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The Impact of China's Recent Structural Reforms on Listed Firms' Auditor Choice

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Abstract This paper studies the tendency towards developing China's national accounting industry against the international Big 4 accounting firms. Studying a Chinese sample from 2003 to 2014, covering the recent structural reforms (i.e., the Split-share Structure Reform (SSSR) in 2005 and the announcement of Document 56 in 2009) the paper concludes that such reforms increased the tendency to hire higher quality national audit firms compared with the international Big 4 audit firms and other small audit firms. This study also highlights the role of market development in improving the likelihood of hiring high quality auditors, and how it counteracts the state influence over the firm's auditor choice. By splitting high quality accounting firms into: the international Big 4 and the Chinese national Big 6, this paper extends the literature on political economy and auditor choice and explains how China is developing its national accounting industry through issuing state policies and restructuring the accounting industry.

Keywords Auditor Choice, Split-share Structure Reform, State Ownership, China

1. Introduction

This paper investigates how audit firms are selected in China over the period 2003 to 2014 before and after the Split-share Structure Reform. Studies of audit choice in developed stock market economies such as the UK and the US typically do so in the context of modelling the demand for 'high quality' audits in an environment of dispersed ownership. In China, however, concentrated ownership is dominant. In particular, there are three important issues to take into account when studying the auditor selection process in China over the study period. These issues concern particular features of the Chinese listed firm environment that can cause audit firm choice determinants to differ from those in more well-developed capitalist economies. First, dispersed ownership has not been a characteristic of listed Chinese firms over this period. In particular, many listed firms were, and still are, controlled by the Chinese state, in one of its guises, which might in turn impact the incentives of the firm towards selecting a high quality audit firm. As is common, we refer to these firms as State-owned Enterprises (SOEs). Wang et al. [1] argue that Chinese SOEs tend to hire small, local, audit firms, instead of large, high quality, audit firms, due to reasons of firms' demand for high quality auditors, local knowledge of national audit firms and the lack of independence of small audit firms due to their affiliation with the state. Hence, by hiring small local audit firms, SOEs and the government can exert more influence on the audit opinion and obscure information about an SOE's actual performance.

Nonetheless, it is not clear that such audit choice preferences will have persisted subsequent to the period studied by [1]. First, the SSSR occurred between 2005 and 2009, which was not included in their study period. As part of the effort to fully privatise LSOEs, the SSSR involved the Chinese government effecting a transformation of SOE non-tradable shares held by the 'state' into tradable shares, in order to reduce agency problems and develop the capital market [2-4]. Such structural reforms in the Chinese market that led to changing the owners, and hence, decision makers of Chinese listed firms, might also change the way these firms select their auditors.

Joyce [5] summarises the aims of the SSSR as: (i) to improve efficiency of the Chinese capital markets; (ii) to empower capitalism, and (iii) to restructure SOEs into non-state-owned enterprises (NSOEs), with an ultimate goal of maximising firms' value. As a result of the SSSR, the proportion of listed LSOEs in the Chinese economy decreased significantly over time from 69% of all listed firms in 2003 to 35% in 2014, based on the sample data. Hence, even if SOEs prior to the SSSR tended to have a preference for using small local audit firms, it is not clear that they will retain such a preference when operating in a more apparently capitalist environment. Arguably, Chinese firms, both SOEs and NSOEs, subsequent to the SSSR will have increased incentives to hire high quality audit firms as a consequence. Consequently, the empowered free market policy might, in turn, push towards an improved accounting transparency and reduced agency costs.

The second important issue that needs to be taken into account is that the Chinese government wants to develop its national accounting industry [6]. Specifically, since the inception of the Chinese Institute of Certified Public Accountants (CICPA) in 1988, the Chinese government has taken steps to develop the accounting profession in the country. One of the latest measures is the introduction of a national policy [1] - "A Number of Opinions on Accelerating the Development of Certified Public Accountants" - in 2009 by the State Council, the highest executive institution in China [6]. Specifically, the State Council aims to create 10 large firms, 200 medium-sized firms, and a large number of small accounting firms by 2014, with developing the large firms as the first priority. Document 56 characterises 'large firms' as international accounting firms with the capability of providing integrated services to large Chinese firms with international operations. Therefore, the large national audit firms are intended to have the capacity to compete with the international Big 4 accounting firms.

Given the SSSR and the Chinese government initiative to promote large national accounting firms, we conjecture that the determinants of auditor choice are likely to have changed over time. In particular, we conjecture that, subsequent to 2009, after the SSSR and the announcement of the Chinese government initiative 'Document 56', Chinese firms are generally more likely to engage higher quality auditors. By high quality auditors, we mean either one of the largest six national audit firms in a year (We subsequently refer to these firms as 'national Big 6') or one of the international Big 4 audit firms. Further, given the Chinese government initiative, we conjecture that, ceteris paribus: (i) all Chinese firms are more likely to hire national Big 6 firms after 2009;[2] and (ii) because of their state control, SOEs are likely to follow government policy and, hence, are even more likely than NSOEs to hire national Big 6 auditors after 2009.

The third important issue to be taken into account is the differences in market development between China's 31 provinces, based on the National Economic Research Institute (NERI) periodic reports on Index of Marketisation of China's provinces from 1997 to 2014. The reports show the average Market Development Index (MDI) for each province constructed based on five sub-categories: Capital Market Index (CMI), Government Decentralisation Index (GDI) Legal Environment Index (LEI) and Product and Factor Market Development Indexes (PMI and FMI). The MDI score varies from 11 points in provinces such as Zhejiang, Jiangsu and Shanghai, to less than five points in Gansu, Qinghai, and Tibet regions.[3] It is important to highlight the role of market development moderates the impact of state, if any, on firms' auditor selection processes. Moreover, Guedhami et al. [7], using cross-country data, and Wang et al.[1], using Chinese data, report that, as firm location moves from less to more developed regions with a stronger level of governance, auditor choice moves from lower to higher quality audit firms. Higher market development, as a signal of a more decentralised economy, might also be reflected in a lower influence of the state over firms' auditor choice. Hence, we investigate whether the government's influence over firms' auditor choice in more developed regions is less pronounced compared to firms in less developed regions. Nonetheless, we also investigate the influence of the level of regional market development on auditor firm choice, and if it is reduced after 2009 as Chinese listed firms generally move towards a more capitalist economy approach to auditor firm choice.

Based on Wang's et al.[1] arguments and the issues escalated by [6] and [8], the selection of the auditor is a function of the following variables: i) state ownership, ii) institutional environment, and iii) regional development. To investigate our conjectures, we initially run Binary Logit Regressions (BLRs) capturing the determinants of auditor choice. We classify audit firms into two groups, first, the top ten audit firms in China in a year (the sum of

1 Also known as Document 56, the policy by the CICPA sets out a five-year strategy to develop Chinese national accounting firms in order to allow competition with international accounting firms.

2 The government initiative to improve pricing in Chinese capital markets and develop and empower free market control[5] will arguably affect both SOEs and NSOEs at different levels.

3 See Appendix A for the average MDI score for each province over the study period 2003 to 2014.

the national Big 6 firms in that year plus the international Big 4), representing the 'high quality' auditors, and the second, the remaining Chinese audit firms (representing 'low quality' firms).[4] Such regressions do not allow investigation of whether there are systematic differences between the determinants of choosing a national Big 6 auditor versus an international Big 4 auditor,[5] however. As a consequence, we also run multinomial logit regressions (MLRs) in which there are three possible choices of audit firms – one of the international Big 4; one of the national Big 6 in a year; or one of the remainder of Chinese small audit firms.

By doing so, we achieve the objectives of the study by investigating whether Chinese firms expressed a preference for national Big 6 auditors, consistent with Chinese government policy, after 2009, with this tendency magnified in SOEs. In both types of regressions, we investigate the mediating effects of the level of market development in the province in which a firm is located in influencing auditor choice.

In a context within which the number of Chinese listed firms has greatly increased over the period we study (in the sample, by 80%), we first document that the market share (by number of firms) of the international Big 4 has slightly increased over time, whereas that for the national Big 6 has increased substantially (from 5% to 55% in the sample). Further, the proportion of the LSOE audit market attributable to national Big 6 firms has increased, although not to the extent of the growth in market share overall, with a slight increase in market share for international Big 4 auditors in that market segment. These changes in market share for the national Big 6 audit firms have generally occurred steadily over time.

After controlling for other firm characteristics that have been found to be associated with the selection process of the audit firm in more developed capitalist economies, the results are as follows. In the BLR analyses considering the following effects independently, we find that, after the SSSR and the announcement of Document 56, there is a higher general tendency to hire high quality[6] audit firms. Further, the higher the level of market development in the region in which a firm is located, the more likely is the hiring of a high quality auditor. The results also show that LSOEs have weaker incentives to hire a Big 4 international audit firm, consistent with [1] findings. Furthermore, in the period subsequent to the SSSR and Document 56, high quality audit choice has increased relative to the periods before and during the SSSR.

