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RELATION BETWEEN AUDIT RISK AND AUDIT FEES - EVIDENCE FROM LISTED FIRMS IN THE US

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ABSTRACT: *This study analyses association between audit risk and audit fees and also studied the influences of industry differences on audit pricing-risk association. Strong empirical evidence has found to suggest that the inherent risk and control risk have positive influence on audit fees. The sample of empirical research comprises a total of 507 listed companies, 260 observations in the United States in 2007 fiscal year and separated into two sub-samples, financial and non-financial firms. Client financial distress factor was tested with the help of Z-score model. The analysis shows that in the similar level of total assets financials are charged lower audit fees than non-financial firms and compared with financials, the audit fees for nonfinancial firms are more sensitive to the financial indicators. It also concluded that the auditors did not seem to take financial firms business risk into consideration when decided audit fees as there is a positive relation between audit fees and companies' solvency and the possibility of bankruptcy. Auditors considered not only the non-financial firms' profitability, but also the liquidity, activity, solvency and possibility of bankrupt when they decide audit fees.*

KEYWORDS: Audit Risk, Control Risk, Detection Risk, Inherent Risk, Non-Financial Firms, Audit Fees

INTRODUCTION

External auditors play an essential role in enhancing the quality of accounting information and reducing the information asymmetry problem between shareholders and managers. To be specific, their work is to verify firms' financial statements and express audit opinions about whether the financial reports have presented true and fair views(The Institute of Chartered Accountants, Australia 2008).

For auditees, the main benefit of purchasing audit service is liability avoidance (Simunic, 1980). Through that, auditees could transform a part of material misstatements risk to audit firms. From the auditors' side, they should take responsibility of the credibility of financial statements and will be paid certain amounts of money to compensate their work. Normally audit fees are less than 0.1% of total client sales (Francis, 2004) and according to Simunic (1980) audit fees consist of two components which are audit resource costs and risk premiums. Audit resource costs are related to the amount of audit efforts took in auditing and the risk premium is a compensation for risk taking. When litigation risk beyond the acceptable level, auditors will charge risk premiums for bearing residual audit risk. When auditors bear and price this litigation risk, they act as insurers (Moizer, 1992).

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Audit risk model consists of three components which are inherent risk, control risk and detection risk. The Statement of Auditing Standards No. 47 firstly requires auditors to use audit risk model as a part of the audit planning process. Under risk-oriented auditing, auditors should distribute audit resources based on the level of the risk of material misstatement. With cost-benefits concerns, the auditors usually try to meet an acceptable level of audit risk and also minimise their audit efforts. However, as audit quality is difficult to be assessed, it really does not know how much we could rely on the audit reports (Moizer, 1992).

In later 1990s, many financial statement frauds and audit failures were reported. Among them, the collapse of Enron and Arthur Andersen, have brought lots of attention. Arthur Andersen provided not only audit service but also consultancy service for Enron. Many senior managers of Enron were the former auditors worked in Arthur Andersen. Too cosy relation was built which compromised auditor's independence judgement and reduced the audit function (Solomon, 2010). Then Sarbanes-Oxley Act passed in 2002, it has significantly changed the financialreporting and auditing environment in America. It not only requires the separation of auditing and consultancy service, but also both external and internal auditors to engage in more and take more responsibility.

REVIEW OF LITERATURE

Audit Risk, Definition: Under current risk-oriented auditing, audit risk is that auditors are really concerned about. The Statement of Auditing Standards No.107 (2006) defines audit risk as there are some material misstatements in financial statements, but for some reasons, auditors could not detect such omissions or frauds. This definition mentions the cause of audit risk but fall to refer the possible results of it. Public Company Accounting Oversight Board (2010) explains that "audit risk is the risk that the auditor expresses an inappropriate audit opinion when the financial statements are materially misstated". It mentions that the main cause of audit risk is the failure of detecting material misstatements and the main result is giving an inappropriate audit opinion which may correspondingly lead potential future losses for audit firms such as litigation, claims, and reputation ruin.

Audit Risk Model: It consists of three components which are inherent risk, control risk and detection risk.

Audit Risk = Inherent Risk x Control Risk x Detection Risk (2-1)

Inherent Risk (**IR**) refers to the probability of an assertion to a misstatement due to error or omission that can be material, before the consideration of any related internal controls (American Institute of Certified Public Accountants, 2006).

Control Risk(**CR**) is the risk of material misstatement in financial statements, which is not prevented or detected by the company's internal control (ibid).It is regarded as a function of the effectiveness of the design and operation of internal control and it cannot be eliminated as the

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limitation of internal control (ibid).

Detection Risk (**DR**) is the auditors may not detect a material misstatement in the financial statements that exists in a relevant assertion (American Institute of Certified Public Accountants, 2006) Inherent risk and control risk exist independently with auditing. They are the entity's own risk, which could not be changed by auditors. Therefore, it suggests that auditors should use the assessment of the inherent risk and control risk to determine a proper level of detection risk. Chart 1 illustrates 9 situations of acceptable detection risk. In order to maintain the total audit risk at acceptable level, higher the inherent risk and control risk, lower the level of detection risk needs to be (Hogen& Wilkins, 2008). Theoretically, if detection risk is zero, the total audit risk could be zero as the three components are in multiplier relation. However, considering of cost and effectiveness, it will be very costly for auditors to check all accounts and transactions. This leads that detection risk cannot be reduced to zero and auditors will always bear certain levels of audit risk.

Chart 1 Acceptable Detection Risk Matrix

		Control Risk		
		High	Medium	Low
Inherent Risk	High	Low	Low	Medium
	Medium	Low	Medium	High
	Low	Medium	High	High

Established by the International Auditing Practices Committee

The Risks Related to Audit- The Risk of Material Misstatement: The risk that the financial statements are materially misstated (American Institute of Certified Public Accountants, 2006).It consists of two components, inherent risk and control risk. The audit risk model could also be written as (ibid):

Audit Risk =Risk of material misstatement x Detection Risk (2-2)

The risk of material misstatement could arise from unintentional misstatements (errors) or intentional misstatements (fraud) (Houston, et al., 1999). Normally, material errors (unintentional misstatements) are much easier to be detected as they are relatively straightforward and not concealed. Nowadays powerful web-based accounting software makes information more accuracy and timeliness which have significantly reduced the percentage of unintentional misstatements.

Litigation Risk: Litigation risk for auditors is the risk that legal action may be taken by shareholders to against auditors since they issued inappropriate auditing opinions.Undetected material misstatements lead certain levels of litigation risk for auditors. Palmrose (1988) noted that non-big 8 firms are bearing higher litigation risk than big 8 firms as auditors in big 8 are more qualified and they always have larger customer selection range. In addition, since higher auditing standards may lead to a rising in litigation risk, in the strongly litigious environment such as in US and UK, auditors may face higher level of litigation risk. Lennox & Li (2012)

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provided indexes of litigation threat against audit firms among 55 countries. The United States has the highest one.

The Measures of Audit Risk: As audit quality, audit risk also cannot be measured directly, but there are some dimensions such as financial indicators, internal control, corporate governance and auditors' engagement, could more or less capture audit risk. These measures are separated into three main categories which are the measures of inherent risk, control risk and detection risk.

The Measures of Inherent Risk- Financial Indicators: Inherent risk relates to the risk that material misstatements may occur. As mentioned above, nowadays, the majority of material misstatements are intentional misstatements (fraud). When the company has poor financial conditions, such as the financial distress, sales decline and liquidity problem, mangers are subjected to pressures and have incentives to engage in fraud in the financial reporting (Markelevich&Rosner, 2013). In this respect, the financial indicators which could reflect the conditions of profitability, liquidity, solvency and activity seem to be good proxies for inherent risk, for instance, Choi, et al (2004) used these four factors to measure client financial characteristics in the audit pricing model.

Simunic (1980) suggested that receivables and inventories are risky balance sheet items as both for external accountants and external auditors measuring the valuation of them are complex. Meanwhile, client profitability is also an essential dimension used to assess inherent risk. It reflects the possibility of auditors being exposed to loss in the case that the auditee is not financially viable (Simunic, 1980).

The Measures of Control Risk: A risk linked to the design and operation of the systems. Internal control is the system of checks and balances to ensure corporates taking their accountability to stakeholders. A good internal control practises could effectively reduce accounting manipulations and achieve a good financial reports quality (Krishnam, 2005), but if the system are weak, the managers may engage in cheating for personal interests. After the implementation of Sarbanes-Oxley Act, the financial reporting environment has changed dramatically; there are many new requirements both for internal auditors and external auditors which require more involvement and responsibility in the internal control systems (Charles, et al., 2010).

The Measures of Detection Risk: A risk measuring from auditors' attributes. The more auditors involved, the less detection risk will be. However, because the amount of auditing investments is not disclosed, thus direct data is not available to capture detective risk. Some researchers did questionnaire surveys to get necessary information. Bradbury & Redmayne (2014) studied audit hours and billing rates among the big 5 auditors. In 1998–2000, among their samples, the average audit hour is 687 hours, with a minimum 228 hours to maximum 3,037 hours. The mean billing rate is $115.1 per hour ranging from $45.6/h and $394/h (ibid). They run an audit hours regression (Ln hours as dependent variable) and show that there is a significantly positive relation between financial risk (measured as LEV) and the number of

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audit hours but not with audit fee per hours (ibid).

Audit Fees: Audit fees are also called audit pricing and certain amounts of money which auditees pay to audit firms for their auditing service. Normally, audit fees are less than 0.1% of total client sales (Francis, 2004).

The Explanation of Expected Costs of Auditing: Simunic (1980) initially established an audit pricing model to explain audit fees. In this model, the audit pricing consists of a resource cost component (cq) and an expected liability loss component (E (d)*E (θ)) (ibid). The equation is as follow:

$$E(c) = cq + E(d) * E(\theta), \text{(2-3)}$$

where E(c) is the audit fees; c is the per-unit cost of auditing service; q is the quantity of audit resources used in the audit examination; E(d) denotes the present value of possible future losses caused by this period's audited financial statement and E(θ) is the possibility of this loss.

