# RESOURCE ALLOCATION SPECIALIZATION, MARKET RECOGNITION SPECIALIZATION AND AUDIT FEES: EVIDENCE FROM THE CHINESE AUDIT MARKET

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## Abstract

Existing literature on audit industry specialization in Anglo-American countries often measures industry specialization using firms' market share in specific industries from market recognition perspective. This paper contributes to the audit industry specialization research by distinguishing between market recognition specialization and resource allocation specialization, and tests their different effects on audit fees in the Chinese audit market. The results support the hypotheses that market recognition specialization is likely to lead to higher audit fees in the whole audit market, resource allocation specialization is likely to lead to lower audit fees in 'top–ten' audit firms, and there is likely to be no effect of resource allocation specialization on audit fees in 'non–top–ten' audit firms. The findings have implications for the regulators both in China and globally in designing strategies to enhance the functioning of audit firms. Importantly, the findings suggest that economic, political and social contexts of a country cannot be ignored in examining audit industry specialization

**Keywords:** Auditing, Chinese Audit Market, Audit Industry Specialization, Audit Fees, Competitive Strategies of Audit Firms

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## 1 Introduction

As the world's second largest economy, China is beginning to play a dominant role in the global economy. China's global importance is attracting an increasing number of accounting and auditing researchers to examine whether the empirical evidence from Anglo-American countries are applicable to China. Understanding the unique features of Chinese financial market is very important for any direct or indirect market participants all over the world. Specifically, there have been calls in the literature for examining various aspects of the unique audit market in China (DeFond et al. 2000; Wang et al. 2009). However, very few researchers have examined Chinese audit market by focusing on its unique features. This paper provides insights into the structure of Chinese audit market and its effect on accounting firms' strategies and behaviour by examining the relationships between industry specialization and audit fees from two specific perspectives, resource allocation and market recognition. We argue that this distinction is important because of the features of audit market formed by Chinese economic and politic environment.

The importance of examining industry specialization has long been established in the existing literature. Adam Smith (1776) puts forward the idea that the division of labour leading to specialization can boost productivity. Auditing practitioners also believe that industry specialization can make contributions to improving the auditing efficiency and quality (McMeeking et al. 2006; Solomon et al. 1999; Simnett et al. 2000). Based on these ideas, researchers, auditing practitioners and policy–makers have been concerned with the issues on audit industry specialization. Since Zeff and Fossum (1967) examined audit industry specialization in the USA, extensive research has been carried out to examine issues, such as the effect of industry specialization on audit quality (Balsam et al. 2003; Romanus et al. 2008; Mascarenhas et al. 2010) and audit fees (Craswell et al. 1995; Ferguson et al. 2003; Francis et al. 2005; Carson 2009).

Importantly, existing literature on audit industry specialization has largely failed to distinguish industry specialization from resource allocation and market recognition perspectives. Specifically, prior research, which has mainly been conducted in Anglo-American countries, often measures industry specialization using the audit firms' market share in specific industries and defines industry specialization as having the dominant market share in a specific industry by an audit firm. Industry market share has

been measured based on number of clients (DeFond et al. 2000; Mayhew and Wilkins 2003; Balsam et al. 2003; Ferguson et al. 2012), client's total assets (Hogan and Jeter 1999; Wang et al. 2009; Mayhew and Wilkins 2003; Carson 2009) and audit fees (DeFond et al. 2000; Cahan et al. 2011; Habib 2011). Criterion of domination is diversified and arbitrary, such as top 1 to top 3, over the 20 percent or 30 percent of the market share (Pearson and Trompeter 1994; Craswell et al. 1995; Cahan et al. 2011; Ferguson and Stokes 2002). These measures mainly focus on comparison of market share among different audit firms. Specifically, these measures reflect audit firms' reputation of industry specialization recognized by market participants, which tends to be related to market recognition perspective of specialization. However, this perspective mainly focuses on factors which are external to audit firms and ignores those factors which are internal to audit firms, such as resource allocation within specific audit firms. We argue that internal factors are important because these factors result in the formation of specialization and show the strategic significance of specialization within audit firms. These internal factors tend to be related to resource allocation perspective of specialization which reflects the audit firm's investment behaviour in specialization. We therefore suggest that to gain deeper insights into its formation process, industry specialization may be viewed from two perspectives, namely, *market recognition specialization* (MRS) and *resource allocation specialization* (RAS). *Market recognition specialization* (MRS) refers to firm's specialization level in a specific industry compared to other audit firms in the same industry, which reflects the market reputation of audit firm. *Resource allocation specialization* (RAS) refers to firm's specialization level in a specific industry compared to other industries in the same audit firm, which reflects the investment input and resource allocation of the audit firm for strategic purposes.

This paper contributes to the audit industry specialization research by distinguishing between MRS and RAS, and examines their different effects on audit fees. With respect to the effect of industry specialization on audit fees, the results provided by prior research have been mixed. Some findings show that industry specialization leads to audit fee discount (O'Keefe et al. 1994; Mayhew and Wilkins 2003), while other results show that it leads to audit fee premium (DeFond et al. 2000; Craswell et al. 1995; Mayhew and Wilkins 2003; Ferguson et al. 2003). Given the differences in emphases and methods of these studies, the lack of consistent findings is not surprising. Importantly, these studies in Anglo-American countries have largely failed to examine industry specialization from firm's resource allocation perspective by only focusing on market recognition perspective. Their failure to capture RAS, an important force of pricing related to industry specialization, may be a possible explanation for the inconclusive results. Indeed, this differentiation between *market recognition* and *resource allocation* perspectives is important to capture two different forces on audit fee from industry specialization. RAS, which focuses on firm's strategy of resource allocation in specific industry, may reduce audit fee as a result of improved operating efficiency and reduced cost beneficial from the economies of scale in gathering resource allocation. However, MRS, which focuses on firm's leading industry market share, may lead to audit fee premium as a result of the firm's reputation of expert in specific industry. Consistent with the research of DeFond et al. (1999) and Wang et al. (2008) in China, we classify Chinese firms as 'top–ten' vs. 'non–top–ten' based on audit fees[3] for each year in 2009 and 2010. This classification of Chinese firms is because the Chinese government encourages 'top–ten' firms to compete with international firms (DeFond et al. 1999). By analysing the MRS and RAS effects simultaneously, the results of the current study show that in the Chinese audit market of listed companies the negative relationship between RAS and audit fees is significant in the 'top–ten' firms while it is not significant in the 'non–top–ten' firms. Also we find evidence that higher MRS of audit firms is likely to lead to higher audit fees in the Chinese audit market of listed companies.

