Business Diversification, Internal Control and Audit Fees
-- Empirical Evidence from the Textile Industry

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Abstract. The study selected the textile industry in Shanghai and Shenzhen from 2012 to 2016 as the research sample, and empirically studied the impact of business diversification and internal control on audit fees by using the data obtained from financial terminals and dibo database. The study found that business diversification was negatively correlated with audit fees, that is, the higher the degree of business diversification, the lower the audit fees. There is a significant negative correlation between the level of internal control and audit fees, that is, the higher the internal control is, the more effective the internal control is, and the lower the audit fees are. Business diversification and internal control are not significantly related to audit charges, and they have no joint effect on audit charges in the textile industry.

1. Introduction

Simunic initially used a multivariate linear regression method to generate the relevant models to analyze the factors that caused changes in audit fees in the United States. Since then, many scholars began to study audit fees issues, they generally found that the audit risk, the auditor's scale, complexity of client, the other characteristics, the corporate governance of listed companies, audit opinion, the characteristics of the public accounting firm, audit market competition intensity is related to the influence factors of audit pricing, etc. However, few scholars have studied the correlation between internal control and audit fees. Due to the rapid development of China's market economy, Chinese companies tend to have no obvious relevance, different professional, multi-type complex diversified business forms. This paper will analyze the relationship between business diversification, internal control and audit fees, and explore the influence of business diversification and internal control on audit fees to explore the role of business diversification and internal control on audit quality and even the development of the entire audit industry.

2. Literature Review

As for the research on the correlation between business diversification and audit fees, scholars have totally different opinions. Some scholars believe that there is no relationship between business diversification and audit fees, while some believe that the complexity of business will increase the difficulty of audit and the risk of audit, which has a direct impact on the level of audit fees. Studies on the correlation between internal control and audit fees can be seen from foreign research literatures. Before the enactment of sarbox, most studies show that internal control has little relationship with audit fees. After that, most scholars believe that audit fees will increase with major defects in internal control, and the higher the quality of internal control, the lower the audit fees will be.

3. Hypothetical Submissions and Source of Data

3.1. Research Hypothesis

H1: The higher the level of business diversification, the higher the audit fee.

If the internal control design is unreasonable or not implemented effectively, it will cause a large audit risk. The CPA must implement more audit procedures to obtain more audit evidence to reduce
the audit risk to an acceptable low level. And these will incur more costs in order to get more evidence. Therefore, the level of internal control directly affects audit fees. Based on this, the following assumptions are made.

H2: The higher the level of internal control, that is, the more effective internal control, the lower the audit fee.

Although business diversification and internal control affect audit fees together, the role of the two in audit fees is mutually reinforcing or mutually exclusive. How will the two influence audit fees? The following assumptions.

H3A: The impact of business diversification and internal control on audit fees is a substitute for each other.

H3B: The impact of business diversification and internal control on audit fees is mutually reinforcing.

3.2. Data Sources
The leap-forward improvement of the internal control level of listed companies in China has actually started since 2009. To this end, the paper selects listed companies in Shanghai and Shenzhen between 2012 and 2016, and selects the textile industry as the research according to the latest industry division of the China Securities Regulatory Commission. sample. After obtaining the initial sample, the missing data for audit fees, industry classification, internal control index, and total company assets were eliminated. In order to ensure the availability and integrity of the data, 215 sample data were retained. The data was processed and analyzed using Excel and SPSS statistical software.

4. Selection of Variables and Model Design
4.1. Variable Selection
Business diversification and internal control are explanatory variables, and audit fees are interpreted variables. Because there are many other factors that affect audit fees, this paper will also introduce control variables to control some important influencing factors.

4.2. Explained Variable
Fee is the interpreted variable of this article, which is used to refer to the audit service provider (CPA) after receiving the audit service, to the auditing service recipient (the audited entity) to compensate for the audit service during the audit process. The provider (CPA) pays a certain amount of the cost of the cost. According to the existing literature, the audit fee will be measured using the natural logarithmic method of audit fees published in the Auditor's Audit Report. This measure will also be used in this paper.