To more clearly present the expected costs of auditing, Houston et.al (1999)modified the model of Simunic (1980) as follows

$$E(c) = cq + [E(d) * E(r)] + [E(f) * E(p)], \text{(2-4)}$$

Where [E (d)*E(r)] presents costs related to undetected material misstatements; [E(f)*E(p)] means the future losses due to factors other than undetected material misstatements; [E (d)*E(r)] + [E (f)*E(p)] denotes the expected cost of business risk.

Accounting to Houston et.al (1999), before conducting auditing, auditors will firstly assess the level of business risk $[E(d) * E(r)] + [E(f) * E(p)]$. Then they will decide how much should be invested in auditing, q. theoretically, this point is "where the marginal reduction in the costs of business risk from an additional unit of auditing is equal to the marginal cost of that unit of auditing" (Houston, et al., 1999).

Houston et.al (2005) continued to expand the audit fees model by adding a third factor, non-litigation risk. Compared to the equation in 2-4, the business risk is separated to be three factors which are acceptable audit risk, residual litigation risk, and non-litigation risk. The model is as follows:

$$E(c) = [cq + E(d) * E(r)] + [E(g) * E(l)] + [E(t) * E(z)], \text{(2-5)}$$

where the component of [E(f)*E(p)] in 2-3 is expanded to two parts in 2-5; [E(g)*E(l)] presents residual litigation risk, which associates with litigation against auditors for reasons unrelated to audit risk; [E(t)*E(z)] refers to possible profits or losses associated with factors other than litigation (ibid).

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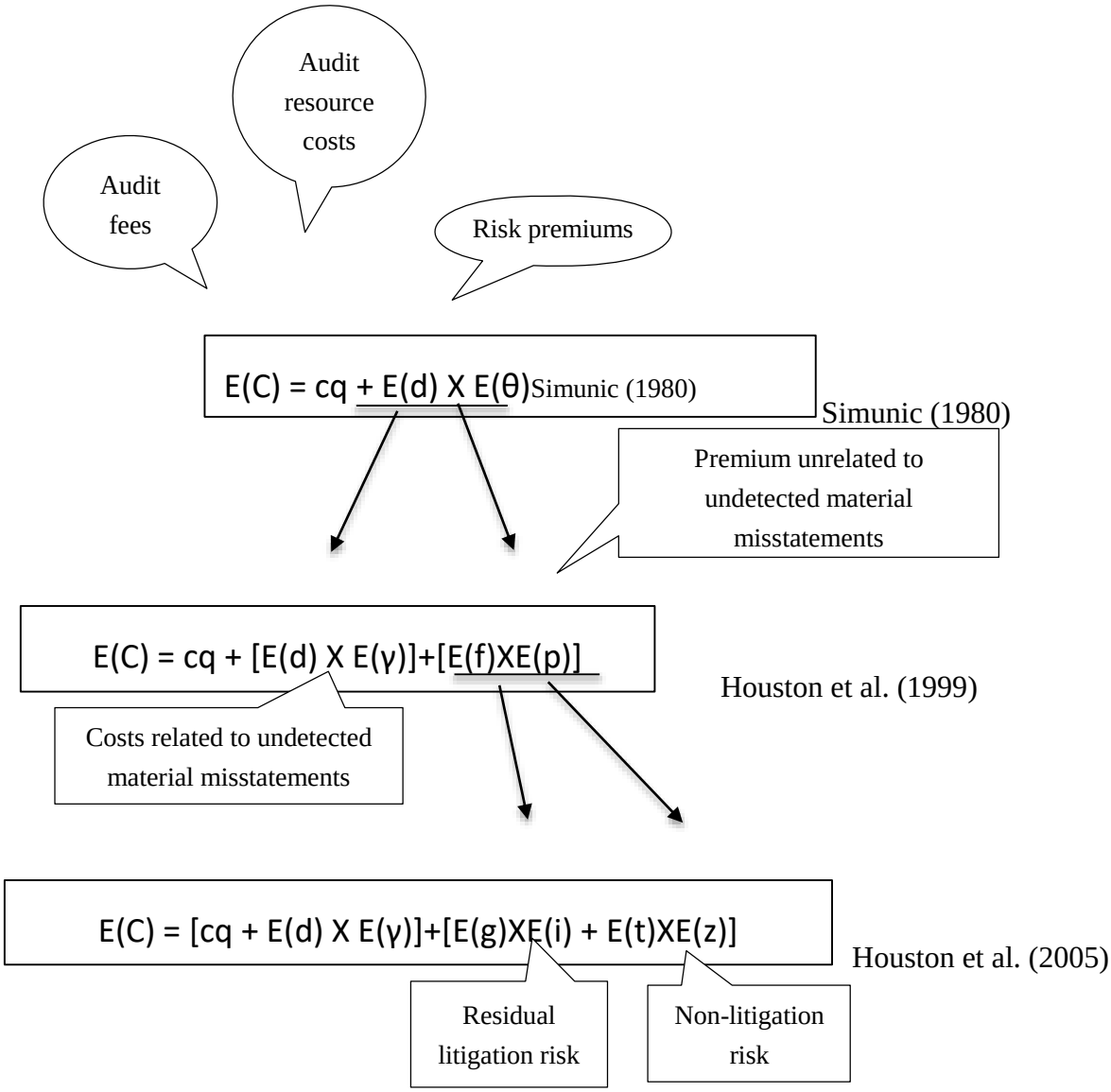

Normally it is difficult to collect the data about the exactly expected cost of audit fees, but above models could help to explain what components are in audit fees. Form these models, it could be seen that audit risk could influence both two components of audit fees; firstly it determines the amount of auditing efforts; secondly, for undetected material misstatements, auditors could charge a risk premium for their possible future loss.

The Main Drivers of Audit Fees: The main determinants of audit fees are the factors that may significant influence the amount of audit efforts such as auditee's size, complexity, and audit risk and audit quality. (Simunic 1980) initially used them to build a linear regression function to explain audit fees. There are four kinds of variables in his paper, which are loss exposure, loss-sharing ratios, auditor's production function and auditor identity. The results indicate a significant relation between audit fees and the complexity of auditing, financial risk, customer risk.

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The Auditee's Size: Most related literature has approved that the auditee's size is the dominant driver of audit fees (Hay, et al., 2008; Simunic, 1980; Firth, 1985). When audit a larger frim, auditors should spend more time in checking the accounts, thus audit fees will certainly increase. Simunic (1980) studied a sample of 397 US listed companies in 1977 and find that the amount of asset is the most important determinant of audit fees. Explanatory power (R^2) is 57%.

Complexity: Complexity is another dimension that has significantly positive influence in audit fees (Charles, et al., 2010; Choi, et al., 2004). Complexity reflects the difficulty level of the auditing. If the auditees have subsidiaries in different industries or countries, auditors would be expected to have more specific knowledge about these auditees and spend more efforts in auditing. Number of subsidiaries, foreign subsidiaries and number of business segments could be applied to measure the auditing complexity.

Audit Quality: In terms of determinants of audit fees, audit quality should be considered. Big 4 have more experienced and qualified CPA to provide better audit service. A number of academics have suggested that big 8/6/5/4 significantly charge higher audit fees than non-big 8/6/5/4 (Hay, et al., 2006). Beattie et al.(2001) studied the audit fees in the charity sector and the results show that big six audit firms charged higher audit fees (18.5% on average) than non-big six.

Non-Audit Fees: In order to strength auditor independence, after SOX, audit service and non-audit services are required to be provided by two different audit firms. But the fees spent in non-audit service are normally positive related to audit fees as most literature has proved (Charles, et al., 2010; Firth, 1985).

The Relation between Audit Risk and Audit Pricing: The archival literature has proved the significantly positive relation between audit risk and audit fees from different measures of audit risk. (Charles, et al., 2010; Gul, et al., 2003; Houston, et al., 2005). That is to say auditors consider the audit risk in determining audit fees and higher risks related to higher audit fees. According to theoretical arguments, both an increase in audit efforts and risk premium contribute to the rising of audit pricing.Firstly, if audit risk is high, auditors should spend more efforts. At the same time, auditors' efforts are limited and there are still some material misstatements which may still have not been detected. This could be a potential litigation risk for audit firms because if the auditee faces financial distress in the future, the audit firm will also be sued by shareholders for wrong auditing information. Therefore, for the undetected parts, auditors tend to charge a risk premium to compensate their possible future loss.

The risk of material misstatement is an essential part of audit risk, which auditors care most since the level of material misstatements risk determines how much auditing work auditors should invest in.Charles et al. (2010)studied 4,320 Big 4 clients during the period 2000–2003 and examined whether the relationship between financial reporting riskand audit pricing has changed during the Sarbanes-Oxley Act. They not only find a positive association between financial reporting risk and audit pricing, but also indicate that the relation significantly

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strengthened during SOX (ibid). In terms of the limitations of the paper, the sample is only based on big 4 clients. Moreover, the paper demonstrates that a comprehensive risk measure called AIFRR is an effective proxy for financial reporting risk, but the formula of how to calculate AIFRR is not mentioned in the paper.

The Relation between Audit Fees and Components of Audit Risk: In the archival literature, different kinds of proxies have been employed to study the relation between audit fees and the three components of audit risk. As mentioned above, generally financial indicators are used to capture inherent risk; the quality of internal control, corporate governance and earnings management could be good proxies for control risk; detection risk is the most difficult one to be captured. The following paragraphs will discuss the archival findings about the relation between audit fees and the three components of audit risk

Inherent Risk and Audit Fees: Chersan et al. (2012) studied 141 firms quoted on New York Stock Exchange in 2010. They find that auditees with high financial performance and more transparent in financial reporting tend to pay less audit fees. Similarly, a number of researchers have suggested a negative relationship between ROA and audit fees and a positive association between loss and audit pricing (Simunic, 1980; Charles, et al., 2010; Lennox & Li, 2012). Schwartz and Soo (1995) show that when the auditees have a profitability decline and financial distress, auditors are more likely to resign. Most archival papers find a significantly positive relation with audit pricing (Simunic, 1980; Lennox & Li, 2012; Firth, 1985; Charles, et al., 2010). In terms of client slovency, many prior research confirmed a positive association between financial leverage and audit fees**.**

Control Risk and Audit Fees: Earlier research found that an insignificant relation between internal control and audit fees. O' Keefe, Simunic and Stein (1994) studied 249 audit engagements in a single audit firm in America. They find almost 80

% of the cross-sectional variation in audit investment could be explained by auditees' size, complexity and risk measures, but there is no empirical evidence about the relation between audit fees and internal control.

