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Abnormal Audit Fees, Audit Market Concentration and Audit Quality

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Abstract: *The problem of abnormal audit fees in the audit market is more prevalent. To study the impact on audit quality, China's A-share listed companies in Shanghai and Shenzhen from 2013 to 2020 were selected as the research objects, and the abnormal audit fees calculated using the pricing model were split into positive abnormal audit fees and negative abnormal audit fees, and the relationship between them and audit quality was analyzed using a regression model, and on this basis, the audit market was examined. The study also examines the mediating effect of concentration in the relationship between negative abnormal audit fees and audit quality. The study shows that abnormal audit fees are significantly and negatively related to audit quality regardless of whether they are high or low, and that audit market concentration plays a partially mediating role in the relationship between negative abnormal audit fees and audit quality, with the lower abnormal fees, the lower the audit market concentration and the higher the audit quality. The study provides new ideas and policy recommendations for the classic problem of abnormal audit fees and audit quality from the perspective of audit market concentration.*

Keywords: *Abnormal Audit Fees, Audit Market Concentration, Audit Quality*

1. Introduction

It has only been more than 40 years since the restoration and reconstruction of the audit market in China. The development of the market is inseparable from the mandatory promotion of national policies, and therefore the whole market environment is not mature compared to that of foreign countries. To ensure that the information disclosed by listed companies is true and reliable, the regulatory authorities require that the annual financial statements of listed companies must be audited and supervised by certified public accountants, and this certified public accountant audit system is an important infrastructure to ensure the good functioning of the capital market.

However, the quality of audit services has been in a poor state in recent years, with cases of financial fraud occurring in China, with 43 cases of misrepresentation notified by the SFC in the first half of 2020 alone. The impact of the fraudulent events at Comet Pharmaceuticals has been enormous, and the auditors who audited Comet Pharmaceuticals only once issued a qualified audit report, with their audit fees averaging up to RMB1.9 million per year, which is particularly striking in a generally low-cost competitive audit market, and these cases of financial fraud were hardly discovered by the firm's audit. It can therefore be seen that the quality of audit services provided by the firms is worrying, that audit fees have a greater impact on audit quality and that audit quality in China needs further improvement. Audit fees are the consideration for audit services provided by accounting firms to companies. Reasonable and normal audit fees can motivate auditors to perform their audit duties, while excessive audit fees can tempt firms to issue standard unqualified opinions that are not in line with the facts. In addition, because China's listed companies are less likely to pursue high-quality audit services, in most companies, the audit is only a process that must be done, the purpose of the audit is not to discover their problems through the audit, so they will continue to depress the audit price, and too low abnormal audit fees will lead to audit costs are not compensated, so that the firm uses a large number of inexperienced auditors, reduce the necessary audit procedures, thereby causing audit quality to decline. In terms of policy regulation, China issued the Notice on Resolutely Combating and Regulating Unjustified Low Price Competition in the CPA profession in 2012 but limiting minimum audit fees through policy alone is likely to condone some accounting firms with insufficient expertise and may not be conducive to improved audit quality.

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Firstly, from the perspective of the audit client, there is a motive and intention to lower the audit fee, firstly, the client needs to control the audit fee according to the established budget, secondly, the client also needs to meet the performance assessment goal of cost reduction, thirdly, the client chooses a low-priced firm to avoid the legacy risk of decision making. From the perspective of accounting firms, there is an objective incentive to use low prices to attract clients, and secondly, from the analysis of industry data, the vast majority of small and medium-sized domestic accounting firms, the level of output value per CPA is equivalent to about one-third of domestic securities accounting firms, equivalent to the international "Big Four" firms In addition, in the context of compulsory auditing, the industry is under pressure to survive, and the phenomenon of competing for business at low prices is more prominent (Liu Shengliang, 2022)[1]. In addition, in the context of compulsory auditing, the audit market is a buyer's market and firms are less able to negotiate prices and are more likely to be undercut in negotiations with clients. For these reasons, the problem of low price competition compared to high fees is more prevalent in the domestic audit market, which in turn affects the development of the audit market as a whole. Small and medium-sized accounting firms have lower operating costs and have a greater advantage in undercutting prices than the international Big Four or the domestic Big Eight firms, so clients of listed companies who are more price-conscious will tend to choose small and medium-sized firms, which have a shorter history of development, fewer practicing CPAs and lack of key personnel and a sound audit mechanism, which will ultimately lead to less credible audit reports and poorer audit quality. This will ultimately lead to less credible audit reports and poorer audit quality.

Therefore, in the context of the frequent occurrence of indiscriminate fees in China's audit market, a new path to study the impact of abnormal fees on audit quality can better explore ways to improve the quality of services in China's audit market, and the conclusions drawn through empirical evidence can provide a new theoretical basis for regulators to regulate the audit market on a macro level, and guide enterprises and firms to make more scientific and reasonable decisions on audit pricing on a micro level.

This paper examines the relationship, mechanism of action and economic consequences between abnormal audit fees and audit quality using a sample of A-share listed companies in Shanghai and Shenzhen from 2013 to 2020. The main contributions are: firstly, existing studies have reached different conclusions on the relationship between positive and negative abnormal audit fees and audit quality, which can be broadly classified into three views: (1) abnormal audit fees are negatively related to audit quality; (2) positive abnormal audit fees are positively related to audit quality; and (3) abnormal audit fees are not related to audit quality. This paper adopts the audit pricing model to classify abnormal audit fees into positive abnormal audit fees and negative abnormal audit fees and uses the data of China's listed companies in Shanghai and Shenzhen A-shares from 2013 to 2020 as the basis to determine the relationship between abnormal audit fees and audit quality in both directions. Second, it expands a new perspective on the relationship between abnormal audit fees and audit quality. Few studies have considered the relationship between abnormal audit fees and audit quality from a macro perspective. This paper expects to find the mechanism of the role of negative abnormal audit fees in influencing audit quality from the perspective of audit market concentration, and to explore the mediating role played by audit market concentration in it.

