The research on fair value and audit fees – Based on engineering management enterprise

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Abstract. In 2006, the new accounting standards introduced the fair value measurement model. The fair value was implemented in the listed company on January 1, 2007. In 2014, fair value was redefined and classified disclosure requirements were improved. Subsequently, the scale of assets and liabilities measured by fair value in China keeps expanding, especially in manufacturing, construction, real estate, electric power and other engineering management enterprises. The internal control problems of engineering management companies lead to audit fee standards are not standardized, and the uncertainty of fair value will worsen this situation. The greater the uncertainty, leading to increase with the risk of audit accordingly, is finally reflected in the audit fees in the form of premium. The purpose of this paper is to study the relationship between fair value and audit fees taking evidences from engineering management enterprise from 2015 to 2018 year, such as construction industry, Water conservancy, environment and public facilities management industry and real estate industry, and to further explore the condition of audit fees, and providing reference for engineering management enterprise to control and manage audit fees.

1. Introduction
As an important part of the operation of accounting firms, audit fees have always been one of the key problems troubling the development of China's CPA industry. On January 27, 2010, the national development and reform commission and the ministry of finance jointly issued China's first national normative document on the management of audit fees: 'Measures for the management of service fees of accounting firms'. Since its promulgation, regional finance departments, in conjunction with price departments, have earnestly implemented and constantly revised and improved their fee collection methods in line with local conditions. The method points out that the standard of auditing fees should take some factors into account such as the nature of audit services, the size of risks and the degree of complexity.

American financial accounting standards (SFAS No.157) in 2006 mentioned the concept and disclosure requirements of hierarchical measurement by fair value. In February 2006, the ministry of finance of China promulgated ‘Accounting standards for business enterprises - basic standards’, which explicitly regards fair value as one of the five measurement attributes. In December 2010, the ministry of finance required listed companies to disclose the amount of fair value at each level and major changes between levels respectively in the ‘Notice on the implementation of accounting standards for enterprises' listed companies and non-listed enterprises' annual reports in 2010’ (financial accounting [2010] No.25). In 2014, the issuance of accounting standards for ‘Business enterprises No. 39 - fair value measurement’ (hereinafter referred to as 'standard 39'), and the revision of ‘Accounting
standards for business enterprises - basic standards’ (hereinafter referred to as ‘basic standards’) specified the definition, elements, measurement, disclosure and other contents of fair value in detail, and put forward the basis and method of dividing the level of fair value in the form of standards. As a follow-up measurement model, fair value has taken root in China’s accounting practice. Previous studies by scholars have shown that fair value measurement will lead to the increase of audit fees (Igor et al, 2014; Yang Shuhuai, 2013; Ettredge et al, 2013; Ma Jianwei et al., 2014; Wang Shouhai, Liu Zhiqiang, 2017; Huang bing et al., 2017; Qian aimin, Zhu Dapeng, 2018)[1-7]. At present, researches on the two things are mainly focused on the financial industry, and no separate researches have been conducted on other industries. Due to the imperfect internal control system of engineering management enterprises, it will lead to higher audit fees, and the uncertainty of fair value will lead to the increase of audit fees. The study of the relationship between fair value and audit fees is beneficial to the control and management of audit fees, cost reduction and efficiency. Then what is the impact of asset measured by fair value audit fees in engineering management companies? What’s the difference between positive changes and negative changes? These are the questions to be discussed in this paper.

2. Literature review, theoretical basis and research hypothesis
In order to converge with international accounting standards, China introduced the fair value measurement attribute in 2006, and then redefined the fair value measurement in 2010 and 2014 respectively. The ministry of finance officially released the fair value measurement standards since 2014, and the number of companies using the stratified measurement of fair value in various industries significantly increased, especially in the engineering management enterprises. So it is worth studying.