However, in the post-SOX period, auditors are required more involvement in checking the internal control systems. A number of literaturesshow a significant association after then. Hogan and Wilkins investigated the relation between internal control deficiency disclosures and audit pricing. The results show that audit firms tended to increase audit pricing when auditees have disclosed some internal control deficiencies (Hogan & Wilkins, 2008). Specifically, on the average, around 35% additional audit pricing have paid when control deficiencies exist among their samples (ibid).

Detection Risk and Audit Fees: The relation between detection risk and audit pricing is ambiguous. Normally, when auditors have paid insufficient efforts in auditing, detection risk would be high, but the level of audit fees is uncertain. It could be low as audit efforts is small, but it also could be high as auditors may charge a high risk premium for bearing high litigation risk.

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Corporate Governance and Audit Fees: As an important proxy for control risk, considerable attention has been placed on the relation between corporate governance and audit fees. But archival studies just provided mix empirical and theoretical evidence. On the one hand, a number of academics have suggested that good corporate governance especially an efficient audit committee appears to reduce audit risk and then reduce audit fees.Huang et al. (2014) examined the association between CEO turnover and audit fees. They found that companies with forced CEO turnover (such as dismissals) have significantly higher audit pricing than voluntary turnover (such as retirements).

On the contrary, many new researches suggest a positive association between good corporate governance and audit fees. Carcello et al (2002) tested the relation between board characteristics and audit fees. Their research indicates a significantly positive association between audit fees and board independence, diligence and expertise. This means effective corporate governance may lead to higher audit pricing. The potential reason is a more independent, diligent board tend to require a higher audit quality which certainly leads a rising in audit fees, but this factor is not related to the audit risk (ibid). In terms of audit committees, Vafeas & Waegelein (2008) provided empirical evidence to suggest that the size of audit committee, member expertise, and percentage of independence are positively related to audit pricing. Meanwhile, many scholars also indicate an insignificant relation.

Earnings Management and Audit Fees: As mentioned above, earnings management could be a proper proxy to examine the effectiveness of internal control. If the company has a weak internal control and poor financial performance, managers are more likely to commit a fraud which lead higher audit risk and audit fees. Many prior studies use discretionary accruals (DAs) to measure the potential earnings management. Gul, Chen, Tsui studied the association between discretionary accruals, managerial ownership, compensation system and audit pricing through an empirical method with 648 Australian firms. They suggested a positive linkage between earnings management and audit fees; managerial ownership has negative influence on the positive associationbetween discretionary accruals and audit pricing (Gul, et at., 2003)

Objectives

Based on these prior papers, this research will restudy the relation between audit risk and audit fees giving the empirical evidence from the listed companies in the U.S. in 2007 from the following objectives.

[1] To identify the components of audit risk and the proper methods to capture them.
[2] To find out the relation between the risk of material misstatement and audit pricing.
[3] Identify the comprehensive risk measures (client financial distress models and discretionary accruals model) could be effective proxies for audit risk.
[4] Practices of corporate governance are good proxies for control risk and have corresponding influence on audit fees and
[5] To extent do industry differences influence audit pricing-risk association.

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METHODOLOGY AND DATA COLLECTION

Sample Selection: All data are drawn from the website of Wharton research data services and Bloomberg data base. The information of audit fees, non-audit fees and auditors' opinion about internal control is downloaded in the audit analytics data set. Auditees' financial information is drawn from the COMPUSTAT data base. The data of corporate governance such as the size of boards and the percentage of independent directors in the boards comes from Bloomberg. Strata software is employed to run all regressions in this paper.

The sample of empirical research comprises a total of 507 listed companies in the United States in 2007 fiscal year (260 initial observations). The initial list of sample is 690 listed companies, but 430 observations have to be removed due to the lack of specific data. This may be partly because some companies have not been established before 2007 or the relevant data have not been collected by the data base. Then only 260 observations left, in order to strengthen the credibility of the empirical evidence, another 700 companies have been added to the list. Again the related data is only available for 247 observations and 453 observations have to be removed. Thus 507 observations are the final sample size for this dissertation.

Hypotheses: In this research paper, five hypotheses being formulated and tested:

H1: There is a negative association between audit fees and auditee's profitability.

H2: There is a positive relation between audit pricing and the risk of bankruptcy (measured as Z-score).

H3: There is a negative relation between audit fees and the quality of internal control.

H4: The association between audit fees and earnings management are positive.

H5: Audit risk and fees would be lower, if companies have good corporate governance practices.

H6: In 2007, the year before financial crisis, auditors considered the financial firms' business risk when decided audit fees.

Methodology: Siminic (1980) initially built a linear regression function to examine the potential drivers of audit fees. Over the past 34 years, many prior studies have followed and expanded the regression examining many more determinants of audit pricing. Hay (2006) summarized the regression of audit fees to be the following form:

$$\ln AF_i = \beta_0 + \beta_1 lnA_i + \sum \beta_k W_{ik} + \sum \beta_e W_{ie} + e_i \quad , \qquad (3\text{-}1)$$

Where $lnAF_i$ presents the log of the audit pricing and lnA_i is the natural log of total assets; W_{ik} (control variables) and W_{ie}(test variables) are two groups of possible determinants of auditpricingβ_1,β_k and β_e are the coefficients of different independent variables.

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Research Design

The Dependent Variable: The above methodology will be employed to run 5 regressions. Different kinds of proxies for audit risk will be tested and find out whether they has impact on audit pricing. The dependent variable (Ln AF) in regressions is natural log of audit fees as the most relevant literature does.

Independent Variables

Control Variables: As many papers have showed that the auditee's size, auditing complexity, the audit quality and non-audit fees have positively significant influence on audit pricing. Firstly, natural log of total assets (Ln TA) is the most common used variable to reflect auditee' size. Secondly, number of subsidiaries, foreign subsidiaries and number of business segments could be applied to measure the auditing complexity (Hay, et al., 2006). As number of subsidiaries, foreign subsidiaries are unable to be found in the COMPUSTAT data base, so square root of number of business segments (SQERG) are chosen to measure complexity. Thirdly, big 4 will be used as a dummy variable (1 if audited by big 4 and 0 otherwise) to measure the influence of audit quality. Finally, natural log of non-audit fees (Ln NAF) is the fourth control variable.

Test Variables: Test variables are the variable which isused to measure the levels of audit risk. They will be separated from three parts, the proxies which measure inherent risk, control risk and detection risk. There are 21 test variables in thesedissertations (11 variables measuring inherent risk, 8 measuring control risk and 2 assessing detection risk).

Proxies for inherent risk

Financial measures: Financial indicators seem to be the most common variables used to measure inherent risk. These financial measures have been separated into five components, the indicators which measure profitability, liquidity, activity, solvency and possibility of bankrupt. These indicators will be tested in the regressions to find out whether auditors consider these factors during determining fees.

Profitability: The capacity of the profitability is an essential factor to be considered during audit planning. If companies have poor ability to generate profits, they may have higher possibility of cheating in financial reports. There are many archival literature has approved a negative relation between profitability and audit fees (Hay, 2013; Simunic, 1980; Lennox & Li, 2012). In this paper, 4 variables will measure the profitability.

Loss is a dummy variable. When there is a loss, the value will be 1, and otherwise it will be 0. The impacts of the loss will be investigated in two ways, the loss in current fiscal year (LOSS1) and the loss in last 3 fiscal years (LOSS3). **ROA** is a ratio which measures the efficiency of the company in using its assets to generate income. Many archival papers find a negative relation with audit fees (Charles, et al., 2010). **EPS** (earnings per share)measures the firm's profit allocated to each common stock.**Non-operating income ratio** measures the percentage of non-

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operating income to total assets. Non-operating income is derived from transactions not related to core business and it could improve the total performance of earnings. However, it is not a sustainable resource of income which could cause a fluctuation on earnings. Therefore, if there is an abnormal non-operating income, it may have a higher possibility of earnings manipulations. Chaney and Philipich (2002) used NOI to measure audit risk and found a significantly positive relation with audit fees.

Liquidity measures the ability of firms to meet short-term obligation. Quick ratio is an important measure of liquidity (Choi, et al., 2004). Many prior literatures find a negative relation between quick ratio and audit fees (Lennox & Li, 2012; Beattie, et al., 2001). **Activity** measures the efficiency of the operations such as the collection of receivables and management of inventories. Two variables, RECEI (receivables/total assets) and INVEN (inventories/ total assets) will be tested in the regressions. Normally, a positive association should be between them and audit pricing (Hay, et al., 2006). In terms of **solvency**, it measures the ability of a firm to meet long-term obligations. LEV (debt/ total assets) will be concluded in regression to test whether auditors consider financial leverage when they determine the level of audit risk and audit fees.

Client Financial Distress Models: Client financial distress should be a very important factor to be considered before auditing. If clients have high possibility of bankruptcy, they may be more likely to be engaged in cheating in financial statements. More importantly, the possibility of financial distress could be a proxy for auditors' litigation risk (Hogan & Wilkins, 2008; Charles, et al., 2010). In this research paper, two measures of the possibility of bankruptcy will be tested which are Altman's Z-score model (Altman, 1983) and a modified Altman's model (Shumway, 2001).