2. Theoretical Analysis and Research Hypotheses

2.1. Abnormal Audit Fees and Audit Quality

Audit fees are the consideration paid by a company for the audit services of an accounting firm. A reasonable and normal audit fee enables the auditor to perform its audit duties properly and to perform the information assurance function. Existing literature usually divides actual audit fees into expected audit fees, which are calculated through an audit pricing model, and abnormal audit fees, which are defined as the difference between actual audit fees and expected audit fees. Abnormal audit fees can be expressed as positive abnormal audit fees and negative abnormal audit fees. Abnormal audit fees are usually accompanied by irregular auditor behavior. Such abnormal audit fees send signals of poor quality financial reporting information and therefore reduce the sustainability of corporate surpluses (Gao Yubin et al., 2017)[2]. Excessive audit fees may lead to financial dependence of the firm on the client, which in turn affects audit independence, while low audit fees may cause problems such as firms compressing audit procedures and reducing human and material resources. Overall, abnormal audit fees can harm audit quality when the sign of abnormal audit fees is not considered.

Based on the above analysis, the first hypothesis is proposed:

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H1: The higher the abnormal audit costs, the worse the audit quality.

In actual transactions, audit services often have abnormally high or low audit fees, so abnormal audit fees are divided into positive abnormal audit fees and negative abnormal audit fees, and the impact of each on audit performance is studied separately. Two different perspectives on abnormal audit fees are mainly held abroad - the economic rent view and the audit cost view. The first view, the economic rent view, focuses on the fact that higher abnormal audit fees are the economic rent paid by the client to the auditor. Excessive abnormal fees can lead to increased dependence of the auditor on the client. Abnormally high fees as economic rents can prompt the auditor to pursue profit maximization as an objective, abandoning the principle of prioritizing audit performance, its consequent loss of objectivity and impartiality as a third-party monitor, ignoring client misconduct in order to maintain good client relationships and ultimately leading to a decline in audit performance (Choi, 2010) [3], hence the economic rent view that abnormal audit fees are is negatively related. The second view, the audit cost view, argues that positive abnormal audit fees represent either a higher level of resources invested by the firm or desire for high quality audit services demonstrated by the client. A high audit fee is therefore compensation for the cost of the audit and ultimately leads to an increase in audit performance, whereas a low audit fee leads to excessive cost-cutting by the auditor to make a profit, and the necessary audit procedures are likely to be reduced, resulting in a decrease in audit performance (Blankley, 2012) [4], so the audit cost perspective suggests that abnormal audit fees are positively related to audit performance.

China's capital market is not sound, the audit market is a buyer's market, with the characteristics of a large number, small scale and low concentration, leading to vicious and disorderly competition, as the purchaser of audit service products, the demand for audit services by companies is compulsory by the government regulatory bodies, conflicts over agency issues are less common compared to foreign countries, conflicts over agency issues are less common compared to foreign countries are less common, and it is uncommon for companies to voluntarily pay higher fees in exchange for high-quality audit services, so the audit cost view does not apply to the domestic audit market, and high fees do not mean high-quality audit services. Auditees may be motivated to purchase audit opinions through abnormal increases in audit fees (Tang Yuejun, 2009) [5], and an analysis of listed companies that have received sanctions from the SFC reveals that these companies have increased their audit fees to purchase audit opinions (Yang Hexiong, 2009) [6]. At the same time CPA auditing is not a purely market behavior, if firms have profit maximization as their goal, there is a great probability that they will engage in audit collusion, and the higher the abnormal audit fees paid by listed companies, the higher the probability that they will improve their adverse audit opinions (Fang Junxiong and Hong Jianqiao, 2008)[7]. Therefore, the source of positive abnormal audit fees is mainly the purchase of audit opinions. Audit collusion will seriously undermine auditor independence, and excessive bargaining will also lead to auditors' lack of commitment to their work, so audit collusion will significantly reduce audit performance, and the issuance of false audit opinions by auditors will increase information asymmetry for investors, and misrepresentation of financial information will deceive and mislead investors.

In addition, from the perspective of excessively low fees, when audit fees do not cover normal audit costs and do not cover the cost of staff salaries and time that firms need to dispatch, the audit system fails and firms lack incentives to value their clients. Lower audit fees can lead accounting firms to compress audit costs and ultimately reduce audit performance (Zhang Rongjing, 2016) [8]. In the case where audit fees are significantly lower than the average social cost of auditing and the average industry fee level, accounting firms may push back to simplify audit procedures, reduce audit staffing requirements, and relax audit performance controls to achieve break-even, thus affecting the quality of audit practice (Liu Shengliang, 2022) [1]. Therefore the higher the negative abnormal audit fees, the higher the auditor's compression of audit costs, the lower the audit performance will be and the market will receive the wrong signal, which in turn makes the interests of investors suffer.

Based on the above analysis, two sub-hypotheses are proposed:

H1a: The higher the positive abnormal audit fees, the worse the audit quality.

H1b: The higher the negative abnormal audit fees, the worse the audit quality.

2.2. Negative Abnormal Audit Fees and Audit Market Concentration

The audit market structure in China today is significantly different from that of foreign countries, as the audit market has only been rebuilt for 40 years, and the large firms that exist in this environment have not grown steadily through their own high audit quality and client recognition, so they will adopt a low price competition strategy in order to secure their market share and compete for power with other large

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firms. Most listed companies commission audits to comply with the SEC's mandatory requirements and do not voluntarily pay for the audit of their financial reports. Clients only value the firm's ability to produce audit reports within a short period and are not concerned with services such as improving financial compliance, so the important criteria for choosing a firm is usually whether the audit fees are low and whether they meet budgetary requirements.