When we allow a more nuanced analysis that distinguishes between national Big 6 and international Big 4 audit firms, we find the following. First, the conclusions in the more conventional logit analysis carry over to the determinants of the likelihood of using a national Big 6 audit firm relative to using a non-Big-10 firm. Second, the determinants of the choice of international Big 4 audit firms relative to non-Big-10 firms are often significantly different from those for the choice of national Big 6 audit firms relative to non-big-10 firms. In particular, after the SSSR Chinese listed firms, generally, are less likely to use an international Big 4 auditor relative to using a non-Big-10 auditor. Also, they are more likely to hire a national Big 6 audit firm compared with Big 4 international and Chinese small audit firms. This tendency further develops in the period after the announcement of Document 56.

Overall, the role of the Chinese state in auditor choice remains but, in contrast to prior work, has turned towards the use of national Big 6, 'high quality', auditors, especially if an LSOE is located in a region with low levels of market development. In regions with high levels of market development, LSOEs behave more like other firms in that region, ceteris paribus. The conjecture that the reforms we study would alter the impact of state ownership on audit choice, however, turns out to be unfounded.

The paper contributes to the literature on auditor choice in China in the following ways. First, we analyse the effects of two major reforms – the SSSR and Document 56 – on the choice of 'high quality' auditors by Chinese listed firms. Second, motivated by the Chinese government initiative, we distinguish between international Big 4 and national Big 6 audit firms in the analysis of audit firm choice. Which is a new classification that can be considered for future research in the Chinese context. The remainder of the paper is structured as follows. Section 2 introduces related literature and develops the hypotheses. Section 3 explains the methodology, and Section 4 describes the sample selection. The main results are reported in Section 5, followed by the conclusion in Section 6.

2. Literature Review and Hypotheses Development

DeAngelo [13] argues that audit as an oversight tool is demanded to control for the potential conflicts of interest between managers and stakeholders.[7] The demand and

4 Previous studies on Chinese listed firm auditor choice exhibit no consensus on how to define 'high quality' audit firms. For example, [7] and [9] use the international Big 4 as the high quality audit firms; [10] use the largest 8 firms (i.e., the international Big 4 and the 4 largest Chinese firms); [1] use the largest 10 firms (i.e., the international Big 4 and the 6 largest Chinese firms); and [11] and [12] use the largest 14 firms (i.e. the international Big 4 and the 10 largest Chinese firms).

5 Appendix B provides a list of Big 10 audit firms in China for each year of the study period 2003 to 2014, based on the CICPA annual ranking of China top-100 accounting firm.

6 The quality of the audit service depends on the auditor's competence (i.e., discover any breach in the contract) and independence (i.e., report this breach of contract) (Watts and Zimmerman, 1981, 314).

7 Jensen and Meckling [14] suggest an agency problem can exist when principals (owners) engage agents (management) to act on their behalf. With the agent obtaining the authority to act autonomously, a separation between ownership and management creates the opportunity for agents to act differently from pursuing the principals' goals in order to maximise their own self-interest.

supply of audit quality, however, is a trade-off between the incentives that the clients have, and the competencies of the assigned auditor (DeFond and Zhang, 2014). For example, to signal a reliable representation of the financial statements, firms will seek a high quality, reputable, audit firm (e.g., big audit firms). Clients with incentives to conceal bad information or manage earnings, however, might target low quality auditors (e.g., lack of competence).[8]

Different proxies have been used to measure audit quality, including audit firm size, audit firm specialty, audit fees and the propensity of the audit firm to issue qualified audit opinions[15-18]. The incentives for a Chinese firm to adopt high quality governance are not necessarily subject only to the preferences of managers but also to the institutional environment where the firm is operating[8]. This paper adds to a large body of research that studies how political connections affect auditor choice criteria[21-24], by focusing on the Chinese market and its recent reforms.

In the Chinese context, [1] study the effect of ownership structure, the level of market development, legal institutional development and government power over auditors on auditor choice. Using data from 1993 to 2003, they divide their sample into three ownership types: Central SOEs controlled by central government, Local SOEs controlled by local state governments, and NSOEs controlled by individual and institutional private investors. They find that both central and LSOEs are more likely to hire small or local audit firms compared to NSOEs operating in the same region. In provinces with more developed institutions based on the legal environment index (i.e., the percentage of lawyers over the population and local courts efficiency), however, they find a lower tendency towards hiring local and small audit firms.

They explain this tendency through three main arguments. First, SOEs receive preferential treatment from government and banks via the facilitating of their listings and the better access to bank loans. Hence, they have less demand for reputable audit firms to signal higher quality accounting compared to NSOEs. Second, in financial distress, SOEs are more likely to obtain government bailouts, compared to NSOEs, due to their political connections. Finally, although the audit disaffiliation programme in the late 1990s led to a separation between the government and the audit profession, auditors in local firms kept their experience and knowledge about SOEs. Such experience of small and local audit firms increases the tendency of SOEs to hire them instead of large audit firms. Another reason why SOEs are less likely to hire high quality audit firms is the fact that small audit firms might help in meeting China Securities Regularity Commission's (CSRC) targets for IPO, where political connections are found to be associated with better chances to go public[25].

The introduction of the mandatory auditor partner rotation (MAR), however, has improved auditor independence in China[26,27]. Moreover, a set of market reforms was started in 2001 to better develop the legal environment in China[28]. Hence, there is a need to further examine [1] findings regarding auditor choice patterns in China as their study period excludes most of these events (i.e., SSSR, and Document 56).

Lin and Liu [28], covering the period from 2001 to 2004, before the SSSR, study the impact of corporate governance, including ownership concentration, on auditor choice. Again, they classify audit firms into Big 10 and non-Big-10 as a proxy for high quality audit and introduce a trade-off argument between hiring a high quality auditor to sustain corporate governance and hiring a low-quality auditor to create "opaqueness gains" for the controlling owners. In their argument, the controlling owner may hire high quality auditors to signal credible financial reporting to other stakeholders, leading to lower share price discounts. This would be the case when the benefits outweigh the costs of having a high quality audit, however, which will limit the controlling owner's opaqueness gains.

Following this trade-off, Wei et al. [28] expect, and find, that firms with more concentrated ownership, based on the shareholding percentage of the largest shareholder, are less likely to hire high quality audit firms. Nonetheless, the better the corporate governance of the firm, the higher the likelihood that the firm will appoint a high quality audit firm. These findings, however, reflect the Chinese market in the pre-reform period where concentrated ownership was dominating the stock market. Guedhami et al. [7], however, using a cross-country sample, show that, as ownership moves from state to foreign investors, auditor choice moves from lower to higher quality auditors, using Big 4 audit firms as a proxy for high quality audit. These findings might hold under the settings in China, where the legal environment developments and the ownership structure reforms suggest a trend towards hiring higher quality auditors. Moreover, as the legal enforcement is weak in China [16], stockholders might demand an independent, high quality, auditing committee to keep their rights protected.

For the SSSR in China, Lin et al. [27] evaluate the gains and efficiency of the transfer of control from the state to private hands and how it is associated with better operating performance and positive market reactions. In their study, the increase in minority private ownership is shown to be associated with a higher perceived firm value, similar to the findings of [29,17]. However, Leung and Cheng [30] find that when partially privatised firms announce proposed sales of remaining government shares, the stock market reacts negatively and there is a symmetric positive reaction if cancellation of such a plan

8 Signalling theory explains this behaviour as a consequence of information asymmetries between managers of firms and the actual owners. In order to reduce information asymmetry, the management of high quality firms will disclose more information and use high quality audit firms.

happens. This might be due to the unique institutional setting (e.g., weak legal enforcement and overall poor corporate governance) where the monitoring role of private ownership over companies is weak [8]. After the SSSR in 2005, however, it is expected to have a more pronounced monitoring role for private investors as the government is giving up control following the “Guidance for Promoting State-owned Assets Adjustment and State-owned Enterprises Reorganization”.

The SSSR left researchers with two different perspectives about how it will affect auditor choice in China. On the one hand, Leung and Cheng [30] assume that, after the SSSR, the controlling shareholders (state shares) will no longer be blocked from realising their shares for cash. Accordingly, they might hire high quality auditors to protect their interests. On the other hand, Liu et al.[32] argue that firms with large controlling shareholders will be less likely to hire high quality auditors in China, despite the nature of the ownership (i.e., state shares or private investors). They also study how the political connections will affect Chinese firms' auditor choice, and find an inverse U-shaped relation indicating that firms with weak political connections will hire higher quality audit firms compared to firms with no connections. Firms with strong political connections, however, tend to go for lower quality audit firms. They explain that this is because administrative and economic resources remain under the control of the government. They assume, however, that as the transition completes, connected firms will demand high quality audit firms instead. Although their study period from 2004 to 2012 is appropriate, their sample is restricted to private firms, and they exclude partially privatised SOEs.

