 otherwise.	+	Choi et al. (2010)
EXORD	1 if the firm reports any extraordinary gains or losses, 0 otherwise.	+	Choi et al. (2010)
LOSS	1 if the firm reported a loss during the year, and 0 otherwise.	+	Lin and Liu (2012)
LOSSLAG	1 if the firm reported a loss during the prior year, and 0 otherwise.	+	Choi et al. (2010)
LEVE	Leverage, total liabilities divided by total assets	+	Lin and Liu (2012)
ROA	Return on assets, income before extraordinary items divided by average total assets	-	Choi et al. (2010)
LIQUID	Liquidity, current assets divided by current liabilities	-	Choi et al. (2010)
BIG4	1 if the auditor is one of the Big 4, and 0 otherwise.	+	Lin and Liu (2012)
SHORTTEN	1 if the auditor is in the first or second year of the audit engagement, and 0 otherwise.	-	Choi et al. (2010)
FISEND	1 if the firm's fiscal year-end is in December.	+	Lin and Liu (2012)
AUDOP	1 if the firm was issued a modified opinion in the prior year; 0 otherwise	+	Lin and Liu (2012)
AUDOPIC	1 if the firm was issued a modified opinion over IC's; 0 otherwise	+ -	

Sample selection

The sample that is used in this study consists of large US listed firms that are included in the S&P 1500 list over the period 2004-2011. The data is extracted from various databases. The databases Execucomp, Compustat North-America, Compustat Segments and Audit Analytics are used. Data on managerial shareholding is extracted from the database Execucomp. In this database data on managerial shareholding in percentages per executive is available. Shares of all executives per company per year are combined to find the level of managerial shareholding per firm-year observation. Data on audit fees and the fiscal year-end per company is extracted from the database Audit Analytics. Data on the number of geographical segments and the number of business segments is extracted from Compustat Segments. All other data is extracted from Compustat North-America.

Initially 10.878 firm-year observations are obtained by extracting all data on managerial shareholding from the Execucomp database over the period 2004-2011. Ultimately 6.801 firm-year observations from 1.062 firms are used. Missing data on audit fees and year-ends in Audit Analytics leads to the exclusion of 105 observations. Missing data on the numbers of business and geographical segments in the database Compustat Segments leads to the exclusion of 969 observations. Furthermore missing data on control variables in Compustat North-America leads to a decline in sample of 2.653 observations. Finally 350 firm-year observations with SIC-Codes 4900-4999 and 6000-6999, being utilities and financial institutions, are excluded from the sample consistent with Choi et al. (2010).The sample selection procedure is shown in Table 2.

In Table 3 the distribution of managerial shareholding in the sample is presented. Approximately 75% of the firm-year observations show a level of managerial shareholding between 0 and 2 percent. Furthermore, more than 95% of the firm-year observations lie between 0 and 20 percent of managerial shareholding. These observations are in line with the discussed sample characteristics in the literature section of this study, that there are differences in levels of managerial shareholding between large US firms and Hong Kong firms.

Table 2: Sample selection

Initial firm-year observations Execucomp 2004-2011	10.878
Less: missing observations in Audit Analytics	105
Less: missing observations in Compustat Segments	969
Less: missing observations in Compustat North-America	2.653
Less: SIC-Codes 4900-4999 and 6000-6999	350
Sample	6.801

Note:

The database Execucomp will be used as the first database since managerial shareholding comprises 4 out of 5 test variables in the model.

Table 3: Managerial shareholding distribution

Regions of managerial shareholding	N	percentages
0-2%	5.096	74,93%
2-5%	765	11,25%
5-10%	368	5,41%
10-15%	190	2,79%
15-20%	89	1,31%
20-25%	91	1,34%
25-30%	57	0,84%
30-40%	145	2,13%
40-50%	0	0,00%
50-100%	0	0,00%
Total	6.801	100,00%

Empirical results

Descriptive statistics

Table 4 provides the descriptive statistics on the used variables. All continuous variables are winsorized at 1% to prevent any potential problems with outliers. The firms in the sample pay an average audit fee of $3,479 million. The average audit fee is higher than the average audit fee in the Hong Kong sample, which was HK$1,673 million (with US$1 = HK$7,76, approximately) in the study by Lin and Liu (2012). Table 4 shows that the level of managerial

shareholding on average is 2,901%. This is much lower than the average level of managerial shareholding in Hong Kong firms, which was 29,16% in the study by Lin and Liu (2012). Of all firm-year observations 28% are observations in the financial crisis in the years 2008 and 2009. Furthermore sample firms on average have 6,26 business regions and 8,18 geographical regions. Similarly as in Hong Kong, accounts receivables and inventories combined add up to 25,5% of total assets on average. On average 12% of the sample firms is lossmaking and 93% of the firms is audited by a Big4 auditor. In line with the busy season argument of auditors, 65% of the observed firm-years have the fiscal year-end in December.