In this market demand, firms regardless of size are fiercely competing for customer resources at low prices, while the costs of smaller firms are easier to reduce audit fees because of their low staffing requirements, low labor costs, and quality management systems are not strict and less division of operating costs, in addition to the need to maintain the operation of such firms will compete for customers, further reducing audit fees. The larger firms have perfect operating mechanisms that lead to higher operating costs, while also paying more attention to risk control, in some cases unable to over-pressure, resulting in the loss of this customer base, but also reducing their market share. If this low-price competition intensifies, the audit market will become less and less concentrated, according to the law of "bad money drives out good money".

Based on the above analysis, the second hypothesis is proposed:

H2: The higher the negative abnormal audit fees, the less concentrated the audit market

2.3. Negative Abnormal Audit Fees, Audit Market Concentration and Audit Quality

Some studies have shown that high audit market concentration can harm audit quality (Gao Zhiyue and Zhang Hao, 2021) [9], while others have demonstrated that increased audit market concentration can promote audit quality (Yang Xue and Zhang Junmin, 2016) [10], and in the current development situation in China, it is necessary to build large-scale accounting firms by establishing an oligopoly-shaped market with a view to better-enhancing audit quality. In general, audit market concentration is positively related to audit quality (Han Weifang, 2015) [11], and conversely, a decrease in audit market concentration will bring about a decrease in audit quality.

To break even, small firms may reduce staffing levels, simplify the audit process and audit procedures, and reduce their control over audit quality. When the audit market concentration gradually decreases, the proportion of clients audited by these firms that are unable to control audit quality will increase, and a large number of substandard audit reports will appear in the market. Even for larger firms, vicious low-price competition will have an impact on them, and "bad money drives out good money" will in turn cause a decline in the income of auditors in such firms, reducing the sense of value and access of CPAs, tod ultimately leading to a loss of high-level talent. The loss of revenue also means that firms do not have sufficient funds for technological innovation to lead the industry, which in turn further reduces the overall quality of audits. Smaller firms also rely on low prices to attract clients and have no incentive to improve the quality of their audit services or to innovate, with some firms failing to detect financial fraud or even having serious audit failures due to formal audits. The audit market as a whole lacks the motivation to move forward due to low audit fees and fragmented client resources, and firms are unable to pool their income to establish a complete and sound operating system, which will lead to a decline in audit quality

Based on the above analysis, the third hypothesis is proposed:

H3: The higher the negative abnormal audit fees, the lower the audit market concentration and consequently the poorer the audit quality.

3. Study design

3.1. Sample Selection and Data Sources

China issued the Notice on Resolutely Combating and Regulating Unjustified Low Price Competition in the CPA Industry in 2012 to limit the minimum fees by law, so 2013 was selected as the starting year of the sample in this paper. In addition, due to the lack of data on the firm's business revenue for the year 2021, the research object selected was listed companies in Shanghai and Shenzhen A-shares from 2013 to 2020. In the process of sample selection, the initial sample was processed in accordance with the following principles: (1) Excluding some observations with missing data; (2) Excluding financial observations due to the financial data and accrued profits of the financial industry being more special; (3) applying a 1% tailing process to the upper and lower continuous variables. The data were all sourced from the CSMAR database, and 15,326 sample observations were finally obtained after processing.

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3.2. Variable Picking

3.2.1. Dependent Variable

The dependent variable is Audit Quality(DD)，which is estimated by the Dechow and Dichev (2002) approach (DD model) [12]. The purpose of an audit is to improve the reliability of the financial reporting information of the audited entity, and a high quality audit should allow less room for surplus management, i.e. a higher quality of surplus. Conversely, a larger headroom for surplus management represents poorer audit quality. Common methods used to calculate surplus quality include the Jones model, the modified Jones model, the DD model (Dechow and Dichev, 2002), and the non-linear accrual model (Ball and Shiwakumar, 2005) [13]. Among them, the DD model not only reflects the characteristics of time series, but also compared to the Jones model, the DD model no longer assumes that cash flows are not manipulated, thus drawing on Zhang Canlin (2015) who uses the DD model as the basis for measuring the size of the surplus management space and as a measure of audit quality[14]. The DD model refers to Dechow and Dichev's (2002) model:

$$WCA_{i,t}/A_{i,t}=\beta_0+\beta_1 CFO_{i,t-1}/A_{i,t}+\beta_2 CFO_{i,t}/A_{i,t}+\beta_3 CFO_{i,t+1}/A_{i,t}+\varepsilon_{i,t} \quad (1)$$

Where WCA represents a change in working capital, CFO_{t-1}, CFO_t, and CFO_{t+1} represent operating cash flows in years t-1, t, and t+1, respectively. The absolute value of the regression residuals of the DD model is taken as the explanatory variable audit quality (DD), with a larger value of this variable representing a larger space for surplus management, i.e. poorer audit quality.