4.3. Explanatory Variables
The paper introduces business diversification and internal control as explanatory variables to jointly explain the changes in audit fees (Fee).

This paper uses the Herfindahl-Hirschman index (Hhi) to measure business diversification by referring to the relevant literature. In order to make the size of the indicator consistent with the degree of diversification, the article uses the “1-Hhi” index as a measure of the degree of diversification. The indicators, the specific calculation formula is as follows:

\[ Hhi = 1 - \sum_{i=1}^{n} p_i^2 \]  

(Eq1)

Among them, \( p_i \) is the ratio of the income of the i-th industry to the total income, and \( n \) is the number of industries involved in the enterprise. The value of Hhi is between 0-1 and is positively correlated with the degree of diversification of the enterprise. The greater the Hhi value, the higher
the degree of diversification. When the company implements specialized operations, the index is zero. This paper studies the textile industry among Chinese A-share listed companies. Internal control (denoted as: IC) is used to measure the level of internal control in the company. This paper uses the Dibo internal control index from 2012 to 2016 to measure the value of internal control (recorded as: IC). The article refers to the relevant foreign literature practice, adds 1 to the index and takes the logarithm to reflect the company. The level of internal control is high or low. The larger the value, the higher the level of internal control.

4.4. Control Variable

The study of audit fees should introduce some important influencing factors and control them. The control variables in this paper refer to He Weifeng and Liu Wei (2015), Ni Xiaoya, Dai Deming and Zhang Xudong (2017) and other documents, introducing the company scale (recorded as: Size), asset-liability ratio (recorded as: Lev), whether it is “PwC,” “DTT,” “KPMG,” “EY”(Note: Big4), ROE (denoted as: Roa), or loss (denoted as: Loss) to control research. The specific variables are defined as follows:

| Variable code | Variable | Variable definitions |
|---------------|----------|----------------------|
| Fee           | Audit fee| Explained variable   |
| Hhi           | Business diversification | Explanatory variables |
| Ic            | Internal Control | Explanatory variables |
| Size          | Company Size | Natural logarithm of total assets |
| Lev           | LEV      | Ratio of total liabilities to total assets |
| Big4          | PwC, DTT,KPMG,EY | The accounting firm takes 1 for the international big4, otherwise it is 0. |
| Roa           | ROA     | Net profit divided by total assets |
| Loss          | Loss    | Operating profit is negative minus 1, otherwise 0 |
| Ind           | Industry benefit | Control industry effects |
| Year          | Time benefit | Control time effects |

5. Empirical Analysis

In this paper, descriptive statistics, correlation analysis and multiple linear regression analysis are performed for each variable. Among them, the continuous variable has been subjected to Winsorize tailing treatment in the upper and lower 1% grading.

5.1. Descriptive Analysis

Sample descriptive statistics are shown in Table 2.

| variables | Sample size | Mean | Standard deviation | Min    | Max    |
|-----------|-------------|------|--------------------|--------|--------|
| Fee       | 215         | 13.5624 | 0.4839             | 12.5425 | 15.1102 |
| Hhi       | 215         | 0.1754  | 0.1990             | 0      | 0.6885 |
| Ic        | 215         | 6.2887  | 1.0977             | 0      | 6.7927 |
| Hhi×Ic    | 215         | 1.1170  | 1.2912             | 0      | 4.4828 |
| Size      | 215         | 21.7813 | 0.8864             | 19.7736 | 23.9169 |
| Lev       | 215         | 0.3932  | 0.1780             | 0.0563 | 0.8382 |
| Big4      | 215         | 0.0326  | 0.1791             | 0      | 1      |
| Roa       | 215         | 0.0307  | 0.0846             | -0.8851 | 0.1633 |
| Loss      | 215         | 0.2093  | 0.4078             | 0      | 1      |
We have descriptive statistics on the data as a whole, and obtained the results. As shown in Table 2, the four statistics of the mean, standard deviation, minimum and maximum values of the sample are obtained.