Table 4: Descriptives statistics

Variables	Mean	Median	Minimum	Maximum	Standard Deviation
AFEE	14,526	14,416	12,465	17,086	0,989
MANSH	2,901	0,550	0,000	37,163	6,421
CRISIS	0,280	0,000	0,000	1,000	0,449
LNTA	14,486	14,333	11,618	18,463	1,502
NBS	6,260	4,000	0,000	21,000	5,105
NGS	8,180	6,000	0,000	35,000	6,658
INVREC	0,255	0,239	0,019	0,702	0,151
EMPLOY	108,523	77,460	13,820	519,904	93,936
FOREIGN	0,770	1,000	0,000	1,000	0,423
EXORD	0,020	0,000	0,000	1,000	0,135
LOSSLAG	0,120	0,000	0,000	1,000	0,328
LOSS	0,120	0,000	0,000	1,000	0,322
LEVE	0,478	0,481	0,086	1,005	0,199
ROA	0,067	0,067	-0,268	0,297	0,078
LIQUID	2,503	2,031	0,538	9,917	1,667
BIG4	0,930	1,000	0,000	1,000	0,247
FISEND	0,650	1,000	0,000	1,000	0,477
AUDOP	0,500	0,000	0,000	1,000	0,500

Table 4 (continued): Descriptives statistics

Variables	Mean	Median	Minimum	Maximum	Standard Deviation
AUDOPIC	0,030	0,000	0,000	1,000	0,176
SHORTTEN	0,060	0,000	0,000	1,000	0,229

Note:

N=6801

All variable definition are stated in table 1

Univariate analysis

In order to perform a univariate analysis on the variable managerial shareholding a split sample method is used. The sample is divided into two groups. The first group contains all observations of managerial shareholding that are lower than the mean of managerial shareholding. The second group contains all observations of managerial shareholding that are equal to or higher than the mean of managerial shareholding. Table 5 provides the results on the univariate analysis. The results indicate that companies with a level of managerial shareholding that is lower than the sample mean of managerial shareholding on average pay higher audit fees than companies with higher than average managerial shareholding. Table 4 states that the mean managerial shareholding level is 2,901% and thus lies within the 0-5% region of low managerial shareholding. The univariate test on managerial shareholding indicates that that companies with higher than 2,901% of managerial shareholding on average pay lower audit fees. However, it cannot be concluded that raising managerial shareholding to a level higher than average but lower than 5% leads to lower audit fees. This is due to the fact that the sample part with the higher than average managerial shareholding observations also contains observations with a higher than 5% managerial shareholding level. Therefore the univariate analysis predicts the allover negative relation between managerial shareholding and audit fees. However no evidence is provided for the relation between managerial shareholding and audit fees within the individual regions of low, intermediate and high managerial shareholding. Thus the univariate analysis does not provide evidence for the acceptance or rejection of hypotheses 1, 2 and 3. Later on in this study the linear regression model provides further insights in these hypotheses.

Table 5: Univariate test managerial shareholding

	MANSH < mean (N=5442)	MANSH > mean (N=1359)	t-value	significance
LNFEE	14,649	14,032	-21,246	0,000***
CRISIS	0,280	0,290	0,573	0,567
LNTA	14,692	13,657	-23,640	0,000***
NBS	6,370	5,850	-3,364	0,001***
NGS	8,600	6,510	-10,416	0,000***
INVREC	0,251	0,267	3,418	0,001***
EMPLOY	115,233	81,653	-11,910	0,000***
FOREIGN	0,790	0,680	-8,340	0,000***
EXORD	0,020	0,010	-1,839	0,066*
LOSSLAG	0,120	0,120	-0,472	0,637
LOSS	0,120	0,107	-1,268	0,205
LEVE	0,497	0,403	-15,837	0,000***
ROA	0,066	0,071	1,855	0,064*
LIQUID	2,401	2,910	10,147	0,000***
BIG4	0,960	0,830	-18,000	0,000***
FISEND	0,660	0,610	-3,410	0,001***
AUDOP	0,517	0,422	-6,240	0,000***
AUDOPIC	0,030	0,040	2,527	0,012**
SHORTTEN	0,050	0,090	5,567	0,000***

Notes:

The variable definitions are stated in Table 1

*,**, and *** denote the significance level at 10%, 5% and 1%, respectively. All two tailed.

The mean comparisons further indicate that firms with lower than average managerial shareholding are larger than firms with higher than average managerial shareholding, since firms with lower than average managerial shareholding have higher total assets and more employees. Firms with lower than average managerial shareholding are more complex, since the numbers of business and geographical segments are higher than for firms with higher than

average managerial shareholding. Finally results show that firms with lower than average managerial shareholding on average more often pay foreign tax, have a higher leverage ratio, have a lower liquidity ratio, are more often audited by a Big4 auditor, are more likely to have the year-end during the auditor's busy season, are more likely to have received a modified audit opinion in the prior fiscal year, are less likely to receive a modified audit opinion over internal controls and are less likely to have a short auditor tenure.

Firms with lower than average managerial shareholding report more extraordinary gains and losses and report a lower return on assets than firms with higher than average managerial shareholding, however the means between the two sample parts only differ at the 10% significance level. The results do not provide evidence for means of the variables LOSS and LOSSLAG to be significantly different for the two sample divisions.

To test whether these results are robust an additional univariate test, using the median of managerial shareholding instead of the mean is conducted. The test provides similar results which are presented in Appendix A.

