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Internal audit quality and audit fees: Evidence from China

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As an integral part of corporate governance, assurance services from internal and external sources supervise and evaluate companies' operations. Systematically combing the relevant internal and external audit literature at home and abroad reveals that internal auditing and audit fees show different relationships in different countries and markets. The objective of this study is to examine the relationship between internal audit quality and audit fees in the Chinese market. This study takes companies which constitute the China Securities Index 300 (CSI 300) as a sample and analyzes data from 2013 to 2020 to examine the relationship between internal audit quality and audit fees using regression analysis. Regression results show that companies with a higher quality of internal audit function pay more external audit fees at the same time. The results provide some suggestions to improve the audit supervision mechanism of Chinese listed companies and can enrich the research on internal control and external supervision.

Key words: Internal audit, external audit, audit fees, corporate governance.

INTRODUCTION

The outbreak of the Enron incident had a strong impact on the US government, enterprises, and the certified public accountant industry, and finally ended with the bankruptcy of Enron and the disintegration of Andersen, then the fifth largest accounting firm. This incident aroused the attention of governments to internal control, internal auditing, and other control systems. After the outbreak of the incident, the US Congress quickly passed the Sarbanes–Oxley Act (Sarbanes-Oxley Act, 2002). This act not only requires external auditors to confirm the accuracy of financial reports but also requires enterprises

to set up an internal audit department designed to supervise the behavior of management and thus improve corporate governance. China has also issued corresponding policies to clarify the roles that internal and external auditing play in corporate governance. In February 2016, Chinese Auditing Standards (CAS) were issued, which emphasize that the focus of internal auditing lies in the reasonable design and effective implementation of internal control systems, the reliability of enterprise accounting information, and the efficiency and compliance of enterprise operation. The external

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audit focuses on a company's financial reports and the evaluation of the effectiveness of internal control. The internal and external complement each other in function, responsibility, and role orientation. In the control system of enterprises, internal and external auditing jointly restrict and supervise the behavior of management. As an integral part of corporate governance, assurance services from internal and external sources supervise and evaluate companies' operations. Systematically combing the relevant internal and external audit literature at home and abroad reveals that internal auditing and audit fees show different relationships in different countries and markets. The objective of this study is to examine the relationship between internal audit quality and audit fees in the Chinese market.

The audit fee is the key research field of the audit market, and it is also the topic that scholars at home and abroad frequently pay attention to. Audit fee refers to the cost of audit resources and the audit risk premium paid by the provider and the recipient of audit services after providing relevant audit services. Audit fees not only depend on the supply–demand relationship of the audit market but are also largely affected by the governance environment of a company, and internal auditing is undoubtedly an important part of the governance environment of a company. Internationally, scholars try to analyze the contribution of a high-quality internal function to audit fees, but because of different measurement methods of internal audit quality, the different nature and scale of selected samples, and different research methods, the conclusions vary. The conclusions of existing studies include the “substitution effect” and the “complementary effect.”

Goal and contribution of this study

The objective of this study is to examine the relationship between internal audit quality and audit fees in the Chinese market. At the same time, the existing literature mostly uses the objectivity, size, structure, competence, and similar aspects of internal auditing to measure internal audit quality, without considering the contribution from the governance environment of a company, ignoring the impact of the board of directors and other management departments on internal audit quality. Combined with the research of other scholars, this study selected the constituent companies of the CSI 300 to conduct an empirical analysis, hoping to provide evidence from China, a developing capital market. Therefore, this study uses internal audit quality as the independent variable to examine its impact on audit fees in the Chinese market. As most of the data used in empirical analysis come from the mature capital markets of developed countries (Prasad et al., 2021), this study contributes to the literature in the Chinese market and provides suggestions for improving the audit supervision mechanism of Chinese listed companies.

LITERATURE REVIEW AND RESEARCH ASSUMPTION

Internal audit quality measurement

Domestic and foreign research literature mainly studies the quality and effectiveness of internal audit from the following five aspects: independence, professional competence, scope of responsibility authorization, size of internal audit organization, and diligence of the audit committee. Maintaining independence in the audit process is key for an internal audit to achieve desirable results, and independence is the prerequisite to ensure that the internal audit department can realize its own value (Alander, 2023; Xie and Tao, 2015). Only by adjusting and straightening out the subordinate relationship of internal audit institutions and setting up independent internal audit institutions can a company ensure the effective operation of the internal audit mechanism. Only when internal auditing has high independence within the organization can it carry out more objective supervision over other departments (Alander, 2023). Trotman and Duncan (2018) also emphasized the influence of the organizational status of an internal audit when it exerts an effect on corporate governance, and believed that the fiduciary duty of internal audit at the level of shareholders, management, or board of directors is the premise of the internal audit functions. In practice, if the importance of internal auditing becomes highly recognized by corporate governance, its work will generally be reported to the audit committee or the CEO; if it is only reported to some middle-level departments, then the internal audit department may be excluded from the corporate governance layer and cannot give full play to its role (Alander, 2023).