The classification of audit firms to be used to study auditor choice in China and its implications should be taken with caution. As mentioned earlier in this paper, many scholars have used Big 10 (including the international Big 4) audit firms to reflect high quality audit, while others use the international Big 4 audit firms to signal higher quality[22,28,31,33]. Ref. [6], however, highlights how the CICPA started several significant reforms that are intended to improve the efficiency and competitiveness of national audit firms relative to the Big 4 international audit firms.

Leung and Cheng [31] summarise how the CICPA, which governs the accounting profession in China and operates the Chinese Auditing Standards Board (CASB), has a substantial effect on the accounting profession in China as follows: The audit signing CPA should be a member of the CICPA and follow the Chinese Accounting Standards (CASs) of 2006. In addition, the accounting firms should possess "The Securities and Futures Related Business License" to be eligible to provide external audit services in China.

The CICPA follows a strategy that aims to: 1) cultivate accounting talent in China; 2) have international standards convergence; and 3) develop larger national audit firms that can compete with the international audit firms [34].[9] This suggests a new classification of audit firms that distinguishes between the international Big 4 and national Big 6 audit firms where both are presumed to produce high quality audit services, but with the support of the Chinese government being provided to the national Big 6 audit firms. Due to the national policy in 2009 established by the State Council, Document 56, a policy that establishes a five-year strategy to develop Chinese national accounting firms in order to compete with international accounting firms. We expect that in the period after the SSSR and the announcement of Document 56, there will be an increase in the propensity to select national Big 6 audit firms relative to both the international Big 4 audit firms, and the remaining non-Big-10 audit firms. Hence, the first and second hypotheses are constructed as follows:

Hypothesis 1a. There is an impact of the SSSR on the propensity to select a national Big 6/international Big 4 audit firm relative to non-Big-10 audit firm.

Hypothesis 1b. There is an impact of the announcement of Document 56 on the propensity to select a national Big 6/international Big 4 audit firm relative to non-Big-10 audit.

Hypothesis 2a. There is an impact of the SSSR on the propensity to select a national Big 6 audit firm relative to a non-Big-10/international Big 4 audit firm.

Hypothesis 2b. There is an impact of the announcement of Document 56 on the propensity to select a national Big 6 audit firm relative to a non-Big-10/international Big 4 audit firm.

Following Wang et al. [1] and Guedhami et al. [7], we further assume that firms in more developed regions will have a higher demand for high quality auditors. This is due to the better credit market development, less government centralisation, and higher levels of legal enforcement in the more developed regions. We also predict that market development will counteract any potential negative government influence on firms' auditor choice. Hence the third hypothesis is:

Hypothesis 3a. Firms in more developed regions tend to hire the international Big 4 or national Big 6 audit firms over small audit firms.

Hypothesis 3b. The higher the level of market development, the lower the impact of state ownership over auditor choice.

3. Methodology

Table 1 summarises the definition of variables used in this essay. To test the hypotheses concerning auditor choice in China, we build on Wang *et al.*[1] by using three sets of variables as follows: 1) ownership structure: the

9 The Chinese government initiative, through the MOF and the CICPA, aims to develop the accounting industry in the country affecting all listed firms despite ownership structure (i.e., SOEs and NSOEs).

nature of the controlling shareholder (LSOE) to capture the government influence over firms; 2) regional development index: the average MDI from the NERI Index of Marketisation of China's provinces to capture the differences in auditor choice preferences across regions; and 3) a set of control variables for firm characteristics that, presumably, have an effect on auditor choice based on the previous literature[1,7,21].

Table 1. Variable Definitions

Variable	Definition
Audit Classification	
Auditor Choice	An indicator variable equals to 0, 1 and 2 if the auditor is Non-Big-10, national Big 6 and international Big 4, respectively, based on CICPA Top-100 Accounting Firms annual reports
International Big 4	A dummy variable equals to 1 if the auditor is an international Big 4, and 0 otherwise
National Big 6	A dummy variable equals to 1 if the auditor is a national Big 6, and 0 otherwise
Big-10 Auditor	A dummy variable equals to 1 if the auditor is a Big 10, and 0 otherwise
Ownership Structure	
LSOE	A dummy variable equals to 1 if the firm is classified as a local state-owned enterprise, and 0 otherwise
QFII %	The percentage of total shares held by Qualified Foreign Institutional Investors
Institutional Investors	The proportion of total shares held by domestic institutional investors
Regional Development	
MDI	Market Development Index
Firm Characteristics	
Ln(Total Assets)	The natural logarithm of total assets
Sales Growth	The natural logarithm of (current sales/previous sales)
RoA	Return on total assets
Leverage	Total debt to total assets
Current Ratio	Current assets to current liabilities
Receivables &Inventories	The sum of receivables and inventories as a proportion of total assets
Asset Turnover	Sales to total assets
Equity Issuance	A dummy variable equals to 1 if the firm issues new shares during the year, and 0 otherwise

The control variables we use are as follows. The percentage of total shares held by Qualified Foreign Institutional Investors (QFII) and the proportion of shares held by domestic institutional investors (Institutional Investors) are used to study the private ownership concentration effect on auditor choice where we assume that private foreign and domestic institutional investors will affect auditor choice either towards high quality audit firms to signal credible financial reporting or toward low-quality audit firm to obtain opaqueness gains benefits as in[28]. We control for firm size using (Ln(Total Assets)), and we use return on total assets (RoA) as a measure of profitability. Leverage (Leverage) and the current ratio (Current Ratio) are used as measures of risk. Sales growth (Sales Growth) is used as a proxy for capital needs for audit. To capture the effects of a firm's operation complexity, we calculate receivables and inventories to total assets (Receivables & Inventories) and asset turnover (Asset Turnover). Issuance of equity (Equity Issuance) is also included to capture the propensity to hire high quality audit firms in order to signal a better reputation when raising capital.

We also add industry dummies to allow the likelihood of auditor choice to behave differently for each industry. Moreover, we add region dummies for China's six regions: Metropolis, Northeast, Coast, Central, Northwest and Southwest, following Sun and Graham's[35] classification, which is based on *per capita* GDP data at a provincial level from 1949 to 2011.[10] To investigate the hypotheses, we initially run BLRs to capture the determinants of auditor choice. Two groups of audit firms are used, the top 10 audit firms in China in a year (the sum of the national Big 6 firms in that year plus the international Big 4), representing the 'high quality' auditors, and the other group representing the remaining non-Big-10 Chinese audit firms ('low quality' firms). We also run multinomial logit regressions (MLRs) in which there are three possible choices of audit firms – one of the international Big 4; one of the national Big 6 in a year; or one of the remaining Chinese small audit firms.[11]

Therefore, we investigate the impact of market development and the introduction of the SSSR and Document 56 in China on high quality audit choice by estimating the following equations on an unbalanced panel of Chinese listed firms.[12]

In the first estimation equation, we replicate Wang's *et al.*[1] model that examines how state influence and market development impact firms' auditor choice without incorporating the effects of the SSSR and Document 56, as a benchmark for the more nuanced analysis that follows.

$$ln\left(\frac{P(Audit\ Choice_{it} = Big\ 10}{P(Audit\ Choice_{it} = Non\ Big\ 10}\right) =$$
$$= b_0 + \ b_1 Local\ SOE_{it} + b_2 MDI_{it} +$$

10 *Per capita* GDP data are from China Compendium of Statistics [36] and China Statistical Yearbook 2012 [37].

11 We also perform interactions between the experimental variables to better understand how the SSSR and Document 56 affect auditor choice in China.

12 Control variables are defined in Table 1.

$$+b_3 Local\ SOE.MDI_{it} + \sum_{k=4}^{n} \beta_k\ Control_{it} \quad (1)$$

In equation 2 we look at the effects of the SSSR and Document 56 on auditor choice without separating between the two types of big audit firms (i.e., the international Big 4 and national Big 6 audit firms). This provides a benchmark of the overall effect of these major reforms on big audit firms' auditor choice.

$$ln\left(\frac{P(Audit\ Choice_{it} = Big\ 10}{P(Audit\ Choice_{it} = Non\ Big\ 10}\right) =$$
$$= b_0 + b_1 Local\ SOE_{it} +$$
$$+b_2 MDI_{it} + b_3 Local\ SOE.MDI_{it} + b_4 Post\ SSSR_{it} +$$
$$+b_5 Post\ Document\ 56_{it} + \sum_{k=6}^{n} \beta_k\ Control_{it} \quad (2)$$

Lastly, before proceeding to the hypothesis testing, we examine whether the effects of the SSSR and Document 56 impact LSOEs and NLSOEs differently following equation 3.

$$ln\left(\frac{P(Audit\ Choice_{it} = Big\ 10}{P(Audit\ Choice_{it} = Non\ Big\ 10}\right) =$$
$$= b_0 + b_1 Local\ SOE_{it} + b_2 MDI_{it} +$$
$$+b_3 Local\ SOE.MDI_{it} + b_4 Post\ SSSR_{it} +$$
$$+b_5 Local\ SOE.Post\ SSSR_{it} + b_6 Post\ Document\ 56_{it} +$$
$$+ b_7 Local\ SOE.Post\ Document\ 56_{it} +$$
$$+ \sum_{k=8}^{n} \beta_k\ Control_{it} \quad (3)$$