A third univariate test is conducted in order to assess differences in means of the used variables during periods of crisis and periods of non-crisis. Table 6 presents the results and does not provide evidence on a significant difference in audit fees between crisis and non-crisis periods. Therefore the univariate analysis does not provide evidence on whether to reject or accept hypothesis 4. Additionally the results in Table 6 do not provide evidence on whether to reject or accept hypothesis 5. Results do not provide evidence on a significant difference between managerial shareholding during periods of crisis and non-crisis. Furthermore results indicate that the means of the variables NBS, NGS, EXORD, LOSSLAG, LOSS, ROA, BIG4, FISEND, AUDOP and AUDOPIC vary significantly at 1% significance between periods of crisis and periods of non-crisis. During a period of crisis on average 20% of the companies is loss making, compared to 8% in a non-crisis period. The average return on assets during a period of financial crisis is 4,7% compared to 7,5% in periods of non-crisis. However, during a period of financial crisis firms operate in more business segments and geographical segments than in non-crisis periods. A possible explanation is that firms try to explore additional markets in order to survive periods of difficult economic circumstances. During a period of crisis 62% of the audit opinions that are issued prior year are modified, whereas 45% of the audit opinions issued prior year in non-crisis periods is modified.

Table 6: Univeriate test crisis 2008-2009

	crisis (N=1909)	non-crisis (N=4892)	t-value	significance
LNFEE	14,519	14,529	0,358	0,721
MANSH	3,076	2,833	-1,367	0,172
LNTA	14,429	14,508	1,197	0,055*
NBS	7,220	5,890	-9,684	0,000***
NGS	9,430	7,690	-9,760	0,000***
INVREC	0,248	0,257	2,291	0,022**
EMPLOY	105,453	109,721	1,694	0,090*
FOREIGN	0,760	0,770	0,136	0,892
EXORD	0,000	0,030	6,699	0,000***
LOSSLAG	0,150	0,110	-4,021	0,000***
LOSS	0,200	0,080	-14,033	0,000***
LEVE	0,485	0,475	-1,884	0,060*
ROA	0,047	0,075	13,650	0,000***
LIQUID	2,544	2,487	-1,257	0,209
BIG4	0,920	0,940	2,663	0,008***
FISEND	0,620	0,660	2,706	0,007***
AUDOP	0,620	0,450	-12,922	0,000***
AUDOPIC	0,020	0,040	2,597	0,009***
SHORTTEN	0,060	0,050	-0,635	0,525

Notes:

The variable definitions are stated in Table 1

*,**, and *** denote the significance level at 10%, 5% and 1%, respectively. All two tailed.

Table 7 provides the correlation matrix on all variables in the model. The correlation between managerial shareholding and audit fees is negative at the 1% significance level (correlation=-0,226).

No significant relationship between the financial crisis and audit fees is found in the correlation matrix. The correlations between variables INVREC and LOSSLAG, and audit fees are negative, contrary to the predictions. However INVREC is only moderately

significant at the 10% significance level. The variable LOSS does not significantly correlate with audit fees in the correlation matrix. The control variable for internal controls and corporate governance AUDOPIC is positively related to audit fees at the 5% significant level. This inclines AUDOPIC affects audit fees consistent with the expectations stated in the research design. All other control variables are significantly correlated with audit fees and have the signs as predicted in the research design section.

Table 7: Correlation matrix

	AFEE	MANSH	CRISIS	LNTA	NBS	NGS	INVREC	EMPLOY	FOREIGN	EXORD
AFEE	1,000									
MANSH	-,226***	1,000								
CRISIS	-0,004	0,017	1,000							
LNTA	,817***	-,246***	-0,023*	1,000						
NBS	,261***	-,046***	,117***	,184***	1,000					
NGS	,310***	-,113***	,118***	,165***	,235***	1,000				
INVREC	-0,023*	,057***	-,027**	-,168***	,048***	,064***	1,000			
EMPLOY	,616***	-,128***	-0,02*	,711***	,129***	,029**	0,001	1,000		
FOREIGN	,401***	-,117***	-0,002	,204***	,120***	,454***	,062***	,066***	1,000	
EXORD	,076***	-0,013	-,081***	,077***	,030**	-,031**	-0,016	,069***	-0,012	1,000
LOSS	-0,011	-,028**	,168***	-,085***	0,000	0,009	-,042***	-,093***	0,007	0,011
LOSSLAG	-,027**	-,025**	,049***	-,102***	-0,007	0,012	-,033***	-,112***	0,020	,025**
LEVE	,399***	-,174***	0,023*	,437***	,113***	-,064***	,040***	,336***	-,028**	,056***
ROA	-,082***	,048***	-,163***	-0,011	-,067***	0,006	,032***	,029**	-0,016	-0,021*
LIQUID	-,348***	,097***	0,015	-,407***	-,125***	,064***	0,009	-,366***	,069***	-,056***
BIG4	,250***	-,206***	-,032***	,275***	,074***	,034***	-,090***	,170***	,065***	,032***
FISEND	,057***	-,028**	-,033***	,037***	-0,02*	,030**	-,145***	-,081***	-0,013	,030**
AUDOP	,164***	-,063***	,155***	,119***	,145***	,133***	-0,020	,064***	,044***	,079***
AUDOPIC	,031**	,026**	-,031***	-,050***	-0,012	-0,014	-0,004	-,042***	,029**	,031**
SHORTTEN	-,117***	,086***	0,008	-,108***	0,003	-,028**	,027**	-,086***	-,032***	0,010

Notes:

All variable definitions are stated in Table x

*** Correlation is significant at the 0.01 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

* Correlation is significant at the 0.10 level (2-tailed)

Table 7 (continued): Correlation matrix

	LOSS	LOSSLAG	LEVE	ROA	LIQUID	BIG4	FISEND	AUDOP	AUDOPIC	SHORTTEN
AFEE										
MANSH										
CRISIS										
LNTA										
NBS										
NGS										
INVREC										
EMPLOY										
FOREIGN										
EXORD										
LOSS	1,000									
LOSSLAG	,334***	1,000								
LEVE	,074***	,046***	1,000							
ROA	-,657***	-,313***	-,207***	1,000						
LIQUID	,025*	,038***	-,624***	,104***	1,000					
BIG4	-0,013	-0,021*	,215***	-,042***	-,190***	1,000				
FISEND	,037***	,049***	,055***	-,026**	-0,023*	,032***	1,000			
AUDOP	,024**	-0,022*	,087***	-,055***	-,086***	,057***	-,027**	1,000		
AUDOPIC	,077***	,057***	0,018	-,069***	-0,008	-0,016	-0,003	,055***	1,000	
SHORTTEN	,052***	,055***	-,050***	-,028**	,060***	-,194***	-0,010	-0,007	,062***	1,000

Notes: All variable definitions are stated in Table xxxx

*** Correlation is significant at the 0.01 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

* Correlation is significant at the 0.10 level (2-tailed)

Multivariate analysis

Table 8 shows the results of the regression model. Due to the existence of uncertainty on the applicable thresholds, three different sets of thresholds are used. Column 1 provides results on the linear regression model with the thresholds set at 2-15%. Column 2 and 3 provide results on the models with thresholds set at 5-25% and 10-35%, respectively. All tested models show an identical adjusted R^2 of 76,7% and a highly significant F and p-value. The model with the thresholds set at 2-15% finds evidence for the existence of a divergence-of-interests effect within the region of low managerial shareholding (0-2%). The coefficient of LMANS is -0,048 and is significant at the 1% significance level (t=-4,993). Therefore, hypothesis 1 is accepted. An increase of managerial shareholding of 1% within the region 0-2% leads to a decrease in audit fees of 4,8%. Furthermore evidence is found for the existence of an entrenchment effect within the region of intermediate managerial shareholding in the 2-15% model. The coefficient of IMANS is 0,006 and is significant at the 5% significance level (t=2,202). Therefore, hypothesis 2 is accepted. An increase in managerial shareholding of 1% within the region of 2-15% leads to an increase of audit fees of 0,6%. The results do not provide statistical evidence for the existence of an alignment-of-interests effect within the region of high managerial shareholding of the model in column 1, since the coefficient of HMANSH is statistically insignificant (t=-0,419). Therefore hypothesis 3 is rejected. Failure to be able to find evidence for the existence of an alignment-of-interests effect within the region of high managerial shareholding may be due to the distribution of managerial shareholding within the sample.

Columns 2 and 3 of Table 8 show the results of the regression model with thresholds set at 5-25% and 10-35% respectively. The results only provide evidence for the divergence-of-interests effect within the region of low managerial shareholding of the model with the thresholds set at 5-25%. Results do not provide evidence for the existence of entrenchment or divergence-of-interests effects in the other regions of managerial shareholding. Failure to find evidence in the 5-25% model for these effects may be due to the distribution of managerial shareholding in the sample as shown in Table 3. Within the 10-35% the same reason may hold, however, also no significant divergence-of-interests effect proves to be present in the region of low managerial shareholding of this model. This inclines the divergence-of-interests effect does not dominate within the entire 0-10% range.

Table 8: Regression results using the various managerial shareholding thresholds

	2-15% region		5-25% region		10-35% region	
	Beta	t-stat	Beta	t-stat	Beta	t-stat
Constant	7,504	78,200***	7,443	78,547***	7,387	79,282***
LMANSH	-0,048	-4,993***	-0,026	-3,13***	-0,012	-1,426
IMANSH	0,006	2,202**	0,015	1,417	0,009	0,939
HMANSH	-0,001	-0,419	0,002	0,229	0,002	0,328
crisis	-0,037	-2,536**	-0,016	-2,529**	-0,016	-2,489**
crisis x IMANSH	0,003	0,93	0,006	0,824	0,005	0,704
LNTA	0,415	62,163***	0,635	62,821***	0,639	63,741***
NBS	0,013	10,760***	0,066	10,638***	0,065	10,536***
NGS	0,012	12,006***	0,084	12,039***	0,084	12,17***
INVREC	0,474	11,559***	0,073	11,616***	0,073	11,702***
EMPLOY	0,001	13,414***	0,119	13,639***	0,119	13,6***
FOREIGn	0,484	30,636***	0,208	30,731***	0,208	30,696***
EXORD	0,068	1,563	0,01	1,627	0,01	1,655*
LOSS	0,033	1,33	0,011	1,389	0,012	1,465
LOSSLAG	0,087	4,553***	0,029	4,577***	0,029	4,568***
LEVE	0,261	6,454***	0,051	6,246***	0,051	6,217***
ROA	-0,536	-5,234***	-0,041	-5,125***	-0,04	-5,003***
LIQUID	-0,007	-1,477	-0,011	-1,428	-0,011	-1,421
BIG4	0,055	2,190**	0,014	2,231**	0,01	2,409**
FISEND	0,101	8,127***	0,049	8,109***	0,049	8,143***
AUDOP	0,079	6,521***	0,041	6,758***	0,042	6,901***
AUDOPIC	0,323	9,709***	0,058	9,715***	0,057	9,682***
SHORTTEN	-0,137	-5,275***	-0,031	-5,183***	-0,031	-5,133***
Adjusted R2	0,767		0,767		0,767	
F-statistic	1.021,28		1018,444		1016,762	
p-value	0,000		0,000		0,000	

Notes:

Table 1 states the variable definitions

*,**, and *** denote the significance level at 10%, 5% and 1%, respectively. All two tailed.