Ismael and Kamel (2021) believed that hiring highly competent and experienced auditors is the key factor in determining whether an internal audit department is effective. Selecting experienced auditors and adopting appropriate audit methods determine whether an internal audit is competent. According to Wang and Lei (2019), the good professional quality of auditors is a necessary condition for internal audit work to realize its own value. The American Institute of Certified Public Accountants also regards competence as a key factor affecting the quality of internal auditing. CAS No. 9 points out that when external auditors determine the nature, time, and degree of their own audit steps, they should consider the work of the internal audit. These considerations include the professional competence of the internal auditors. In 2019, according to the revised Chinese Standards for Certified Public Accountants No. 1411, the competence of internal auditors is also listed as one of the important considerations when external certified public accountants may use internal auditing.

Internal auditing not only maintains the traditional advantages in finance, accounting, and internal control

but also integrates risk management and corporate governance. Management should use internal audits to attach importance to interpersonal relations, strengthen comprehensive communication, and create greater value for the organization (Alander, 2023). Wang and Lei (2019) believed that one of the keys for an internal audit to achieve desirable results is to actively communicate with senior management and adjust the scope of audit work according to the company's business changes. Since the Institute of Internal Auditors issued a new definition of internal auditing in 1999, internal auditing not only provides confirmation but also has a value-added function, which has greatly expanded the scope of responsibility of internal auditing. In addition, Sierra-García et al. (2019) and Alander (2023) believed that the audit committee strengthens communication with internal auditors through holding meetings, reduces resistance in the process of performing responsibilities, and then improves the internal audit function. However, the existing research mainly focuses on the internal audit department itself, ignoring the coordinating role of the audit committee when internal and external audits exert their impact. Therefore, factors of the audit committee relevant to the measurement factors of internal audit quality were added in order to get better results.

Internal auditing and audit fees

Scholars have conducted many studies on this topic. Due to different measurement methods, selected samples, and research methods, the conclusions are inconsistent. The main conclusions include the substitution effect and complementary effect. For the substitution effect, Calvin and Holt (2023) and Zain et al. (2015) analyzed when and how external auditors rely on the internal auditor's work. Their empirical research confirmed that when internal audit plays a better role, the external audit fees tend to be lower, indicating that the two show an effect of substitution. Calvin and Holt (2023) further indicated that companies with internal audit education have fewer material weaknesses in internal controls over financial reporting, fewer financial statement misstatements, and shorter audit lags, and sometimes pay lower audit fees. Calvin and Holt (2023) and Abbott et al. (2016) not only confirmed that the audit assistance provided by an internal audit will significantly reduce the audit fees, but also found that the audit fees will be reduced to a greater extent with the assistance provided by the internal audit with greater organizational status and committed resources. Wang and Lei (2019) and Calvin and Holt (2023) found that high-quality internal audits were significantly related to low-level unexpected external audit fees. This confirms once again that internal auditing can indeed replace some functions of external auditing, therefore contributing to reducing external audit fees.

For the complementary effect, Prasad et al. (2021) and Sierra-García et al. (2019) pointed out that instead of the

traditional point of view which supports the substitution effect, recent studies have obtained more results supporting a complementary effect where higher audit fees are charged when a company has stronger internal audit functions. The core of this view lies in the transformation of the internal audit function. Goodwin-Stewart and Kent described this trend in 2006, that is, for an internal audit, a company hopes to strengthen the supervision of the whole process of enterprise operation; for an external audit, the company focuses on improvement of the quality of financial reports. According to the research of Prasad et al. (2021), the internal audit profession is currently in a transition stage beyond the compliance function. Compared with having the function limited to financial compliance in the traditional model, the value of contemporary internal auditing is that it focuses on consulting and value-added operations, that is, it pays more attention to strategic and significant organizational risks than the risk of material misstatement of financial reports. This functional differentiation makes the internal audit no longer a substitute for the external audit but a function complementary to the external audit under the overall corporate governance framework (Zain et al., 2015).

Scholars such as Zain et al. (2015), Sierra-García (2019), and Calvin and Holt (2023) have found a significant relationship between internal audit quality and audit fees, thus supporting a complementary effect where management, aiming for higher governance standards, often commits to a high-quality internal audit system and seeks higher-quality external audit supervision, resulting in higher audit fees. From the management perspective, a prominent element is that those pursuing higher-quality external audits seek to enhance the credibility of financial statements by engaging high-quality external auditors. In China, this typically refers to the international Big Four. According to Yang (2019), considering the reputation assets brought by the Big Four's brand effect, they avoid providing low-quality services that would entail reputation risk. Coupled with their highly professional audit talents, the market widely recognizes the Big Four's audit quality, corresponding to higher charges for audit services. The annual audit consultation and final accounts documents released by the State-Owned Assets Supervision and Administration Commission show significant differences in hourly fees between the Big Four and local accounting institutions, with fees for Big Four auditors nearly 20 times higher than those for local auditors of similar levels. Another factor is that management's high requirements can increase auditor working hours in certain aspects. For instance, according to the research of Goodwin-Stewart and Kent (2016), management with higher expectations for external auditing expects their auditors to be more diligent, which often entails more frequent attendance at committee meetings and preparation of additional reports, leading to increased audit hours. This finding was confirmed by Sierra-García et al. (2019).