3.2.2. Independent Variable

The independent variable is Abnormal Audit fees(ABFEE), which are the portion of the consideration charged by the firm that deviates too much or too little from the normal amount. There are two representative ways of calculating abnormal audit fees in existing studies, one is to use the regression residuals of audit pricing models, e.g. Han Lirong (2015) [15]; the other is to use changes in actual audit fees, typically represented by Fang Junxiong and Hong Jianqiao (2008)[7]. By definition, audit fees are the consideration for audit services provided by an accounting firm to a company. A reasonable and normal audit fee can motivate auditors to perform their audit duties, use their professional skills and maintain an appropriate questioning attitude and professional ethics. A reasonable audit fee also covers the costs necessary for the audit process so that the auditor does not have to omit audit procedures in order to save costs and thus reduce the quality of the audit. The components of a normal audit fee therefore usually include the complexity of the audit subject, the audit risk, and the firm's reputation. Considering that changes in actual audit fees are influenced by multiple factors and may not be abnormal changes, this paper uses an audit pricing model to measure abnormal audit fees. Drawing on Han Lirong (2015) to construct an audit pricing model[15]:

$$\begin{aligned} LNFEE_{i,t}=&\alpha_0+\alpha_1 LNASSET_{i,t}+\alpha_2 ARINV_{i,t}+\alpha_3 CATA_{i,t}+\alpha_4 CR_{i,t}+\alpha_5 ROA_{i,t}+\alpha_6 LEV_{i,t}+\alpha_7 LOSS_{i,t}\\ &+\alpha_8 EMPLOY_{I,t}+\alpha_9 BIG4_{i,t}+\alpha_{10} TIER2_{i,t}+\alpha_{11} OFFICESIZE_{i,t}+\alpha_{12} CHANG_{i,t}+\alpha_{13} DELAY_{i,t}\\ &+\sum Year+\sum IndustRy+\varepsilon_{i,t} \end{aligned} \quad (2)$$

The subscript in the model denotes the firm and the subscript t denotes the year. The model controls for the main factors affecting audit fees and uses the natural logarithm of actual fees (LNFEE) to measure actual audit fees. The natural logarithm of the firm's total assets at the end of the period (LNASSET) is used to measure the size of the firm; the larger the size, the higher the corresponding audit fee. The financial risk and audit risk factors of the audited entity, using accounts receivable and inventory as a percentage of total assets (ARINV), current assets as a percentage of total assets (CATA), current ratio (CR), return on total assets (ROA), whether there has been a loss in the last two years (LOSS), gearing ratio (LEV) and whether the accounting firm changed during the year (CHANG) as client risk. The higher the expected audit risk or financial risk, the higher the audit fee for the client. The square root of the number of employees of the audited company (EMPLOY) and the time lag of the audit (DELAY) are used as proxy variables for the complexity of the audit, and the higher the complexity of the audit, the higher the expected audit fee. The accounting firm size variable (OFFICESIZE), the international "Big Four" (BIG4) and the domestic "Big Eight" (TIRE2) are used as characteristics variables for accounting firms, and the larger the accounting firm, the higher the audit fee. When an auditee engages an international 'Big Four' or domestic 'Big 8' accounting firm, the audit fee will increase. Annual-fixed effects and industry-fixed effects are also controlled.

The residual of the model is the abnormal portion of the actual audit fee that deviates from the normal audit fee and is taken as the absolute value of the abnormal audit fee (ABFEE), observations with a

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residual greater than 0 are taken as the positive abnormal audit fee (PABFEE) and observations with a residual less than 0 are taken as the absolute value of the negative abnormal audit fee (NABFEE). All three variables are cis-indicators of the degree of abnormal audit fees; specifically, the larger these three indicators are, the more abnormal the audit fees are.

3.2.3. Mediator Variable

The mediator variable is Audit Market Concentration, The concept of market concentration arose from industrial organisations and is commonly measured by the CRn and Herfindahl indices. In the audit industry, CRn is the sum of the audit fees of the top n accounting firms in a region as a proportion of all audit fees in that region, and the Herfindahl Index is the sum of the squares of the market shares of each accounting firm's audit fees in a region as a proportion of all audit fees in that region as a whole. However, as the publication of data on audit fees is not complete, it is common practice to use the total assets and operating income of the accounting firm's clients. Fang Hongxing and Su Fei (2011) argue that client operating income is the best proxy[16], so this paper draws on Fang and Sufi's view to calculate the CRn and Herfindahl index based on the annual operating income of the accounting firm's clients. In this paper, provincial audit market concentration is used as a mediating variable, and these two indicators are used to measure audit market concentration in each province respectively, with clients being listed companies.

CRn of n taken 4, that is, the top four accounting firms in each province were selected to calculate CR4, the formula is: CR4 = Income4/Incomen, Income4 for the top four firms ranked by the total client business income of a province, Incomen for the total business income of all clients in the province, the larger the CR4, the higher the audit of the province The HERF is calculated by the formula: HERF=$\sum_{i=1}^{n}\theta_i^2$, which is the ratio of the client revenue of the ith firm in a province to the client revenue of all firms in that province.

Details of the dependent, independent and mediating variables and all control variables are shown in Table 1.

Table 1: Variable definitions.

Variable type	Symbol	Variable definition
Dependent variable	DD	The residuals of the DD model are taken in absolute terms, with larger values indicating greater scope for surplus management and poorer audit quality
Independent variable	ABFEE	The absolute value of abnormal audit fees
	PABFEE	The positive portion of abnormal audit costs
	NABFEE	The negative portion of abnormal audit fees and take the absolute value
Mediator variable	HERF	Based on customer revenue, HERF is calculated for sub-provinces using the method described in the text
	CR4	Based on customer revenue, CR4 is calculated for sub-provinces using the method described in the text
Controlled variable	LNASSET	The logarithm of the company's total assets at the end of the period
	ARINV	(accounts receivable + inventory)/ total assets
	CR	Current assets/current liabilities
	ROA	Net profit / average balance of total assets; when the denominator is not announced or is zero, it is expressed as NULL; average balance of total assets = (balance of total assets + balance of total assets of the previous year)/2
	LOSS	Equals 1 if net profit is negative in period t or t-1, otherwise 0
	LEV	Total corporate liabilities / total assets
	EMPLOY	The square root of the number of employees in the company
	DELAY	The logarithm of the number of days between the audit report date and the balance sheet date
	OFFICESIZE	The natural logarithm of an accounting firm's business revenue
	BIG4	Equals 1 if the accounting firm is international Big Four, otherwise 0
	TIRE2	Equals 1 if the accounting firm is domestic Big Eight, otherwise 0
	PROPERTY	Equals 1 if the nature of the actual control of the enterprise is a state-owned enterprise, otherwise 0
	AGE	The logarithm of the length of the interval between the company's IPO year and the year 2020
	EPS	Company's earnings per share