As discussed in the literature section of this study, the financial crisis is expected to positively influence audit fees. However, as the results indicate, the crisis affects audit fees in a negative manner. The coefficient of CRISIS is -0,037 in the model with thresholds set at 2-15% and is significant at a significance level of 5% (t=-2,536). Since the coefficient of the test variable CRISIS is negative instead of positive, hypothesis 4 is rejected. The results incline that audit firms' clients cut costs on the financial audit during a financial crisis, consistent with findings by Campello et al (2010). The results, however, conflict with findings of Zhang and Huang (2013) that the financial crisis leads to higher audit fees. A possible explanation for the difference in results is the different samples that are used. It could, for instance, be possible that large US listed firms have more bargaining power towards the auditor than Hong Kong firms and therefore are able to negotiate a lower audit fee. Consistent with findings in the model with the 2-15% thresholds, the coefficient of the CRISIS control variable is negative for both the 5-25% and the 10-35% model at a significance level of 5% (β=-0.016, t=-2,529 and β=-0,016, t=-2,489 respectively).

The interaction term controlling for the effect of the financial crisis on audit fees within the region of intermediate managerial shareholding is highly insignificant for all models. The t-values for the three models are 0.920, 0.824 and 0.704 respectively. Therefore no concluding remarks can be made about whether the financial crisis affects the relationship between managerial shareholding and audit fees within the region of managerial shareholding. Thus hypothesis 5 is therefore rejected.

Positive coefficients are found at 1% significance level for the control variables natural log of total assets (LNTA), number of business segments (NBS), number of geographical segments (NGS), inventories and accounts receivables divided by total assets (INVREC), square root of number of employees (EMPLOY), whether a firm pays foreign tax (FOREIGN), whether a firm made loss in the prior year (LOSSLAG), a firm's leverage ratio (LEVE) and whether a firm's fiscal year-end is during the auditor's busy season (FISEND). Similarly negative coefficients are found at 1% significance level for the control variables return on assets (ROA) and short auditor tenure (SHORTTEN). All findings are consistent with prior research (Choi et al. 2010; Lin and Liu 2012). These results hold for all three models with different sets of thresholds.

For the variables liquidity (LIQUID), the reporting of extraordinary gains or losses (EXORD) and whether a loss was reported during the current year (LOSS) no significant relations were found with the dependent variable. The exclusion of significance for the

variable LOSS is probably due to the variable LOSSLAG, which is included in the model.

Contrary to prior studies, the control variables in column 1 and column 2 for whether an audit is performed by a BIG4 firm are significant at a 5% significance level, instead of at a 1% significance level (Choi et al. 2010; Lin and Liu 2012). In the model with managerial shareholding thresholds set at 10-35% the BIG4 control variable is only moderately significant at the 10% significance level (t=1,935).

As described in the methodology section, the issuance of a modified audit opinion indicates an auditor's doubts over the financial statements. Therefore in the next year additional audit procedures will be executed by the auditor to cover up additional risks. Consistent with this reasoning the control variable for a modified audit opinion issued in the prior year in column 1 is significantly positively related to audit fees at the 1% significance level (β=0,079 and t=6,521). This inclines that a modified opinion issued in the prior year leads to a higher audit fee in the current year. Similar results are seen in columns 2 and 3.

The coefficient of the control variable AUDOPIC within the 2-15% model is positive and significant at the 1% significance level (β=0,323 and t=9,709). This is in line with the expectations set in the methodology section. Similar results are found using the 5-25% model and the 10-35% model.

Additional tests

As defined in the research design section the financial crisis is expected to start in the year 2008 with the bankruptcy of the Lehman Brothers (Campello et al. 2010; Zhang and Huang 2013). In the literature section of this study it is described that the financial crisis is expected to positively affect audit fees. The results presented in Table 8 indicate that the crisis negatively affects audit fees, inclining that audit firms' clients cut costs on the financial audit. Table 8 is based on regression results using the years 2008 and 2009 as crisis years. However it is unsure whether the negative effect of the financial crisis on audit fees ends in 2009. Therefore additional regressions are run to test whether the financial crisis test variable still is statistically significant when the years 2010 and 2011 are included in the crisis dummy. The results are presented in Table 9. The dummy variable for the financial crisis has a significant negative coefficient at the 5% significance level when the crisis dummy obtains value 1 in the years 2008-2009. Additionally when the crisis dummy is 1 in the years 2008-2010 and 2008-2011 the negative coefficient is significant at the 1% significance level. This inclines that audit companies' clients are cutting costs on the financial audit in the years 2010

and 2011 as well is in the years 2008 and 2009. Therefore it could be concluded that the financial crisis, starting with the Bankruptcy of the Lehman Brothers in 2008, triggered a 'cost reduction process' that is ongoing until at least the year 2011. Since no data of the year 2012 is included in the sample no conclusions can made regarding whether the cost reduction process is an ongoing process.