Additionally, in practice, highly demanding management may require CPA firms to issue quarterly audit reports or special audit reports beyond the requirements of the Administration of Information Disclosure of Listed Companies to strengthen monitoring, resulting in higher audit costs.

Based on earlier discussion, the comprehensive effect arises from the differences and complexity in functions between internal audit and external audit. Management pursuing higher governance standards is often committed not only to establishing a high-quality internal audit system but also to seeking higher-quality external audit supervision, leading to higher audit fees.

Research assumptions

After consulting relevant literature, it is evident that there is no clear consensus on the relationship between audit fees and quality. Therefore, this paper selects the constituent companies of the CSI 300 to conduct empirical analysis on the relationship between internal audit quality and audit fees. Based on existing research results, assumptions are proposed. Since there is still no definitive conclusion, the correlation direction in the hypothesis was not initially predicted: there is a significant relationship between internal audit quality and external audit fees.

RESEARCH METHODOLOGY

Data source and sample selection

This study utilizes companies comprising the China Securities Index 300 (CSI 300) as a sample and analyzes data from 2013 to 2020 to examine the relationship between internal audit quality and audit fees through regression analysis. The statistical software "STATA" is employed for the analysis. The initial sample data consist of constituent companies of the CSI 300, with all data attributed to the years 2013–2020. The primary data sources include the CSMAR database, RESSET database, and www.cninfo.com. Internal audit data are manually extracted from the company's internal audit system, self-evaluation reports of internal control, board meeting announcements, enterprises' annual reports, and other relevant information.

Following the practices of scholars such as Yuan and Wang (2020) and Goodwin-Stewart and Kent (2006), the samples were screened as follows: firstly, *ST and ST companies were excluded; secondly, samples with missing or undisclosed internal audit data were removed; finally, due to the unique financial data and structure of the financial and insurance industries, samples from these industries were excluded as well. After the sorting process, a total of 12,886 data points from 132 companies remained. Table 1 presents the number of these companies for each year.

Measures of internal audit quality

The literature review depicted the five main factors of internal audit quality in previous research. Considering the actual situation of Chinese mainland companies, this work focuses on five variables: the subordination mode, scope of responsibility, size of internal audit organization, number of internal audit meetings, and whether

the company discloses the professional title requirements of internal auditors.

The subordination mode of internal audit organization: This factor is abbreviated as IAModel. Many scholars at home and abroad (Prawitt et al., 2008; Abbott et al., 2016) believe that a higher subordinate level means a higher organizational status and stronger independence, and thus more authority and resources to fully perform their functions. Therefore, this study used the subordinate mode of the internal audit organization to measure the independence of the internal audit organization. If the internal audit organization is subordinate to the board of directors or the board of supervisors, it is assigned 2; if it is subordinate to the audit committee, it is assigned 1; and if it is subordinate to management, it is assigned 0.

The scope of internal audit organization responsibility: This factor is abbreviated as IADuty. Taking the content of CAS No. 1411 into consideration, it divided the responsibilities of the internal audit organization into three categories: financial compliance audit, special audit, and internal control system evaluation and consultation. This paper also adopted the division standard and took the number of the above three types of responsibilities as the evaluation indicator.

The size of internal audit organization: This factor is abbreviated as IASize. On the one hand, it reflects a company's overall emphasis on internal auditing; on the other hand, the larger the scale, the more professional the division of labor within the organization, the higher the work efficiency, and the more accurate the judgment and decision-making, so as to improve the quality of internal audits. The research by Ege (2015) and Wang and Zhang (2015) used the size of an internal audit organization to measure the quality of internal auditing. As it is difficult to obtain data on the number of personnel of an internal audit department, this study will use the total number of personnel of the audit committee as a substitute.

The number of internal audit meetings: This factor is abbreviated as IANumber. The diligence of an internal audit organization will also affect the quality of the internal audit to a certain extent. The audit committee holds meetings to strengthen communication with internal auditors, reduce resistance in the process of performing responsibilities, and then improve the governance efficiency of internal audits (Li et al., 2017). Therefore, the research of Yuan and Wang (2020) and Sierra-García et al. (2019) selected the number of internal audit meetings held by the audit committee or other corporate governance structures as one of the factors to measure internal audit quality.

Whether to disclose the professional title requirements of internal auditors: This factor is abbreviated as IACom. The professional competence of internal auditors refers to whether they have professional knowledge about accounting and auditing, and whether they have working experience on internal auditing or professional technical training. The internal audit system disclosed by Chinese listed companies stipulates that the personnel holding the audit position shall have corresponding professional competence. Therefore, in the research of Wang and Lei (2019), whether listed companies disclose the professional title requirements of internal auditors was selected as one of the measurement of internal audit quality. If yes, the value is 1, otherwise it is 0.