Existing researches mainly focus on the impact of fair value measurement methods on audit fees and the different impact of fair value measurement on audit expenses in different industries. Igor Goncharov and Riedl (2014) took the European real estate industry as a sample to study the relationship between fair value and audit fee, and found that the uncertainty and complexity of fair value valuation significantly increased the audit risk and audit fees [1]. Ettredge (2009) found in an empirical study that the fair value of the banking industry was significantly positively correlated with the audit fee, that is, the fair asset measurement would increase the audit risk, thereby affecting the collection of audit fees [2]. Yang shuhuai (2013) found in an empirical study that fair value measurement would increase audit costs, thereby increasing audit risks and increasing audit costs [3]. The uncertainty of market parameters and valuation techniques will increase the inherent risks of enterprises, which will lead to the increase of audit risks of enterprises. Auditors can only reduce inspection risks by increasing working hours and improving the quality of audit services to control audit risks. According to the relevant provisions of the service fee management method of the accounting firm, the size and complexity of the workload will affect the audit fee, and the increase of the workload will lead to the increase of the audit fee. Accounting firms usually set audit fees at the beginning of the year, so the real impact of audit fees is the amount of assets and liabilities measured at the fair value of the previous year. Based on this, the following assumptions are proposed:

H1.1: Assets measured by fair value (in the previous year) are significantly positive correlated with audit fees (in the current year).

H1.2: The total of assets and liabilities measured by fair value (in the previous year) are significantly positive correlated with audit fees (in the current year).

The principle of accounting conservatism requires enterprises to maintain a prudent attitude when dealing with economic business. Article 13 of "enterprise accounting system" points out that when conducting accounting business, assets should not be counted more and liabilities should not be counted less, and the principle of prudence should be followed. Auditors may also have certain bias when conducting audits, and audit risks may lead auditors to adopt accounting policies that reduce profits (Defond, Subramanyam, 1998). Due to the uncertainty of fair value measurement, it will bring audit risk. Therefore, when the fair value assets increase, the auditor will invest more time and energy.
Based on robustness, and the increase of workload will definitely result in the increase of audit fees. Based on this, the following assumptions are proposed:

H2: The correlation between the assets measured by fair value in positive changes and the audit fees (the current year) is significantly higher than that in negative changes.

3. Research design

3.1. Data and sample selection
This paper takes evidences from the construction industry, real estate industry, the energy industry and Water conservancy, environment and public facilities management industry range 2015 to 2018 as the basic samples. China introduced fair value measurement in 2006 and implemented it within the listing scope in 2007. In 2010, accounting standards clearly required listed enterprises to disclose the amount of fair value hierarchical measurement and relevant information. According to the statistics of relevant industry annual reports engineering management companies are also gradually beginning to disclose fair value related information. Finally, in 2012, China issued a new version of guidelines for industry classification and classification of CSRC, so data from six years after 2012 were selected as the time node.

After excluding some data in this paper, the sample size is as follows:

| Year | Numbers |
|------|---------|
| 2015 | 185     |
| 2016 | 185     |
| 2017 | 185     |
| 2018 | 185     |

3.2. Model design and Variables definition
This paper refers to the model of Ettredge, Xu and Yi (2009) [2], and constructs the empirical model of this paper by combining the empirical research on the influencing factors of China’s real estate industry audit fees and the actual situation.

\[
LNFEE = \alpha_0 + \alpha_1 LNFV + \alpha_2 BIG4 + \alpha_3 LEV + \alpha_4 ROA + \alpha_5 ROE + \alpha_6 Asset + \alpha_7 Audit
+ \alpha_8 Industry + \alpha_9 YEAR + \epsilon
\]

Specific variables and definitions are shown in table 2 below:

| Types of variables | Variable symbol | Variable name | Variable definition |
|--------------------|----------------|--------------|--------------------|
| Dependent variable | LNFEE | Audit fees | The natural logarithm of the total audit expenses paid to the accounting firm in the current year. |
| Independent variable | LNFVA | Assets measured at fair value | The natural logarithm of the sum of assets at fair value for the previous year. |
| | LNFV | Assets and liabilities measured at fair value | The natural logarithm of the sum of asset and liabilities at fair value for the previous year. |
| | BIG4 | The size of Auditor | If the firm is a big four, then take 1, otherwise 0. |
| | LEV | Asset-liability ratio | The ratio of total liabilities to total assets. |
| | ROA | Rate of return on total assets | The ratio of total operating income to total assets. |
| | ROE | Return on assets | The ratio of net profit to total assets. |
| Control variable | Audit | Audit quality | If it is a non-standard unqualified opinion, then take 1, otherwise 0. |
| | YEAR | Year | The control variable of year. |
4. Results and analysis