Table 9: Multivariate results, test for duration crisis effect

	2-15% region crisis 08-09		2-15% region crisis 08-10		2-15% region crisis 08-11	
	Beta	t-stat	Beta	t-stat	Beta	t-stat
Constant	7,504***	78,200	7,433***	80,346	7,422***	80,374
LMANSH	-0,048***	-4,993	-0,026***	-2,962	-0,024***	-2,77
IMANSH	0,006**	2,202	0,019	1,555	0,022*	1,649
HMANSH	-0,001	-0,419	-0,002	-0,255	-0,003	-0,306
crisis	<u>-0,037**</u>	<u>-2,536</u>	<u>-0,039***</u>	<u>-5,953</u>	<u>-0,041***</u>	<u>-6,047</u>
crisis x IMANSH	0,003	0,930	0,007	0,840	0,001	0,099
LNTA	0,415***	62,163	0,637***	63,840	0,641***	64,214
NBS	0,013***	10,760	0,069***	11,137	0,067***	10,862
NGS	0,012***	12,006	0,089***	12,717	0,087***	12,497
INVREC	0,474***	11,559	0,07***	11,246	0,070***	11,201
EMPLOY	0,001***	13,414	0,118***	13,608	0,116***	13,369
FOREIGn	0,484***	30,636	0,206***	30,523	0,208***	30,914
EXORD	0,068	1,563	0,007	1,167	0,006	0,933
LOSS	0,033	1,330	0,012	1,539	0,012	1,516
LOSSLAG	0,087***	4,553	0,032***	5,105	0,031***	4,9
LEVE	0,261***	6,454	0,053***	6,559	0,055***	6,713
ROA	-0,536***	-5,234	-0,041***	-5,116	-0,042***	-5,192
LIQUID	-0,007	-1,477	-0,010	-1,257	-0,009	-1,138
BIG4	0,055**	2,190	0,013**	2,068	0,012*	1,935

Table 9 (continued): Multivariate results, test for duration crisis effect

	2-15% region crisis 08-09		2-15% region crisis 08-10		2-15% region crisis 08-11	
	Beta	t-stat	Beta	t-stat	Beta	t-stat
FISEND	0,101***	8,127	0,048***	7,951	0,047***	7,83
AUDOP	0,079***	6,521	0,039***	6,451	0,031***	4,97
AUDOPIC	0,323***	9,709	0,056***	9,435	0,055***	9,282
SHORTTEN	-0,137***	-5,275	-0,032***	-5,344	-0,033***	-5,529
Adjusted R2	0,767		0,768		0,768	
F-statistic	1.021,28		1.024,270		982,005	
p-value	0,000		0,000		0,000	

Notes:

The variable definitions are stated in Table 1

*,**, and *** denote the significance level at 10%, 5% and 1%, respectively. All two tailed.

Conclusion

This study investigates the relationship between managerial shareholding and audit fees. The study of Lin and Liu (2012) is replicated while using the S&P 1500 firms instead of Hong Kong listed firms. The Hong Kong sample is characterized by strong variation of managerial shareholding levels whereas the S&P 1500 firms are characterized by low managerial shareholdings. Therefore differences may arise in results when replicating the study of Lin and Liu (2012). Additionally, the financial crisis is expected to influence the relation between managerial shareholding and audit fees and therefore the effects of the financial crisis on the relation between managerial shareholding and audit fees is tested. Finally the direct effect of the financial crisis on audit fees is investigated.

The results provide evidence for the existence of a divergence-of-interests effect within the region of low managerial shareholding. Raising managerial shareholding within the region of low managerial shareholding leads to a decline in agency costs. The decline in agency costs results in a reduction in inherent risk which leads to a reduction in audit effort and therefore audit fees are lower (Felix et al. 2001; Hackenbrack and Knechel 1997; O'Keefe et al. 1994; Simunic and Stein 1996; Lin and Liu 2012). Evidence is found for a dominant divergence-of-interests effect in the 0-2% region and the 0-5% region of

managerial shareholding. For the interval 0-10% no dominating divergence-of-interests effect is found, thus the divergence-of-interests does not dominate within the entire 0-10% region.

Furthermore the results provide evidence for the existence of an entrenchment effect within the region of intermediate managerial shareholding. An increase in managerial shareholding within the region of intermediate managerial shareholding results in deeper managerial entrenchment which leads to an increase in agency costs. An increase in agency costs leads to an increase in inherent risk for the auditor. The increased inherent risk results in more audit effort and therefore higher audit fees (Felix et al. 2001; Hackenbrack and Knechel 1997; O'Keefe et al. 1994; Simunic and Stein 1996; Lin and Liu 2012). The results provide evidence for the existence of an entrenchment effect within the 2-15% region.

The results do not provide evidence on the existence of an alignment-of-interests effect within the region of high managerial shareholding. Therefore it cannot be concluded that an increase in managerial shareholding within the region of high managerial shareholding has an effect on audit fees.