Following the argument that the Chinese government would provide a special treatment to national big audit firms in order to compete with the international Big 4 audit firms [6], we run multinomial logit regressions (MLRs) to compare three possible choices of audit firms *via* which we can investigate whether Chinese firms express a preference for national Big 6 auditors, consistent with the Chinese government policy, after 2009, with this tendency magnified in SOEs[13]. First, in equation 4, we run a basic estimation model that examines government influence and market development impact on auditor choice as follows.

$$ln\left(\frac{P(Audit\ Choice_{it} = Domestic\ Big\ 6}{P(Audit\ Choice_{it} = Non\ Big\ 10}\right) =$$
$$= b_{10} + b_{11} Local\ SOE_{it} + b_{12} MDI_{it} +$$
$$+b_{13} Local\ SOE.MDI_{it} + \sum_{k=14}^{n} \beta_{1k}\ Control_{it} \quad (4a)$$

$$ln\left(\frac{P(Audit\ Choice_{it} = International\ Big\ 4}{P(Audit\ Choice_{it} = Non\ Big\ 10}\right) =$$
$$= b_{20} + b_{21} Local\ SOE_{it} + b_{22} MDI_{it} +$$
$$+b_{23} Local\ SOE.MDI_{it} + \sum_{k=4}^{n} \beta_{2k}\ Control_{it} \quad (4b)$$

In equation 5 we expand the analysis to include the effects of the SSSR and Document 56. By doing so, we test how the SSSR and Document 56 affect the propensity to choose national Big 6 audit firms relative to the international Big 4 audit firms.

$$ln\left(\frac{P(Audit\ Choice_{it} = Domestic\ Big\ 6}{P(Audit\ Choice_{it} = Non\ Big\ 10}\right) =$$
$$= b_{10} + b_{11} Local\ SOE_{it} + b_{12} MDI_{it} +$$
$$+b_{13} Local\ SOE.MDI_{it} + b_{14} Post\ SSSR_{it} +$$
$$+b_{15} Post\ Document\ 56_{it} + \sum_{k=16}^{n} \beta_{1k}\ Control_{it} \quad (5a)$$

$$ln\left(\frac{P(Audit\ Choice_{it} = International\ Big\ 4}{P(Audit\ Choice_{it} = Non\ Big\ 10}\right) =$$
$$= b_{20} + b_{21} Local\ SOE_{it} + b_{22} MDI_{it} +$$
$$+b_{23} Local\ SOE.MDI_{it} + b_{24} Post\ SSSR_{it} +$$
$$+b_{25} Post\ Document\ 56_{it} + \sum_{k=26}^{n} \beta_{2k}\ Control_{it} \quad (5b)$$

Finally, we test if the impact of the SSSR and Document 56 is magnified in SOEs particularly, or if it affects all Chinese listed firms the same way. Hence, equation 6 provides the main estimation model for testing the hypotheses.

$$ln\left(\frac{P(Audit\ Choice_{it} = Domestic\ Big\ 6}{P(Audit\ Choice_{it} = Non\ Big\ 10}\right) =$$
$$+b_{10} + b_{11} Local\ SOE_{it} + b_{12} MDI_{it} +$$
$$b_{13} Local\ SOE.MDI_{it} + b_{14} Post\ SSSR_{it} +$$
$$b_{15} Local\ SOE.Post\ SSSR_{it} + b_{16} Post\ Document\ 56_{it} +$$
$$+b_{17} Local\ SOE.Post\ Document\ 56_{it} +$$
$$+ \sum_{k=18}^{n} \beta_{1k}\ Control_{it} \quad (6a)$$

$$ln\left(\frac{P(Audit\ Choice_{it} = International\ Big\ 4}{P(Audit\ Choice_{it} = Non\ Big\ 10}\right) =$$
$$= b_{20} + b_{21} Local\ SOE_{it} + b_{22} MDI_{it} +$$
$$+b_{23} Local\ SOE.MDI_{it} + b_{24} Post\ SSSR_{it} +$$
$$+b_{25} Local\ SOE.Post\ SSSR_{it} +$$
$$+b_{26} Post\ Document\ 56_{it} +$$
$$+b_{27} Local\ SOE.Post\ Document\ 56_{it} +$$
$$+ \sum_{k=28}^{n} \beta_{2k}\ Control_{it} \quad (6b)$$

13 The three groups are the international Big 4 audit firms, the national Big 6 audit firms in a year, and the remainder of Chinese audit firms.

We estimate the equations above to study the development of Chinese listed firms' auditor choice. More Specifically, b_{11}, captures the increase/decrease in the relative probability of selecting national Big 6 compared with non-Big-10. While, b_{21} , represents the increase/decrease in the relative log odds of selecting international Big 4 compared with non-Big-10. The difference between the two equations for each estimator (i.e. b_{11}- b_{21}) identifies the increase/decrease in the relative probability of selecting national Big 6 compared with the international Big 4 audit firms.

To identify the impact of MDI, the SSSR and Document 56 on high quality auditor choice and government influence throughout the sample period, the estimation models above compare the increase/decrease in the relative probability of selecting national Big 6 and international Big 4 compared to non-Big-10, respectively. Finally, we investigate whether Chinese firms express a preference for national Big 6 auditors, consistent with the Chinese government policy, after 2009, with this tendency magnified in SOEs by studying the interaction[14] terms in b_{15} and b_{17} in equation 6a, and b_{25} and b_{27} in equation 6b, as well as the difference between the estimators in both equations (i.e. $b_{15} - b_{25}$ and $b_{17} - b_{27}$).

4. Data and Sample

The China Stock Market and Accounting Research (CSMAR) database serves as the main source of data on firms' ownership structure and other financial information. Audit firms are classified based on the CICPA Top-100 Accounting Firms, which has published these reports annually since 2003 based on variant audit quality indicators (i.e., total revenue, the number of employed CPAs, internal governance and practice quality). Regional development data is constructed based on the National Economic Research Institute (NERI) periodic reports on Index of Marketisation of China's provinces from 2003 to 2014. The sample period starts from 2003, for which data on controlling shareholders are first available on CSMAR, until 2014. The final sample covers a total of 1,831 Chinese listed firms with 15,000 firm-year observations that can be used in the analysis.

Table 2 summarises the sample selection process. We include firms that only issue A-shares, excluding firms with B-shares and H-shares, following[1], in order to select firms operating in similar regulatory environments. We further exclude firms in the financial industry for the same reason, leaving firms in five industries with the majority being industrial firms, accounting for 60% of the sample size, followed by properties and public utility firms covering 10% each and, finally, firms in commerce and conglomerates. This indicates a diversified sample consistent with prior recent research on the Chinese market such as[40]. We further restrict the sample to firms with no missing data on ownership structure, auditor choice, and other financial information. Finally, we exclude CSOEs from the sample because China's State-owned Assets Supervision and Administration Commission (SASAC) issued two rules in 2004, which requires the SASAC to assign auditors for CSOEs and requires them to retain auditors for 2-5 consecutive years, meaning that CSOEs do not choose their auditors based on their characteristics.

We assume that the Big 10 audit firms produce high quality audit following DeAngelo's [13] argument of audit firm size and audit quality. We further classify audit firms into the international Big 4 audit firms (i.e., PricewaterhouseCoopers, Deloitte, Ernst & Young, and KPMG), national Big 6 audit firms (based on the CICPA Top-100 Chinese accounting firms for each year), and other non-Big-10 audit firms.

We classify firms as LSOEs or NSOEs, where a firm is considered as an LSOE if the state or a state agency meets any of the following criteria: "1) the one with the maximum shareholding in the shareholder list of listed company unless the opposite evidence exists; 2) the one who can execute and control more superior voting rights than the shareholder with the maximum shareholding of a listed company; 3) the one who holds and controls 30 per cent or above of shares and voting rights unless opposite evidence exists; 4) the one who can decide the election of over half of the members of the board of directors of a listed company by executing voting rights; 5) the one who is under other circumstances (i.e., identified by the securities regulatory authorities of the State Council) as the stipulations of CSRC. Following Clause 41 of the Guidelines for the Articles of Association of Listed Companies, released by the CSRC on December 16, 1997"[41].

14 In nonlinear models (i.e., logit and probit) to study the magnitude and the significance of an interaction effect it is suggested to compute the cross derivative of the expected value of the dependent variable instead of the coefficient of the interaction term[38,39]. Therefore, we produce additional analysis of the interaction effects based on the cross-partial derivative in Appendix D.

