# An Empirical Study of Accounting Firm Scale and Legal Environment Influence on Audit Quality

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**Abstract.** China's overall weak legal system environment and clear regional legal system differences existing side by side provides the research background for us to study the relationship between accounting firm scale, legal environment and audit quality. In this paper, using the data of 2014, under China's unique legal environment background, classify according to accounting firm scale and background, take manageable accrued profit instead of actual audit quality, empirically testify the relationship between legal environment, firm size and audit quality.

With the development of market economy and particularity of certified public accountants work, audit quality directly relates to healthy development of capital market. The scale of accounting firms must, therefore, improve information quality as the premise, and large-scale development must also be on the basis of ensured audit quality. In our country, whether there is a difference between large and small audit quality, whether it relates to law environment, whether there are other influence factors, the academia has not yet been determined. And discuss the accounting problems in China shall consider China's national conditions. In general, the rule of law environment is weak in our country. From the angle of region, local legal environment development is not balanced. Will legal system differences in different areas, then, affect different size firm's audit quality?

## I. ACCOUNTING FIRM SCALE MEASURE

In the study of accounting firm scale and audit quality, accounting firm can be divided into N big and not N big dichotomy, which is widely used in the literature at home and abroad. Especially in western developed countries, the division of N big and not N big is very stable.

### *A. Research design*

1. Research methods

We choose to have clustering analysis with a strong objectivity to test classification results significantly and can comprehensively consider certified public accountants' indicators to analyze 2014 accounting firm situation.

2. Data collection

(1)Data selection indicators

In this paper also uses multiple indicators measure in the course of study.

(2) Data source

Data are from Shanghai stock exchange, Shenzhen stock exchange website as well as Accountants Accounting Firm Comprehensive Information Evaluation in 2014 certified by Chinese Institute of Certified Public Accountants.

(3) Descriptive statistics and correlation analysis

According to the data in Table 1.1, there is a big difference between accounting firms. Accounting firms' average market share is only 1.56%, and of all the indicators, in addition to customers and firms accountant number two indicators, the other four indicators are more than the average. Second, we can see that different statistical index system gets obvious accounting firm market share difference. This shows that there is large difference between the sizes of customers, and if the same accounting firm scales measure in accordance with different indicators, there are bigger differences.

 

Table 1.1 Accounting firm size proportion index information

| | N | minimum | maximum | average | standard deviation |
|---|---|---|---|---|---|
| customer number | 64 | .064 | 6.877 | 1.5625 | 1.2467 |
| Customer's main business income | 64 | .013 | 20.584 | 1.5625 | 3.7551 |
| Customer total assets | 64 | .004 | 25.072 | 1.5625 | 5.2672 |
| Customer equity | 64 | .010 | 27.894 | 1.5625 | 4.4068 |
| The firm's total revenue | 64 | .133 | 17.652 | 1.5625 | 3.6029 |
| Accountant office number | 64 | .622 | 7.586 | 1.5625 | 1.2259 |
| Effective N (list state) | 64 | | | | |

Table 1.2 Correlation coefficient of accounting firm scale indicators

| | Client quantity | Client business income | Total client property | Client sharehoder interests | Total office income | Office accountant quantity |
|---|---|---|---|---|---|---|
| customer number | 1 | | | | | |
| Customer revenue | .170 | 1 | | | | |
| Customer's total assets | .046 | .955** | 1 | | | |
| Customer equity | .145 | .978** | .953** | 1 | | |
| Firm's total revenue | .112 | .900** | .920** | .908** | 1 | |
| Accountants office number | .426** | .441** | .401** | .419** | .563** | 1 |

* *. In. 01 level (double side) significant correlation.

Table 1.2 analyzes the variables relationship accounting firm scale, and it can be seen in the table that the correlation coefficient of accounting office account numbers and customer main business income, number of customers, clients, shareholders' equity, firm revenue, and customer total assets is 0.4, and is statistically significant at 0.01% level.

***B. Clustering analysis results***

Shown in Table 1.3, in all office categories, KPMG Huazhen, Deloitte HuaYong, Ernst &young Huaming, PWC Zhongtian are all alone, and are very significant distinguished from the other groups, suggesting that the big four firm have strong stability. These firms were divided into 6 ~ 8 classes and single factor variance analysis is done respectively, and significant difference between the results of all kinds is below 1%.