The results indicate that the financial crisis negatively affects audit fees. The results are conflicting with Zhang and Huang (2013), who find that accounting firms charge higher audit fees when firm risk increases during the 2008 Chinese financial crisis. The results of this study incline that audit firms of large US listed companies are not able to increase the audit fees during times of a financial crisis. Moreover the financial crisis leads to lower audit fees. A possible explanation could be the fact that large US listed firms have more bargaining power towards the auditor than Chinese listed firms. Furthermore the additional linear regression results indicate that the effect of the financial crisis on audit fees is ongoing in the years 2010 and 2011. Therefore it can be concluded that the financial crisis triggered a cost reduction process which is ongoing until at least the year 2011.

The results do not provide evidence that the financial crisis affects the relation between managerial shareholding and audit fees within the region of intermediate managerial shareholding. Therefore it cannot be concluded that the financial crisis results in an additional increase in inherent risk for the auditor when an entrenchment effect is present at a firm.

This study contributes to existing literature by trying to determine the thresholds of the transitions from the low to intermediate and intermediate to high managerial shareholding regions for large US listed firms. A contribution is made by providing evidence on the existence of a divergence-of-interests effect and entrenchment effect within the sample of US listed firms. Furthermore this study contributes to existing literature by providing evidence on the effect of the financial crisis on audit fees in the US. Evidence suggests that the financial

crisis, starting with the bankruptcy of the Lehman Brothers in 2008, triggered a cost reduction process which affects audit fees until at least 2011. Thus practical relevance of this study includes the results that large US listed firms have strong bargaining power towards auditors, since results indicate that the financial crisis negatively affects audit fees.

A limitation of this study is the distribution of managerial shareholding in the sample. The sample is characterized by low managerial shareholding. A possible explanation of the fact that the results do not provide significant evidence for the existence of an alignment-of-interests effect within the region of high managerial shareholding is the fact that managerial shareholding is low in the sample. Furthermore since this study uses three sets of thresholds to investigate the intervals of low, intermediate and high managerial shareholding it is not sure that the exact intervals are found.

Future research could perform a further analysis on the exact regions of managerial shareholding for US listed firms. To further investigate the exact transitions from low to intermediate managerial shareholding and from intermediate to high managerial shareholding a curvilinear regression model could be used. Another implication for future research is performing a similar study as this study using a sample of all available US listed firms. When not only S&P 1500 firms are used, the sample could contain more variation in managerial shareholding which may lead to additional results. The cost reduction effect of the financial crisis triggers motivations for further empirical research. The results of this study show that the financial crisis negatively affects audit fees and prior research shows that audit quality and audit fees are positively related (DeFond et al. 2000; Abbott et al. 2003; Lennox and Pittman 2010). Therefore it could be interesting to further investigate audit quality during the financial crisis using large US listed companies as a sample.

References

Abbott, L. J., S. Parker, G.F. Peters, and K. Raghunandan. 2003b. An empirical investigation of audit fees, nonaudit fees, and audit committee. Contemporary Accounting Research 20 (2): 215–234.

Adams, R. B., H. Almeida, and D. Ferreira. 2005. Powerful CEOs and their impact on corporate performance. The Review of Financial Studies 18: 1403–1432.

Bedard, J., and K. Johnstone. 2006. A longitudinal comparison of auditors' response to client risk in the Sarbanes-Oxley era. Working paper, Bentley College.

Bell, T. B., W. Landsman, and D. A. Shackelford. 2001. Auditors' perceived business risk and audit fees: Analysis and evidence. Journal of Accounting Research 39 (1): 35–43.

Berle, A.A. Jr., and G.C. Means. 1932. The modern corporation and private property. Macmillan, New York.

Campello, M., R.H. Campbell, and J.R. Graham. 2010. The real effects of financial constraints: Evidence from a financial crisis. Journal of Financial Economics 97 (3): 470-487.

Choi, J. H., J.B. Kim, X. Liu, and D. Simunic. 2007. Audit pricing, legal liability regimes, and Big 4 premium: Theory and cross-country evidence. Contemporary Accounting Research 25 (1): 55-99.

Claessens, S., S. Djankov, J.P.H. Fan, and L.H.P. Lang. 2002. Disentangling the incentive and entrenchment effects of large shareholders. The Journal of Finance 57 (6): 2741-2771.

Claessens, S., S. Djankov, and L. Lang. 2000. The separation of ownership and control in East Asian corporations. Journal of Financial Economics 58: 81–112.

Cronqvist, H. and R. Farlenbrach. 2009. Large shareholders and corporate policies. The Review of Financial Studies 22 (10) 3941 – 3976.

Cronqvist, H. and M. Nilsson. 2003. Agency costs of controlling minority shareholders. Journal of Finance and Quantitative Analysis 38: 695–719.

DeFond, M.L. 1992. The association between changes in client firm agency costs and auditor switching. Auditing: A Journal of Practice and Theory 11 (1): 16-31.

DeFond, M. L., J.R. Francis, and T.J. Wong. 2000. Auditor industry specialization and market segmentation: Evidence from Hong Kong. Auditing: A Journal of Practice & Theory 19 (1): 49–66.

Fama, E.F. 1980. Agency problems and the theory of the firm. Journal of Political Economy 88: 288-307.

Felix, W. L., A.A. Gramling, and M.J. Maletta. 2001. The contribution of internal audit as a determinant of external audit fees and factors influencing this contribution. Journal of Accounting Research 39 (3): 513–34.