Indeed, to distinguish MRS and RAS is particularly important in Chinese context. Competition in Chinese audit market is very intense. Audit firms not only compete for clients, but also compete for qualified staff. On the one side, the audit market concentration in China is much lower than in Anglo-American countries. In the American audit market of listed companies, market share of the Big–five was 87 percent[4] in 1996. Comparably, in the Chinese audit market of listed companies the market share of the top–20 audit firms was much lower with only 64.24 percent in 2000. In the Chinese statutory audit market, the average market share of the then Big–five between 1995 and 2003 was 26 precent (Chen et al. 2007). These facts suggest that Chinese audit market with many small and medium size firms are different from the oligopolistic audit markets of Anglo-American countries which are dominated by Big–four. Low audit market concentration increases competition for audit clients. This leads to the price war among audit firms in Chinese audit market, which force the audit firms to think how to reduce the cost by allocating the resource strategically. Specialization bringing economies of scale may be a good way to reduce the cost (Mayhew and Wilkins 2003; Cahan et al. 2011). As such, RAS may be an important strategic consideration for audit firms in China.

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[3] This data is taken from the Chinese Institute of Certified Public Accountants (CICPA).
[4] 'Bigger Pieces of the Audit Pie', Journal of Accountancy, January,1998

On the other side, compared with the demand for independent audit service, the supply of professional qualified staff is relatively scarce. While the accounting profession has experienced rapid growth following the economic reforms, the size of professional accountants in China is still relatively small compared to Anglo-American countries. For example, the proportion of professional accountants per million populations is 1116 in USA and 116 in China in 2009 (details in Appendix 1A). Additionally, the number of CPA per audit firm in China was 13.2 in 2004 and decreased to 11.99 in 2009 (details in Appendix 1B). Furthermore, very low pass rate in CPA examination may also contribute to the small size of CPA. CPA examination is currently blooming because of the high demand of professional accountants which is evidenced by high remuneration package offered by audit firms compared with the other industries. However, CPA examination is considered as one of the hardest professional examinations in China due to its very low pass rate. The pass rate of CPA examination in China from 2004 to 2008[5] ranged from 10.3% to 18.4% (details in Appendix 1C). Given the shortage of qualified professional accountants, it is useful to examine the effect of *RAS* on audit fees in Chinese context.

If studies on industry specialization only focus on firms with leading industry market position, the strategic significance of industry specialization for small and medium size firms would be overlooked. It is argued that small and medium size firms, that may not gain the leading industry market position in specific industry, may still adopt industry specialization strategies. Compared with the Big–four, the Chinese audit firms are still considered as the small and medium size audit firms (details in appendix 1D). In order to examine industry specialization of small and medium size firms, Big–four audit firms have been excluded from the current study.

The remainder of the paper is organized as follows. Section 2 reviews the prior literature and develops the measurement methods used in this paper. Section 3 develops the hypotheses and Section 4 provides the results of study. Section 5 is the conclusions of the paper.

## 2 Specialization measurement development

### 2.1 Measurement methods of the industry specialization in the existing literature

There are three main methods to measure auditor industry specialization in the existing literature,

namely, industry market share, clients' portfolio share and self-advocacy. Each of these is discussed next.

Industry market share was first developed by Zeff and Fossum (1967) and is defined as the percentage of an industry's total assets that are audited by a particular firm over this specific industry's total assets that are audited by all firms. In the existing literature most researchers have used the industry market share to measure industry specialization (Balsam et al. 2003; Low 2004; A.Dunn and Mayhew. 2004; Palmrose 1986; Pearson and Trompeter 1994; Casterella 2004; Francis et al. 2005). However, higher market share may be resulted from a number of factors including firm size, brand name and industry specialization. Industry specialization is only one of several reasons which may lead to higher market share. It is argued that higher market share is influenced by firm size (Neal and Riley 2004). This leadership industry market share method implies that if the audit firms are small or medium, they may not form industry specialization because of their lack of capability in obtaining the dominant industry market share. As such, this method ignores the strategic meaning of industry specialization for the small and medium size audit firms.

Yardley et al. (1992) introduced the clients' portfolio share method, which measures the auditor industry specialization by the percentage of audit fees in specific industries over the total income of the audit firm. This approach focuses on the audit firm itself to measure its industry specialization. However, very few researchers have used this method to measure industry specialization largely because the size of the industry affects the results of the measurement. By using this method, a large number of audit firms may be identified as specializing in the largest industry and very few may be identified as the specializing in the smallest industry (Neal and Riley 2004).

Hogan and Jeter (1999) developed 'self-advocacy' as the third measurement method for industry specialization. This method is based on the claims by the firms that they are specialist in certain specific industries. However, this approach is subjective and relies on audit firms' advertisements. As such, very few researchers have used this method to measure industry specialization. Additionally, Neil and Riley (2004) proposed a combined measure for industry specialization which is results of clients' portfolio share multiplied by industry market share. However, this method lacks economic meanings and has not been further applied in the literature.

### 2.2 The economic meaning of market recognition specialization (MRS) and its measurement

Different measurement methods reveal different underlying concepts of specialization. As discussed earlier, industry specialization can be categorized as MRS and RAS. MRS compares firm's specialization

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[5] We collected the pass rate of CPA examination in China from 2004 to 2008 because the new examination system was adopted in 2009, which separated the examination into two stages, professional stage and comprehensive stage, and added one new subject in professional stage, corporate strategy and risk management.

level among different audit firms within the same industry, while RAS compares firm's specialization level among different industries within the same audit firm.

Although industry market share method ignores the strategic meaning of industry specialization for the small and medium size audit firms, we argue that this method can measure the level of industry specialization recognized by the market, namely, MRS. That is because industry market share can be recognized by stakeholders outside of audit firms and enables the comparison among different firms in the same industry. As the industry market share method compares the market share of different firms within the same industry, the size of firm will have an impact on this indicator. Because of the size impact, big firms are likely to have more industry market shares compared to small or medium firms. Therefore, using the industry market share method, big firms are likely to have higher level of industry specialisation compared to small or medium firms.

A number of indicators that measure market share of firms are available in existing literature, such as total asset of clients (Hogan and Jeter 1999; Wang et al. 2009; Mayhew and Wilkins 2003; Carson 2009), square root of total asset size (Sun and Liu 2011; Behn et al. 2008), audit fees (DeFond et al. 2000; Habib 2011; Cahan et al. 2011) and the number of clients (DeFond et al. 2000; Mayhew and Wilkins 2003; Balsam et al. 2003; Ferguson et al. 2012). Since this paper is examining the influence of MRS on audit fees, it is not logical to calculate market share based on audit fees. Because it is important to differentiate impacts between large and small clients, we calculate the industry market share based on total assets of clients. The formula of MRS is as follows :

$$MRS_{ik} = \frac{\sum_{j=1}^{J_{ik}} CA_{ikj}}{\sum_{i=1}^{I_k} \sum_{j=1}^{J_{ik}} CA_{ikj}}$$