In order to have a more comprehensive measurement, this study took the natural logarithm of the sum of the assignments of the above five indicators as the final result to measure the internal audit quality, so as to reduce the impact of errors caused by manual data collection, and to ensure objectivity to a greater extent.

Other control variables

Additionally, apart from the factors constituting the internal audit

Table 1. Sample by years.

Year	Number of observations	%
2013	61	8.05
2014	68	8.97
2015	78	10.29
2016	89	11.74
2017	104	13.72
2018	109	14.38
2019	120	15.83
2020	129	17.02
Total	758	100

quality measurement standard mentioned above, the audit fees incurred by a company are also influenced by the company's characteristics, such as its scale, profitability, ownership concentration, debt ratio, etc. In order to conduct a more comprehensive empirical test of internal audit quality, combined with the situation of Chinese listed companies, the following indicators were selected as control variables.

Ownership concentration: This can be represented by the shareholding ratio of the largest shareholder, abbreviated as H1. The higher the degree of ownership concentration, the more concentrated the rights of shareholders and the stronger the ability of the largest shareholder to oversee and control the operation and management of the company. Major shareholders, for the sustainability of their own interests, tend to pay more attention to corporate governance and endeavor to ensure the legitimacy and fairness of financial reports (Xie and Tao, 2015). Therefore, it is reasonable to expect that ownership concentration will influence the restatement probability of financial statements, and consequently, affect the audit fees.

Duality of chairman and CEO: This is abbreviated as Dual. "Duality" refers to one person holding dual roles. Ideally, the top leaders of the board of directors and the management should be two different individuals. If these roles are held by the same person, it may result in the board of directors being controlled by the CEO, potentially weakening the supervisory function of management. Moreover, the CEO's power might overshadow internal control, leading to ineffective internal control within the company (Jizi and Nehme, 2018). In such circumstances, external audit work may not be conducted based on effective internal control, potentially impacting audit fees. Therefore, if the chairman and CEO are different individuals, the company is assigned 1; if one person holds both roles, the company is assigned 2.

Asset–liability ratio: This indicator is abbreviated as LEV. A high asset–liability ratio in a company could increase operational risk, and the burden of liabilities might prompt management to employ extreme accounting methods to mask the true financial situation. Consequently, external auditors may charge higher fees to draw reasonable audit conclusions (Sierra-García et al., 2019). Thus, the asset–liability ratio may influence audit fees.

Company size: Abbreviated as Size, this is measured by the natural logarithm of total assets. Generally, a company's size determines the scale of the audit work. Larger companies tend to have larger scopes for external audit work, leading to more audit time and procedures (Ege, 2015). Therefore, it can be reasonably predicted that company size will affect audit fees.

Profitability: Abbreviated as ROE, profitability is measured by the company's return on net assets. Typically, companies with higher profitability tend to generate higher relevant income from their assets, resulting in lower profit pressure faced by management and

a lower probability of issuing false financial reports (Sierra-García et al., 2019). Hence, it can be reasonably predicted that company profitability will affect audit fees.

Employment of accounting firm: This factor is abbreviated as Big Four. The audit fees paid by a company can vary based on the size and professional competence of the accounting firm (Prasad et al., 2021; Wang and Lei, 2015). If a company engages a CPA firm from the Big Four as its external audit institution, the company is assigned 2; if the external audit institution is not one of the Big Four, the company is assigned 1. Table 2 summarizes the variables above.

Model construction

On the basis of prior research of internal audit quality and referring to the research methods of Prawitt et al. (2008), Ismael and Kamel (2021), and Prasad et al. (2021), the following equation presents the model constructed:

$$AF = \beta_1 \ln IAQ + \beta_2 H1 + \beta_3 Dual + \beta_4 LEV + \beta_5 SIZE + \beta_6 ROE + \beta_7 Big4 + \varepsilon$$

DATA ANALYSIS

Descriptive statistics

Table 3 shows the result of descriptive statistics. The subordination mode of internal audit organization: The median of the subordination mode (IAModel) is 1, with an average of 1.11, indicating that most of the internal audit departments of the sample companies are subordinate to the audit committee, and few are subordinate to the board of directors. There is no sample with value 0, indicating that none of the companies' internal audit departments is subordinate to the management.

The scope of internal audit organization responsibility: The median of the scope of responsibility (IADuty) is 2 and the average is 2.22, meaning that the scope of internal audits responsibility of these selected companies is mostly dual function. Combined with the information gained during the data collection process, the data show that most of the internal audit responsibilities of the sample companies focus on financial revenue and expenditure auditing and internal control auditing. If some

Table 2. Definition of main variables.