Table 1.3 2014 Accounting firm clustering analysis results

| | | | | |
|---|---|---|---|---|
| 6class | class cluster | 1 | 1 | KPMG Huazhen |
| | | 2 | 1 | Deloitte HuaYong |
| | | 3 | 2 | Lixin, Elliot Yue |
| | | 4 | 58 | Fujian Huaxing 58 firms and so on |
| | | 5 | 1 | Ernst &young Huaming |
| | | 6 | 1 | PWC Zhongtian |
| | | Total | 64 | description：KPMG Huazhen 6 firms belongs to 5 classes in 6 classes |
| | effective | | 64 | |
| 7class | Class cluster | 1 | 8 | 7 classes in 8 eight firms such as Beijing Kyoto |
| | | 2 | 1 | PWC Zhongtian |
| | | 3 | 2 | Lixin, Elliot Yue |
| | | 4 | 1 | Deloitte HuaYong |
| | | 5 | 1 | KPMG Huazhen |
| | | 6 | 1 | Ernst & Young Hua Ming |
| | | 7 | 50 | Fujian Huaxing 58 firms and so on |
| | | Total | 64 | decription： KPMG Huazhen six firms belong to 5 classes in 8 classes |
| | effective | | 64 | |
| 8class | class cluster | 1 | 1 | Ernst & Young Hua Ming |
| | | 2 | 11 | Zhejiang Tian Jian, 11 firms |
| | | 3 | 2 | Lixin, Elliot Yue |
| | | 4 | 45 | Anhui maple 45 firms and so on |
| | | 5 | 1 | Deloitte HuaYong |
| | | 6 | 1 | KPMG Huazhen |
| | | 7 | 1 | PWC Zhongtian |
| | | 8 | 2 | Fujian Huaxing、Ernst &young Huaming |
| | | Total | 64 | description：KPMG Huazhen six firms belong to5 classes in 8 classes. |
| | Effective | | 64 | |

## II. THE EFFECTS OF ACCOUNTING FIRM SCALE AND LEGAL ENVIRONMENT ON AUDIT QUALITY

This paper specifies accounting firm scale by non " six big " and "six big" and substitutes earnings management degree variables by actual audit quality, researches whether accounting firm scale in our country in relatively weak law rule overall environment during the period of transition economy can be on behalf of audit quality, and at the same time, also examines if clear differences regional legal system has different impact on non " six big " and " six big" audit quality.

### *A. Research hypothesis*

For now, the overall legal environment in China cannot make substantial effects on accounting firm's bad behavior; reduce audit quality and a lower risk of being punished, while the possibility of dismissal by customers for the independence is high.

Hypothesis 1: In the audit market under the background of the overall weak legal environment in our country, non-"six big" customers manipulating profit is as high as that of "six big".

The obvious difference in regional legal environment in our country is likely to have different influence on different sizes of certified public accountants.

Hypothesis 2: Whether "six big" customer sites legal environment is sound which can affect reduce of accrued profit manipulation. The more perfect legal environment, the lower "six big" customers can manipulate accrued profit. Regional legal environment change will not affect "six big" customers manipulating accrued profits.

### *B. Research design*

1. Data sources and sample selection

Region legal difference quantitative data come from samples financial data in China's marketization index --regional market relative progress report and company information is from Shanghai stock exchange, Shenzhen stock exchange website.

2. Manipulate the accrued profit estimation

This paper adopts section Jones model and estimates the playable divisions accrued profits.

Cross section Jones model expression:

$$TAijt/Aijt\text{-}1=\alpha 1jt/Aijt\text{-}1+\alpha 2jt(\Delta REVijt/Aijt\text{-}1)+\alpha 3jt(PPEijt/Aijt\text{-}1)+\varepsilon ijt \quad (1)$$

Each variable in formula: Δ REV is the event difference between annual main business net income and net income of last year's main business; TA is the total accrued profit got by minus operating profit by net cash flow; PPE is the value of fixed assets, A is t - 1 total assets at the end of the year, j is industry, ε is residual error, I is specific company, and t - 1 and t are respectively last year event and this year event.

The non-manipulation accrued profit gets estimates by NDA expressed formula; manipulation accrued profit is DA.

3. Test model

This paper adopts the influence of model test foregoing assumptions overall legal environment background and regional difference legal system environment firm size on accrued profit manipulation.