$MRS_{ik}$ = *MRS* of audit firm i in industry k

$CA_{ikj}$ = assets of client j served by audit firm i in industry k

i = 1,2,…,I = an index for audit firms

j = 1,2,…,J = an index for client companies

k = 1,2,…,K = an index for client industries

$I_k$ = the number of audit firms in industry k

$J_{ik}$ = the number of clients served by audit firm i in industry k

### 2.3 The economic meaning of resource allocation specialization (RAS) and its measurement

Recall that, RAS is defined as firm's specialization level in a specific industry compared to other industries in the same audit firm. It is related to firm's strategy of allocating resource. It is a comparison of the different resources inputs level within the firm itself rather than a comparison with other firms. If a firm has allocated relatively more resources to a

specific industry, then it is obvious that the firm will have more clients in this industry than in the others. This will results in richer accumulated audit experience in this specific industry. This richer accumulated audit experience will create a competitive advantage for the audit firm. It is difficult for small and medium firms to occupy dominant position in any industry based on MRS. However, if most clients of the small firm are in one specific industry, it may form RAS even if this small firm has no MRS. Therefore, RAS reveals the strategic meaning of industry specialization for small and medium size firms.

Although clients' portfolio share method has the limitation that the size of the industry affects the results of the measurement as we mentioned before, we argue that this method can be used to measure the level of RAS. In the process of investing and allocating resource, audit firms need to estimate both client factors and firm factors. If a firm wants to adopt RAS as its strategy, it may prefer clients in some specific industries and develop the special competence in these industries. This may lead the firm to form the specific clients' portfolio share. As such, the clients' portfolio share is the result of firms' resource allocation decision and it can be used to measure the level of RAS. By examining the effects of MRS and RAS simultaneously, we can distinguish their different effects on audit fees.

In this paper we select the number of clients to calculate the clients' portfolio share as the measurement of RAS in order to examine the effect of knowledge spillover from specialization (McMeeking et al. 2006). More clients and experience in a specific industry may lead to greater professional knowledge and skills that the firm acquires in this specific industry. This is not dependent on the assets or revenues of the clients. Therefore, the basis of calculating clients' portfolio share should be the number of clients rather than clients' total assets and revenues.

The traditional clients' portfolio share method will be influenced by scales of different industries (Neal and Riley 2004). For example, the number of listed companies in manufacturing industry greatly exceeds the number of listed companies in extractive industry in China. Accordingly, for every audit firm, the number of clients in manufacturing industry may be higher than in other industries. In this paper we address this main limitation of the traditional clients' portfolio share method. To avoid the influence of industry scale, we standardized the number of clients in different industries using Standardized Coefficient to calculate clients' portfolio share of an audit firm in a specific industry. The standardized clients' portfolio share removes the impact of industry scale differences. To simplify the calculation, we select the industry with the largest clients number as the benchmark industry to calculate the Standardized

Coefficient. Therefore, the formula of *RAS* is as follows:

$$RAS_{ik} = \frac{CN_{ik} \times SC_k}{\sum_{k=1}^{K}(CN_{ik} \times SC_k)}$$

$$SC_k = \frac{\text{Clients numeber in benchmark industry}}{\text{Clients number in industry k}}$$

$RAS_{ik}$ = *RAS* of audit firm i in industry k

$CN_{ik}$ = the number of clients served by audit firm i in industry k

$SC_k$ = Standardized Coefficient in industry k

i = 1,2,…,I = an index for audit firms

k = 1,2,…,K = an index for client industries

## 3 Hypotheses formulation

The structural economics approach suggests that there are three dimensions of the audit market, namely, market structure, market strategy and market performance (Gramling and Stone 2001). Market structure reflects the status of a market such as the intensity of competition among suppliers and customers, barriers to entry, the differentiation or homogeneity of products. Market strategy is the process by which organizations allocate theirs limited resources and how they achieve sustainable competitive advantages. Market performance is the extent to which a market efficiently and equitably allocates resources. While the topics on audit market structure and audit market performance have been examined extensively in the literature, very few researchers have examined market strategy of audit firm specialization (Habib 2011). Market strategy relates to human resource policies and portfolio diversification within audit firm. Furthermore, Porter (1985) identified two basic market competitive strategies: product differentiation and cost minimization. As discussed earlier, we classify industry specialization from two different perspectives, namely, MRS and RAS. From the market strategy, industry specialization is a mixed strategy which includes both product differentiation and cost minimization competitive strategies. MRS is related to product differentiation strategy, while RAS is related to cost minimization strategy.

Cahan et al. (2011) argue that some audit firms may pursue product differentiation, others may pursue cost minimization in developing of their industry specialization strategy. We suggest that the industry specialization is a mixed strategy, which may include both these two competitive strategies. However, the existing literature has not differentiated between these two aspects of specialization strategy, which may explain the reasons for the contradictory empirical findings. For example, some findings show that industry specialization leads to audit fee discount (O'Keefe et al. 1994; Mayhew and Wilkins 2003), while other results show that it leads to audit fee premium (DeFond et al. 2000; Craswell et al. 1995; Ferguson et al. 2003; Mayhew and Wilkins 2003). Indeed, audit firms adopting industry specialization strategy may benefit from both product differentiation and cost minimization. It is likely that industry specialization leads to either fee premium or fee discount depending on the dominant effects of MRS or RAS. It is the specific contexts that may determine which aspect of specialization is likely to be dominant, such as the audit market structure, audit firm size and client's bargaining power. This paper only examines the influences of two kinds of industry specialization on audit fees.

### 3.1 Market recognition specialization (MRS) and audit fees

Since the users of audited financial statements cannot judge the audit quality directly, they may use indirect observable signal such as firm reputation (Moizer 1997). A number of researchers have provided the evidence that industry specialization can increase clients' financial reporting quality (Owhoso et al. 2002; Hammersley 2006; Stanley and DeZoort 2007; Romanus et al. 2008). If the specialist identity of the audit firm is recognized by the market, then the reputation of this firm can make its audit product different from other audit firms (Cahan et al. 2011). This differentiation may result in an audit fee premium. As such, MRS related to product differentiation strategy is likely to lead to higher audit fees. Furthermore, evidence shows that companies with higher proportion of independent directors on the board are more likely to select audit firms with higher industry market share to enhance financial reporting quality (Beasley and Petroni 2001; Abbott and Parker 2000). This means that independent directors may recognize the value of audit firm's MRS. When clients demand reputational value which comes from MRS, then they are likely to pay premium for this reputation. Therefore, we propose the following hypothesis:

**H1** : Higher level of *market recognition specialization* (MRS) is likely to lead to higher audit fees.

### 3.2 Resource allocation specialization (RAS) and audit fees

The size of audit firm may also influence the forming of *MRS*. Compared to small and medium size firms, larger size firms are more likely to gain *MRS*. However, *RAS* reveals the strategic meaning of industry specialization for small and medium size firms. *RAS* is related to firms' strategy about the investment input and resource allocation within audit firms, which includes the acceptance of clients, recruitment policy and other human resource policies. If a firm forms *RAS* in one specific industry, then it is likely to realize the economies of scale, and therefore

may cost-efficiently implement the audit by utilizing its accumulated knowledge in this specific industry. This is further supported by the argument of McMeeking et al. (2006, p.209) that "the specialist knowledge could introduce production economies of scale into the audit process…, transforming the auditors involved into more efficient, lower-cost producers of audit". Evidence also shows that industry specialization enables firms to build and maintain their competitive advantage in price competition (Cahan et al. 2011; Eichenseher and Danos 1981; Danos et al. 1989). Therefore, it is suggested that *RAS* is related to the strategy of cost minimization and creates competitive advantage on cost.