Variable	Abbreviation	Definition	Literature references
Dependent variable	AF	Audit fees- measured by the natural logarithm of domestic audit fees	
Independent variable	InIAQ	Internal audit quality, calculated by the five indicators: the subordination mode of internal audit organization, the scope of internal audit organization responsibility, the size of internal audit organization, the number of internal audit meetings, and Whether to disclose the professional title requirements of internal auditors	Prawitt et al.(2008); Zain et al. (2015); Abbott et al (2016); Wang and Lei (2019); Yuan and Wang (2020)
	H1	Ownership concentration, measured by the shareholding ratio of the largest shareholder	Xie and Tao (2015)
Control variables	Dual	Duality of chairman and CEO. If one person has both roles, assign 1; if a different person holds each role, assign 2	Jizi and Nehme (2018)
	LEV	Asset–liability ratio	Sierra-García et al. (2019)
	Size	Size of a company, measured by the nature logarithm of the company's total assets	Ege (2015)
	ROE	Profitability, measured by return on net assets	Sierra-García et al. (2019)
	Big Four	Employment of accounting firm. If the external audit institution is one of the Big Four, assign 2; if not, assign 1	Prasad et al. (2021)

Table 3. Descriptive statistics of main variables.

Variable	Mean	Median	Std Dev.	Min.	Max.
IAModel	1.11	1	0.32	1	2
IADuty	2.22	2	0.42	2	3
IASize	3.51	3	1.00	0	8
IANumber	5.07	5	1.84	1	17
IACom	0.06	0	0.24	0	1
InIAQ	2.47	2.44	0.17	1.95	3.18
AF (RMB)	3024409	1900000	4052741	350,000	40,100,000
Dual	1.68	2	0.47	1	2
ROE	0.15	0.14	0.12	-0.53	0.72
H1	37.90	35.88	18.28	4.96	88.55
LEV	0.48	0.50	0.18	0.01	0.92
Big Four	1.28	1	0.45	1	2

companies need a special audit, they will hire external audit institutions (usually the same CPA firms responsible for financial statement auditing) to carry out relevant work. Therefore, there are few companies whose internal audit responsibility contains all the three types, which are special audit, financial audit, and internal control evaluation and consultation.

The size of internal audit organization: The maximum and minimum value of the size of internal audit organization (IASize) is 8 and 0, and the standard

deviation is 1.00, indicating that there are certain differences in the size of the internal audit organization of the sample company. Among them, some state-owned listed companies, such as Shanghai Airport and Huaneng Hydropower, have not set up an audit committee, so the value obtained is 0. The median of IASize is 3 and the average is 3.51, revealing that there are more companies with an audit committee scale of three to four people in the sample companies.

The number of internal audit meetings: The maximum

Table 4. Result of correlation analysis.

Variable		1	2	3	4	5	6	7	8
1	AF	1.000							
2	lnIAQ	0.200***	1.000						
3	H1	0.020	0.011	1.000					
4	LEV	0.506***	0.134***	-0.026	1.000				
5	Size	0.750***	0.207***	0.117***	0.599***	1.000			
6	ROE	-0.029	-0.117***	0.115***	-0.208***	-0.089**	1.000		
7	Dual	0.039	0.040	0.147***	0.076**	0.086**	-0.075**	1.000	
8	Big Four	0.517***	0.059*	-0.134***	0.283***	0.395***	-0.017	0.039	1.000

***p<.01, **p<.05, *p<.1.

and minimum value of the number of internal audit meetings (IANumber) is 17 and 1, and the standard deviation is 1.84. These figures demonstrate that the number of internal audit meetings held by the sample companies varies greatly. The median of IANumber is 5 and the average is 5.19, indicating that most sample companies held about five internal audit meetings each year during 2013–2020.

Whether companies disclose the professional title requirements of internal auditors (IACom): The median is 0 and the average is 0.06, showing that among the sample companies, few disclose the professional title requirement in their internal audit system. This reflects the general lack of attention paid by Chinese listed companies to the competence of internal auditors, and also reflects the lack of internal audit disclosure system for listed companies.

The minimum value of audit fees (AF) is ¥ 350,000, which is from Unigroup Guoxin Microelectronics Co., Ltd in 2017–2020 and Shanxi Fen Wine Factory Co., Ltd in 2013–2016; the maximum value is ¥ 40,100,000, which is from China State Construction Corporation in 2020; and the standard deviation is ¥ 4052741, indicating that the audit fees of each sample company are quite different and scattered. The median value of duality of chairman and CEO (Dual) is 2, with an average of 1.68, indicating that in the companies composed of CSI 300, the separation of the duties of chairman and CEO is most common. The maximum profitability (ROE) is 0.72, which is from Stone Technology Co., Ltd in 2019; the minimum is -0.53, which is from Tianqi lithium Co., Ltd in 2019. The results show that there is a wide gap in the profitability of different companies.

The ownership concentration (H1) is no higher than 88.55 and no lower than 4.96, with a median value of 35.88 and an average value of 37.90. These reveal that there are great differences in the equity concentration of CSI 300 companies. The stability of each company is different due to the influence of companies' scale, the owner's preference for control, and their political power.