Altman's Z-score Model: Altman (1983) initially developed a Z-score to measure the risk of bankruptcy and this model is widely used in the prediction of financial distress. Financial indicators, total asset (TA), working capital (WC), EBIT, retained earnings (RE), market value of equity (E), total liability (TL), sales (S) measure financial health from different dimensions. The model is

$$\mathrm{Z-score} = 1.2\left(\frac{WC}{TA}\right) + 1.4\left(\frac{RE}{TA}\right) + 3.3\left(\frac{EBIT}{TA}\right) + 0.6\left(\frac{E}{TL}\right) + 0.999\left(\frac{S}{TA}\right). \qquad (3\text{-}2)$$

According to the explanation of Altman (1983), if the Z-score is smaller than 1.8, the company has a strong possibility of financial distress. 1.8<Z-score<2.99 is a grey area which means the firm still has some possibility of bankruptcy. Z-score>2.99 is a safe area having less possibility of financial distress. A variable called **Z-score1** will be generated through above formula.

The modified Altman's Model: Shumway (2001) modified Altman's model changing the original parameters as it suggested that the market risk factors have changed lots compared with its in early 1980s. A variable called **Z-score2** will be calculated to test its potential influence on audit fees. The modified Z-score is:

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$$Z-\text{score}=1.51\left(\frac{WC}{TA}\right)+1.0\left(\frac{RE}{TA}\right)+6.2\left(\frac{EBIT}{TA}\right)+0.1\left(\frac{E}{TL}\right)+1.75(\frac{S}{TA}).\quad (3\text{-}3)$$

Proxies for Control Risk

The Quality of Internal Control: Theoretically, a weak internal control system will lead higher audit fees as the firm with a weak internal control system may has much higher risk of material misstatements. In this dissertation, three variables which are commonly used to measure the quality of internal control will be employed. First one is auditors' opinions about internal control (IC). It is a dummy variable to measure the efficiency of internal control. After auditing, auditors appear to have sufficient knowledge about auditee's internal control and could give a fair opinion about it. When the auditor gave a "no material weakness" opinion, "IC" will be equal to 0. If the auditor issued an adverse opinion, the value of "IC" will be 1. Secondly, WEAK is another measures of internal control. If the company disclosed a weakness about internal control, the value will be 1. Similarly, if the company had a restatement in financial reports in 2007, the value of RESTATE will be equal to 1. The data about these three variables could download directly from the Audit Analytics data base.

The Discretionary Accruals Model: In this paper, the discretionary accruals model will be applied to measure earnings management. There is no unambiguous model to measures discretionary accruals (Gul, et al., 2003), but the modified Jones model (1991) from Dechow (1995)is used in large-scale archival studies (Walker, 2013; Gul, et al., 2003). Accourding to Dechow's modified accrual model (1995), the formular of non-discretionary accruals is as following:

Non-Discretionary Accruals (NDA) =Total accruals (TA) –Discretionary accruals (DA)so if we want to work out discretional accruals (DA), the value of total accruals and non-discretional accruals should first be calculated. Total accrual is calculated as following:

Total Accruals (TA) = Operating income- free cash flows. (3-4)

Non-discretionary accruals (NDA) are calculated by:

$$\frac{\boldsymbol{NDA_{it}}}{\boldsymbol{A_{it-1}}}=\boldsymbol{\alpha}\left(\frac{\mathbf{1}}{\boldsymbol{A_{i,t-1}}}\right)+\boldsymbol{\beta_1}\left(\frac{\triangle \boldsymbol{REV_{it}}-\triangle \boldsymbol{REC_{it}}}{\boldsymbol{A_{i,t-1}}}\right)+\boldsymbol{\beta_2}(\frac{\boldsymbol{PPE_{it}}}{\boldsymbol{A_{i,t-1}}}),\qquad (3\text{-}5)$$

Where the values of coefficientsα,β_1 andβ_2 are estimated by the following equation,

$$\frac{\boldsymbol{TA_{it}}}{\boldsymbol{A_{it-1}}}=\widehat{\boldsymbol{\alpha}}\left(\frac{\mathbf{1}}{\boldsymbol{A_{i,t-1}}}\right)+\widehat{\boldsymbol{\beta}}_{\mathbf{1}}\left(\frac{\triangle \boldsymbol{REV_{it}}-\triangle \boldsymbol{REC_{it}}}{\boldsymbol{A_{i,t-1}}}\right)+\widehat{\boldsymbol{\beta}}_{\mathbf{2}}\left(\frac{\boldsymbol{PPE_{it}}}{\boldsymbol{A_{i,t-1}}}\right)+\in_{\boldsymbol{it}}.\quad (3\text{-}6)$$

Finally, the value of discretionary accruals could be calculated as:

$$\boldsymbol{DA_{it}=TA_{it}-NDA_{it}}.\qquad \textbf{(3-7)}$$

The tested variable DA in regressions is equal to the square root of discretionary accruals calculated through above equations.

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Corporate Governance: As mentioned in the literature review, many prior research papers have suggested that the practises of corporate governance could influence audit risk and fees. The size, independence and expertise are most common measures to assess the effectiveness of audit committees (Chan, et al., 2013; Krishnam, 2005; Redmayne, et al., 2010). Due to the requirements of governance codes, directors of audit committes should all be independent directors. In my sample, among 507 companies, 506 companies have 100% independent audit committees, so it seems useless to study this variable. Additionally, since the data about the expertise unable to be obtained in Bloomberg, the size of audit committees (AC-SIZE) will be the only measure of the effectiveness of audit committee. Additional three proxies for corporate governance will be tested in regressions, which are the size of the board (B-SIZE), the percentage of independent directors in the board (ID) and CEO duality (CEO).

Proxies for Detection Risk: In this research paper, two variables (BUSY and CHANGE) will be examined to test whether they have influences on detection risk and audit fees. Firstly, it has a "busy season" for auditors when most companies come to purchase auditing service. In America, the most common fiscal year-end is 31 December and the busy season could be January and February (Hay, et al., 2006).In busy season, auditors usually have lots of cases in hands and I suppose that overload working may make them to be less likely to have fully engagement in their work over the whole time. What is more, in order to finish auditing on time, auditors may rush time and be less prudently in auditing which may cause the detection risk increase. Secondly, in terms of the CHANGE variable, it is chosen because the lack of specific experience and knowledge about auditees in the initial engagement may cause auditors be less likely to detect potential problems in financial statements. These two variables are both dummy variables. When there is an auditor change or auditing in busy season, the value is 1 and otherwise 0.

Table 1 Summary of Variables and Possible Relations with Audit Fees

Category	Variables		Definition
Dependent variable	Ln AF		The natural log of audit fees
Control variables	Ln TA	+	The natural log of total assets
	SQSEG	+	The square root of business segments
	BIG4	+	Dummy variable, 1 if audited by big 4 and 0 otherwise
	Ln NAF	+	The natural log of non-audit fees
Test Variables			
Proxies for inherent risk	LOSS1	+	1 if there was a loss in auditing year and 0 otherwise
Profitability	LOSS3	+	1 if there was a loss in any past of 3 years and 0 otherwise
	ROA	-	Ratio of net income to total assets
	EPS	-	Earnings per shares
	NOI	+	The ratio of non-operating income to total assets

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Liquidity	QUICK	-	Ratio of cash, short-term marketable investments and receivables to current liabilities
Activity	INVEN	+	Ratio of total inventory to total assets
	RECEI	+	Ratio of receivables to total assets
Solvency	LEV	+	Total debt divided by total assets
Client financial distress	Z-score 1	-	The value of Altman's Z-score model
	Z-score 2	-	The value of modified Altman's Z-score model
Proxies for control risk			
Discretionary accruals	DA	+	The square root of discretionary accruals
Internal control	IC	+	Auditor's opinion about internal control, 1 if the auditor issued an adverse opinion and 0 otherwise
	WEAK	+	1 if internal control was ineffective and 0 otherwise
	RESTATE	+	1 if there was a financial restatements and 0 otherwise
Corporate governance	B-SIZE	-	The size of the board
	ID	-	The percentage of independent directors in the board
	CEO	-	CEO duality, 1 if CEO and chairman combined, 0 otherwise
	AC-SIZE	-	The size of the audit committee
Proxies for detection risk			
	CHANGE	+	1 if there was an auditor change and 0 otherwise
	BUSY	+	1 if auditee's fiscal year is ending at 30 December and 0 otherwise

RESEARCH MODELS

To examine the influences of audit fees, five regression models based on audit fees model from prior papers (Hay, 2013) will be examined. Meanwhile, two sub-samples will be generated to make further investigations about audit pricing-risk association. The first sub-sample is financial firms (N=124)consist of banks, insurances, diversified financials and real estateand non-financial firms (N=383).

In order to clearly see the associations between audit fees and three components of audit risk, the proxies for inherent risk will be tested in regressions (1), (2) and (3); the measures of control risk and detection risk will be examined in regression (4) and (5). In terms of first three regressions, some financial indicators have high correlations such as the correlations of LOSS1

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and LOSS3 (0.51), LEV and QUICK (-0.516). These variables will be separated if their correlations are over 0.4. In the fourth and fifth regression, due to the high correlations of IC and WEAK (0.7938), B-SIZE and AC-SIZE (0.4936), they will be separates in regression (4) and (5) respectively.

The majority of financial measures which could capture inherent risk will be examined in regression (1)regression (2) focus on testing the impact of LOSS1 and one of the proxies for litigation risk, Z-score1. Additionally, in order to test the association between audit pricing and ROA, LEV, regression (3) is estimated.