Whether this competitive advantage on cost leads to audit fees discount largely depends on the features of audit market and firms. From audit market perspective, more intense competition pressure is more likely to transfer cost reduction to audit fees discount. Our earlier discussion suggests that competition in Chinese audit market is very intense. When a firm gains the competitive advantage on cost, it may then reduce audit fees to attract clients. From the firm's perspective, effect of *RAS* may be observed only after the firm has the increase in number of clients which may then lead to economies of scale. As discussed earlier, we classify Chinese firms as 'top–ten' versus 'non–top–ten'. In 2009 there were 1996 listed companies in China, of which 951 companies were audited by 'top-ten' firms and 924 companies were audited by 'non-top-ten' firms. The mean of number of clients in 'top-ten' firms is significantly larger than in 'non-top-ten' firms (p < 0.01). As such, 'top-ten' firms may have accumulated enough clients to achieve economies of scale from RAS and may reduce audit fees to attract and maintain the clients as competition intensifies. 'Non-top-ten' firms may not have capacity of using RAS to reduce audit fees. Therefore, we propose the following hypotheses:

**H2a** : Higher level of *resource allocation specialization* (RAS) is likely to lead to lower audit fees in 'top–ten' audit firms.

**H2b** : There is likely to be no effect of *resource allocation specialization* (RAS) on level of audit fees in 'non–top–ten' audit firms.

## 4 Hypotheses testing

### 4.1 *Testing model and variables*

Audit fees are regressed on the model consistent with the prior studies (Ferguson et al. 2003; Carson 2009; Cahan et al. 2011; Simunic 1980).

$$Ln\ (fee\ ) = \partial + b_0 + \sum_{j=1}^{n} b_i X_i$$

We use the method developed in Part 2 of this paper to measure RAS and MRS. We add RAS and MRA to the model to distinguish the different effects between RAS and MRS on audit fees. All variables in the model are listed in Table 1 (details in Appendix 2). The control variables Location1 and Location2 measure the location features of clients and audit firms respectively. When clients are located in Beijing, Shanghai, Tianjin and Guangzhou, the value of Location1 is 1, otherwise it is 0. When audit firms are located in Beijing, Shanghai, Tianjin and Guangzhou, the value of Location2 is 1, otherwise it is 0. The choice of these control variable is based on the context that there is a significant regional difference in Chinese audit market (Yu 2001). The choice of the other control variables, such as natural log of client's total assets (LTA), Square of subsidiaries number (SUBS), is consistent with prior studies (Craswell et al. 1995; Ferguson et al. 2003; Francis et al. 2005; Simon and Francis 1988). The OLS regression model is specified as follows:

Add RAS to the model:

$$LAF = b_0 + b_1 RAS + b_2 LTA + b_3 SUBS + b_4 FOREIGN + b_5 QUICK + b_6 ROI$$
$$+ b_7 LOSS + b_8 AUDITCHA + b_9 LOCATION\ 1 + b_{10} LOCATION\ 2 + b_{11} BIG\ 10 + \varepsilon$$

Add MRS to the model:

$$LAF = b_0 + b_1 MR\ S + b_2 LTA + b_3 SUBS + b_4 FOREIGN + b_5 QUICK + b_6 ROI$$
$$+ b_7 LOSS + b_8 AUDITCHA + b_9 LOCATION\ 1 + b_{10} LOCATION\ 2 + b_{11} BIG\ 10 + \varepsilon$$

Add both RAS and MRA to the model to distinguish the different effects between *RAS* and *MRS* and this model is our key model:

$$LAF = b_0 + b_1 RAS + b_2 MR\ S + b_3 LTA + b_4 SUBS + b_5 FOREIGN + b_6 QUICK + b_7 ROI$$
$$+ b_8 LOSS + b_9 AUDITCHA + b_{10} LOCATION\ 1 + b_{11} LOCATION\ 2 + b_{12} BIG\ 10 + \varepsilon$$

Most of the existing literature arbitrarily set up a threshold criterion and use the binary variables to measure industry specialization. We do not use the binary judgment method because there is no consistent criterion in the existing literature and this method may fail to capture the effect of industry

specialization on audit fees. As such, we use the continuous variable and do not set up the any specific criterion to measure MRS and RAS in our paper.

### 4.2 Sample and data collection

We collected relevant financial information of companies listed on the Shanghai and Shenzhen Stock Exchange between 2009 and 2010 from GTA's China Stock Market and Accounting Research Database (GTA's CSMAR database). The number of subsidiaries was collected from annual financial statements of companies in 2009 and 2010. Additionally, only A-shares[6] market data is used in this study because A-shares are offered only to domestic investors and capture the main features of Chinese market. The classification of industries is according to "Listed Company Industry for Classification" issued by the China Securities Regulatory Commission (CSRC). According to the primary industry classification 59% of the listed companies belong to manufacturing industry in 2009 and 60% of the listed companies belong to manufacturing industry in 2010. As such we use the secondary classification in manufacturing industry. Therefore, there are a total of 22 industries. We have applied the following filter to the data:

(1) Exclude observations of financial and insurance companies because their accounts are special and lack of comparability with other industries.

(2) Exclude observations of listed companies that did not disclose their annual audit fees.

(3) Exclude listed companies audited by the Big–four.

(4) Exclude observations of listed companies whose relevant financial information is missing.

This provides a total of 1129 companies in 2009 and 1103 companies in 2010. Of these companies, 49% in 2009 and 2010 were audited by 'top–ten' firms. The others companies were audited by 'non–top–ten' firms. The detailed number of usable observations is listed in Table 2 (details in Appendix 2).

### 4.3 Descriptive statistics

In this section we report descriptive statistics using data in 2009 and 2010. Table 3 is the descriptive statistics of sample variable. Table 4 is the group descriptive statistics of 'top–ten' and 'non–top–ten' and *t-test* results. Table 4 shows that most of the variables in the 'top–ten' and 'non–top–ten' are

significantly different. Thus, it is necessary to examine by group.

### 4.4 Regression results

In order to examine the different influence between MRS and RAS on audit fees, we carry out regression of three models. Models 1 and 2 test the effects of MRS and RAS respectively. Model 3 tests their effects simultaneously.