Francis, J.R., and E.R. Wilson. 1988. Auditor Changes: A joint test of theories relating to agency costs and auditor differentiation. The Accounting Review 63 (4): 663-682.

Hackenbrack, K. E., and W. R. Knechel. 1997. Resource allocation decisions in audit engagements. Contemporary Accounting Research 14 (3): 481–500.

Hart, O.D. 1983. The market mechanism as an incentive scheme. Bell Journal of Economics 14: 366-382.

Hogan, C.E., and M.S. Wilkins. 2008. Evidence on the audit risk model: do auditors increase audit fees in the presence of internal control deficiencies? Contemporary Accounting Research 25 (1): 219-242.

Jensen, M. C., and W.H. Meckling. 1976. Theory of the firm, managerial behavior, agency costs and ownership structure. Journal of Financial Economics 3: 305–60.

Jensen, M.C., and R. Ruback. 1983. The market for corporate control: The scientific evidence. Journal of Financial Economics 11: 5-50.

Johnstone, K.M. 2000. Client-Acceptance Decisions: Simultaneous effects of client business risk, audit risk, auditor business risk, and risk adaption. Auditing: A Journal of Practice & Theory 19 (1): 1-25.

Kinney, W.R., and McDaniel. 1989. Characteristics of firms correcting previously reported quarterly earnings. Journal of Accounting and Economics 11: 71-93.

Krishnan, J., and J. Krishnan. 1997. Litigation risk and auditor resignations. The Accounting Review 72 (4): 539-560.

Lennox, C. 2005. Management ownership and audit firm size. Contemporary Accounting Research, 22 (1): 205–27.

Lennox, C., and J. Pittman. 2010. Auditing the auditors: Evidence on the recent reforms to the external monitoring of audit firms. Journal of Accounting and Economics 49: 84–103.

Lin, Z.J., and M. Liu. 2012. The effects of managerial shareholding on audit fees: evidence from Hong Kong. International Journal of Auditing. Published online.

Morck, R., A. Shleifer, and R.W. Vishny. 1988.Management ownership and market valuation: An empirical analysis. Journal of Financial Economics 20 (1): 292–315.

Niemi, L. 2005. Audit effort and fees under concentrated client ownership: Evidence from four international audit firms. International Journal of Accounting 40 (4) 303–23.

O'Keefe, T. B., D.A. Simunic, and M.T. Stein. 1994. The production of audit services: evidence from a major public accounting firm. Journal of Accounting Research 32 (2) 241–61.

Peel, M. J. and M.A. Clatworthy. 2001. The relationship between governance structure and audit fees pre-Cadbury: Some empirical findings. Corporate Governance: An International Review 9 (4) 286–97.

Scharfstein, D. 1988. The disciplinary role of takeovers. Review of Economic studies 55: 185-200.

Schwartz, K., and K. Menon. 1985. Auditor switches by failing firms. The Accounting Review 60 (2): 248-261.

Shleifer, A., and R.W. Vishny. 1989. Management entrenchment: the case of manager-specific investments. Journal of Financial Economics 25: 123-139.

Simunic, D. A., and M.T. Stein. 1996. Impact oflitigation risk on audit pricing: A review of economics and the evidence. Auditing: A Journal of Practice & Theory, Vol. 15, Supplement, pp. 119–34.

Simunic, D. A. 1980. The pricing of audit services: Theory and evidence. Journal of Accounting Research 18 (1) 161–90.

Teoh, S.H., and T.J. Wong. 1993. Perceived Auditor Quality and the Earnings Response Coefficient. The Accounting Review 68 (2) 346-366.

Wallace, W. 1980. The Economic Role of the A audit in Free and Regulated Markets. Touche Ross Foundation.

Zhang, T., and J. Huang. 2013. The risk premium of audit fee: evidence from the 2008 financial crisis. China Journal of Accounting Studies 1 (1) 47-61.

Appendices

Appendix A: Univariate test managerial shareholding

	MANSH < median (N=3395)	MANSH > median (N=3406)	t-value	significance
LNFEE	14,887	14,166	32,308	0,000***
LNTA	15,084	15,084	35,718	0,000***
CRISIS	0,280	0,290	0,969	0,333
NBS	6,500	6,030	-3,759	0,000***
NGS	9,060	7,310	-10,925	0,000***
INVREC	0,245	0,264	5,365	0,000***
EMPLOY	134,662	82,470	-23,847	0,000***
FOREIGN	0,830	0,710	-11,667	0,000***
EXORD	0,020	0,010	-3,258	0,001***
LOSS	0,114	0,121	0,931	0,352
LOSSLAG	0,110	0,130	2,432	0,015**
LEVE	0,510	0,447	-13,253	0,000***
ROA	0,070	0,065	-2,702	0,007***
LIQUID	2,299	2,706	10,129	0,000***
BIG4	0,980	0,890	-14,722	0,000***
FISEND	0,660	0,640	-2,495	0,013**
AUDOP	0,570	0,430	-11,394	0,000***
AUDOPIC	0,030	0,030	1,011	0,312
SHORTTEN	0,040	0,070	4,430	0,000***

Notes:

The variable definitions are stated in Table 1

*,**, and *** denote the significance level at 10%, 5% and 1%, respectively. All two tailed.