The maximum and minimum asset–liability ratio (LEV)

is 0.92 and 0.01, the average is 0.48, and the median is 0.50, indicating that although the asset–liability ratio of the sample companies varies greatly, most of them are at a relatively moderate level. The median of employment of accounting firm (Big Four) is 1 and the average is 1.28. Combined with the specific data, the results show that among the 758 samples, 211 chose the Big Four accounting firms as their external audit institution, accounting for 27.84% of the total.

Correlation analysis

The correlation coefficient of relevant variables in the model is analyzed. Table 4 shows the specific correlation coefficient. The correlation coefficient between lnIAQ and AF is 0.200, and the significant level is 1%, which means that the higher the quality of internal audit, the higher the owner's external audit fees. In addition, the value p<0.01 shows that the positive correlation between the two is quite significant. This result preliminarily confirms the hypothesis: there is a significant relationship between internal audit quality and external audit fees.

From the perspective of control variables, the correlation coefficient between asset–liability ratio (LEV) and audit fees is 0.506, which is significant at the level of 1%. This also confirms the speculation that the high asset–liability ratio of the company will increase the risks faced by the company, the possibility of earnings management by the management will also increase, and the external auditors will pay more fees to make a high-level guarantee for the financial statements, thus increasing audit fees. The correlation coefficient between the employment of accounting firm (Big Four) and audit fees is 0.517, which is significant at the level of 1%, indicating that the audit fees of the companies audited by the Big Four accounting firms are higher. The Big Four accounting firms usually mean higher audit quality. To ensure audit quality, there must be sufficient audit resource investment and a perfect quality control system, which all need higher audit fees to make up for the cost. The correlation coefficients between company (Size) and

Table 5. Result of regression analysis on audit fees and internal audit quality.

Variable	Coef.	St. Err.	t-value	p-value	VIF
Dependent variable					
AF	0.000	0.000	0.000	0.000	0.000
Independent variable					
lnIAQ	0.158	0.073	2.17	0.031**	1.06
Control variable					
H1	-0.002	0.001	-1.49	0.137	1.08
LEV	0.244	0.109	-2.24	0.026**	1.65
Size	0.418	0.014	29.88	0.000***	1.79
ROE	0.188	0.088	2.15	0.032**	1.08
Dual	-0.060	0.030	-1.97	0.049**	1.04
Big Four	0.286	0.057	5.04	0.000***	1.20
Constant	3.738	0.381	9.81	0.000***	
Overall R-squared = 0.619			Prob>F = 0.000		

*** p<.01, ** p<.05, * p<.1.

audit fees are 0.750, which are also significant at the level of 1%, indicating that the larger the company size, the higher the audit fees. Otherwise, there is no significant correlation between ownership concentration (H1), duality of leader and CEO (Dual), profitability (ROE), and audit fees.

Regression analysis

A Hausman test shows that the sample is more consistent with the fixed effect, so a fixed effect regression test on the sample was conducted. Table 5 shows the results of regression analysis. On the whole, it can be seen that the p-value is 0.000, which shows that the regression coefficient can greatly reflect the relationship between those variables and audit fees. The model is appropriate and the goodness of fit is good. In addition, the overall R-squared is 0.619, indicating that 61.9% of the change in audit fees can be explained by the quality of internal audit. There is a significant positive correlation between audit fees (AF) and internal audit quality (lnIAQ) at the level of 5%, showing that the higher the level of internal audit, the higher the audit fee. This conclusion is consistent with the evidence found by Goodwin-Stewart and Kent (2006) in Australia, Sierra-García et al. (2019) in Spain and Prasad et al. (2021) in New Zealand. The possible reasons for this consistency are that the number of meetings of the audit committee has been taken into account, and the sample data sources used are relatively new, which may better reflect the trend that internal audit functions are expanding nowadays. The finding of this paper together with these

studies supports the view of a complementary effect to a certain extent.

For control variables, the company size (Size) and employment of accounting firm (Big Four) also have significant positive effects on audit fees. The company size (Size) is significant in the confidence interval of 1%, and the coefficient value is 0.418, which has a significant positive impact on the audit fees, indicating that the larger the company size is, the higher the audit cost will be. The employment of accounting firm (Big Four) is significant in the 1% confidence interval, and the coefficient value is 0.286, which also has a significant positive impact on the audit fees (AF). This means that the audit fees of companies employing the Big Four accounting firms are significantly higher than those of companies employing non-Big Four accounting firms. Otherwise, the asset-liability ratio (LEV), profitability (ROE) and duality of leader and CEO (Dual) also show a significant correlation with audit fees in the confidence interval of 5%.

Robustness test

In order to ensure the objectivity of the research results and eliminate the artificial influence, this study used a robustness test to ensure the credibility of the results obtained. Variance inflation factor test: The variance inflation factor (VIF) is used to test the variables in the regression model in order to verify whether there is multicollinearity between them, so as to make the model more reasonable and the regression result more reliable. Table 5 shows the results of the VIF test. The VIF of the variables in Table 5 is less than 10 and the maximum

Table 6. Result of regression analysis on audit fees and internal audit quality (adding variables).