3.3. Model

To examine the role that abnormal audit fees play in shaping audit quality, estimate three models:

$$DD_{i,t}=\alpha_0+\alpha_1 ABFEE_{i,t}+\sum\alpha_j CONTROLS_{i,t}+\sum Year+\sum Industry+\varepsilon_{i,t} \quad (3)$$

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$$DD_{i,t}=\alpha_0+\alpha_1 PABFEE_{i,t}+\sum\alpha_j CONTROLS_{i,t}+\sum Year+\sum Industry+\varepsilon_{i,t} \quad (4)$$

$$DD_{i,t}=\alpha_0+\alpha_1 NABFEE_{i,t}+\sum\alpha_j CONTROLS_{i,t}+\sum Year+\sum Industry+\varepsilon_{i,t} \quad (5)$$

To examine the role that audit market concentration play between abnormal audit fees and audit quality, estimate two models:

$$HERF_{i,t}=\alpha_0+\alpha_1 NABFEE_{i,t}+\sum\alpha_j CONTROLS_{i,t}+\sum Year+\sum Industry+\varepsilon_{i,t} \quad (6)$$

$$DD_{i,t}=\alpha_0+\alpha_1 NABFEE_{i,t}+\alpha_2 HERF_{i,t}+\sum\alpha_j CONTROLS_{i,t}+\sum Year+\sum Industry+\varepsilon_{i,t} \quad (7)$$

4. Empirical Analysis

4.1. Descriptive Statistics

To better understand the general distribution characteristics of the data, in this paper, stata15.0 software is used to make descriptive statistics for all variables. Details are shown in Table 2.

Table 2 shows that the mean absolute value of surplus management space of listed companies during 2013-2020 is 0.080, the median is 0.048, the minimum is 0.001 and the maximum is 0.726, the data are volatile and the data are all greater than 0, indicating that all listed companies have a certain degree of surplus management behavior. The mean absolute value of abnormal audit fees is 0.308, the median value is 0.250, and the minimum value is 0.004, and the data are all greater than 0, indicating that all listed companies have a certain degree of abnormality in audit fees. And the sample number of positive abnormal audit fees 7591 is smaller than the sample number of negative abnormal audit fees 7735, which indicates that low price competition among firms is more common, so this paper conducts further research on abnormally low audit fees. In addition the descriptive statistics of positive abnormal audit fees and negative abnormal audit fees are basically the same, indicating that the degree of deviation and sample distribution of the two abnormal fees are similar. The mean value of the HERF indicator is 0.228, the median is 0.207, the data fluctuates less, the maximum value is 0.504, the overall concentration of the audit market is not high. The mean value of the CR4 indicator is 0.741, the median is 0.789, both greater than 0.7 (Zhang Liang, 2012) [17], it can be seen that in more than 50% of the provinces audit market concentration has reached a very high oligopolistic market structure.

Table 2: Descriptive statistics.

VarName	Obs	Mean	SD	Min	P25	Median	P75	Max
DD	15326	0.080	0.109	0.001	0.020	0.048	0.095	0.726
ABFEE	15326	0.308	0.248	0.004	0.117	0.250	0.437	1.182
PABFEE	7591	0.309	0.255	0.004	0.115	0.248	0.439	1.259
NABFEE	7735	0.308	0.243	0.004	0.120	0.253	0.435	1.109
HERF	15326	0.228	0.116	0.079	0.124	0.207	0.297	0.504
CR4	15326	0.741	0.138	0.438	0.631	0.789	0.847	0.988
LNASSET	15326	22.561	1.304	19.976	21.661	22.390	23.324	26.449
ARINV	15326	0.260	0.171	0.007	0.128	0.237	0.357	0.748
CR	15326	1.987	1.641	0.273	1.066	1.510	2.284	10.520
ROA	15326	0.035	0.060	-0.229	0.012	0.033	0.063	0.203
LEV	15326	0.459	0.202	0.072	0.303	0.454	0.611	0.909
LOSS	15326	0.181	0.385	0.000	0.000	0.000	0.000	1.000
EMPLOY	15326	64.439	47.304	10.536	34.828	51.488	76.335	291.928
BIG4	15326	0.071	0.257	0.000	0.000	0.000	0.000	1.000
TIER2	15326	0.619	0.486	0.000	0.000	1.000	1.000	1.000
OFFICESIZE	15326	11.811	0.931	9.504	11.247	12.021	12.563	13.156
CHANG	15326	0.137	0.344	0.000	0.000	0.000	0.000	1.000
DELAY	15326	4.564	0.207	3.738	4.443	4.635	4.736	4.787
PROPERTY	15326	0.454	0.498	0.000	0.000	0.000	1.000	1.000
AGE	15326	2.650	0.576	1.099	2.303	2.833	3.135	3.332
EPS	15326	0.335	0.544	-1.390	0.072	0.240	0.525	2.510

4.2. Analysis of Regression Results

4.2.1. Abnormal Audit Fees and Audit Quality

Firstly, hypotheses H1, H1a and H1b are tested in the study. Table 3 presents the results of three regressions respectively, the explanatory variable is audit quality, the explanatory variable in column (1) is abnormal audit fees, the explanatory variable in column (2) is positive abnormal audit fees and the explanatory variable in column (3) is negative abnormal audit fees. The regression coefficient of 0.013

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for abnormal audit fees is significantly positive at the 1% level, testing hypothesis H1a that the more abnormal the audit fee, the greater the scope for surplus management, i.e., the worse the audit quality. Columns (2) and (3) split the abnormal audit fees into positive and negative components and regress them on the subsample, and the results indicate that, controlling for other variables, either too high or too low audit fees lead to lower audit quality, which is consistent with the previous hypothesis.

