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Human capital characteristics of accounting firms and audit fee--- empirical data of the China's a shares companies listed on shanghai stock exchange in 2013

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ABSTRACT

The human capital characteristics of accounting firm is directly related to audit quality, thus it influences audit fee. Combining with the top 100 information of comprehensive evaluation on accounting firms of China, this article analyses the relationship between human capital characteristics and audit fee based on the data of the China's A-shares companies listed on Shanghai Stock exchange in 2013. The results shows that the number of CPA (Certified public accountants)and accounting talents, proportion of the forty years old or younger have significant positive correlation with audit fee. And proportion of elder forty years old is negatively related to audit fee.

KEYWORDS

Audit fee; Human capital; Accounting firm; Accounting talents; Academic qualifications.



INTRODUCTION

With the rapid development of economy and capital market in China, the independent audit performed by accounting firm to the listed company is becoming more and more important. Because of the serious information asymmetry in the securities market, as "rational economic man", investors and operators will pursue their own interests as much as possible. Investors need to judge the company's operating conditions with the help of auditing opinions issued by the CPA about financial reports of the listed companies. It is obvious that audit work performed by CPA is closely related to the interests of general investors.

Audit fee is the pay of accounting firms by providing professional audit services. It not only reflects the audit quality of accounting firms, but also as an important cost expenditure of audited organization, represents requirements of audit quality made by audited organization. In 1980, Simunic^[1] began an empirical study of audit fee. Hereafter, scholars, based on their respective views of researches, brought different variables into Simunic's audit fee multiple linear regression model and conducted researches on influence factors of audit fee. As to listed companies, scholars studied audit fee mainly from aspects of the scale of audited organizations, business complexity level, corporate governance and financial risk. As to accounting firms, scholars studied their influence on audit fee, mostly from whether their scales are Big Four. Human capital is the most important resources of accounting firms and relates directly to the level of their audit quality, thus has an effect on audit fee. However, there is little study on such effect caused by human capital of accounting firms. Based on this, this article takes example by the past research methods, using human capital characteristics of accounting firms as the point of contact, does an empirical research on influence factors of audit fee.

RELATED WORK

Abroad, Libby and Frederick (1990)^[2] thought work experience of auditors will gradually increase with years. After research, they have found the more experienced, the higher audit quality and audit fee will increase accordingly. After research on the human resources of accounting firms in Holland audit market, Brocheler etc. (2004)^[3] found that the audit performance of CPA negatively correlated with age, while educational level of CPA has significant positive correlation with performance. In addition, Chen etc. (2008)^[4] conducted research on the performance and audit quality of Taiwan and found that the longer the assistant auditors are trained, the higher the audit firm achieves performance accordingly. This rule is particularly evident in the large audit firms. But the training for partner of a large accounting firm will only indirectly affect the performance of the firm. Since then, Chen (2009)^[5] also studied the effect of human capital on audit quality of audit firms in Taiwan and found that the human capital significantly affect audit quality in the accounting firms with qualification of listed companies.

In China, because the relevant data of human capital in the accounting firm is difficult to obtain, relative studies began late. Zeng jianguang and Wu lina(2011)^[6] made use of information issued by CICPA (Chinese Institute of Certified Public Accountants) during 2006-2010, of comprehensive assessment Top one hundred accounting firms, and studied human capital of accounting firms and audit fee, which showed that education background of CPA has a significant correlation with audit fee, namely, the higher the percentage of CPA with undergraduate degree or below is, the lower audit fee is, whereas the higher the percentage of CPA with master's degree, including double bachelor's degree, the higher audit fee is; the percentage of CPA with doctor's degree has no significant correlation with audit fee. Moreover, in study they divided CPA into two groups, one group is no more than age 40, another group is more than age 40. The finding is that age of CPA has a significant negative correlation with audit fee, that is, the bigger the percentage of CPA no more than age 40 is, the higher audit fee is; the bigger the percentage of CPA more than age 40 is, the lower audit fee is. LI Jiangtao, Wang dongmei and Yang yuchun (2012)^[7] took the data of listed companies in Shanghai and Shenzhen in 2009 as samplings, studied the influence of auditor's personal characteristics on auditing expense ratio. The result shows that age, profession and practice time have a significant correlation with auditing expense ratio, that is, the younger the auditor is, the closer the profession is with finance and accounting and the longer the practice time is, the higher audit fee is. Shen Jiayi (2011)^[8] studied the relation between human capital characteristics of accounting firms and their income, utilizing Information of Top One Hundred Accounting Firms Comprehensive Assessment issued by CICPA during 2007-2009. The result indicated that the proportion of CPA and CPA younger than age 40 both has a significant positive correlation with income of accounting firms whereas education background of CPA has no significant effect on income of accounting firms.