Variable	Coef.	St. Err.	t-value	p-value	VIF
Dependent variable					
AF	0.000	0.000	0.000	0.000	0.000
Independent variable					
lnIAQ	0.160	0.073	2.20	0.028**	1.06
Control variable					
H1	-0.002	0.001	-1.48	0.138	1.09
LEV	0.228	0.110	2.07	0.039**	1.73
Size	0.417	0.014	29.57	0.000***	1.79
ROE	0.212	0.092	2.37	0.018**	1.16
Dual	-0.058	0.030	-1.91	0.057	1.04
Big Four	0.289	0.057	5.08	0.000***	1.22
Added variable					
Industry	-0.0005	0.076	-0.01	0.995	1.10
Opinion	0.182	0.164	1.11	0.268	1.07
Constant	3.745	0.412	9.10	0.000***	
Overall R-squared = 0.620			Prob>F = 0.000		

*** p<.01, ** p<.05, * p<.1.

value is 1.79, which can explain that there are no serious multicollinearity problems between the regression variables selected in this paper.

Adding more variables: According to Wang and Lei (2019), and Zain et al. (2015), type of audit opinion and industry, abbreviated as Opinion and Industry, are the other two factors that may have an influence on audit fees. Different industries usually have different risks, business complexity, and supervision, which will affect the audit time, thus affecting the audit cost. Thus, this factor is added into the model, and the classification standard used is based on the Industry Classification Standard issued by China Securities Regulatory Commission in 2012. As to the type of audit opinion, compared with the unqualified opinion, the qualified opinion usually means that the audit fee will increase due to the assessed risk of material misstatement, the process of coordination and communication with customers, additional audit procedures, and other factors. Therefore, this factor is also added: if a company obtained an unqualified audit opinion, it is assigned 0; if not, it is assigned 1. Table 6 shows the new regression results along with new VIF test.

Table 6 shows that the regression result after adding these two variables is consistent with the previous analysis. The correlation between audit fees (AF) and internal audit quality (lnIAQ) is significantly positive at the level of 5%, and the VIF of the regression is still less than 10, which can further prove the hypothesis. Changing the

weight of the factors measured internal audit quality: This paper obtains the internal audit quality index by assigning values to the four factors and taking logarithms of the total number. In order to reduce the impact of artificial assignment, other different weights of the four factors were set for the regression. The regression results after changing weights have not changed significantly, showing that the conclusion obtained in the previous part is reliable to a certain extent.

DISCUSSION

After the review of relevant theories and research results of other scholars, this paper took companies from the CSI 300 in 2013–2020 as a sample to study the relationship between internal audit quality and audit fees. After conducting the empirical research, the following conclusions are drawn: under the control of other relevant variables, companies with higher quality of internal audit tend to pay more audit fees in mainland China. Further analysis found that among the selected control variables, company size (Size) and employment of accounting firm (Big Four) also had significant positive contributions to audit fees.

IMPLICATIONS OF THE RESEARCH

There is not a firm conclusion among scholars at home

and abroad and existing results on this topic are contradictory. Unlike most data tested that are from mature markets in developed countries, the data collected in this study are from Chinese listed companies, which may provide some evidence from China, an emerging market. The conclusion of this paper supports the complementary effect between internal audit quality and audit cost. The viewpoint of the substitution effect mainly lies in that some internal audit activities may replace external audit work, so as to reduce audit fees. However, in the sample companies selected, this effect did not appear. Prawitt et al. (2008) and Zain et al. (2015) held that the premise for the substitution effect is that audit standards support the external audit institutions to do so, and the audited unit has a high level of internal audit. Based on this, on the one hand, the Chinese mainland capital market is not mature enough, and the norms of corporate structure, governance requirements, and information disclosure of listed companies are inadequate. This has led some companies to pay little attention to the internal audit institutions and functions, which has caused obstacles for external auditors in the use of internal audit work. On the other hand, in the current CAS, the regulations on whether the external auditors rely on or how to rely on internal audit work are not detailed enough. The determination involves a lot of content that needs professional judgement, which further makes it difficult to use internal audit work. Based on the above reasons, the substitution effect of the two is far weaker than the complementary effect.

According to the findings of Prasad et al. (2021), the premise for the complementary effect is that functions of internal and external audit focus on different directions; in addition, when governance and control are not heavily regulated and ownership is concentrated, this kind of complementary effect will be more significant. CAS emphasizes that the responsibility of an internal audit is to check the accounting information and operation of enterprises, and supervise the internal control system. The external audit is mainly to verify the company's financial reporting and evaluate the effectiveness of internal control. The two each have their own emphasis on function, responsibility, and scopes, and complement each other. This reason, plus what has been discussed in the previous parts, that is, Chinese mainland listed companies generally have a low internal audit level and lack of professional qualifications of internal auditors, making the complementary effect more obvious because it is difficult for the external audit to rely on internal audit work, and finally presenting the phenomenon that there is a positive correlation between internal audit quality and audit fees.