Table 3: Abnormal audit fees and audit quality.

	(1)	(2)	(3)
Dependent variable	DD	DD	DD
ABFEE	0.013***		
	(3.57)		
PABFEE		0.015***	
		(2.96)	
NABFEE			0.012**
			(2.36)
LNASSET	-0.001	-0.003	0.003
	(-0.80)	(-1.57)	(1.27)
ARINV	-0.015*	-0.019	-0.008
	(-1.72)	(-1.62)	(-0.62)
CR	0.008***	0.009***	0.007***
	(9.33)	(6.85)	(6.13)
ROA	0.128***	0.146***	0.115***
	(4.14)	(3.12)	(2.92)
LEV	0.059***	0.064***	0.055***
	(7.36)	(5.36)	(5.02)
LOSS	0.021***	0.023***	0.018***
	(6.77)	(5.14)	(4.28)
EMPLOY	-0.000***	-0.000***	-0.000***
	(-6.04)	(-3.41)	(-5.58)
BIG4	0.003	-0.006	0.011
	(0.49)	(-0.83)	(1.48)
TIER2	0.003	-0.000	0.007
	(0.91)	(-0.06)	(1.44)
OFFICESIZE	-0.001	0.001	-0.003
	(-0.69)	(0.36)	(-1.30)
CHANG	0.013***	0.018***	0.008**
	(4.54)	(4.32)	(2.17)
DELAY	0.000	-0.006	0.008
	(0.06)	(-0.96)	(1.19)
PROPERTY	-0.008***	-0.004	-0.012***
	(-3.88)	(-1.28)	(-3.99)
AGE	-0.001	-0.003	0.000
	(-0.60)	(-1.38)	(0.11)
EPS	0.005*	0.000	0.008*
	(1.65)	(0.03)	(1.93)
_cons	0.083**	0.138**	-0.010
	(2.00)	(2.32)	(-0.17)
N	15326	7591	7735
r2_a	0.14	0.16	0.12

Note: ***, ** and * indicate that the statistical significance levels are 1%, 5% and 10%, respectively.

Specifically, the regression coefficient of 0.015 for positive abnormal audit fees is significantly positive at the 1% level, suggesting that high fees are mainly derived from audit opinion purchases rather than high client demand for audit services, and that firms charge excessive fees not because of more labor and more complex audit procedures performed, but more to compensate for the high risk of issuing false standard audit opinions. The regression coefficient of negative abnormal audit fees 0.012, is significantly positive at the 5% level, this result indicates that the low price competition among accounting firms and too low revenue leads them to cut costs and reduce expenses, reducing the investment in audit procedures and personnel makes it difficult to ensure audit quality.

4.2.2. Negative Abnormal Audit Fees, Audit Market Concentration and Audit Quality

Table 4 presents the regression results of selecting a subsample of negative abnormal audit fees to test the mediating effect of audit market concentration. Columns (1) and (2) use the HERF index to measure audit market concentration, and columns (3) and (4) replace HERF with CR4 and regress again. The explanatory variables in columns (1) and (3) are audit market concentration, and the explanatory variables in columns (2) and (4) are audit quality, and the mediating variables are added to the previous column for regression.

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Table 4: Negative abnormal audit fees, audit market concentration and audit quality.

	(1)	(2)	(3)	(4)
Dependent variable	HERF	DD	CR4	DD
NABFEE	-0.031***	0.011**	-0.020***	0.011**
	(-6.35)	(2.21)	(-3.25)	(2.28)
HERF		-0.023**		
		(-2.13)		
CR4				-0.020**
				(-2.17)
LNASSET	0.003*	0.003	0.004	0.003
	(1.74)	(1.30)	(1.62)	(1.30)
ARINV	0.000	-0.008	-0.009	-0.008
	(0.04)	(-0.62)	(-0.73)	(-0.64)
CR	-0.001	0.007***	-0.000	0.007***
	(-1.12)	(6.11)	(-0.01)	(6.14)
ROA	-0.030	0.115***	-0.062	0.114***
	(-0.76)	(2.90)	(-1.28)	(2.89)
LEV	-0.015	0.054***	-0.009	0.054***
	(-1.40)	(4.99)	(-0.73)	(5.01)
LOSS	0.014***	0.018***	0.015***	0.018***
	(3.52)	(4.35)	(3.08)	(4.35)
EMPLOY	-0.000***	-0.000***	-0.000***	-0.000***
	(-5.20)	(-5.66)	(-4.36)	(-5.67)
BIG4	0.000	0.011	0.015	0.011
	(0.03)	(1.48)	(1.58)	(1.52)
TIER2	0.026***	0.007	0.031***	0.007
	(5.27)	(1.56)	(5.04)	(1.56)
OFFICESIZE	0.006**	-0.003	0.004	-0.003
	(2.06)	(-1.25)	(1.15)	(-1.27)
CHANG	-0.022***	0.008**	-0.020***	0.008**
	(-6.31)	(2.04)	(-4.37)	(2.07)
DELAY	-0.006	0.008	-0.005	0.008
	(-0.83)	(1.17)	(-0.59)	(1.18)
PROPERTY	-0.001	-0.012***	0.018***	-0.012***
	(-0.27)	(-4.00)	(4.83)	(-3.85)
AGE	0.003	0.000	0.013***	0.001
	(1.03)	(0.13)	(3.32)	(0.20)
EPS	-0.002	0.008*	-0.006	0.008*
	(-0.44)	(1.92)	(-1.26)	(1.90)
cons	0.118**	-0.007	0.596***	0.002
	(2.07)	(-0.12)	(8.50)	(0.03)
N	7735	7735	7735	7735
r2_a	0.11	0.12	0.15	0.12

Note: ***, ** and * indicate that the statistical significance levels are 1%, 5% and 10%, respectively.