In conclusion, scholars at home and abroad, usually started with age, education background, profession, proportion and practice time of CPA in studying the effects of human capital of accounting firms on audit fee, ended with different conclusions. For instance, they had opposite views on the effect of auditors' age on audit fee. This may be caused by the sample data selected by scholars from different countries, regions and different year. The author, on the basis of predecessors' findings, choosing the data of the China's A shares companies listed on Shanghai Stock exchange in 2013 and Information of Top One Hundred Accounting Firms Comprehensive Assessment, studies the relation of human capital characteristics of accounting firms with audit fee.

RESEARCH HYPOTHESIS AND VARIABLE DESIGN

Research hypothesis

Based on the previous research methods on the human capital of accounting firms, this article selects the number of CPA and accounting talents, the age and academic qualifications of CPA as substitution variable of human capital characteristics of accounting firms, studies its influence on audit fee by the establishment of multiple regression model.

Audit to listed companies is a very professional job. In order to ensure the quality of audit, maintain the stability of the securities market and protect the interests of the majority of investors, only the CPA can engage in the audit work of the listed company. So it is visible that the CPA is the determinant of audit fee. At the same time, the both sides of supply and demand of audit work consider the number of CPA in accounting firms as an important factor which can impact audit fee. On this basis, this article puts forward the following hypothesis:

Hypothesis 1: The number of CPA positively correlated significantly with audit fee.

It is particularly important for CPA to receive continual professional training and update the knowledge constantly. Through on-the-job training, CPA can improve their professional level and ability, so the audit quality can be improved accordingly. In China, the Ministry of Finance has launched CPA industry leading training project. The training can effectively promote the professional skills and knowledge level of CPA. The more the CPA takes participation with the training project, the higher audit quality and competitiveness, and audit fee will increase accordingly. On this basis, this article puts forward the following hypothesis:

Hypothesis 2: The more the CPA takes part in the industry leading training project, the higher audit fee is.

The age structure of CPA is an important characteristic of accounting firms. To a certain extent, the age can reflect the personal knowledge structure, ability to learn and resilience. Due to the demands of updating professional knowledge in audit work is higher, and the intensity of audit work is generally big, the accounting firms with more young CPA who have much energy, much agile thinking, and be easy to accept new knowledge and be adapted to the changing economic and legal environment, can provide high quality audit services and charge much audit fee. Referring to the practice of predecessors, and dividing the CPA's age by 40 years old, this article put forward the following hypothesis:

Hypothesis 3: The percentage of CPA no more than age 40 are positively correlated significantly with audit fee.

Hypothesis 4: The percentage of CPA more than age 40 has a negative correlation with audit fee.

To a certain extent, the level of education and basic quality of CPA can reflect by academic qualifications. The CPA who have higher degree tend to grasp the overall and systematic professional knowledge, have stronger ability of cognitive and insight, and be easier to accept new ideas, and be more adaptive to change of the environment. The accounting firms which has more highly educated CPA, is more likely to issue a reasonable report, reduce the audit risk, deal accurately with the relevant information, and ensure high quality of audit. On the other hand, the buyer is usually willing to pay higher audit fee for the services provided by CPA with higher academic qualification. On this basis, this article puts forward the following hypothesis:

Hypothesis 5: The percentage of CPA with undergraduate degree or below has a negative correlation with audit fee.

Hypothesis 6: The percentage of CPA with master's degree or above has a positive correlation with audit fee.

Variable selection and the designed model

In order to achieve better effect of linear regression, this article regards the natural logarithm of the audit fee as explained variable. Explanatory variables are the natural logarithm of the number of CPA, number of the industry leading training plan, the percentage of CPA no more than age 40, the percentage of CPA more than age 40, the percentage of CPA with undergraduate degree or below and the percentage of CPA with master's degree or above. At the same time, the scale of listed company, financial risk of listed company, the ratio of accounts receivable to the final total assets of listed company, the ratio of inventory to the final total assets of listed company and the reputation of the accounting firm are regarded as control variables. This article analyses the relationship between human capital characteristics and audit fee by the multiple linear regression model as follows:

$$\text{LnFee} = \beta_0 + \beta_1 \text{InCPA} + \beta_2 \text{Talent} + \beta_3 \text{Young} + \beta_4 \text{Old} + \beta_5 \text{PerBC} + \beta_6 \text{PerMS} + \beta_7 \text{InAsset} + \beta_8 \text{Currt} + \beta_9 \text{Rec} + \beta_{10} \text{Inv} + \beta_{11} \text{Big4} + \varepsilon$$

The specific variables are defined in TABLE 1.