4.1. Summary statistics

Table 3. Summary statistics

| Variables | Obs | Mean  | Std.   | Min   | Max   |
|-----------|-----|-------|--------|-------|-------|
| LNFEE     | 740 | 14.1223 | 0.6858 | 12.6115 | 16.8112 |
| LNFVA     | 740 | 18.5240 | 2.2740 | 10.8198 | 24.2394 |
| LNFV      | 740 | 18.5301 | 2.2714 | 10.8198 | 24.2409 |
| BIG4      | 740 | 0.0716  | 0.2580 | 0      | 1     |
| LEV       | 740 | 0.6152  | 0.1754 | 0.0478 | 0.9839 |
| ROA       | 740 | 0.0251  | 0.0511 | -0.4737 | 0.2828 |
| ROE       | 740 | 0.0650  | 0.1495 | -1.8489 | 0.9831 |
| Audit     | 740 | 0.0324  | 0.1773 | 0      | 1     |

Table 3 shows the descriptive statistical results of the total samples. It can be seen from the table that there is a big difference between the maximum and minimum of the sample audit fee, indicating that there is a certain gap in the audit fee level of each accounting firm. The minimum value and maximum value of the four coefficients of the relevant assets and liabilities measured by fair value are also quite different, which means that the scale of fair value applied in China's engineering management companies is quite different.

4.2. Correlation analysis

The results of the correlation test of all variables showed that audit fee (LNFEE) and explanatory variables were significant correlated at the 1% level, and the correlation coefficient 0.28 in negative changes and LNFEE was smaller than the correlation coefficient 0.37 in positive changes, which was consistent with hypothesis 2. And the correlation coefficient between independent variables of each model is below 0.8, so there is no multicollinearity.

4.3. Empirical results and analysis

Table 4. Empirical results

| Variables | H1.1   | H1.2   | H2     | H2     |
|-----------|--------|--------|--------|--------|
| Cons      | 11.9676*** (61.50) | 11.9572*** (61.43) | 11.8379*** (53.97) | 12.0361*** (28.76) |
| LNFVA     | 0.0680*** (6.94) | 0.0729** (6.50) | 0.0657*** (3.11) |
| LNFV      | 0.0687*** (7.00) |
| BIG4      | 0.7630*** (9.68) | 0.7616*** (9.66) | 0.6719*** (6.95) | 0.8453*** (5.45) |
| LEV       | 1.1124*** (7.80) | 1.108*** (7.77) | 1.2158*** (7.47) | 1.0670*** (4.74) |
| ROA       | -0.3630 (-0.28) | -0.3747 (-0.29) | -0.2159 (-0.14) | 0.8820 |
| ROE       | 0.8478* (1.86) | 0.8523* (1.87) | 0.5361 (1.05) | -0.1760** (-0.40) |
| Audit     | 0.1153 (0.83) | 0.1158 (0.84) | 0.3475** (2.33) | -0.0057 (-0.02) |
| YEAR | Control | Control | Control | Control |
|------|---------|---------|---------|---------|
| R²   | 0.3213  | 0.3221  | 0.3455  | 0.2638  |
| AdjR²| 0.3121  | 0.3129  | 0.3323  | 0.2354  |
| F-statistic | 35.03 | 35.15 | 26.10 | 9.28 |
| N    | 740     | 740     | 492     | 248     |

* a *, ** and *** mean significant at the levels of 10%, 5% and 1% respectively, and t value in brackets.

4.4. Robust tests

In order to make the results more reliable, this paper carries out the following robustness test: (1) The level of internal control of an enterprise will significantly affect the control risk in the audit risk of the enterprise. Therefore, the variables representing the internal control level of listed companies will be added to the model to control and then tested, and the result still holds. (3) According to the different nature of engineering management company, the research finds that the total assets and liabilities measured by fair value are significantly positively correlated with the audit fees, whether state-owned enterprises or non-state-owned enterprises. The results of regressions are consistent with the above, indicating the robustness of the conclusions in this paper.

5. Conclusions

Audit fees affect the relationship between accounting firms and customer management, and determine the allocation of resources in the audit market, which has been widely studied by scholars for a long time. This paper takes listed companies in China's engineering management enterprise as research objects, selecting data from 2015 to 2018 as research samples, and empirically tests the impact of assets and liabilities measured by fair value and assets measured by fair value on audit fees. The results show that: the audit fees of engineering management companies are significantly affected by the assets and liabilities measured by fair value, and compared with the measurement by fair value when it has negative changes, assets measurement by fair value at positive changes have a more serious impact on the audit fees. This further indicates that when the fair value asset changes in a positive way, the auditor needs to pay more audit workload for the sake of robustness, thus charging higher audit fees. This conclusion can provide a certain reference value for project management company's audit fee management.

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