Table 2. Sample Selection

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of listed firms	1,378	1,465	1,461	1,542	1,654	1,708	1,855	2,211	2,449	2,577	2,621	2,735
Less: firms with B-shares or H-shares	111	109	109	109	109	109	166	296	401	462	485	523
Less: firms in the financial industry	28	28	28	33	41	40	43	48	51	53	53	54
Less: firms without ownership information	8	6	2	2	5	5	8	8	6	14	24	35
Less: CSOEs	201	230	235	253	262	287	303	320	318	315	316	321
Less: firms without financial information	105	143	71	128	162	112	146	274	194	129	87	132
Final sample	**925**	**949**	**1,016**	**1,017**	**1,075**	**1,155**	**1,189**	**1,265**	**1,479**	**1,604**	**1,656**	**1,670**
Data covers the period from 2003 to 2014 including 15,000 firm-year observations. Financial data and data on ownership structure available publicly at CSMAR database. All continuous variables are winsorized at the top and bottom 1%.												

Table 3. Auditor Choice by Ownership Type

Auditor Choice	Ownership Type	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
International Big 4	Number of firms	60	45	56	49	57	51	50	55	66	72	73	77
	% of LSOEs	77	69	68	73	67	65	72	71	68	65	60	58
	% of NSOEs	23	31	32	27	33	35	28	29	32	35	40	42
National Big 6	Number of firms	47	51	60	109	139	223	347	394	514	791	914	929
	% of LSOEs	81	71	77	67	61	57	49	46	37	33	32	32
	% of NSOEs	19	29	23	33	39	43	51	54	63	67	68	68
Non-Big-10	Number of firms	818	853	900	859	879	881	792	816	899	741	669	664
	% of LSOEs	68	64	60	55	53	50	48	45	40	40	39	37
	% of NSOEs	32	36	40	45	47	50	52	55	60	60	61	63
Data covers the period from 2003 to 2014 including 15,000 firm-year observations. Financial data and data on ownership structure available publicly at CSMAR database. All continuous variables are winsorized at the top and bottom 1%.													

Table 3 shows the sample by ownership structure and auditor choice throughout the sample period, where we can see a trend of hiring Big 6 audit firms over those other small audit firms. For example, in 2003, 818 listed firms (80%) had a non-Big-10 auditor. This figure dropped to 664 listed firms (40%) in 2014. Of the 1,006 listed firms choosing Big 10 audit firms in 2014, 92% were picking Big 6 audit firms rather than the international Big 4. The market share of the international Big 4 remains stable, however, over the sample period with an average of 5% of listed firms.

5. Main Results

Table 4 summarises firms' characteristics[15] mean value throughout the sample period and for each ownership type. To remove extreme values and reduce the effect of potential outliers, all continuous variables are winsorized at the top and bottom 1%. The table shows that the market share of the international Big 4 audit firms remained unchanged with an average of 5% of total firms. National Big 6 audit firms' market share, on the other hand, doubled ten times since 2003, with a market share of 56% of total firms in 2014, accompanied by a significant drop in non-Big-10 audit market share.

Also there is a significant drop in the number of LSOEs since 2005 (the beginning of the SSSR) where it decreased from 69% in 2003 to 35% in 2014. Market development grows gradually over the sample period. The table also summarises the changes in the control variables' mean value throughout the sample period. Consistent with the Wang *et al.*[1] sample, we find that LSOEs tend to be of a larger firm size and lower complexity compared to NSOEs. However, LSOEs have higher leverage and lower current ratios compared with NSOEs.

15 We provide summary statistics for the aggregated sample throughout the study period in Appendix C.

Table 4. Mean Value for Firm Characteristics by Ownership Type

Firm Characteristics	Ownership Type	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
International Big 4 %	All firms	0.06	0.05	0.06	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.05
	LSOEs	0.07	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.08	0.08	0.07	0.08
	NSOEs	0.05	0.04	0.05	0.03	0.04	0.03	0.02	0.02	0.02	0.02	0.03	0.03
National Big 6 %	All firms	0.05	0.05	0.06	0.11	0.13	0.19	0.29	0.31	0.35	0.49	0.55	0.56
	LSOEs	0.06	0.06	0.07	0.13	0.14	0.21	0.29	0.31	0.32	0.43	0.49	0.50
	NSOEs	0.03	0.04	0.04	0.08	0.11	0.17	0.30	0.31	0.37	0.53	0.59	0.59
LSOE %	All firms	0.69	0.65	0.61	0.57	0.55	0.52	0.49	0.46	0.40	0.38	0.36	0.35
MDI	All firms	6.68	7.29	7.96	8.41	8.92	8.65	8.99	9.02	9.34	9.80	9.99	10.40
	LSOEs	6.67	7.28	7.85	8.30	8.77	8.41	8.69	8.70	8.90	9.25	9.46	9.86
	NSOEs	6.71	7.31	8.12	8.55	9.10	8.90	9.29	9.29	9.63	10.13	10.28	10.69
QFII %	All firms	0.01	0.03	0.12	0.23	0.18	0.10	0.14	0.11	0.06	0.06	0.07	0.08
	LSOEs	0.01	0.03	0.11	0.24	0.19	0.10	0.14	0.12	0.08	0.06	0.08	0.11
	NSOEs	0.02	0.03	0.13	0.22	0.16	0.09	0.15	0.10	0.05	0.05	0.07	0.07
Institutional Investors %	All firms	0.04	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05
	LSOEs	0.04	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06
	NSOEs	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.06	0.05	0.04	0.04	0.05
Ln(Total Assets)	All firms	21.11	21.18	21.17	21.23	21.37	21.37	21.48	21.63	21.75	21.84	21.96	22.08
	LSOEs	21.22	21.34	21.37	21.51	21.69	21.76	21.89	22.07	22.23	22.34	22.47	22.59
	NSOEs	20.86	20.89	20.85	20.86	20.98	20.95	21.08	21.25	21.42	21.54	21.67	21.80
Sales Growth	All firms	0.15	0.18	0.04	0.10	0.19	0.08	0.03	0.23	0.18	0.08	0.12	0.06
	LSOEs	0.15	0.20	0.08	0.10	0.21	0.08	0.05	0.23	0.17	0.06	0.08	0.02
	NSOEs	0.15	0.15	-0.02	0.09	0.18	0.08	0.02	0.24	0.19	0.09	0.13	0.08
RoA	All firms	0.01	0.01	-0.01	0.02	0.04	0.02	0.03	0.05	0.04	0.04	0.04	0.03
	LSOEs	0.02	0.02	0.01	0.02	0.04	0.02	0.02	0.04	0.04	0.03	0.03	0.02
	NSOEs	-0.02	-0.02	-0.04	0.00	0.05	0.03	0.04	0.05	0.05	0.04	0.04	0.04
Leverage	All firms	0.26	0.26	0.26	0.25	0.23	0.22	0.21	0.19	0.17	0.16	0.16	0.15
	LSOEs	0.24	0.25	0.25	0.24	0.23	0.23	0.22	0.21	0.19	0.19	0.19	0.18
	NSOEs	0.30	0.29	0.29	0.27	0.23	0.22	0.20	0.18	0.16	0.15	0.15	0.14
Current Ratio	All firms	1.49	1.39	1.36	1.34	1.38	1.51	1.65	1.93	2.45	2.32	2.17	2.07
	LSOEs	1.51	1.40	1.36	1.29	1.27	1.30	1.38	1.47	1.53	1.52	1.48	1.52
	NSOEs	1.43	1.37	1.37	1.41	1.51	1.73	1.91	2.33	3.07	2.81	2.56	2.37
Receivables & Inventories	All firms	0.30	0.31	0.31	0.30	0.25	0.27	0.26	0.27	0.28	0.28	0.27	0.28
	LSOEs	0.29	0.29	0.29	0.27	0.23	0.24	0.23	0.24	0.25	0.25	0.24	0.24
	NSOEs	0.33	0.34	0.34	0.33	0.28	0.30	0.29	0.29	0.30	0.29	0.29	0.29
Asset Turnover	All firms	0.55	0.62	0.65	0.68	0.71	0.73	0.65	0.69	0.70	0.66	0.65	0.62
	LSOEs	0.58	0.66	0.70	0.73	0.75	0.75	0.67	0.70	0.73	0.69	0.67	0.62
	NSOEs	0.50	0.55	0.58	0.61	0.66	0.70	0.63	0.67	0.67	0.65	0.65	0.62
Equity Issuance	All firms	0.16	0.22	0.15	0.33	0.32	0.37	0.26	0.34	0.39	0.30	0.29	0.35
	LSOEs	0.15	0.22	0.13	0.27	0.27	0.32	0.22	0.26	0.28	0.23	0.21	0.22
	NSOEs	0.18	0.21	0.19	0.41	0.39	0.43	0.30	0.41	0.46	0.35	0.34	0.41

Variables are defined in Table 1. All continuous variables are winsorized at the top and bottom 1%.