(1)

$$\mathrm{LnAF} = \beta_0 + \beta_1 \mathrm{lnTA} + \beta_2 \ln \mathrm{NAF} + \beta_3 \mathrm{BIG4} + \beta_4 \mathrm{SQSEG} + \beta_5 \mathrm{EPS} + \beta_6 \mathrm{LOSS3} + \beta_7 \mathrm{NOI} + \beta_8 \mathrm{QUICK} + \beta_9 \mathrm{RECEI} + \beta_{10} \mathrm{INVEN} + \beta_{11}\ \mathrm{Z-score\ 2} + \epsilon_1$$

(2)

$$\mathrm{LnAF} = \beta_0 + \beta_1 \mathrm{lnTA} + \beta_2 \ln \mathrm{NAF} + \beta_3 \mathrm{BIG4} + \beta_4 \mathrm{SQSEG} + \beta_5 \mathrm{LOSS1} + \beta_6 \mathrm{NOI} + \beta_7\ \mathrm{Z-score\ 1} + \epsilon_2$$

(3)

$$\mathrm{LnAF} = \beta_0 + \beta_1 \mathrm{lnTA} + \beta_2 \ln \mathrm{NAF} + \beta_3 \mathrm{BIG4} + \beta_4 \mathrm{SQSEG} + \beta_5 \mathrm{EPS} + \beta_6 \mathrm{LOSS3} + \beta_7 \mathrm{NOI} + \beta_8 \mathrm{ROA} + \beta_9 \mathrm{LEV} + \beta_{10} \mathrm{INVEN} + \epsilon_3$$

In terms of control risk and detection risk, their influences on audit fees will be tested in regression (4) and (5). Specifically, 6 proxies for control risk and 2 for detection risk will be examined in regression (4). Regression (5) is testing the two measures of control risk, WEAK and AC-SIZE.

(4)

$$\mathrm{LnAF} = \beta_0 + \beta_1 \mathrm{lnTA} + \beta_2 \ln \mathrm{NAF} + \beta_3 \mathrm{BIG4} + \beta_4 \mathrm{SQSEG} + \beta_5 \mathrm{IC} + \beta_6 \mathrm{RESTATE} + \beta_7 \mathrm{DA} + \beta_8 \mathrm{B-SIZE} + \beta_9 \mathrm{ID} + \beta_{10}\ \mathrm{CEO} + \beta_{11} \mathrm{BUSY} + \beta_{12}\ \mathrm{CHANGE} + \epsilon_4$$

(5)

$$\mathrm{LnAF} = \beta_0 + \beta_1 \mathrm{lnTA} + \beta_2 \ln \mathrm{NAF} + \beta_3 \mathrm{BIG4} + \beta_4 \mathrm{SQSEG} + \beta_5 \mathrm{WEAK} + \beta_6 \mathrm{RESTATE} + \beta_7 \mathrm{DA} + \beta_8 \mathrm{AC-SIZE} + \beta_9 \mathrm{CEO} + \beta_{10}\ \mathrm{ID} + \beta_{11} \mathrm{BUSY} + \beta_{12}\ \mathrm{CHANGE} + \epsilon_5$$

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RESULTS

DESCRIPTIVE STATISTICS

Table 2 Descriptive Statistics for the Total Sample (N=507)

Variable	Std. Dev.	Mean	Min	Median	Percentile		Max
					25%	75%	
Audit fees(thousand$)	4667.28	2433.81	21	982.8	399.935	2542.3	49656.7
Ln AF	1.3517	13.8100	9.95	13.80	12.90	14.75	17.72
Total assets(million$)	141834.4	19588.25	3.346	947.163	256.269	4792.8	2017263
Ln TA	2.1820	6.9750	1.21	6.85	5.55	8.47	14.52
Non-audit fees	2028.7160	649.8576	0	118.318	23.6	463.23	25907
Ln NAF	4.1443	10.6013	0	11.6811	10.069	13.046	17.07
BIG4	0.4393	0.7396	0	1	0	1	1
Segments	7.0692	8.1341	0	7	2	12	53
SQSEG	1.4027	2.4841	0	2.65	1.41	3.46	7.28
EPS	2.7889	1.2420	-16.97	0.94	0.12	2.01	26.34
LOSS1	0.4085	0.2110	0	0	0	0	1
LOSS3	0.4495	0.2801	0	0	0	1	1
ROA	0.2146	0.0132	-2.784	0.03272	0.00522	0.0814	0.69501
Non-operation income	2013.51	568.39	0	61.5	13.261	296.12	23182
NOI	0.2244	0.1807	0	0.09155	0.01998	0.2734	1.76965
QUICK	3.4978	1.8739	0	0.90371	0.1035	2.0563	30.8849
LEV	0.2835	0.5698	0	0.57121	0.37165	0.7815	2.05665
RECEI	0.2362	0.2144	0	0.12705	0.05053	0.251	0.96762
INVEN	0.1192	0.0766	0	0.01841	0	0.1086	0.85382
Z-score1	3.5780	1.9961	-17.99	1.64042	0.39173	3.1661	32.3403
Z-score2	2.8094	1.8941	-15.24	1.81556	0.42996	3.5551	13.6172
IC	0.1948	0.0394	0	0	0	0	1
WEEK	0.2286	0.0552	0	0	0	0	1
RESTATE	0.2931	0.0947	0	0	0	0	1
DA	20.8729	13.0926	0.1078	7.7075	3.9069	14.765	258.949
B-SIZE	2.5376	8.9625	4	9	7	10	20
ID	0.1316	0.7601	0.25	0.7778	0.7	0.8667	1
CEO	0.4941	0.4201	0	0	0	1	1
AC-SIZE	0.9876	3.7318	0	3	3	4	9
BUSY	0.3983	0.8028	0	1	1	1	1
CHANGE	0.2538	0.0690	0	0	0	0	1

Table 2 presents the statistical summary for variables of the total 507 observations. The mean audit fee is $2,433,000 with a minimum of $21,000 and a maximum of $49,656,700. The average total asset is $19588.25 million, ranging from $3.346 million to $2017263 million with a very large standard deviation. The mean audit fee is only 0.012% of mean total assets, so it seems that audit fees are not very big expenses for companies. Meanwhile, the mean non-audit fee is $649,000 and nearly 4 times less than average audit fee. Moreover, the mean value of

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BIG4 is 0.7396 which indicates that among 507 observations, 74% companies were audited by big 4 in 2007. Companies had around 8 business segments on average and 1.32%Mean ROA.

More importantly, sample firm had 21.44% of its total assets in accounts receivables on average which means that the majority of companies had a relative large percentage of receivables. As for two types of Z-scores, they have gotten a quite similar mean values, 1.9961 for Z-score1 and 1.8941 for Z-score2. In terms of measures for control risk, there were only 3.94%, 5.52% and 9.47% companies had adverse auditor opinions in internal control, ineffectiveness internal control and restatements in financial reports separately. It also could be seen that on average about 76% directors were independent director and approximately 42% companies had separated the positions of CEO and chairman. Similarly, the mean size of board was 8.9625 with a minimum of 4 and a maximum of 20. As for the proxies for detection risk, about 80% observations did audit in busy season and only 6.9% firms changed auditors in 2007.

Table 3 Descriptive Statistics For Two Subsamples, Financial Firms And Non-Financial Firms:

Variable	Financial firms (N=124)				Non-financial firms (N=383)			
	Std. Dev.	Mean	Min	Max	Std. Dev.	Mean	Min	Max
Audit fees(thousand$)	7513	2731	34	49657	3263	2338	21	24673
Ln AF	1.48	13.48	10.43	17.72	1.29	13.92	9.95	17.02
Total assets(million$)	282038	65955	27	2017263	10511	4577	3	100448
Ln TA	2.08	8.17	3.31	14.52	2.07	6.59	1.21	11.52
Non-audit fees	3563	1078	0	25907	1133	511	0	13000
Ln NAF	3.19	11.26	0.00	17.07	4.39	10.39	0.00	16.38
BIG4	0.49	0.62	0	1	0.42	0.78	0	1
Segments	5.28	3.36	0.00	29.00	6.89	9.68	0.00	53.00
SQSEG	1.46	1.12	0.00	5.39	1.06	2.92	0.00	7.28
EPS	3.04	1.75	-3.95	26.34	2.68	1.08	-16.97	14.38
LOSS1	0.27	0.08	0	1	0.44	0.25	0	1
LOSS3	0.30	0.10	0	1	0.47	0.34	0	1
ROA	0.05	0.02	-0.22	0.35	0.25	0.01	-2.78	0.70
Non-operation income	2318	493	0	23182	1907	593	0	21905
NOI	0.03	0.02	0.00	0.25	0.24	0.23	0	1.77
QUICK	1.30	0.26	0.00	12.50	3.81	2.40	0	30.88
LEV	0.18	0.80	0.07	0.98	0.27	0.50	0	2.06
RECEI	0.31	0.47	0.00	0.92	0.12	0.13	0	0.97
INVEN	0.10	0.03	0.00	0.72	0.12	0.09	0	0.85
Z-score1	1.07	0.52	-5.47	6.90	3.96	2.47	-17.99	32.34
Z-score2	1.29	0.54	-8.31	7.80	3.02	2.33	-15.24	13.62
IC	0.15	0.02	0	1	0.21	0.04	0	1
WEEK	0.20	0.04	0	1	0.24	0.06	0	1
RESTATE	0.33	0.12	0	1	0.28	0.09	0	1
DA	35.59	16.26	0.11	258.95	12.85	12.07	0.14	112.00
B-SIZE	3.10	10.01	4.00	20.00	2.23	8.62	4.00	17.00
ID	0.13	0.76	0.38	0.93	0.13	0.76	0.25	1.00
CEO	0.49	0.40	0	1	0.50	0.43	0	1
AC-SIZE	1.12	3.98	3.00	9.00	0.93	3.65	0.00	8.00
BUSY	0.25	0.94	0	1	0.43	0.76	0	1
CHANGE	0.25	0.06	0	1	0.26	0.07	0	1

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Table 3presents summary statistics on the sub-samples of financial firms and non-financial firms. It could be seen that the mean value of audit fee for financial firms is just a little bit larger than that for nonfinancial firms ($2731000 vs.$2338000). However, the mean total assets of financial firms are almost 14 times larger than that for non-financial firms. In this respect, in the similar level of total assets financials are charged lower audit fees than non-financial firms in 2007. In terms of financial indicators, as the sample year is 2007, the year before financial crisis, most financial firms had a very good financial performance. For instance, only 8% financials suffered a loss in 2007, compared with 25% for non-financial firms. The EPS and ROA for financial firms were higher as well. However, as for liquidity and solvency, the indicators, such as quick ratio, leverage and receivables to assets ratio indicate that financial firms were within very high inherent risk. Specifically, before the financial crisis, there was an overuse of complex financial products such as ABS and CODs, which leaded an excessive leverage (80% on average in this sample) for financial firms. The excessive leverage means a high possibility of suffering solvency problems and financial distress. Similarly, from the results of Z-scores, it could be seen that the mean Z-score1 for financial firms is only 0.52 which indicates that the majority of financials had high possibility of bankruptcy. Interestingly, the financial crisis and the collapse of many financials happened just in following year. This suggests that financial firms in 2007 really have an excessive inherent risk and Z-scores have predicted that. In conclusion, according to table 3, in 2007 compared with non-financial firms, financial firms were much more profitable, but confronted with liquidity and solvency problems.