TABLE 1 : All variables used in the model

Variable types	variables	Definition
explained variable	LnFee	The natural logarithm of the audit fee
	InCPA	Natural logarithm of the number of CPA
Explanatory variables	Talent	The number of accounting talents
	Young	The percentage of CPA no more than age 40
	Old	The percentage of CPA more than age 40
	PerBC	The percentage of CPA with undergraduate degree or below
	PerMS	The percentage of CPA with master's degree or above
	LnAsset	Natural logarithm of the final total assets of listed company
	Currt	total current assets /total current liabilities
Control variables	Rec	Accounts receivable/final total assets
	Inv	The stock at the end/total assets
	Big4	Dummy variable, if it is international "big four", value is 1, whereas values is 0

Sample selection and data sources

This article selects the data of the China's A-shares companies listed on Shanghai Stock exchange in 2013 as research samples, excluding the companies that disclosure of audit fee is not standard, finance and insurance companies, the companies that have serious financial risk or be lack of data. Eventually we get 653 samples for empirical analysis. In this article, the data are from the website of Chinese institute of CPA and the Shanghai stock exchange. The information of comprehensive assessment on accounting firms of China stems from Chinese institute of CPA in 2013. The data of this article are sorted, calculated and analyzed by the software of EXCEL and SPSS17.0.

EMPIRICAL ANALYSIS AND RESULTS

Descriptive statistics

From TABLE 2, it can be found that there are big differences among audit fee of listed companies in the Shanghai Stock exchange in 2013. The minimum value of natural logarithm of audit fee is 11.5192, which represents the audit fee is RMB 100000. The maximum value of natural logarithm of audit fee is 16.5394 and the corresponding audit fee is RMB 150 billion. Meanwhile, the big difference existed in the number of CPA and accounting talents shows firm personnel structure and the degree of attention to the talents cultivation is not the same. The average of the percentage of CPA no more than age 40 is 0.6766, and the average of the percentage of CPA more than age 40 is 0.2288. It is shown that employed CPA as a whole tend to be younger, but it can be seen from the maximum and the minimum that age structure of the accounting firms is very different. As to the degree of CPA, from the statistics, it can be seen that CPA with undergraduate degree still account for larger proportion, so it can be judged that degree level of CPA needs to be improved.

TABLE 2 : Descriptive statistics of All variables

	N	minimum	maximum	mean	standard deviation
LnFee	653	11.5129	16.5394	13.5768	0.5887
InCPA	653	4.6250	9.4226	6.0911	0.8202
Talent	653	0.0000	14.0000	4.8469	4.1165
Young	653	0.0077	0.9602	0.6766	0.1464
Old	653	0.0392	0.9923	0.2288	0.0838
PerBC	653	0.2108	0.9792	0.8590	0.1876
PerMS	653	0.0006	0.7581	0.1798	0.0291
LnAsset	653	18.4849	26.4725	22.3597	1.2486
Currt	622	0.0636	9.5002	1.7366	1.3539
Rec	653	0.0000	0.4969	0.0864	0.0958
Inv	653	0.0000	0.9397	0.1879	0.1899
Big4	653	0.0000	1.0000	0.2246	0.3677

Correlation analysis

By the correlation analysis in TABLE 3, it can be seen that InCPA, Talent and LnAsset have positive effect on the LnFee at the level of 1%. The results shown that the more the number of CPA and Talent selected by industry leader training of accounting firm, the higher audit fee is. At the same time, the increasing scale of listed company also can lead to higher audit fee. So hypothesis 1 and 2 are verified preliminarily. In addition, the percentage of CPA more than age 40 is negatively related to the audit fee at level of 5%. So we can find the higher the percentage of CPA more than age 40, the lower audit fee is. The hypothesis 4 is also verified. From TABLE 3, it can be found that Young, Inv and Big4 have positive effect on the LnFee, but it is not significant. PerBS and Currt have negative effect on LnFee, it is not significant also.

In addition, some correlation coefficient between explanatory variables is relatively high, such as correlation coefficient between InCPA and Talent is 0.539, correlation coefficient between Young and PerBC is 0.774. So in this article all explanatory variables are included in the regression model firstly, then, in order to avoid multicollinearity, each variable is included in the regression model for test.