Tables 5 and 6 respectively show the regression results based on overall samples of models 1, 2 and 3 in 2009–2010. Regression results of model 1 show that MRS and audit fees are positively correlated (p <0.05). Regression results of model 2 show that there is no significant correlation between RAS and audit fees. In model 3, the results show that MRS and audit fees are positively correlated, but there is no significant correlation between RAS and audit fees. The results support the hypothesis H1 that higher level of MRS leads to higher audit fees. It is suggested that the insignificant results about RAS may be because of the overall low level of RAS in the Chinese audit market. In the following section we further distinguish between 'top–ten' and 'non–top–ten' to test the effect of RAS on audit fees.

The descriptive statistics in Table 4 show that mean differences between 'top–ten' and 'non–top–ten' are significantly different between MRS and RAS. Therefore, we examine hypotheses H2a and hypotheses H2b separately between 'top–ten' and 'non–top–ten'.

Tables 7 and 8 respectively show the regression results of the three models based on the 'top–ten' in 2009–2010. In model 1, relationship of MRS and audit fees are positively correlated (p <0.05) in 2009, while the data of 2010 shows no significant correlation. In model 2, there is no significant correlation between RAS and audit fees in 2009, while in 2010 there is negative correlation (p <0.01). The model 3 shows MRS and audit fees are positively correlated (p <0.01) in 2009 and 2010, while RAS and audit fees are negatively correlated (p <0.01). The results in Tables 7 and 8 support the hypothesis H2a that higher level of RAS leads to lower audit fees in 'top–ten' audit firms.

Tables 9 and 10 show that in the sample of 'non–top–ten' there is no correlation between RAS and audit fees in 2009 and 2010. Thus, the results support the hypothesis H2b that there is no effect of RAS on level of audit fees in 'non–top–ten' firms. A possible reason of this finding may be that the number of clients in 'non–top–ten' firms may not lead to economies of scale. An alternative explanation may be that 'non–top–ten' firms in China may not have accumulated enough industry specialized knowledge to reduce audit cost. As such, the audit fees discount effect of RAS may not be seen. It is also worth noting that MRS of 'non–top–ten' shows no significant positive correlation with audit fees in 2009. A

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[6] There are two types of shares traded on the Chinese Stock Exchanges: A-share and B-share. A-shares are offered only to domestic investors and transacted in Chinese currency (RMB). B-shares are offered to foreign investors and transacted using U.S. dollars in Shanghai Stock Exchange or Hong Kong dollars in Shenzhen Stock Exchange.

possible reason for this may be because of the fierce competition among 'non–top–ten' firms. These differences between 'top–ten' and 'non–top–ten' show the dualistic character of Chinese audit market.

## 5 Conclusions

Existing literature on auditor industry specialization in Anglo-American countries often measures industry specialization using the firms' market share in specific industries. This perspective focuses on factors which are external to firms and ignores those factors which are internal to firms, such as resource allocation within specific firms. We suggest that it is important to take into account this aspect of resource allocation. This paper contributes to the industry specialization research by distinguishing between MRS and RAS.

The objective of this paper is to examine the influence of RAS and MRS on audit fees in the Chinese audit market. RAS focuses on firm's strategy of resource allocation in specific industry, while MRS focuses on firm's market reputation about industry market share. The results show that in 'top–ten' firms, RAS and audit fees are negatively correlated, which support the hypothesis that higher level of RAS is likely to lead to lower audit fees in 'top–ten' firms. This result implies that 'top–ten' firms can achieve competitive advantage to reduce audit fees by RAS. In 'non–top–ten' firms, the negative correlation between RAS and audit fees is not significant, which support the hypothesis that there is likely to be no effect of RAS on level of audit fees in 'non–top–ten' firms. This result implies that RAS level of 'non–top–ten' firms is not high enough to reduce audit fees. These firms have not benefited from RAS strategy because of the size limitation. The evidence partially supports hypothesis that higher level of MRS is likely to lead to higher audit fees. The results in the total sample and 'top–ten' firms show that MRS shows significant positive correlations with audit fees, while this result is not applicable to the 'non–top–ten' audit firms. These different results also show that it is important to distinguish between 'top–ten' and 'non–top–ten' in the Chinese audit market.

The results of the study have implications for the Chinese government, regulators, audit firms, accounting information users and researchers. By understanding industry specialization and audit fees in the Chinese audit market, national regulators, such as Ministry of Finance (MOF), China Securities Regulatory Commission (CSRC), Chinese Institution of Certified Public Accountants (CICPA), may design strategies to improve the functioning of audit market. The findings suggest that Chinese government may provide additional guidance to the 'non–top–ten' audit firms in order to enhance the functioning of audit firms using industry specialization strategies. Additionally, the findings may interest Big–four firms and global standard setters, such as International Federation of Accountants (IFAC) and International

Auditing and Assurance Standards Board (IAASB), in understanding the importance of economic, political and social contexts in which auditing functions. Moreover, by understanding the unique features of the Chinese audit market, accounting information users may have better insights into the Chinese capital market characteristics. Furthermore, the theoretical and methodological enhancement in this paper is useful for future researchers examining industry specialization and audit fees in various countries. It is important to understand that Anglo-American measures of industry specialization are not likely to provide adequate insights into the Chinese audit market. This paper also shows that it is important for researchers to question whether the findings of Anglo-American countries are applicable to other audit markets. Importantly, economic, political and social contexts of countries cannot be ignored in researching industry specialization.

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# Appendices
## Appendix 1

**A:** Comparison of the Size of Professional Accountants in China and USA in 2009

| Country | Population | Number of Professional Accountants[7] | Proportion of Professional Accountants per Million Population |
|---|---|---|---|
| China | 1.3345 billion-(1) | 155 000-(2) | 116 |
| USA | 0.307 billion-(3) | 342 562-(4) | 1116 |

Source:

(1) http://www.stats.gov.cn/english/newsandcomingevents/t20120120_402780233.htm

(2) http://www.gov.cn/jrzg/2009-10/03/content_1432214.htm

(3) http://en.wikipedia.org/wiki/Demographics_of_the_United_States

(4) 2010-2011 AICPA Annual Report http://www.aicpa.org/About/AnnualReports/Pages/ 2010-2011AICPAAnnualReport.aspx

**B:** 2005-2008 Number of CPA in Audit firm in China

| Year | CPA in Audit Firm | Audit Firm | CPA per Audit Firm |
|---|---|---|---|
| 2009 | 91 149 | 7 605 | 11.99 |
| 2008 | 85 855 | 7 284 | 11.79 |
| 2007 | 77 345 | 7 012 | 11.03 |
| 2006 | 72 048 | 6 458 | 11.16 |
| 2005 | 69 283 | 5 355 | 12.94 |
| 2004 | 65 456 | 4 958 | 13.2 |

Source: http://baike.esnai.com/view.aspx?CThesaurus=t&w=%bb%e1%bc%c6%ca%a6%ca%c2%ce%f1%cb%f9

**C:** 2005-2008 Pass Rate of CPA Examination in China

| Year | Accounting | Auditing | Financial and Cost Management | Economic Law | Tax Law |
|---|---|---|---|---|---|
| 2008 | 10.79% | 15.06% | 15.26% | 17.98% | 13.56% |
| 2007 | 12.66% | 13.95% | 18.41% | 17.09% | 11.08% |
| 2006 | 12.87% | 13.22% | 14.50% | 16.69% | 17.34% |
| 2005 | 11.22% | 10.93% | 13.92% | 12.47% | 18.19% |
| 2004 | 10.32% | 10.04% | 12.61% | 12.68% | 11.66% |

Source: collected according to the statistic data provided by Chinese Institute of Certified Public Accountants (CICPA)

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[7] Professional accountants refer to members of professional accounting bodies.