Hypothesis 1 test model:

$$DAit=\beta 0+\beta 1Sizeit+\beta 2Leverageit+\beta 3OCFit+\beta 4AbsAccrit+\beta 5Lossit+\beta 6Big6+eit \quad (2)$$

Assumption 2 test model

$$DAit=\beta 0+\beta 1Sizeit+\beta 2Leverageit+\beta 3OCFit+\beta 4AbsAccrit+\beta 5Lossit+\beta 6Indexit+\beta 7Big6+\beta 8Big6\times Indexit+eit \quad (3)$$

Among them, Big6 is experimental variable. β0 is intercept, β1 ~β8 are coefficient, e is residual. DA is manipulating accrued profit. Index is on behalf of the regional legal environment Index. Big6 x Index is the joint impact of accounting firm scale and the legal system of environmental on earnings management. Size is scale of the company. Leverage is debt ratio. OCF is the ratio of total assets and net operating cash flow. AbsAccr is the absolute value of total accrued profit and total assets ratio.

Table 2.1 lists the sample's descriptive statistics, sample company average leverage coefficient is 0.482, the average size is 21.436, and in addition, the Loss mean value is 0.06, which shows that an average of 6% company loses. Table 2.2 and Table 2.3, respectively, are the "six big" group and non-"six big" description statistical information. It can be seen from the Table that non-"six big" customer's cash flow and assets are significantly lower than "six big" customer. At the same time, "six big" customer losses is higher than that of the "six big" losses.

Table 2.1 Whole samples description

| | N | minimum | maximum | average | standard deviation |
|---|---|---|---|---|---|
| Size | 1232 | 17.975 | 26.548 | 21.43631 | 1.087531 |
| Leverage | 1232 | .000 | 4.035 | .48227 | .218135 |
| OCF | 1232 | -.363 | 1.000 | .05157 | .095762 |
| AbsAccr | 1232 | .000 | 2.065 | .02465 | .078694 |
| Index | 1232 | 2.79 | 16.61 | 8.8296 | 4.14551 |
| Loss | 1232 | 0 | 1 | .06 | .242 |
| Effective N (list state) | 1232 | | | | |

Table 2.2 Six group description statistics

| | N | minimum | maximum | average | standard deviation |
|---|---|---|---|---|---|
| Size | 168 | 17.97 | 26.55 | 21.8068 | 1.35120 |
| Leverage | 168 | .00 | 4.03 | .4951 | .32998 |
| OCF | 168 | -.29 | 1.00 | .0574 | .11412 |
| AbsAccr | 168 | .00 | .26 | .0208 | .03170 |
| Index | 168 | 2.79 | 16.61 | 11.1770 | 4.72686 |
| Loss | 168 | .00 | 1.00 | .0833 | .27721 |
| Effective N (list state) | 168 | | | | |

Table 2.3 Non-"six big" description statistics

| | N | minimum | maximum | average | standard deviation |
|---|---|---|---|---|---|
| Size | 1064 | 18.03 | 25.02 | 21.3778 | 1.02844 |
| Leverage | 1064 | .00 | 1.44 | .4802 | .19485 |
| OCF | 1064 | -.36 | 1.00 | .0507 | .09256 |
| AbsAccr | 1064 | .00 | 2.07 | .0253 | .08373 |
| Index | 1064 | 2.79 | 16.61 | 8.4590 | 3.92209 |
| Loss | 1064 | .00 | 1.00 | .0592 | .23613 |
| Effective N (list state) | 1064 | | | | |

***C. Empirical results***

1. Univariate analysis

Table 2.4 compares the manipulating accrued profit and its absolute value of "six big" and non-"six big". We can see from the Table that non-"six big" and "six big" manipulation accrued profit average are 0.0001 and 0.0009 respectively. Medians are 0.0024 and 0.0048 respectively. They have no statistically significant difference. The non-"six big" and "six big" manipulation accrued profits median between and absolute value mean are not significant difference. The preliminary supports hypothesis 1.

Table 2.4 The comparison between “six big” and non-“six big”

| | "Six big" sample group (N = 168) | | | Non-“six big” sample group (N = 1064) | | | T test (double tail) | Z test (double tail) |
|---|---|---|---|---|---|---|---|---|
| variable | median | average | mean | median | standard deviation | mean | | |
| DA | 0.0009 | 0.0393 | 0.0048 | -0.0001 | 0.0657 | 0.0024 | 0.2915 | 0.2915 |
| \|DA\| | 0.0264 | 0.0292 | 0.0167 | 0.0294 | 0.0587 | 0.0178 | -1.0683 | -1.0682 |

Table 2.5 and Table 2.6 are “six big” and non-“six big” firm correlation coefficients between the variables. It can be seen from the Table that "six big" and non-"six big" have showed a positive correlation between Index and manipulating accrued profit (DA) (0.095 and 0.090), indicating that the “six big” and non-“six big” groups legal environment change will not inhibit earnings management behavior of customers.