The results in columns (1) and (3) show that the absolute value of negative audit fees is significantly negatively correlated with audit market concentration at the 1% level, and the more low audit fees deviate from normal fees, the lower the audit market concentration, and there is no threshold for low-price competition, regardless of the size of the firm can compete at low prices. Smaller firms can further reduce costs due to lower wages and fewer resources, and are in a more advantageous position to compete at lower prices, so multiple firms rely on lower prices to attract client resources. The concentration of the audit market in terms of client revenue also decreases.

The results from columns (2) and (4) show that the regression coefficients of audit market concentration under both calculations are significant at the 5% level, and the regression coefficient of negative abnormal audit fees is significant at the 5% level, indicating that audit market concentration can play a role of partial intermediation, and the larger the negative abnormal audit fees, i.e., the more the excessive low fees deviate from the normal value, the lower the audit market concentration and the poorer the audit quality. The decline in audit market concentration brought about by low-price competition is usually accompanied by problems such as irregular firm development and lack of innovation in audit techniques. Large-scale firms lack sufficient client resources to give full play to the scale effect, and in addition lack sufficient audit revenue to invest in audit technology research and development innovation and audit service enhancement. Small accounting firms solicit clients through low prices, as their core competitiveness with each other is essentially determined by their audit fees. The more such firms rely on price undercutting, the more intense the competition between them will become, and the fragmentation of client resources will reduce the concentration of the audit market, with each firm not generating enough revenue to build a good management system or to take audit techniques to the next level. At the same time, because low prices further depress audit costs, they can exacerbate the incomplete and

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unsound audit process, meaning that small firms competing at low prices enter a vicious circle in which it is difficult to break away from the wrong price competition to improve audit quality.

4.3. Robustness Test

Table 5: Robustness test with alternative dependent variables.

	(1)	(2)	(3)
Dependent variable	EM	EM	EM
ABFEE	0.006***		
	(3.99)		
PABFEE		0.008***	
		(3.86)	
NABFEE			0.004*
			(1.89)
LNASSET	-0.003***	-0.003***	-0.002***
	(-5.11)	(-3.78)	(-2.78)
ARINV	-0.001	-0.004	0.001
	(-0.50)	(-1.00)	(0.14)
CR	0.001***	0.002***	0.001***
	(4.38)	(3.35)	(2.83)
ROA	-0.117***	-0.087***	-0.152***
	(-6.03)	(-3.16)	(-5.63)
LEV	0.010***	0.015***	0.004
	(2.95)	(3.00)	(0.90)
LOSS	0.027***	0.028***	0.024***
	(21.34)	(15.35)	(14.19)
EMPLOY	-0.000	-0.000***	0.000
	(-1.01)	(-2.60)	(0.39)
BIG4	-0.001	-0.001	-0.001
	(-0.58)	(-0.37)	(-0.29)
TIER2	-0.001	0.000	-0.000
	(-0.47)	(0.10)	(-0.14)
OFFICESIZE	0.000	0.000	-0.000
	(0.25)	(0.45)	(-0.41)
CHANG	0.004***	0.006***	0.001
	(3.19)	(3.49)	(0.83)
DELAY	-0.001	-0.002	0.001
	(-0.45)	(-0.69)	(0.38)
PROPERTY	-0.006***	-0.006***	-0.006***
	(-7.19)	(-4.76)	(-4.93)
AGE	0.002**	0.001	0.002*
	(2.29)	(1.27)	(1.90)
EPS	0.011***	0.009***	0.012***
	(7.79)	(4.22)	(6.70)
_cons	0.090***	0.093***	0.078***
	(5.78)	(4.28)	(3.40)
N	15325	7590	7735
r2_a	0.13	0.14	0.12

Note: ***, ** and * indicate that the statistical significance levels are 1%, 5% and 10%, respectively.

To verify the robustness of the paper's findings, substitutions were made for the explanatory and explanatory variables. First, the DD indicator measuring audit quality was replaced using the regression residuals (EM) calculated by the nonlinear accrual model, referring to Ball and Shiwakumar's (2005) model with $ACC_{i,t}=\alpha_0+\alpha_1CFO_{i,t-1}+\alpha_2CFO_{i,t}+\alpha_3CFO_{i,t+1}+\alpha_4DCFO_{i,t}+\alpha_5DCFO_{i,t}\times CFO_{i,t}+\varepsilon_{i,t}$, calculate manipulative accrued profit. where ACC_i,= Operating Profit - Net Cash Flow from Operating Activities; $CFO_{i,t-1}$, $CFO_{i,t}$ and $CFO_{i,t+1}$ denote net cash flow from operating activities of the company i for periods t-1, t and t+1, respectively; $DCFO_{i,t}$ equals 1 when CFO_t-CFO_{t-1}<0, otherwise 0; $_{it}$ is the regression residual that is the discretionary accruals. The higher the absolute value of the residuals, the lower the quality of the audit. The regression results of this replacement variable are shown in Table 5.