**D:** 2009-2010 Audit Revenues of Big-four Firms and 'Top–ten' Firms in China

| Name of Auditing Firm | Year's Revenues in 2010 (thousand RMB¥) | Year's Revenues in 2009 (thousand RMB¥) |
|---|---|---|
| **Big-four Firms in China** | | |
| PricewaterhouseCoopers China | 2 960 650 | 2 578 433 |
| Deloitte China | 2 600 071 | 2 370 252 |
| Ernst & Young China | 2 094 125 | 2 221 099 |
| KPMG China | 1 862 027 | 1 960 636 |
| **'Top–ten' Firms in China** | | |
| RSM China Certified Public Accountants | 1 039 294 | 872 051 |
| BDO China Shu Lun Pan Certified Public Accountants LLP | 817 250 | 662 664 |
| Crowe Horwath China | 702 447 | 532 255 |
| Pan-China Certified Public Accountants | 650 344 | 502 660 |
| Shinewing Certified Public Accountants | 563 954 | 518 600 |
| PKF Daxin Certified Public Accountants LLP | 639 561 | 516 761 |
| Da Hua Certified Public Accountants | 559 962 | 510 857 |
| Vocation International Certified Public Accountant Co., Ltd. | 516 563 | 413 161 |
| China Audit Asia Pacific Certified Public AccountantsCo.,Ltd. | 487 323 | 400 654 |
| Ascenda Certified Public Accountants | 442 262 | 387 579 |

Source: collected according to the statistic data provided by Chinese Institute of Certified Public Accountants (CICPA)

## Appendix 2

**Table 1.** Variable definition

| Variables | Definition | Expected Symbols |
|---|---|---|
| Dependent Variable | | |
| LAF | Natural log of audit fees paid by listed company | |
| Independent Variables | | |
| RAS | Standardized clients' portfolio share of audit firm i in j industry based on the number of clients | - |
| MRS | Market share audit firm i in j industry based on the client's total assets | + |
| Control Variable | | |
| LTA | Natural log of client's total assets | + |
| SUBS | Square root of subsidiaries number | + |
| FOREIGN | Square root of overseas subsidiaries number | + |
| QUICK | liquidity ratio | - |
| ROI | Return on Total assets | - |
| LOSS | Whether there is a loss of clients in recent 3 years. If yes ,LOSS=1,or LOSS=0; | + |
| AUDITCHA | Whether client changes audit firms ,if yes, AUDTICHA=1,  or, AUDTICHA =0; | +/- |
| LOCATION1 | Location features of clients. If they are in Beijing,Shanghai,Tianjin,Guangdong and Zhejiang, LOCATION1 =1,  or, LOCATION1=0 | + |
| LOCATION2 | Location features of audit firms. If they are in Beijing,Shanghai,Tianjin,Guangdong and Zhejiang, LOCATION2 =1,  or, LOCATION2=0 | + |
| BIG10 | The reputation and size of audit firms. If the firm rank 'Top–ten', BIG10=1,or, BIG10=0 | + |

**Table 2.** Effective samples

| Year | The Company Number Audited by 'Top–ten' | The Company Number Audited by 'Non–top–ten' | Total |
|------|------|------|------|
| 2009 | 552 | 577 | 1129 |
| 2010 | 546 | 557 | 1103 |

**Table 3.** The descriptive statistics of variables（2009 and 2010）

| | N | Mean | Median | Standard Deviation |
|------|------|------|------|------|
| **2009** | | | | |
| LAF | 1129 | 13.217 | 13.122 | 0.545 |
| LTA | 1129 | 21.583 | 21.620 | 1.306 |
| SUBS | 1129 | 2.969 | 2.828 | 1.660 |
| FOREIGN | 1129 | 0.284 | 0.000 | 0.675 |
| QUICK | 1129 | 1.038 | 0.755 | 1.243 |
| ROI | 1129 | 0.043 | 0.047 | 0.151 |
| LOSS | 1129 | 0.310 | 0.000 | 0.463 |
| AUDITORCHA | 1129 | 0.178 | 0.000 | 0.383 |
| LOCATION#1 | 1129 | 0.349 | 0.000 | 0.477 |
| LOCATION#2 | 1129 | 0.743 | 1.000 | 0.437 |
| Big10 | 1129 | 0.489 | 0.000 | 0.500 |
| RAS | 1129 | 0.089 | 0.070 | 0.080 |
| MRS | 1129 | 0.055 | 0.045 | 0.035 |
| **2010** | | | | |
| | N | Mean | Median | Standard Deviation |
| LAF | 1103 | 13.302 | 13.218 | 0.599 |
| LTA | 1103 | 21.762 | 21.793 | 1.367 |
| SUBS | 1103 | 3.101 | 2.828 | 1.835 |
| FOREIGN | 1103 | 0.267 | 0.000 | 0.653 |
| QUICK | 1103 | 1.595 | 1.253 | 1.562 |
| ROI | 1103 | 0.043 | 0.035 | 0.123 |
| LOSS | 1103 | 0.259 | 0.000 | 0.438 |
| AUDITORCHA | 1103 | 0.077 | 0.000 | 0.267 |
| LOCATION#1 | 1103 | 0.345 | 0.000 | 0.475 |
| LOCATION#2 | 1103 | 0.748 | 1.000 | 0.434 |
| Big10 | 1103 | 0.495 | 0.000 | 0.500 |
| RAS | 1103 | 0.092 | 0.075 | 0.073 |
| MRS | 1103 | 0.066 | 0.033 | 0.080 |