Table 2.5 Six indicator variable phase relationship

| | | DA | Size | Leverage | OCF | AbsAccr | Loss | Index |
|---|---|---|---|---|---|---|---|---|
| DA | Pearson correlation | 1 | -.024 | -.077 | -.043 | -.128 | .009 | .095 |
| | Significant (double side) | | .757 | .321 | .578 | .099 | .912 | .223 |
| | N | 168 | 168 | 168 | 168 | 168 | 168 | 168 |
| Size | Pearson correlation | -.024 | 1 | -.065 | -.046 | .012 | -.162* | .060 |
| | Significant (double side) | .757 | | .405 | .555 | .877 | .036 | .440 |
| | N | 168 | 168 | 168 | 168 | 168 | 168 | 168 |
| Leverage | Pearson correlation | -.077 | -.065 | 1 | .215** | -.050 | -.035 | -.122 |
| | Significant (double side) | .321 | .405 | | .005 | .516 | .653 | .115 |
| | N | 168 | 168 | 168 | 168 | 168 | 168 | 168 |
| OCF | Pearson correlation | -.043 | -.046 | .215** | 1 | .022 | -.138 | -.121 |
| | Significant (double side) | .578 | .555 | .005 | | .778 | .075 | .118 |
| | N | 168 | 168 | 168 | 168 | 168 | 168 | 168 |
| AbsAccr | Pearson correlation | -.128 | .012 | -.050 | .022 | 1 | -.160* | -.035 |
| | Significant (double side) | .099 | .877 | .516 | .778 | | .038 | .651 |
| | N | 168 | 168 | 168 | 168 | 168 | 168 | 168 |
| Loss | Pearson correlation | .009 | -.162* | -.035 | -.138 | -.160* | 1 | -.039 |
| | Significant (double side) | .912 | .036 | .653 | .075 | .038 | | .620 |
| | N | 168 | 168 | 168 | 168 | 168 | 168 | 168 |
| Index | Pearson correlation | .095 | .060 | -.122 | -.121 | -.035 | -.039 | 1 |
| | Significant (double side) | .223 | .440 | .115 | .118 | .651 | .620 | |
| | N | 168 | 168 | 168 | 168 | 168 | 168 | 168 |

*. At 0.05 level (double side).
* *. In. 01 level (double side).

Table 2.6 Six big indicator variable phase relationship

| | | DA | Size | Leverage | OCF | AbsAccr | Loss | Index |
|---|---|---|---|---|---|---|---|---|
| DA | Pearson correlation | 1 | .040 | -.166** | -.004 | -.071* | .019 | .090 |
| | Significant (double side) | | .187 | .000 | .901 | .021 | .547 | .003 |
| | N | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 |
| Size | Pearson correlation | .040 | 1 | .177** | .007 | -.033 | -.134** | -.012 |
| | Significant (double side) | .187 | | .000 | .815 | .288 | .000 | .691 |
| | N | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 |
| Leverage | Pearson correlation | -.166** | .177** | 1 | -.061* | .026 | .080** | -.072* |
| | Significant (double side) | .000 | .000 | | .047 | .389 | .009 | .018 |
| | N | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 |
| OCF | Pearson correlation | -.004 | .007 | -.061* | 1 | .073* | -.120** | -.102** |
| | Significant (double side) | .901 | .815 | .047 | | .017 | .000 | .001 |
| | N | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 |
| AbsAccr | Pearson correlation | -.071* | -.033 | .026 | .073* | 1 | -.025 | -.009 |
| | Significant (double side) | .021 | .288 | .389 | .017 | | .416 | .761 |
| | N | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 |
| Loss | Pearson correlation | .019 | -.134** | .080** | -.120** | -.025 | 1 | -.054 |
| | Significant (double side) | .547 | .000 | .009 | .000 | .416 | | .078 |
| | N | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 |
| Index | Pearson correlation | .090 | -.012 | -.072* | -.102** | -.009 | -.054 | 1 |
| | Significant (double side) | .003 | .691 | .018 | .001 | .761 | .078 | |
| | N | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 | 1064 |

* *. In. 01 level (double side).
*. At 0.05 levels (double side).
2. Multiple regression analysis