Second, the explanatory variables use the change in the actual observed value of audit fees as a replacement variable, referring to Fang Junxiong and Hong Jianqiao (2005) using the change in the total asset audit fee rate (AFEE) as a proxy for abnormal audit fees with the following formula[7]:

$$AFEE_{i,t}=\ln(FEE_{i,t}/ASSET_{i,t})-\ln(FEE_{i,t-1}/ASSET_{i,t-1}) \quad (8)$$

AFEE greater than or equal to 0 is positive abnormal audit fees (PAFEE), and AFEE less than 0 is negative abnormal audit cost (NAFEE). The regression results are shown in Table 6. The results of both substitution variables regressions are generally consistent with the previous results, indicating that

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abnormal audit fees can impair audit quality.

Table 6: Robustness test with alternative independent variables.

	(1)	(2)	(3)
Dependent variable	DD	DD	DD
AFEE	0.112***		
	(15.30)		
PAFEE		0.030***	
		(3.88)	
NAFEE			-0.151***
			(-14.96)
LNASSET	-0.001	-0.006***	-0.001
	(-0.98)	(-2.81)	(-0.62)
ARINV	-0.007	-0.014	-0.004
	(-0.86)	(-1.19)	(-0.32)
CR	0.007***	0.006***	0.008***
	(8.62)	(4.77)	(7.15)
ROA	0.130***	0.035	0.122***
	(4.31)	(0.86)	(2.59)
LEV	0.042***	0.028***	0.050***
	(5.33)	(2.90)	(4.30)
LOSS	0.015***	0.010**	0.017***
	(5.10)	(2.57)	(3.85)
EMPLOY	-0.000***	-0.000**	-0.000***
	(-5.06)	(-2.53)	(-3.91)
BIG4	0.000	0.004	0.002
	(0.09)	(0.60)	(0.23)
TIER2	0.003	0.004	0.002
	(0.85)	(0.88)	(0.36)
OFFICESIZE	-0.001	-0.001	-0.001
	(-0.43)	(-0.40)	(-0.26)
CHANG	0.004	0.003	0.003
	(1.46)	(0.72)	(0.82)
DELAY	-0.000	0.002	0.000
	(-0.03)	(0.34)	(0.04)
PROPERTY	-0.002	-0.000	-0.005*
	(-1.16)	(-0.05)	(-1.90)
AGE	-0.001	0.003	-0.001
	(-0.80)	(1.05)	(-0.52)
EPS	0.002	0.001	0.003
	(0.83)	(0.22)	(0.73)
_cons	0.075*	0.168***	0.058
	(1.86)	(3.09)	(1.06)
N	15285	5832	9453
r2_a	0.18	0.16	0.20

Note: ***, ** and * indicate that the statistical significance levels are 1%, 5% and 10%, respectively.

5. Research Conclusions and Recommendations

5.1. Research Conclusions

The problem of abnormal audit fees in China's market is very common, on the one hand, the excessive fees brought by the purchase of audit opinions, listed companies use high prices to attract accounting firms to conspire with them; on the other hand, the low price competition between accounting firms, listed companies are reluctant to proactive audits, but mandatory audits are usually less focus on audit quality and more on affordability. Accounting firms compensate for the impact of low fees by reducing input costs and streamlining the audit process. Both types of abnormal audit fees reduce audit quality, and an in-depth study of negative abnormal audit fees finds that audit market concentration plays a partial mediating effect in the negative relationship between negative abnormal audit fees and audit quality. In the context of mandatory auditing, low-price competition leads to the fragmentation of client resources, accounting firms compete together to solicit clients regardless of their size, audit market concentration decreases, and the problem of excessive competition and the expulsion of good money from bad money further reduces audit quality. China's capital market has certain peculiarities and needs to find a balance from the perspective of competition, market mechanism, and government management, and to improve audit quality also needs to start from audit fees and audit market concentration.

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5.2. Policy Recommendations

First, improve the audit risk premium system. The government intervenes and supervises moderately the phenomenon of over-competitive low-priced solicitation, controls low-priced audit fees by strengthening laws and regulations, and raises the cost of violations by accounting firms colluding with listed companies. Legal constraints help regulate the audit market, and a good rule of law environment is based on a strict regulatory mechanism for firms to enhance the fairness and transparency of the audit market, and to crack down on unqualified audit processes and the curtailment of due audit procedures.

Second, increase the size of quality firms. With the development of China's capital market, auditors who see a gap in the demand for audits start a large number of small firms, more and more small firms have exceeded the market demand, bringing excessive low-price competition in the audit market, which ultimately leads to market disruption and a decline in audit quality. These small firms merge and reorganize with each other or large firms absorb small firms to be able to do large-scale, strong quality. The firm has enough scale and resources to establish a standardized process and perfect quality supervision and management system, when the market for listed companies chooses fewer firms, to form healthy competition, to avoid excessive low-priced customers, the firm can rely on China's macro-control of a variety of policies, resources to enhance audit services, innovative audit technology in the field, drive the whole market tends to benign development, to regulate the overall market structure, to reduce the quality of audit. The whole market structure is regulated to reduce the wrong behavior of cutting the prescribed audit procedures arbitrarily because the cost exceeds the income. Therefore, we will actively promote the merger of accounting firms to change the current competitive situation and create opportunities for healthy competition in the auditing industry.

Third, partnership accounting firms are encouraged. As of the end of 2020, there were 3964 domestic limited liability firms, but this model is limited in terms of the liability that the auditor needs to bear if there is an audit failure, so the responsibility and risk awareness of such firms is not strong, and insufficient attention is paid to the standardization of the audit process. In contrast, the legal liability for audit failures in partnership firms is joint and several, and auditors in special general partnership firms that cause audit failures will have unlimited liability, so the partnership system can force firms to pay attention to the importance of the risk of each business they take on, improve risk awareness, standardize audit procedures and invest the necessary human resources, to better improve audit quality and audit independence.

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