Correlations

Table 4 illustrates correlation coefficients between variables. It shows that Ln AF is positively significant correlated with four control variables, Ln TA (0.75), Ln NAF (0.422), BIG4 (0.562), SQSEG (0.466). Besides Ln TA is positively significant correlated with Ln NAF (0.465) and BIG4 (0.415), correlations between the control variables and test variables are less than 0.4. In terms of correlations between test variables, LOSS1 is high correlated with four test variables, EPS (-0.505), LOSS3 (0.517), ROA (-0.547) and Z-score 2 (-0.446). Moreover, there are significant correlations between Z-score1 and Z- score 2 (0.742), QUICK (0.529), LEV (-0.498). As if company has an ineffectiveness internal control, the auditor is more likely to issue adverse opinion about internal control, so it is reasonable that IC and WEAK are high correlated (0.794).

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Table 4 Correlations (N=507)

	lnaf	lnta	lnnaf	big4	sqseg	eps	loss1	loss3	roa	noi	quick	lev	recei	inven
lnaf	1.000													
lnta	0.750	1.000												
lnnaf	0.422	0.465	1.000											
big4	0.562	0.415	0.278	1.000										
sqseg	0.466	0.074	0.153	0.355	1.000									
eps	0.238	0.363	0.121	0.113	0.032	1.000								
loss1	-0.080	-0.299	-0.123	-0.002	0.081	-0.505	1.000							
loss3	-0.148	-0.383	-0.174	-0.090	0.124	-0.300	0.517	1.000						
roa	0.133	0.201	0.032	0.010	0.076	0.369	-0.547	-0.322	1.000					
noi	-0.100	-0.426	-0.151	-0.034	0.162	-0.151	0.222	0.286	-0.199	1.000				
quick	-0.249	-0.367	-0.261	-0.038	0.037	-0.107	0.202	0.203	-0.091	0.144	1.000			
lev	0.157	0.412	0.204	-0.003	-0.273	0.059	-0.079	-0.118	-0.055	-0.313	-0.516	1.000		
recei	-0.204	0.150	-0.013	-0.271	-0.571	0.108	-0.202	-0.257	0.064	-0.185	-0.202	0.419	1.000	
inven	0.050	-0.093	-0.020	-0.024	0.258	0.004	0.030	0.005	0.052	0.243	-0.084	-0.162	-0.141	1.000
zscore1	-0.031	-0.077	-0.117	-0.013	0.140	0.117	-0.241	-0.197	0.383	0.124	0.529	-0.498	-0.086	0.162
zscore2	0.176	0.077	0.031	0.061	0.267	0.230	-0.446	-0.333	0.611	0.153	0.017	-0.250	-0.033	0.329
ic	0.069	-0.076	0.009	0.005	0.094	-0.059	0.119	0.190	-0.112	0.186	0.015	-0.037	-0.077	-0.007
weak	-0.021	-0.148	-0.040	-0.053	0.041	-0.082	0.171	0.215	-0.155	0.179	0.133	-0.043	-0.063	-0.031
restate	0.080	0.097	0.084	0.069	-0.012	-0.032	-0.019	0.023	-0.007	-0.103	-0.065	0.039	0.004	-0.064
da	0.555	0.612	0.291	0.241	0.179	0.234	-0.012	-0.122	0.042	-0.154	-0.098	0.159	-0.037	0.011
bsize	0.383	0.578	0.260	0.199	-0.100	0.222	-0.200	-0.244	0.079	-0.243	-0.224	0.344	0.233	-0.161
id	0.124	0.101	0.079	0.073	0.070	0.028	0.000	-0.006	0.042	-0.047	-0.051	0.064	0.083	-0.019
ceo	0.003	0.019	0.064	-0.014	0.072	0.116	-0.117	-0.086	0.105	-0.051	-0.080	0.016	-0.020	0.035
acsize	0.266	0.384	0.165	0.171	-0.003	0.279	-0.183	-0.231	0.088	-0.184	-0.115	0.232	0.198	-0.062
busy	0.053	0.155	0.048	0.056	-0.032	-0.018	-0.023	-0.033	-0.017	-0.209	-0.039	0.141	0.078	-0.186
change	-0.108	-0.070	-0.044	-0.140	-0.019	-0.044	0.031	0.021	-0.012	0.094	0.026	0.029	0.009	0.014

	zscore1	zscore2	ic	weak	restate	da	bsize	id	ceo	acsize	busy	change
zscore1	1.000											
zscore2	0.742	1.000										
ic	-0.076	-0.066	1.000									
weak	-0.011	-0.110	0.794	1.000								
restate	-0.048	-0.039	-0.031	-0.049	1.000							
da	-0.049	-0.019	-0.060	-0.082	0.030	1.000						
bsize	-0.113	-0.049	-0.113	-0.140	0.103	0.351	1.000					
id	-0.110	-0.061	-0.015	-0.038	0.088	0.055	0.118	1.000				
ceo	0.038	0.105	-0.049	-0.066	0.011	-0.020	-0.044	0.114	1.000			
acsize	-0.033	0.034	-0.058	-0.083	0.067	0.210	0.494	0.312	0.069	1.000		
busy	-0.095	-0.126	-0.027	0.011	0.059	0.015	0.096	0.014	0.030	0.086	1.000	
change	0.027	-0.016	0.105	0.139	0.018	-0.055	-0.076	-0.003	0.005	-0.029	0.057	1.000

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RESULTS FOR AUDIT FEES REGRESSIONS

Results for Regressions Tested Inherent Risk

Table 5 Results for Regressions Tested Inherent Risk

Ln AF	Model 1			Model 2			Model 3		
	Coef.	t-stat.	VIF	Coef.	t-stat.	VIF	Coef.	t-stat.	VIF
Ln TA	0.476	24.2***	2.3	0.467	26.05***	1.89	0.476	23.47***	2.38
Ln NAF	0.005	0.66	1.34	0.005	0.66	1.33	0.007	0.82	1.32
BIG4	0.401	**5.06*** **	1.51	0.409	5.3***	1.42	0.434	5.51***	1.45
SQSEG	0.260	**9.41*** **	1.87	0.318	14.11***	1.24	0.305	12.48***	1.43
EPS	-0.013	-1.12	1.24				-0.014	-1.22	1.32
LOSS1				0.274	**3.52*** **	1.25			
LOSS3	0.225	**2.89*** **	1.53				0.217	2.92***	1.36
ROA							0.104	0.68	1.3
NOI	0.898	**5.96*** **	1.42	0.954	6.55***	1.32	0.941	6.21***	1.41
QUICK	-0.010	-1.07	1.26						
LEV							-0.080	-0.66	1.45
RECEI	-0.490	**(-)3.11*** **	1.72						
INVEN	-0.122	-0.46	1.25				0.015	0.06	1.15
Z-score 1				-0.006	-0.68	1.16			
Z-score 2	0.022	**1.77** **	1.51						
Sample size		507			507			507	
R-squrared		0.7821			0.7791			0.7771	
Adj R_squared		**0.7772**			**0.776**			**0.7726**	

*Note: See Table 1 in page 35 for variable definitions. *** and ** respectively indicate*

Two-tailed significance at the 0.05 and 0.10 levels.

Table 5illustrates the empirical results for regression (1), (2) and (3). From table 5, it could be seen that firstly, adjusted R squared for these three models are around 0.77 which means that models have largely explained audit fees. Secondly all variables have passed VIF tests. Among four control variables, the three variables measuring auditee size (Ln TA), audit quality (BIG4) and audit complexity (SQSEG) have positive and significant influences on audit fees. However, the nature log of non-audit fees appears to be insignificant. The possible reason might be in this sample, 56 observations (10% of total observations) have not charged any non-audit service.

In terms of test variables, table 5 shows that under 95% confidence level, the t ratios of variables LOSS1, LOSS3 and NOI are larger than 1.96 which indicates that they have significantly positive influences on audit fees. These findings are consistent with prior research that is auditors did consider the profitability of auditees when deciding the audit pricing. NOI is non-operating income to total assets ratio which is rarely studied in prior paper but it is proved a significant relation with audit fees. Recall that non-operating income may cause a

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fluctuation of earnings and is not a sustainable resource of income. Notably, if there is an abnormal non-operating income, it may have a higher possibility of earnings manipulations (Chaney &Philipich, 2002). In this respect, it seems that auditors do consider not only companies' ability to earn profits, but also the components and quality of earnings.

Further note that RECEI is negatively significant with audit fees in the model 1. This means that among these 507 observations, companies with larger percentage of receivables seem to be charged lower audit fees. This finding is inconsistent with most archival literature due to sample selection. One or two industries which have large percentage of receivables may dominate the sample. According to table 6, it could be seen that financials, consumer discretionary, industrials and information technology are the main industries which cover nearly 68% of total sample. Notably, 24% of observations are coming from financial firms (banks, insurance, diversified financials and real estate firms). As we know, financial firms have some special financial characteristics differing from other industries. For instance, they usually have large percentages of receivables as the loans lending to customers and the financial investments in stock or bond markets are all account receivables for financials. The table 3 also shows that for financial firms, 47% of assets are account receivables on average compared with only 13% for nonfinancial firms. In addition, for nearly 35% financial observations, the receivable ratios are larger than 70%. However, with larger percentage of receivables, the audit fees for financials were not dramatically larger than nonfinancial firms'. This may largely cause the abnormal sign for RECEI variable in total sample regression.