Table 5. Correlation Coefficients

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Big 10 Auditor	1.00																
2 International Big 4	0.30	1.00															
3 National Big 6	0.90	-0.15	1.00														
4 Post Document 56	0.34	-0.01	0.36	1.00													
5 Post SSSR	0.25	-0.01	0.26	0.53	1.00												
6 LSOE	-0.07	0.09	-0.11	-0.19	-0.14	1.00											
7 MDI	0.27	0.06	0.26	0.33	0.33	-0.20	1.00										
8 QFII %	0.00	0.08	-0.04	-0.05	0.05	0.03	0.03	1.00									
9 Institutional Investors	0.02	0.07	-0.02	-0.03	0.03	0.08	-0.03	0.12	1.00								
10 Ln(Total Assets)	0.22	0.27	0.10	0.25	0.22	0.23	0.12	0.11	0.12	1.00							
11 Sales Growth	-0.02	0.01	-0.02	0.03	0.01	0.00	-0.02	0.03	0.06	0.12	1.00						
12 RoA	0.08	0.06	0.06	0.13	0.17	-0.03	0.12	0.08	0.12	0.19	0.32	1.00					
13 Leverage	-0.11	-0.02	-0.11	-0.23	-0.20	0.09	-0.17	-0.03	-0.07	0.07	-0.05	-0.38	1.00				
14 Current Ratio	0.08	-0.05	0.10	0.19	0.11	-0.20	0.13	-0.02	0.01	-0.13	-0.01	0.21	-0.43	1.00			
15 Receivables & Inventories	-0.03	-0.07	0.00	-0.02	-0.07	-0.13	0.08	-0.04	-0.06	0.00	0.02	-0.09	0.07	-0.01	1.00		
16 Asset Turnover	0.01	-0.01	0.01	0.00	0.05	0.05	0.11	0.06	0.06	0.08	0.16	0.14	-0.08	-0.11	0.05	1.00	
17 Equity Issuance	0.04	-0.01	0.04	0.08	0.12	-0.15	0.08	0.03	0.09	0.13	0.16	0.19	-0.08	0.12	-0.01	0.03	1.00

Table 5 lists the Pearson correlations for all variables included in the tests. Correlations between the dependent variables and the experimental variables have the expected signs. When classifying the Big 10 audit firms into national Big 6 and international Big 4 audit firms, however, we see a negative correlation between the choice of national Big 6 audit firms and LSOE.[16] Correlations between independent variables do not indicate multicollinearity problems. The Variance Inflation Factors (VIF) in the multivariate models are below 4 (not tabulated).

Variables are defined in Table 1. All continuous variables are winsorized at the top and bottom 1%. Bold numbers indicate significance at 5% level.

Table 6 presents the BLR model results. The coefficients of the estimated regressions are accompanied with the associated t-statistics and reported based on robust standard errors. In the analysis, we control for industry fixed effects by adding industry dummies. We also control for regional fixed effects by adding region dummies to allow firms in different regions to respond differently to any potential regional effect, as suggested by[35]. Furthermore, adding region dummies will help in capturing the availability of big audit firms.[17] Hence, market development (MDI) can capture the demand side for high quality audit instead of the geographic location of the firm.

Model 1 replicates the Wang et al. [1] study after updating the study period. It ignores the potential impact of the SSSR and Document 56 and shows that, consistent with [1], MDI has a positive impact on high quality audit choice. It does not show a significant impact of state influence on audit choice, however. Moreover, it shows that the MDI effect on audit choice is reduced in the case of LSOEs. Model 2 includes the SSSR and Document 56 dummies. The regression results show a positive impact of SSSR on high quality auditor choice, with an incremental effect of the State Council's national policy in improving high quality auditor choice in China. Finally, in Model 3, we include LSOE interaction terms[18] with both the SSSR and Document 56. The results, however, do not provide strong evidence that LSOEs have a preference for hiring a Big 10 audit firm over other small Chinese audit firms in the period following the SSSR.

Additionally, we find a reduced impact of LSOE on the likelihood of a firm choosing a high quality audit firm in the period following the announcement of Document 56. The results also show a positive impact of market development on the choice of high quality audit firms. The significant negative interaction term between market development (MDI) and government influence (LSOE) shows that market development lowers the impact of state ownership on auditor choice.[19] These results indicate that

16 This negative correlation does not necessarily indicate a negative relationship between national Big 6 audit choice and LSOE - this is further investigated in the multivariate regressions analyses later in this paper.

17 The tests of VIF including both regional dummies (i.e., classifying mainland China into six different regions based on geographic location) and MDI for each province (i.e., market development score for each of China's 31 provinces) are less than 8 indicating no resulting multicollinearity from using both sets of variables in the same estimation model.

18 A further analysis of the interaction terms, considering the nonlinear nature of the regression we use, is provided in Appendix D following[38,39].

19 We also run the tests after adding MDI interactions with the SSSR and

the state influence decreases as we move to more developed regions with more capitalist market characteristics (i.e., lower market centralisation and higher legal enforcement).

The BLR results, nevertheless, do not show a significant role for private institutional investor's ownership (i.e., foreign and domestic institutional ownership) in selecting a firm's auditor. This suggests that private institutional ownership impact on Chinese listed firms' managerial decisions is not taking effect. The results, however, show that firm size is associated with higher quality auditor choice. The results also show that equity issuance is negatively associated with Big 10 audit choice.[20] There is no significant effect of return on assets, current ratio and asset turnover on auditor choice. Sales growth, leverage and receivables and inventories to assets are associated with higher non-Big-10 auditor choice. Following[1], we use receivables and inventories to assets as a measure for the complexity of operations. The results show a negative relationship between the complexity measure and high quality audit choice, however. This suggests that, under the institutional environment of China, other measures for firms' complexity might be more appropriate rather than receivables and inventories to assets.

A detailed investigation of auditor choice in China is presented in Table 7, where MLR results are reported. As illustrated earlier, instead of restricting auditor choice to either Big 10 or non-Big-10, in the MLR models, we allow three group comparisons.[21] The coefficients indicate the degree of increase or decrease in the likelihood of picking one group of auditors (Big 4 or Big 6) over the base outcome (non-Big-10). We also check the difference between these coefficients between the international Big 4 and the national Big 6 using Chi-square tests. Those differences are reported in the third column of each model.

The results reveal that the conclusions in the more conventional logit analysis carry over to the determinants of the likelihood of using national Big 6 audit firms relative to using a non-Big-10 firm. In particular, the impact of MDI on auditor choice, and its mediating effect on state influences is applicable when a national Big 6 audit firm is chosen against non-Big-10 audit firms. Moreover, MDI increases the likelihood to pick a national Big 6 audit firm over the international Big 4 audit firms.

Model 2 reports the positive impact of the SSSR, and the State Council's national policy is exclusive to national Big 6 audit firms over both small audit firms and the international Big 4 audit firms. This confirms the efforts of the Chinese government in supporting high quality national Chinese accounting firms. Hence, the argument of Wang *et al.*[1], that LSOEs have weaker incentives to pick big audit firms relative to small ones, is only applicable in the case of international Big 4 audit firms.

In Model 3, we investigate the role of state influence in developing high quality national audit choice. The results show that LSOEs prefer national Big 6 over the international Big 4 audit firms, as well as over other small audit firms in the period before the SSSR and Document 56. In the period following these reforms, however, there seems to be no direct evidence of state influence on firms' audit choice. Nonetheless, state influence over national Big 6 auditor choice relative to non-Big-10 audit firms is reduced in the period after the announcement of Document 56, though the effect is only slightly significant, this is further investigated in Appendix D, where we provide additional estimates considering the nonlinear nature on the logit regression following [38,39].

Document 56 events to study how MDI impact changes throughout the study period. The results do not show any significant trends.

20 Ref. [42] explains this by the potential earnings management behaviour in the periods surrounding IPOs in which firms might target low quality audit firms in order to do so.

21 National Big 6 compared to non-Big-10, international Big 4 compared to non-Big-10 and national Big 6 compared to international Big 4.

Table 6. Determinants of Big 10 (Logit Model: Non-Big-10 as Base Case)

Variables	Model 1	Model 2	Model 3
	Big 10	Big 10	Big 10
LSOE	0.311	0.634*	0.757**
	(0.943)	(1.931)	(2.249)
Post SSSR		0.418***	0.475***
		(4.756)	(3.337)
Post SSSR. LSOE			-0.071
			(-0.405)
Post Document 56		0.844***	0.999***
		(13.990)	(11.465)
Post Document 56. LSOE			-0.304***
			(-2.739)
MDI	0.445***	0.316***	0.310***
	(13.081)	(9.097)	(8.884)
MDI . LSOE	-0.066*	-0.086**	-0.073**
	(-1.850)	(-2.416)	(-1.973)
Ln(Total Assets)	0.457***	0.331***	0.332***
	(11.725)	(7.945)	(7.971)
Sales Growth	-0.179***	-0.214***	-0.222***
	(-3.310)	(-3.905)	(-4.064)
RoA	-0.104	0.115	0.100
	(-0.236)	(0.245)	(0.209)
Leverage	-1.138***	-0.604**	-0.590**
	(-4.146)	(-2.180)	(-2.131)
Current Ratio	0.032*	0.009	0.006
	(1.817)	(0.536)	(0.363)
Receivables & Inventories	-0.700***	-0.642***	-0.648***
	(-2.928)	(-2.634)	(-2.655)
Asset Turnover	-0.077	-0.037	-0.034
	(-0.817)	(-0.382)	(-0.355)
Equity Issuance	-0.130***	-0.115**	-0.116**
	(-2.622)	(-2.272)	(-2.284)
QFII %	-15.519**	-7.090	-6.908
	(-2.249)	(-1.006)	(-0.988)
Institutional Investors	0.071	0.307	0.310
	(0.178)	(0.735)	(0.747)
Constant	-12.896***	-10.511***	-10.638***
	(-14.923)	(-11.550)	(-11.548)
Pseudo R2	0.132	0.157	0.158
Industry Dummies	Yes		
Region Dummies	Yes		
Observations	15000		

Variables are defined in Table 1. *, ** and *** denote 10%, 5% and 1% significance levels, respectively.