The statistical results show that the average cost of audit fees (Fee) is 13.52424, the minimum value is 12.5425, and the maximum value is 15.1102. It can be seen that the difference between the minimum and maximum audit fees is large, indicating that the audit fees paid by listed companies are relatively large. The difference.

The key to this paper is business diversification and internal control. For business diversification (Hhi), the mean value is 0.1754, the minimum value is 0, and the maximum value is 0.6885. There is a significant difference between the minimum and maximum values, indicating that diversity is There are still big differences between different companies. The mean value of the internal control index representing internal control is 6.2887, and there is a significant difference between the minimum value of 0 and the maximum value of 6.7927, indicating that the quality of the internal control systems of different companies is different. The common influence of business diversification and internal control on audit fees, that is, the product of business diversification (Hhi) and internal control (Ic), Hhi×Ic, minimum value is 0, maximum value is 4.4828, and the minimum value and maximum value are different. Big. For the five control variables, the difference between the minimum value of the company size (Size) of 19.7736 and the maximum value of 23.9169 is significant. The mean value of Lev is 0.3932, which is more suitable, but the difference between the minimum value of 0.0563 and the maximum value of 0.8382 is large. The average value of Big4 is 0.0326, indicating that only 3.26% of the samples examined were audited by “Big4” accounting firm. The average return on total assets (Roa) is 0.0307, and the difference between the minimum and maximum values is large. The average loss (Loss) is 0.2093, indicating that only a few of the sample sizes are in a negative operating profit.

5.2. Multiple Linear Regression Analysis

Based on the control year and industry, this paper conducts further multivariate linear regression analysis on the relationship between business diversification and audit fees, internal control and audit fees, business diversification, internal control and audit fees.

5.2.1. Research Business Diversification and Audit Fees

| Variables | Coefficient | T Value | P Value |
|-----------|-------------|---------|---------|
| Hhi       | -0.230**    | -2.105  | 0.037   |
| Size      | 0.350***    | 12.116  | 0.000   |
| Lev       | -0.547***   | -3.772  | 0.000   |
| Big4      | 1.021***    | 8.313   | 0.000   |
| Roa       | -0.068      | -0.219  | 0.827   |
| Loss      | 0.021       | 0.341   | 0.734   |
| Constant  | 6.162***    | 10.132  | 0.000   |
| Ind       | Control     |         |         |
| Year      | Control     |         |         |
| Observation | 215        |         |         |
| R-squared | 0.595       |         |         |

**Adjusted R-squared** 0.583

The results show that the P value of the key explanatory variable business diversification (Hhi) in the model is less than 0.05, indicating that the business diversification (Hhi) can significantly affect the audit fee (Fee) at 5%. The coefficient of business diversification (Hhi) is -0.235 and less than 0, indicating that business diversification (Hhi) is negatively correlated with audit fees (Fee), which
means that the higher the diversification of business, the lower the audit fees, which confirms the H1. First, it is not established.

5.2.2. Study the Relationship between Internal Control and Audit Fees

**Table 4.** Regression results table (internal control and audit fees)

| Variables | Coefficient | T Value | P Value |
|-----------|-------------|---------|---------|
| Ic        | -0.068***   | -3.033  | 0.003   |
| Size      | 0.375***    | 12.880  | 0.000   |
| Lev       | -0.620***   | -4.371  | 0.000   |
| Big4      | 1.044***    | 8.624   | 0.000   |
| Roa       | 0.228       | 0.699   | 0.485   |
| Loss      | 0.019       | 0.302   | 0.763   |
| Constant  | 6.019***    | 10.078  | 0.000   |

Ind Control

Year Control

Observation 215

R-squared 0.604

Adjusted R-squared 0.592

***P<0.01, **P<0.05, *P<0.1

In the control variable, the P value of the company size is significantly less than 0.05, and the coefficient is positive, indicating that the audit fee (Fee) is significantly positively correlated with the company size (Size), indicating that the company is larger, auditing. The higher the charge; the same can be seen that the audit fee (Fee) is significantly negatively correlated with the asset-liability ratio (Lev); the audit fee (Fee) is significantly positively correlated with the “Big4”. The P value of total return on assets (Roe) and Loss are both greater than 0.05, indicating that the two are not significant.