Table 6 Industry Classification of the Sample

Industry	Number of observations	Percentage of observations
Financials	124	24%
Information Technology	75	15%
Industrials	70	14%
Consumer Discretionary	77	15%
Health Care	51	10%
Energy	35	7%
Consumer Staples	26	5%
Materials	24	5%
Utilities	21	4%
Telecommunication Services	4	1%
Total	**507**	**100%**

Recall that the model 1 to 3 examines the relation between audit fees and proxies for inherent risk. From the above results, many proxies for inherent risk have positively significant influences on audit pricing, thus it could be say that there is a positive relation between inherent risk and audit fees. Turning to Hypothesis 1, it predicts that there is a negative association between audit fees and auditee's profitability. The findings suggest that Hypothesis 1 should be accepted as LOSS1 and LOSS3 are both significant and positive in model 1 and 3. Auditors

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seem to take auditee's profitability into consideration when deciding audit fees. In terms of Hypothesis 2 which proposes a positive relation between audit pricing and the risk of bankruptcy, as both two measures of financial distress (Z-score1 and Z-score 2) are not significant in the regressions, this hypothesis could not be supported.

Results for regressions tested control and detection risk

Table 7 Results for regressions tested control and detection risk (n=507)

	Model 4			Model 5		
Ln AF	Coef.	t ratio	VIF	Coef.	t ratio	VIF
Ln TA	0.3739	16.96***	2.69	0.3850	18.4***	2.4
Ln NAF	0.0058	0.71	1.32	0.0061	0.74	1.32
BIG4	0.4891	6.12***	1.43	0.4934	6.15***	1.43
SQSEG	0.3261	13.86***	1.27	0.3288	14.11***	1.23
IC	0.6301	**4.11*** **	1.04			
WEAK				0.4598	**3.48*** **	1.05
RESTATE	0.0597	0.59	1.03	0.0645	0.63	1.02
DA	0.0052	**2.85*** **	1.68	0.0049	2.67***	1.68
B-SIZE	0.0047	0.32	1.58			
ID	0.2488	1.09	1.04	0.3112	1.31**	1.13
CEO	-0.0739	-1.22	1.04	-0.0734	-1.21	1.03
AC-SIZE				-0.0238	-0.7	1.3
BUSY	-0.1249	(-) **1.66** **	1.04	-0.1378	(-) 1.82**	1.05
CHANGE	-0.2045	(-) **1.73** **	1.04	-0.2094	(-) 1.77**	1.04
Sample size		507			507	
R-squrared		0.7675			0.7655	
Adj R-squared		**0.7618**			**0.7599**	

*Note: See Table 1 in page 35 for variable definitions. *** and ** respectively indicate two-tailed significance at the 0.05 and 0.10 levels*

Model 4 and model 5 test the proxies for control risk and detection risk. Adjusted R squared for model 4 and 5 are around 0.76 and all variables have passed VIF tests. According to table 7, the t ratios of IC, WEAK and DA are larger than 1.96 and under 95% confidence level, their influences on audit fees are positive and highly significant. Thus we should accept the Hypothese 3 which pridicts a negative relation between audit fees and the quality of internal control. Furthermore this empirical evidence indicates that if auditors issued an adverse opinion about internal control (measured as IC) or there was a weakness in internal control system (measured as WEAK), auditors tend to spend more audit efforts which lead a higher audit fees. These findings are consistent with most prior literature such as Hoitash, et al. (2008), Charles, et al. (2010) and Hogan & Wilkins (2008). In addition, Hypothesis 4 proposes a positive relation between audit fees and earnings management. The results show that the proxy for earnings management, the square root discretionary accruals (DA) has positive and significant

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influence on audit pricing. However, the coefficient is very small only 0.0052. This largely contributes to the part of large values of DA. Some values are even larger than 50. In short all of these three variables are proxies for control risk, so it could be seen that there is a significantly positive relation between audit pricing and control risk.

In terms of the measures of corporate governance, as mentioned in literature review, archival studies provided mix empirical and theoretical evidence. In these regression results, among the four governance variables, board size (B-SIZE), the percentage of independent directors (ID), CEO duality (CEO) and the size of audit committees (AC-SIZE), none of them are significant in audit fees regressions. It seems that auditors did not assess the effectiveness of corporate governance when determining the price.It probable that because before financial crisis auditors paid less attention in the quality of corporate governance.

This research paper chose two variables, auditor change (CHANGE) and busy season (BUSY) to examine whether they could be proper proxies for detection risk. From table 7, it could be seen that less than 90% confidence level, the variables CHANGE and BUSY have significantly negative influences on audit pricing. These findings suggest that these two variables could not be good measures for detection risk. The possible reason for the negative relation between audit fees and BUSY is that during busy season, auditors might relative spend less hours in each case which could lead a slight decrease in audit fees. Meanwhile, I supposed auditor change might cause an increase in detection risk as auditors have less experience in the initial engagements. However, CHANGE is negative which mean that the firms with a auditor change have paid less audit fees. The possible reason is other factors may also influence on the decision made of audit fees in the initial engagement. Many archival relevant papers proved that in U.S. many auditors give a fee discounting on initial engagements (Ghosh & Lustgarten, 2006; Elliott, et al., 2013; Turpen, 1990). To conclud, this reseaech paper has not found any proper measure of detection risk and does not provide any evidence on the relation between detection risk and audit fees

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EMPIRICAL RESULTS FOR SUB-SAMPLES

Results for Financial Firms

Table 8 Regression Results for Financial Firms Tested Inherent Risk

Ln AF	Model 1-F			Model 2-F			Model 3-F		
	Coef.	t-stat.	VIF	Coef.	t-stat.	VIF	Coef.	t-stat.	VIF
Ln TA	0.52	14.53***	2.35	0.53	16.46***	1.92	0.535	13.35***	2.84
Ln NAF	0.05	2.46***	1.5	0.04	2.24***	1.64	0.054	2.91***	1.43
BIG4	0.41	2.96***	1.87	0.34	2.68***	1.43	0.281	1.99***	1.94
SQSEG	0.28	5.01***	2.74	0.26	6.74***	1.41	0.236	4.78***	2.09
EPS	-0.007	-0.36	1.36				-0.005	-0.28	1.42
LOSS1				0.51	**2.57*** **	1.27			
LOSS3	0.29	1.43	1.57				0.335	1.72**	1.48
ROA							0.349	0.3	1.74
NOI	3.10	1.49	1.6	3.94	**2.07*** **	1.39			
QUICK	0.06	1.24	1.47						
LEV							-0.943	**(-)2.01*** **	3.14
RECEI	0.08	0.3	3.21						
INVEN	-0.263	-0.47	1.22				0.027	0.05	1.2
Z-score 1				0.17	**3.13*** **	1.38			
Z-score 2	0.13	**3.04*** **	1.33						
Sample size		124			124			124	
R-squrared		0.879			0.8791			0.8731	
Adj R-squared		**0.8671**			**0.8718**			**0.8619**	

*Note: See Table 1 in page 35 for variable definitions. *** and ** respectively indicate two-tailed significance at the 0.05 and 0.10 levels*

In order to further investigate the different characteristics between financial firms and non-financial firms about the audit pricing-risk association, 5 audit fees models will be employed again in this part. Table 8 shows the results of testing inherent risk measures in the sample of financial firms. Firstly, the adjusted R squared for model 1-F, 2-F and 3-F are around 0.86 which means that audit fees could largely be explained by these regressions. Among the financial variables, LOSS1, LOSS3, NOI, Z-score1 and Z-score2 have significantly positive influences on audit fees. The results of LOSS1, LOSS3 and NOI are consistent with model 1 to 3 which has done in previous part.

However, the impacts of Z-score on audit fees are positive indicating that companies with lower Z-score paid less audit fees. Another abnormal variable is LEV. The t ratio of LEV is -2.01 indicating a significant and negative relation with audit pricing. These findings are inconsistent with prior research. The potential reason for abnormal signs might be before financial crisis, confronted with risky investments, many financial companies seemed to underestimate the possibility of suffering liquidity risk and ignore the importance of oversight the excessive risk.

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In another word, they failed to manage their business risk and this happened especially among the relative small financials (Yeoh, 2010). While as mentioned above, audit fees are largely determined by auditee's size, thus for these small financials, they were charged less audit fees but had an excessive risk taking, for instance keep a high financial leverage and have a high possibility of bankruptcy. Therefore, it could be seen that auditors seemed to do not take auditees' business risk into consideration when decided audit fees. More importantly, they do not seem to play a responsible gate keeper to oversight financial firm's risk taking in 2007 before the financial crisis.