Table 7. Determinants of National Big 6 and International Big 4 (Multilogit Model: Non-Big-10 as Base Case)

	Model 1			Model 2			Model 3		
Variables	National Big 6	International Big 4	Difference	National Big 6	International Big 4	Difference	National Big 6	International Big 4	Difference
LSOE	0.438	-1.277	1.715***	0.906***	-1.671*	2.577***	0.993***	-1.630*	2.623***
	(1.281)	(-1.376)	(6.820)	(2.658)	(-1.737)	(6.740)	(2.731)	(-1.706)	(6.820)
Post SSSR				0.816***	-0.788***	1.604***	0.830***	-0.674**	1.504***
				(7.382)	(-5.091)	(78.540)	(4.906)	(-2.545)	(24.170)
Post SSSR . LSOE							-0.003	-0.165	0.162
							(-0.013)	(-0.540)	(0.210)
Post Document 56				1.014***	-0.386**	1.400***	1.148***	-0.422*	1.570***
				(16.145)	(-2.472)	(70.160)	(12.794)	(-1.897)	(45.730)
Post Document 56. LSOE							-0.267**	0.031	-0.298
							(-2.280)	(0.125)	(1.300)
MDI	0.516***	-0.032	0.548***	0.353***	0.064	0.289***	0.349***	0.060	0.289***
	(14.159)	(-0.389)	(9.550)	(9.742)	(0.722)	(9.990)	(9.564)	(0.671)	(9.550)
MDI . LSOE	-0.079**	0.101	-0.180**	-0.111***	0.135	-0.246**	-0.101***	0.142	-0.243**
	(-2.132)	(1.050)	(4.970)	(-3.002)	(1.351)	(5.800)	(-2.657)	(1.333)	(4.970)
Ln(Total Assets)	0.337***	1.086***	-0.749***	0.171***	1.209***	-1.038***	0.172***	1.210***	-1.038***
	(8.489)	(11.473)	(89.390)	(4.171)	(11.076)	(89.260)	(4.182)	(11.095)	(89.390)
Sales Growth	-0.149***	-0.401***	0.252*	-0.193***	-0.441***	0.248*	-0.200***	-0.441***	0.241*
	(-2.717)	(-3.123)	(3.240)	(-3.441)	(-3.363)	(3.460)	(-3.564)	(-3.359)	(3.240)
RoA	-0.201	3.557	-3.758	-0.041	3.363	-3.404	-0.047	3.318	-3.365
	(-0.488)	(1.608)	(2.230)	(-0.089)	(1.496)	(2.300)	(-0.101)	(1.472)	(2.230)
Leverage	-0.965***	-2.105***	1.140**	-0.267	-2.315***	2.048**	-0.259	-2.307***	2.048**
	(-3.567)	(-2.728)	(6.280)	(-0.980)	(-2.838)	(6.270)	(-0.947)	(-2.829)	(6.280)

Table 7 Continued

Current Ratio	0.046**	-0.199**	0.245**	0.021	-0.170**	0.191**	0.019	-0.170**	0.189**
	(2.574)	(-2.356)	(5.430)	(1.215)	(-2.091)	(5.540)	(1.085)	(-2.096)	(5.430)
Receivables & Inventories	-0.459*	-1.629***	1.170**	-0.336	-1.622***	1.287**	-0.340	-1.628***	1.288**
	(-1.910)	(-2.628)	(4.200)	(-1.371)	(-2.581)	(4.180)	(-1.387)	(-2.590)	(4.200)
Asset Turnover	-0.036	-0.393	0.357*	0.011	-0.441*	0.452*	0.013	-0.438*	0.451*
	(-0.386)	(-1.573)	(3.220)	(0.119)	(-1.771)	(3.240)	(0.130)	(-1.761)	(3.220)
Equity Issuance	-0.084*	-0.378***	0.294**	-0.061	-0.359***	0.298**	-0.062	-0.359***	0.297**
	(-1.656)	(-2.823)	(4.760)	(-1.191)	(-2.691)	(4.780)	(-1.199)	(-2.694)	(4.760)
QFII %	-27.471***	17.381	-44.852**	-18.748**	15.246	-33.994***	-18.626**	15.085	-33.711**
	(-3.709)	(1.402)	(6.550)	(-2.462)	(1.196)	(6.670)	(-2.456)	(1.181)	(6.550)
Institutional Investors	-0.182	0.718	-0.900	0.041	0.620	-0.579	0.045	0.625	-0.580)
	(-0.463)	(0.671)	(0.280)	(0.102)	(0.583)	(0.280)	(0.110)	(0.588)	(0.280)
Constant	-10.847***	-26.555***		-7.920***	-28.819***		-8.006***	-28.884***	
	(-12.392)	(-11.753)		(-8.782)	(-11.608)		(-8.679)	(-11.635)	
Pseudo R2	0.160			0.197			0.197		
Industry Dummies	Yes								
Region Dummies	Yes								
Observations	15000								

6. Summary and Conclusion

This paper extends the auditor selection process literature by focusing on the institutional setting of China, where "quality[22]" is not the only criterion determining the choice of auditor. As the government plays a major role in both the financial and audit markets in China[8], this paper has investigated how state ownership and market development affect firms' auditor choice. More specifically, this paper has studied the implications of the introduction of national policy "A Number of Opinions on Accelerating the Development of Certified Public Accountants" in 2009 by the State Council "Document 56" that sets a five-year strategy to develop Chinese national accounting firms in order to compete with international accounting firms [6].

The main findings show that the overall demand for high quality audit firms (i.e., the international Big 4 and national Big 6 combined) has increased significantly since 2009, the year of the announcement of Document 56. The decomposition of the high quality audit firms into the international Big 4 and national Big 6, however, shows that this overall increase in audit quality is mainly driven by a tendency toward hiring national Big 6 audit firms rather than the international Big 4. Hence, the findings support Gillis's [6] speculation that the government, through the MOF regulations and the CICPA, tries to develop its national accounting industry by encouraging the development of big national audit firms.

The LSOEs' tendency to hire national Big 6 audit firms over international Big 4 and non-Big-10 audit firms does not persist in the periods following the SSSR and Document 56. Consistent with the findings of [1] and [7], market development is found to enhance high quality auditor choice. The decomposition of the high quality audit firms also reveals that the determinants of the choice of auditor, especially national Big 6, are different from that found in literature studying western capitalist markets. In China, high quality is not necessarily the only criterion to choose audit firms, but the institutional environment where the firm operates is also important.

This paper has extended the literature on state ownership and audit selection, and explained how China is developing its national accounting industry through LSOEs and national policy. It has extended our understanding of how Chinese firms choose their auditors, following a wave of new regulations that aim to improve the audit profession in China. It has also highlighted the differences between China's 31 provinces and how regional development affects auditor choice and is distinguished between three types of auditors: international Big 4, national Big 6 and other small audit firms.