**Table 4.** Descriptive statistics of 'Top–ten' and 'Non–top–ten' and the test results of mean differences (2009 and 2010)

| | 2009 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Samples of 'Top–ten' (N=552) | | | Samples of 'Non–top–ten' (N=577) | | | The Mean Difference |
| | Mean | Median | Standard Deviation | Mean | Median | Standard Deviation | T value |
| LAF | 13.303 | 13.234 | 0.590 | 13.134 | 13.122 | 0.485 | 5.259*** |
| LTA | 21.726 | 21.658 | 1.373 | 21.446 | 21.557 | 1.224 | 3.621*** |
| SUBS | 3.108 | 3.000 | 1.753 | 2.836 | 2.646 | 1.556 | 2.759*** |
| FOREIGN | 0.327 | 0.000 | 0.718 | 0.243 | 0.000 | 0.629 | 2.095** |
| QUICK | 0.980 | 0.785 | 0.906 | 1.094 | 0.728 | 1.495 | -1.550 |
| ROI | 0.041 | 0.048 | 0.153 | 0.045 | 0.045 | 0.149 | -0.417 |
| LOSS | 0.312 | 0.000 | 0.464 | 0.308 | 0.000 | 0.462 | 0.113 |
| AUDITORCHA | 0.248 | 0.000 | 0.432 | 0.111 | 0.000 | 0.314 | 6.079*** |
| LOCATION1 | 0.389 | 0.000 | 0.488 | 0.310 | 0.000 | 0.463 | 2.797*** |
| LOCATION2 | 0.861 | 1.000 | 0.347 | 0.631 | 1.000 | 0.483 | 9.207*** |
| RAS | 0.068 | 0.065 | 0.030 | 0.109 | 0.079 | 0.104 | -8.891*** |
| MRS | 0.073 | 0.072 | 0.033 | 0.038 | 0.034 | 0.028 | 19.167*** |
| | 2010 | | | | | | |
| | Samples of 'Top–ten' (N=546) | | | Samples of 'Non–top–ten' (N=557) | | | The Mean Difference |
| | Mean | Median | Standard Deviation | Mean | Median | Standard Deviation | T value |
| LAF | 13.406 | 13.305 | 0.660 | 13.201 | 13.162 | 0.513 | 5.733*** |
| LTA | 21.926 | 21.861 | 1.446 | 21.602 | 21.751 | 1.265 | 3.961*** |
| SUBS | 3.145 | 3.000 | 1.716 | 3.058 | 2.828 | 1.945 | 0.790 |
| FOREIGN | 0.319 | 0.000 | 0.726 | 0.216 | 0.000 | 0.569 | 2.621** |
| QUICK | 1.586 | 1.260 | 1.376 | 1.605 | 1.250 | 1.726 | -0.203 |
| ROI | 0.045 | 0.036 | 0.128 | 0.041 | 0.034 | 0.117 | 0.544 |
| LOSS | 0.255 | 0.000 | 0.436 | 0.264 | 0.000 | 0.441 | -0.353 |
| AUDITORCHA | 0.073 | 0.000 | 0.261 | 0.081 | 0.000 | 0.273 | -0.469 |
| LOCATION1 | 0.388 | 0.000 | 0.488 | 0.302 | 0.000 | 0.459 | 3.036** |
| LOCATION2 | 0.861 | 1.000 | 0.346 | 0.637 | 1.000 | 0.481 | 8.864*** |
| RAS | 0.073 | 0.065 | 0.040 | 0.111 | 0.088 | 0.091 | -9.017*** |
| MRS | 0.102 | 0.079 | 0.092 | 0.031 | 0.018 | 0.044 | 16.445*** |

***、**、*respectively means the significance level "1%"、"5%"、"10%"

**Table 5.** Regression results of overall samples in three models (2009)

| | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | T value | Coefficient | T value | Coefficient | T value |
| LTA | 0.475*** | 18.480 | 0.473*** | 18.079 | 0.474*** | 18.452 |
| SUBS | 0.239*** | 8.877 | 0.239*** | 8.831 | 0.239*** | 8.876 |
| FOREIGN | 0.057** | 2.328 | 0.057** | 2.308 | 0.058** | 2.330 |
| QUICK | -0.025 | -1.134 | -0.024 | -1.089 | -0.025 | -1.147 |
| ROI | 0.036 | 1.586 | 0.034 | 1.530 | 0.036 | 1.594 |
| LOSS | 0.060** | 2.496 | 0.058** | 2.431 | 0.059** | 2.479 |
| AUDITORCHA | -0.106*** | -4.718 | -0.112*** | -4.994 | -0.108*** | -4.751 |
| LOCATION1 | 0.089*** | 3.689 | 0.089*** | 3.664 | 0.089*** | 3.683 |
| LOCATION2 | 0.038 | 1.597 | 0.044* | 1.813 | 0.040* | 1.667 |
| Big10 | 0.050* | 1.939 | 0.086*** | 3.720 | 0.056** | 2.016 |
| RAS | | | 0.023 | 1.001 | 0.014 | 0.578 |
| MRS | 0.063** | 2.526 | | | 0.058** | 2.183 |
| F-statistic | 95.528 (p<0.001) | | 94.584 (p<0.001) | | 87.543 (p<0.001) | |
| Adjusted R² | 0.480 | | 0.477 | | 0.479 | |
| Sample size | 1129 | | 1129 | | 1129 | |

***、**、*respectively means the significance level "1%"、"5%"、"10%"

**Table 6.** Regression Results of Overall Samples in Three Models (2010)

| Variables | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| | Coefficient | T value | Coefficient | T value | Coefficient | T value |
| LTA | 0.521*** | 20.838 | 0.535*** | 21.689 | 0.520*** | 20.776 |
| SUBS | 0.186*** | 7.408 | 0.192*** | 7.647 | 0.186*** | 7.415 |
| FOREIGN | 0.079*** | 3.261 | 0.084*** | 3.488 | 0.078*** | 3.246 |
| QUICK | -0.013 | -.583 | -0.015 | -.696 | -0.012 | -0.557 |
| ROI | 0.083*** | 3.682 | 0.079*** | 3.500 | 0.083*** | 3.664 |
| LOSS | 0.045* | 1.900 | 0.043* | 1.802 | 0.046* | 1.923 |
| AUDITORCHA | -0.022 | -1.016 | -0.021 | -.951 | -0.022 | -0.978 |
| LOCATION1 | 0.106*** | 4.501 | 0.106*** | 4.509 | 0.105*** | 4.468 |
| LOCATION2 | 0.018 | 0.749 | 0.018 | .752 | 0.016 | 0.654 |
| Big10 | 0.050** | 2.021 | 0.080*** | 3.451 | 0.041 | 1.533 |
| RAS | | | 0.000 | 0.007 | -0.024 | -1.002 |
| MRS | 0.072*** | 2.837 | | | 0.081*** | 3.009 |
| F-statistic | 94.681 (p<0.001) | | 93.414 (p<0.001) | | 86.875 (p<0.001) | |
| Adjusted R2 | 0.483 | | 0.480 | | 0.483 | |
| Sample size | 1103 | | 1103 | | 1103 | |

\*\*\*、\*\*、\*respectively means the significance level "1%"、"5%"、"10%"