5.2.3. Research Business Diversification, Internal Control and Audit Fees

**Table 5.** Regression results table (business diversification, internal control and audit fees)

| Variables  | Coefficient | T value | P value |
|------------|-------------|---------|---------|
| Hhi        | 0.316       | 0.305   | 0.760   |
| Ic         | -0.056**    | -1.991  | 0.048   |
| Hhi*Ic     | -0.080      | -0.501  | 0.617   |
| Size       | 0.369***    | 12.634  | 0.000   |
| Lev        | -0.589***   | -4.037  | 0.000   |
| Big4       | 1.025***    | 8.470   | 0.000   |
| Roa        | 0.181       | 0.538   | 0.591   |
| Loss       | 0.011       | 0.180   | 0.857   |
| Constant   | 6.091***    | 9.972   | 0.000   |

Ind Control

Year Control

Observation 215

R-squared 0.611

Adjusted R-squared 0.595

***P<0.01, **P<0.05, *P<0.1

According to the results of multiple linear regression analysis in Table 5, it can be seen that the adjusted R-squared of the mathematical model reaches 59.5%, indicating that 59.5% of the change in audit fees can be explained by the independent variables participating in this study. However, as
shown in Table 5-7, the P value of the key explanatory variable business diversification (Hhi) in the model is 0.760, which is greater than 0.05, indicating that business diversification (Hhi) cannot significantly affect the audit fee (Fee). Another key explanatory variable internal control (Ic) has a P value of 0.048 less than 0.05, indicating that internal control (Ic) can significantly affect audit fees (Fee) at 5%. When the business diversification and internal control jointly affect the H value of Hhi*Ic is 0.617 greater than 0.05, indicating that the common impact of business diversification and internal control is not significant for audit fees. Hypothesis 3 is obviously not true.

5.3. Robustness Test
We use the audit opinion (OP) to replace the loss (Loss), and the audit opinion (OP) indicates that the standard has no reservations, and otherwise 0, to test the above three regression models.

When we replace the loss (Loss) with the audit opinion (OP), the correlation coefficient between the audit fee (Fee) and the business diversification (Hhi) is -0.209, indicating that the audit fee (Fee) and business diversification (Hhi) are still at 5 There was a significant negative correlation at the % level.

When we replace the loss (Loss) with the audit opinion (OP), the correlation coefficient between the audit fee (Fee) and the internal control (Ic) is -0.043, indicating the audit fee (Fee) and internal control (Ic) is still significantly negatively correlated.

When we replace the loss (Loss) with the audit opinion (OP), the combined effect of business diversification and internal control is still not significant for audit fees.

6. Conclusions and Policy Recommendations

6.1. Conclusions
Audit fees are negatively correlated with business diversification, that is, the higher the degree of business diversification, the lower the audit fees. Audit fees are negatively correlated with internal controls, i.e. the higher the level of internal control, the more effective internal controls and the lower the audit fees. Business diversification and internal control do not affect audit fees. Under the combined effect of business diversification and audit fees, the results of audit fees are not significant, that is, the combination of business diversification and internal control has no effect on audit fees.

6.2. Policy Recommendations
In the textile industry, companies with high levels of business diversification have a reduced impact on their audit fees. Perhaps the higher the diversification of the business, the better the management system of the enterprise makes the auditor easier at the time of the audit. For the textile industry, which is less diversified, it is possible to further expand its business and have a new attempt in different fields. The increase in the level of internal control has a clear impact on the reduction of audit fees. From the perspective of listed companies, it is necessary to further improve internal control. From the perspective of the audit firm, the audit workload and fees will be lower for companies with better internal control quality. Under the combined effect of business diversification and internal control, audit fees have no impact. For this conclusion, it may be because the internal control suppresses the diversification of business in the textile industry, so the sample size can be further expanded. Find more intrinsic connections in more industries.

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