Table 2.7 Multiple regression analysis of firm scale and relationship between earnings management

| Variable | Regression coefficient | t |
|---|---|---|
| Constant | -0.043 | -1.206 |
| Size | 0.003 | 1.805 |
| Leverage | -0.043 | -5.301 |
| OCF | 0.001 | 0.062 |
| AbsAccr | -0.054 | -2.395 |
| Loss | 0.008 | 1.05 |
| Big6 | -0.00002 | -0.004 |
| Observations | 1232 | |
| Adjusted R2 | 0.024 | |
| F value | 6.071 | |

a. Dependent variable: DA

Table 2.7 is to test whether hypotheses 1 is set up. According to model (2), do multiple regression analysis. It can be seen that experimental variable Big6 conforms to DeAngelo firm size and audit quality are related theory, while the regression coefficients symbols are negative, it does not have a significance, namely non-“six big” is not significantly lower than that of "six big" audit quality. It also supports hypothesis 1.

Table 2.8 multiple regression of earnings management effected by regional legal difference and firm size

| | Whole sample | | “six big” | | Non-“six big” | |
|---|---|---|---|---|---|---|
| Variable | regression coefficient | t | regression coefficient | t | regression coefficient | t |
| constant | -0.057 | -1.585 | 0.025 | 0.48 | -0.087 | -2.078 |
| Size | 0.003 | 1.834 | 0.001 | 0.457 | 0.005 | 2.479 |
| Leverage | -0.042 | -5.11 | -0.009 | -0.907 | -0.059 | -5.704 |
| OCF | 0.007 | 0.366 | -0.007 | -0.241 | 0.002 | 0.105 |
| AbsAccr | -0.054 | -2.39 | -0.162 | -1.66 | -0.049 | -2.057 |
| Loss | 0.009 | 1.228 | -0.003 | -0.252 | 0.013 | 1.493 |
| Index | 0.001 | 2.883 | 0.001 | 1.017 | 0.001 | 2.654 |
| Big6 | 0.007 | 0.549 | | | | |
| Big6×Index | -0.001 | -0.888 | | | | |
| Observations | 1232 | | 168 | | 1064 | |
| Adjusted R2 | 0.029 | | -0.005 | | 0.039 | |
| F value | 5.634 | | 0.87 | | 8.283 | |

a. Dependent variable: DA

Table 2.8 is used to verify regression result of accounting firm scale and regional legal difference and earnings management. In Table 2.7, index of regression coefficients of “six big” group and non-“six big” are 0.001, which is not consistent with hypothesis 2. In control variables: the symbol of Leverage is negative, which means that financially troubled company is more likely to have negative earnings management; cash flow (OCF) is negative. The higher cash flow, the more likely negative earnings management is.

### *D. Conclusion*

This paper selects to accounting firm of listed company in 2014 as research sample, and researches the relationship between accounting firm scale and audit quality. Take earnings management as substitution variables for actual audit quality. Through clustering analysis, specify firm size into “six big” and non-"six big". Make empirical research on the relationship between China's current legal environment firm size and audit quality, and the main conclusions are as follows:

1. Using cluster analysis for better identify of scale differences in domestic affairs, adopting dichotomy to divide domestic accounting firms into “six big” and non-“six big”. And the very significant difference between "six big" and non-“six big” is clear.

2. From the empirical results, we can see that “six big” and non-“six big” customers manipulating accrued profit has no significant differences, suggesting that “six big” inhibit ability of earnings management is not better than that of non-“six big”, and it did not show more strong ability of supervision.

3. The regional differences in legal environment in our country are big. While all transactions are "six big" and non-“six big”, but it did not affect the firm's actual audit quality. The study is consistent with Ji Yan’s study.

## III. POLICY RECOMMENDATIONS

China should continue to improve accounting relevant laws and regulations. On the basis of it, optimize the structure of accounting firm scale configuration; actively explore organization to satisfy the needs of the development of large accounting firms. Actively encourage governance mechanism science, a good momentum of development, professional quality of medium-sized public accounting firms in form of science integration, positive efforts to improve small and medium-sized accounting firms internal management and professional service level, guide small accounting firms innovation service mode, scientific development mode and technical means, and thus develop into a large accounting firm. Cultivate the core competitiveness "big accounting firm" actively in our country with multinational business and provide comprehensive service to improve certified public accountants professional environment, establish and improve industry integrity monitoring system, supervise and urge CPA self-discipline checks, increase CPA violation penalties. Establish professional code of ethics system and professional standards system parallel development, and constantly improve the quality of integrity level and certified public accountants practice, and promote healthy and long-term development of public accounting firm.

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