TABLE 3 : Pearson correlation analysis between the variables

	LnFee	InCPA	talent	Young	Old	perBC	perMS	LnAsset	Currt	Rec	Inv	Big4
LnFee	1											
InCPA	.171***	1										
Talent	.188***	.539***	1									
Young	.041	-.151***	.345***	1								
Old	-.088**	-.405***	-.082**	.073*	1							
PerBC	-.005	-.338***	.174***	.774***	.654***	1						
PerMS	.000	.060	.446***	.659***	.037	.417***	1					
LnAsset	.673***	.150***	.111***	-.042	-.053	-.056	-.041	1				
Currt	-.027	.019	-.001	-.049	.015	-.020	-.066*	.038	1			
Rec	-.033	.013	-.015	-.069*	-.013	-.055	-.086**	-.130***	-.052	1		
Inv	.050	-.025	-.034	.030	.021	.030	.050	.113***	-.068*	-.113***	1	
Big4	.037	-.011	.014	.051	-.038	.019	.017	-.006	-.002	-.018	-.032	1

Note: *** means correlation (bilateral) in the level of 0.01, ** means correlation (bilateral) in the level of 0.05, * means correlation (bilateral) in the level of 0.1.

Regression analysis

The result of the regression model of audit fee is shown in TABLE 4. In model 2, LnFee is positive correlated to InCPA significantly at the level of 5%, so hypothesis 1 is verified. We can find that the more CPA in accounting firm by which the audit quality is guaranteed, the higher the audit fee. In model 1 and 3, LnFee is positive correlated to Talent significantly at the level of 1%, so we conclude that accounting talents training can effectively improve the professional level and skills of CPA and strengthen the competitiveness of the accounting firm. Thus audit clients are willing to pay higher audit fee, and hypothesis 2 is confirmed. In model 4, LnFee is positive correlated to Young significantly at the level of 1%, and hypothesis 3 is founded. It can be concluded that CPA no more than 40 years old in accounting firms are the primary sources of wealth. Having energetic body and agile thought, they are more competent to the hard audit work. We can see from model 1 that LnFee is negatively related to the percentage of CPA more than age 40 at the level of 5%, which is consistent with the hypothesis 4. It can be found that the higher the percentage of CPA more than age 40, the lower audit fee. It can be seen from the model 1, 6, and 7 that hypothesis 5 and 6 have not been tested. The reason may be that the performance of CPA with different degree in audit work is the same roughly. As to control variables, it is shown in all models that LnFee is positive correlated to LnAsset significantly at the level of 1% and is negative correlated to Currt significantly at the level of 10%. It can be concluded that the bigger the scale of listed company, the higher the audit fee is, and the stronger the solvency, the lower audit fee is.

TABLE 4 : Analysis of regression results

	1	2	3	4	5	6	7
InCPA	0.000	0.052**					
Talent	0.017***		0.017***				
Young	-0.831			0.315***			
Old	-1.799**				-0.323		
PerBC	1.137**					0.140	
PerMS	-0.563						0.627
LnAsset	0.323***	0.326***	0.325***	0.333***	0.329***	0.332***	0.331***
Currt	-0.023*	-0.024*	-0.023*	-0.022*	-0.023*	-0.023*	-0.023*
Rec	-.303*	0.286	0.303*	0.333*	0.295	0.312*	0.314*
Inv	-0.068	-0.086	-0.077	-0.102	-0.092	-0.098	-0.099
Big4	0.299	0.363	0.344	0.322	0.341	0.349	0.351
R-squared	0.497	0.478	0.486	0.479	0.475	0.475	0.474
Adj R-squared	0.488	0.473	0.481	0.474	0.470	0.470	0.469
F	54.714***	93.961***	97.070***	94.259***	92.813	92.747***	92.395***

Note: *** means correlation (bilateral) in the level of 0.01, ** means correlation (bilateral) in the level of 0.05, * means correlation (bilateral) in the level of 0.1.

CONCLUSIONS

Combining with the information of comprehensive evaluation on accounting firms of China, this article analyses the relationship between human capital characteristics and audit fee based on the data of the China's A-shares companies listed on Shanghai Stock exchange in 2013. The research results shows that there are several explanatory variables that have statistically significant positive effect on audit fee, such as the number of CPA, accounting talents, the percentage of CPA no more than age 40. As to control variable, the scale of the listed companies is positively related to the audit fee. It shows that the larger company scale, the more complex business it has. So more audit cost leads to higher audit fee. The percentage of CPA more than age 40 and company's solvency are negatively related to the audit fee.

According to the above research conclusion, we put forward the following suggestions: Qualified CPA is the key factor to improve the audit fee for accounting firm. So accounting firms should increase investment in human capital, make a reasonable personnel training plan, further strengthen the follow-up professional education, make full use of the advantage of young CPA, so that they can enhance competitiveness in the audit market and the quality of auditing services, then obtain higher audit fee.

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