Conclusions

After reviewing the relevant theories and research, this paper takes the constituent companies of CSI 300 from

2013 to 2020 as the research object, selects five main characteristics of internal audit (independence, professional competence, scope of responsibility authorization, size of internal audit organization, diligence of the audit committee), and empirically tests the relationship between internal audit quality and external audit fees. This paper finds that companies with a higher quality of internal audit function appear to pay more external audit fees. Further analysis shows that among the selected control variables, company size and accounting firm employment also have significant positive contributions to audit fees. This study contributes to literature by examining the relationship between internal audit quality and audit fees in the Chinese market. Regression results and robustness tests show that companies with a higher quality of internal audit function pay more external audit fees at the same time. Results provide some suggestions to improve the audit supervision mechanism of Chinese listed companies and enhance the corporate governance of listed companies in China as well as enriching the research on internal control and external supervision. The continuous increment of China's listed companies has put forward higher requirements for the development of internal auditing. In addition to expanding the number of personnel, the internal audit department needs to strengthen personnel training and communication with other departments; at the same time, it also requires a full understanding of the role of internal auditing, which can ensure its position in the organization. Only with the joint efforts of internal audit organization and corporate governance can the effectiveness of internal auditing be brought into full play. Policy makers should also strengthen the internal audit information disclosure of all listed companies, provide a better information disclosure environment for follow-up researchers, and promote the further development of the internal audit function of listed companies.

RECOMMENDATIONS

The Shanghai Stock Exchange and Shenzhen Stock Exchange have issued specific regulations, that is, listed companies must set up internal audit departments, establish an audit committee system, and disclose relevant information. However, several problems prevent internal audits from having a substitute function, so that the role of internal audits in reducing agency costs and increasing enterprise value cannot be well reflected. Combined with the findings of other scholars, this paper puts forward relevant suggestions as follows:

(1) Improve the independence of internal audit organization: The premise for effective implementation of internal audit activities is whether they can obtain support from the governance layer. The effectiveness of internal auditing largely depends on the rights and resources

given by the board of directors, audit committee, and management. Therefore, to ensure the independence, the company should upgrade the internal audit to the level of corporate governance, and make the internal audit department directly subordinate to the board of supervisors or the board of directors. In addition, the company should give more responsibilities and rights to internal audit organizations, and enable them to monitor and report the internal non-compliance or control defects of the company in a timely way.

(2) Improve the comprehensive professional ability of internal audit staff: On the one hand, the company can train existing personnel and encourage them to actively participate in relevant professional ability improvement training courses, so as to improve the professional ability of internal auditors; companies can also encourage auditing professional examination to replace training with examination and improve auditors' ability. On the other hand, it is advisable to recruit excellent members with sufficient internal audit experience and high professional titles as the head of internal audit institutions; companies also can mobilize internal resources, select excellent personnel with strong comprehensive quality to join the internal audit team, train as audit reserve talents, and enhance the audit force.

(3) Improve the policies and regulations on disclosure of internal audit and its use by external auditors: On the one hand, relevant auditing standards can further emphasize the coordination between the external and internal audits, and formulate clearer and more quantitative provisions for the scale, professional competence, scope of audit responsibilities, and other factors considered by external auditors when using internal audits. In this way, the quality of an internal audit can be better evaluated, and the external audit can clarify when to use and to what extent to use the internal work, so as to promote the substitution effect and reduce audit costs. On the other hand, policy makers should strengthen the information disclosure of the internal audit system of listed companies, improve the transparency of internal audit quality, and thus provide a better information disclosure environment for follow-up research. This can form a virtuous circle: research promotes policy-making, and policy-making further promotes research progress and enterprise development.

LIMITATIONS

There are several limitations of this paper which should be noted and can be improved in further research. First, in view of the availability of the data, the study conducted tests across eight years (2013–2020). In the future research, under the condition of more comprehensive information disclosure, selected data can be from a longer period to make the conclusion more convincing. In

addition, the study only includes certain control variables. Some variables are not included in the analysis such as complexity of audit and repeated audits which may affect the level of audit fees. Second, because the number of the audit committee does not reflect the total number of personnel, it might not be a good measurement of internal audit size. It may be a better choice to use the size of the internal audit budget as an indicator in future research. Third, when quantifying the scope of responsibility of the internal audit department, the method used involves some subjective judgement. Although efforts were made to make the results as objective as possible through weighting and logarithm, the researcher's judgement still has a certain impact on the final conclusion. If the disclosure norms of a company's internal audit can be more perfect in the future, the use of more objective and standardized data will help us to further improve the reliability of the conclusion. Fourth, the companies selected in this paper are limited to the constituent companies of the CSI 300. Future research in this direction can expand the research sample from listed companies to various types of companies to make the research conclusion more reliable.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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