**Table 7.** Regression Results of 'Top–ten' Samples in Three Models（2009）

| Variables | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| | Coefficient | T value | Coefficient | T value | Coefficient | T value |
| LTA | 0.498*** | 13.877 | 0.507*** | 14.113 | 0.496*** | 13.969 |
| SUBS | 0.225*** | 5.986 | 0.225*** | 5.965 | 0.232*** | 6.232 |
| FOREIGN | 0.072** | 2.071 | 0.072** | 2.076 | 0.071** | 2.079 |
| QUICK | -0.033 | -1.102 | -0.031 | -1.018 | -0.024 | -0.790 |
| ROI | 0.048 | 1.562 | 0.046 | 1.473 | 0.059* | 1.905 |
| LOSS | 0.087*** | 2.631 | 0.082** | 2.488 | 0.101*** | 3.058 |
| AUDITORCHA | -0.172*** | -5.541 | -0.180*** | -5.804 | -0.167*** | -5.455 |
| LOCATION1 | 0.083** | 2.512 | 0.080** | 2.402 | 0.074** | 2.255 |
| LOCATION2 | 0.026 | 0.830 | 0.026 | 0.841 | 0.005 | 0.150 |
| RAS | | | -0.032 | -1.054 | -0.143*** | -3.558 |
| MRS | 0.068** | 2.269 | | | 0.165*** | 4.096 |
| F-statistic | 61.206 (p<0.001) | | 60.353 (p<0.001) | | 57.992 (p<0.001) | |
| Adjusted R2 | 0.522 | | 0.519 | | 0.532 | |
| Sample size | 552 | | 552 | | 552 | |

\*\*\*、\*\*、\* respectively means the significance level "1%"、"5%"、"10%"

**Table 8.** Regression Results of 'Top–ten' Samples in Three Models（2010）

| | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| **Variables** | **Coefficient** | **T value** | **Coefficient** | **T value** | **Coefficient** | **T value** |
| LTA | 0.548*** | 15.136 | 0.561*** | 15.785 | 0.545*** | 15.201 |
| SUBS | 0.206*** | 5.596 | 0.215*** | 5.896 | 0.209*** | 5.758 |
| FOREIGN | 0.094*** | 2.779 | 0.095*** | 2.824 | 0.085** | 2.520 |
| QUICK | -0.045 | -1.490 | -0.048 | -1.584 | -0.040 | -1.329 |
| ROI | 0.063** | 2.033 | 0.060* | 1.934 | 0.069** | 2.240 |
| LOSS | 0.071** | 2.171 | 0.070** | 2.162 | 0.075** | 2.319 |
| AUDITORCHA | 0.012 | 0.380 | 0.023 | 0.754 | 0.021 | 0.690 |
| LOCATION1 | 0.125*** | 4.012 | 0.124*** | 3.978 | 0.121*** | 3.921 |
| LOCATION2 | 0.026 | 0.854 | 0.021 | 0.695 | 0.017 | 0.573 |
| RAS | | | -0.078*** | -2.620 | -0.120*** | -3.566 |
| MRS | 0.035 | 1.103 | | | 0.094*** | 2.649 |
| F-statistic | 60.293（p<0.001） | | 61.492（p<0.001） | | 57.169（p<0.001） | |
| Adjusted R2 | 0.521 | | 0.526 | | 0.531 | |
| Sample size | 546 | | 546 | | 546 | |

\*\*\*、\*\*、\* respectively means the significance level "1%"、"5%"、"10%"

**Table 9.** Regression Results of 'Non–top–ten' Samples in Three Models（2009）

| | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| **Variables** | **Coefficient** | **T value** | **Coefficient** | **T value** | **Coefficient** | **T value** |
| LTA | 0.444*** | 11.777 | 0.443*** | 11.743 | 0.443*** | 11.726 |
| SUBS | 0.263*** | 6.630 | 0.265*** | 6.686 | 0.263*** | 6.649 |
| FOREIGN | 0.038 | 1.040 | 0.038 | 1.054 | 0.038 | 1.048 |
| QUICK | -0.023 | -0.687 | -0.022 | -0.656 | -0.023 | -0.696 |
| ROI | 0.022 | 0.646 | 0.023 | 0.677 | 0.023 | 0.689 |
| LOSS | 0.028 | 0.772 | 0.028 | 0.787 | .028 | 0.765 |
| AUDITORCHA | 0.000 | -0.026 | -0.011 | -0.321 | -0.007 | -0.220 |
| LOCATION1 | 0.093** | 2.558 | 0.092** | 2.520 | 0.092** | 2.537 |
| LOCATION2 | 0.040 | 1.115 | 0.049 | 1.366 | 0.047 | 1.287 |
| RAS | | | 0.046 | 1.397 | 0.038 | 1.090 |
| MRS | 0.037 | 1.128 | | | 0.025 | 0.716 |
| F-statistic | 39.717（p<0.001） | | 39.832（p<0.001） | | 36.226（p<0.001） | |
| Adjusted R2 | 0.402 | | 0.403 | | 0.402 | |
| Sample size | 577 | | 577 | | 577 | |

\*\*\*、\*\*、\* respectively means the significance level "1%"、"5%"、"10%"

**Table 10.** Regression Results of 'Non–top–ten' Samples in Three Models（2010）

| | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| **Variables** | **Coefficient** | **T value** | **Coefficient** | **T value** | **Coefficient** | **T value** |
| LTA | 0.487*** | 13.164 | 0.513*** | 14.176 | 0.488*** | 13.073 |
| SUBS | 0.183*** | 4.976 | 0.192*** | 5.195 | 0.183*** | 4.972 |
| FOREIGN | 0.031 | 0.880 | 0.032 | 0.902 | 0.031 | 0.876 |
| QUICK | 0.020 | 0.615 | 0.024 | 0.710 | 0.020 | 0.615 |
| ROI | 0.108*** | 3.041 | 0.114*** | 3.196 | 0.108*** | 3.033 |
| LOSS | 0.017 | 0.469 | 0.018 | 0.475 | 0.017 | 0.468 |
| AUDITORCHA | -0.050 | -1.480 | -0.057* | -1.698 | -0.050 | -1.481 |
| LOCATION1 | 0.090** | 2.463 | 0.094** | 2.547 | 0.090** | 2.462 |
| LOCATION2 | 0.023 | 0.645 | 0.028 | 0.771 | 0.024 | 0.649 |
| RAS | | | 0.044 | 1.320 | 0.003 | 0.079 |
| MRS | 0.099*** | 2.866 | | | 0.098** | 2.539 |
| F-statistic | 38.813 （p<0.001） | | 37.722 （p<0.001） | | 35.221 （p<0.001） | |
| Adjusted R2 | 0.405 | | 0.398 | | 0.404 | |
| Sample size | 557 | | 557 | | 557 | |

\*\*\*、\*\*、\* respectively means the significance level "1%"、"5%"、"10%"