Table 9 Regression Results for Financial Firms Tested Control and Detection Risk

	Model 4-F			Model 5-F		
Ln AF	Coef.	t stat.	VIF	Coef.	t stat.	VIF
Ln TA	0.439	10.11***	3.21	0.441	10.52***	3.04
Ln NAF	0.044	2.33***	1.45	0.043	2.3***	1.45
BIG4	0.467	3.25***	1.93	0.473	3.32***	1.93
SQSEG	0.304	6.85***	1.65	0.300	7.26***	1.45
IC	0.241	0.7	1.1			
WEAK				0.366	1.38	1.1
RESTATE	0.027	0.17	1.13	0.039	0.24	1.11
DA	0.003	1.33	2.24	0.003	1.37	2.25
B-SIZE	0.008	0.41	1.63			
ID	-0.217	-0.51	1.15	-0.370	-0.81	1.32
CEO	-0.220	**(-)2.09*** **	1.07	-0.218	(-)2.09***	1.06
AC-SIZE				0.037	0.71	1.41
BUSY	-0.060	-0.28	1.1	-0.041	-0.19	1.12
CHANGE	-0.079	-0.37	1.09	-0.069	-0.33	1.09
Sample size		124			124	
R-squrared		0.8722			0.8742	
Adj R-squared		**0.8584**			**0.8606**	

*Note: See Table 1 in page 35 for variable definitions. *** and ** respectively indicate two-tailed significance at the 0.05 and 0.10 levels*

Table 9 shows the results of examined the proxies for control risk and detection risk in the sample of financials. Firstly, Adjusted R squared for model 4-F and 5-F are around 0.86 and all variables have passed VIF tests. Secondly, except CEO, other test variables seem to be insignificant. It appears that auditors do not consider auditee's quality of internal control and corporate governance in this sample. That is because before financial crisis, a large proportion of financial firms had a poor corporate governance practices especially in risk management and remuneration system (Kumar & Singh, 2013; Kirkpatrick &Isaksson, 2009) which made auditors to view the practices of corporate governance as ineffective in reducing audit risk. As for the variable, CEO, it has significantly negative influence on audit pricing. This suggests that the companies with CEO duality paid more audit fees. It is consistent with the prior papers

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which supports that good corporate governance could make audit fees higher as managers are more demanding.

Results for nonfinancial firms

Table 10 Regression results for nonfinancial firms tested inherent risk

Ln AF	Model 1-NF			Model 2-NF			Model 3-NF		
	Coef.	t-stat.	VIF	Coef.	t-stat.	VIF	Coef.	t-stat.	VIF
Ln TA	0.511	21.73***	2.38	0.508	23.48***	1.99	0.502	21.34***	2.32
Ln NAF	0.001	0.14	1.34	0.001	0.08	1.32	0.002	0.18	1.31
BIG4	0.318	3.52***	1.41	0.288	3.22***	1.36	0.309	3.39***	1.4
SQSEG	0.158	4.68***	1.29	0.177	5.4***	1.2	0.174	5.16***	1.25
EPS	-0.020	-1.53	1.26				-0.020	-1.46	1.36
LOSS1				0.177	**2.16*** **	1.25			
LOSS3	0.166	**2.05*** **	1.48				0.147	1.88	1.33
ROA							0.082	0.54	1.36
NOI	0.658	**4.29*** **	1.31	0.745	5.05***	1.2	0.757	4.95***	1.27
QUICK	-0.021	**(-)2.31*** **	1.23						
LEV							0.254	**1.99*** **	1.17
RECEI	0.878	**2.89*** **	1.28						
INVEN	-0.243	-0.84	1.24				-0.154	-0.55	1.11
Z-score 1				-0.022	**(-)2.55*** **	1.14			
Z-score 2	-0.013	-0.96	1.75						
Sample size		383			383			383	
R-squrared		0.7767			0.7722			0.7704	
Adj R_squared		**0.7701**			**0.768**			**0.7642**	

Note: See Table 1 in page 35 for variable definitions. *** and ** respectively indicate two-tailed significance at the 0.05 and 0.10 levels

The further investigation about the audit pricing-risk association also has paid on the sample of non-financial firms. From table 10, it could be seen that 7 financial indicators are significant in the regressions compared with only 4 in the regressions of total observations. First of all, LOSS1, LOSS3 and NOI have the same results of that in total sample. Notably, QUICK and Z-score1 which are insignificant in model 1 and 2, are negatively significant in model 1-NF, 2-NF. Other notable variables are LEV and RECEI, according to table 10 they have positive and highly significant influences on audit fees. Recall that the previous results indicate significantly negative relations. That to say among non-financial firms, the companies with higher leverage and larger percentage of receivables tend to be charged higher audit fees. The results for non-financial firms are finally consistent with archival literature. To conclude compared with financials, it seems that the audit fees for nonfinancial firms are more sensitive to the financial indicators. Auditors considered not only the nonfinancial firms' profitability, but also the liquidity, activity, solvency and possibility of bankrupt when they decide audit fees.

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Table 11 Regression Results for Non-Financial Firms Tested Control and Detection Risk

	Model 4-NF			Model 5-NF		
Ln AF	Coef.	t stat.	VIF	Coef.	t stat.	VIF
Ln TA	0.454	16.23***	3.19	0.471	17.34***	2.96
Ln NAF	0.004	0.46	1.31	0.004	0.48	1.31
BIG4	0.292	3.12***	1.44	0.293	3.1***	1.45
SQSEG	0.170	5***	1.24	0.175	5.12***	1.24
IC	0.762	**4.73*** **	1.05			
WEAK				0.552	**3.88*** **	1.07
RESTATE	0.088	0.75	1.04	0.087	0.73	1.04
DA	0.000	-0.04	2.09	-0.001	-0.28	2.05
B-SIZE	0.006	0.34	1.58			
ID	0.517	2.04***	1.08	0.617	2.34***	1.16
CEO	-0.053	-0.79	1.06	-0.055	-0.8	1.06
AC-SIZE				-0.041	-1.04	1.26
BUSY	-0.017	-0.22	1.04	-0.031	-0.4	1.04
CHANGE	-0.266	(-)2.02***	1.08	-0.276	(-)2.07***	1.09
Sample size		383			383	
R-squrared		0.7657			0.7621	
Adj R-squared		**0.7581**			**0.7543**	

Note: See Table 1 in page 35 for variable definitions. *** and ** respectively indicate two-tailed significance at the 0.05 and 0.10 levels

As for the results for last two models 4-NF and 5-NF, it suggests that among the proxies for control risk, variables IC and WEAK are positive and significant. That to say there is a positive relation between audit fees and quality of internal control. When it comes to governance variables, only ID (the percentage independence directors) has significantly positive impact on audit pricing. This finding suggests that more independence directors lead higher fees among nonfinancial firms.

FINDINGS AND CONCLUSION

This paper analyses association between audit risk and audit fees. The audit risk is separated into three components, inherent risk, control risk and detection risk. In order to better understand audit pricing-risk relationship, the archival literature, it could be seen that substantial papers have proved the significantly positive relation between audit risk and audit fees from different measures of audit risk. (Charles, et al., 2010; (Gul, etal., 2003; Houston, et al., 2005). That is to say auditors do consider the audit risk in determining audit fees and higher risks related to higher audit fees. According to theoretical arguments, if audit risk is high, auditors should spent more efforts. At the same time for the undetected material misstatements, auditors tend to charge a risk premium to compensate their possible future loss. Thus both an

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increase in audit efforts and risk premiums contribute to the rising of audit pricing.

As for the empirical results of this paper, strong empirical evidence has found to suggest that the inherent risk and control risk have positive influence on audit fees. However, it has not found any proper measures of detection risk and does not provide any evidence on the relation between detection risk and audit fees.

Among 11 measures of inherent risk, the measures of profitability (LOSS1, LOSS3 and NOI) have significantly positive impacts on audit fees not only in the regressions of the total sample (in model 1 and 2), but also in the two sub-samples (in model 1-F, 2-F, 1-NF and 2-NF). This indicates that auditors take auditee's profitability into consideration when decided audit fees. The RECEI variables are negative and significant in the model 1 and this because financial firms which have large percentage of receivables dominated the sample. Excluding financial observations, in the model 1-NF of non-financial subsample, RECEI are positive and highly significant. Turning to the comprehensive risk measures, two types of client financial distress models, according to the results in model 1 and 2, model 1-F and 2-F, Z-scores have positive influence on audit fees. Only in the non-financial sample, model 2-NF indicates a significant negative impact. These results suggest that Z-score seems to be a sensitive proxy and could not effectively measure audit risk.

In terms of the 8 measures of control risk, IC and WEAK are highly significant this suggests that auditors seemed to consider the quality of internal control when deciding audit pricing.If auditors issued an adverse opinion about internal control (measured as IC) or there was a weakness in internal control system (measured as WEAK), auditors tend to spend more audit efforts which lead a higher audit fees. Another comprehensive risk measure in this paper is discretionary accruals model (DA). DA is positive and significant in model 4 which means that companies with larger amount of discretionary accruals will be charged higher audit fees. As mentioned above, the risk material misstatement is highly related to earnings management. Thus consistent with prior literature, the empirical results of this paper also support the positive relation between the risk of material misstatement and audit fees. Turning to the measures of corporate governance, their influences on audit fees are weak. In the model 4 and 5, none of them are significant. In the sub-samples, CEO is negatively significant (in model 4-F) and ID (the percentage of independent directors) is positively significant (in model 4-NF). Firstly, an insignificant relation suggests that auditors seemed to view corporate governance as ineffective in reducing audit risk. Secondly, a positive relation indicates that good corporate governance seemed to be not a good proxy for audit risk. Since a more independent, diligent board tend to require a higher audit quality which certainly lead a rising in audit fees, but this influence on audit fees is not related to the audit risk.

Furthermore, this research paper also examines 2 variables of detection risk. As mentioned above, it has not directly available data to capture detective risk. However, there might be some indirect methods to assess detection risk. This paper chose auditor change and busy season as proxies for detection risk, but the negative impacts on audit fees indicate that CHANGE and BUSY could not be proper measures of detection risk. The negative impacts are determined by

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other factors apart from audit risk.

This paper has also studied the influences of industry differences on audit pricing-risk association. The total observations are separated into two subsamples, financial firms and nonfinancial firms. Firstly, the findings indicate that in the similar level of total assets financials are charged lower audit fees than nonfinancial firms. Secondly, auditors did not seem to take financial firms business risk into consideration when decided audit fees as there is a positive relation between audit fees and companies' solvency (measured as financial leverage), the possibility of bankruptcy (measured as Z-score). More importantly, auditors did not seem to play a responsible gate keeper to oversight financial firm's risk taking in 2007 before the financial crisis. Compared with financials, the audit fees for nonfinancial firms are more sensitive to the financial indicators. Auditors considered not only the non-financial firms' profitability, but also the liquidity, activity, solvency and possibility of bankrupt when they decide audit fees.

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