22 Audit quality depends on the auditor's competence (i.e., discover any breach in the contract) and independence (i.e., report this breach of contract) (Watts and Zimmerman, 1981, 314)

Acknowledgments

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Appendices

Appendix A: Average MDI score for each Province throughout the study period 2003 to 2014

Province	MDI	CMI	GDI	LEI	FMI	PMI
Anhui	8.87	9.68	8.98	7.96	9.43	8.31
Beijing	11.40	8.43	8.62	17.15	11.96	10.84
Chongqing	8.71	9.07	8.64	8.43	9.27	8.15
Fujian	10.07	11.47	9.42	9.31	10.63	9.51
Gansu	4.53	2.82	5.6	5.17	5.09	3.97
Guangdong	12.17	11.19	9.58	15.75	12.73	11.61
Guangxi Zhuang	6.87	7.6	8.22	4.79	7.43	6.31
Guizhou	4.99	4.65	6.1	4.22	5.55	4.43
Hainan	7.06	8.02	6.87	6.3	7.62	6.50
Hebei	7.93	10.41	8.07	5.3	8.49	7.37
Heilongjiang	6.24	5.6	7.41	5.71	6.80	5.68
Henan	8.53	11.01	8.32	6.26	9.09	7.97
Hubei	8.27	9.11	8.48	7.23	8.83	7.71
Hunan	7.72	8.46	7.47	7.23	8.28	7.16
Inner-Mongolia	6.28	7.34	6.2	5.3	6.84	5.72
Jiangsu	16.00	12.96	9.87	25.16	16.56	15.44
Jiangxi	7.72	9.08	7.76	6.32	8.28	7.16
Jilin	7.18	8.33	7.37	5.84	7.74	6.62
Liaoning	9.28	11.19	7.81	8.84	9.84	8.72
Ningxia Hui	6.22	8.45	6.19	4.01	6.78	5.66
Qinghai	3.94	4.22	4.39	3.21	4.50	3.38
Shaanxi	5.42	4.45	6.34	5.48	5.98	4.86
Shandong	9.89	12.15	8.71	8.8	10.45	9.33
Shanghai	13.05	8.61	9.62	20.91	13.61	12.49
Shanxi	5.25	3.58	6.7	5.47	5.81	4.69
Sichuan	8.11	8.22	8.17	7.95	8.67	7.55
Tianjin	9.68	8.5	8.95	11.6	10.24	9.12
Tibet	3.62	3.11	4.35	3.4	4.18	3.06
Xinjiang Uygur	4.72	4.1	5.28	4.79	5.28	4.16
Yunnan	6.22	6.03	7.31	5.31	6.78	5.66
Zhejiang	15.41	12.53	9.49	24.2	15.97	14.85
Average	8.11	8.08	7.62	8.63	8.67	7.55

Market Extracted from the National Economic Research Institute (NERI) periodic reports on Index of Marketisation of China's provinces 2003 to 2014. Market Development Index (MDI) overall score as well as Credit Market Index (CMI), Government Decentralisation Index (GDI), Legal Environment Index (LEI), Factor Market Index (FMI) and Product market Index (PMI).

Appendix B: CICPA Top-10 China audit firms for the period from 2003 to 2014											
2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
PwC	PwC	PwC	PwC	PwC	PwC	PwC	PwC	PwC	PwC	PwC	PwC
KPMG	KPMG	KPMG	Ernst & Young	Ernst & Young	Ernst & Young	Ernst & Young	Deloitte	Deloitte	Deloitte	Deloitte	Deloitte
Deloitte	Deloitte	Deloitte	Deloitte	Deloitte	Deloitte	Deloitte	KPMG	KPMG	Ernst & Young	Ruihua	Ruihua
Ernst & Young	Ernst & Young	Ernst & Young	KPMG	KPMG	KPMG	KPMG	Ernst & Young	Ernst & Young	KPMG	Ernst & Young	BDO
BDO	BDO	BDO	BDO	BDO	RSM	RSM	RSM	RSM	BDO	BDO	Ernst & Young
Jiangxi	Yue Hua	Shine Wing	Yue Hua	Ruihua	BDO	BDO	BDO	BDO	RSM	KPMG	KPMG
Rightson	Shine Wing	Asia-Pacific	Shine Wing	Shine Wing	Shine Wing	Wan Long	Shine Wing	Crowe Horwath	Pan-China	Daxin	Pan-China
Jingdu	Asia-Pacific	Yue Hua	Wan Long	Asia-Pacific	Daxin	Pan-China	Pan-China	Pan-China	Shine Wing	Pan-China	Da Hua
Shine Wing	Rightson	Rightson	Asia-Pacific	Rightson	Wan Long	Daxin	Crowe Horwath	Shine Wing	Crowe Horwath	Shine Wing	Shine Wing
Asia-Pacific	Jiangsu Notary	Jingdu	Rightson	Wan Long	Leanda	Shine Wing	Daxin	Daxin	Da Hua	Da Hua	Daxin

Big 10 audit firms based on The Chinese Institute of Certified Public Accountants (CICPA) Top-100 Accounting Firms annual reports

Appendix C: Summary Statistics							
Variable	Mean	S.D.	Min.	25%	Median	75%	Max.
International Big 4 %	0.05	-	-	-	-	-	-
National Big 6 %	0.30	-	-	-	-	-	-
LSOE %	0.48	-	-	-	-	-	-
MDI	8.99	2.39	2.60	7.27	8.99	11.04	13.33
QFII %	0.001	0.004	0.00	0.00	0.00	0.00	0.04
Institutional Investors %	0.05	0.09	0.00	0.00	0.02	0.07	0.74
Ln(Total Assets)	21.58	1.17	18.60	20.80	21.50	22.26	26.05
Sales Growth	0.12	0.39	-2.02	-0.03	0.11	0.26	2.25
RoA	0.03	0.08	-0.82	0.01	0.03	0.06	0.34
Leverage	0.20	0.16	0.00	0.07	0.19	0.31	1.07
Current Ratio	1.83	1.94	0.10	0.90	1.29	1.97	20.82
Receivables & Inventories	0.28	0.18	0.00	0.14	0.25	0.38	0.83
Asset Turnover	0.66	0.48	0.02	0.34	0.55	0.83	3.00
Equity Issuance	0.30	-	-	-	-	-	-

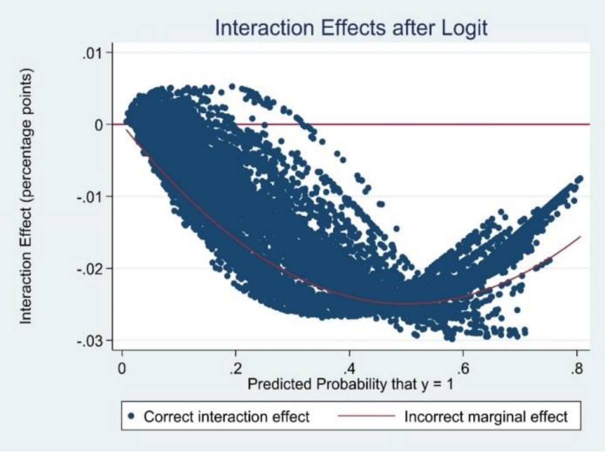
Data covers the period from 2003 to 2014 including 15,000 firm-year observations. Variables are defined in Table 1. All continuous variables are winsorized at the top and bottom 1%.

Appendix D Interaction Effects Analysis

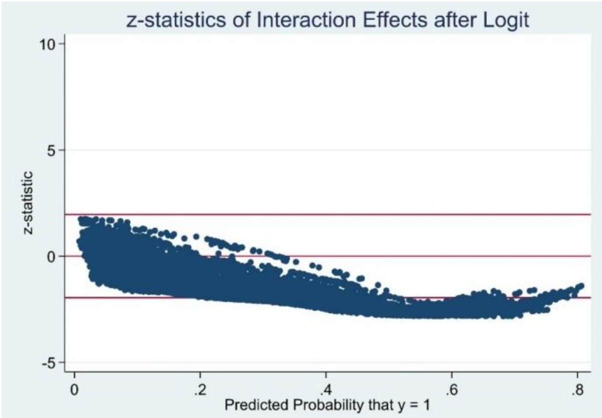
In this section, we analyse the interaction effects in the estimation models following [38,39]. In particular, we use the STATA command '*inteff*' that was developed by Norton *et al.* (2004). This command considers the nonlinear nature of the logit regression and derives the standard errors for the interaction effect by applying the Delta method proposed by [38]. By doing so, we allow the interaction effect to vary for each observation based on the predicted probability that the dependent variable is equal to one. We then present the results in graphs for both the magnitude and the significance of the interaction effect for each of the interaction terms used in the analysis.

The interaction effect of LSOE . MDI (National Big 6 relative to non-Big-10 audit firms).

Graph 1 shows that the interaction effect for 'LSOE . MDI' is positive when the likelihood that the firm will pick a national Big 6 audit firm is small, while it is negative when the predicted probability is relatively high. Nonetheless, the interaction effect becomes significant only when the probability to pick a national Big 6 audit firm is relatively high. Hence, the moderating role of MDI takes effect when the predicted probability to pick a national Big 6 audit firm is high.



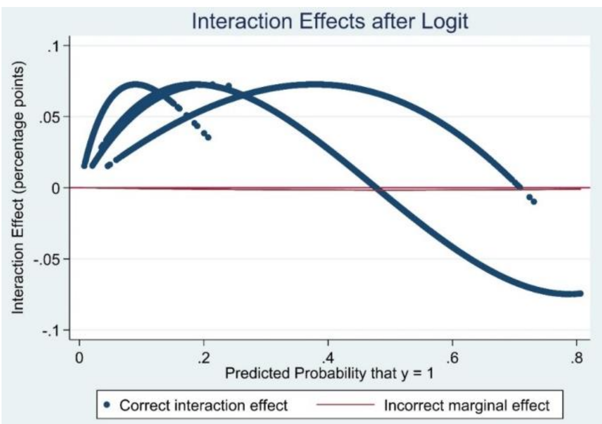
Graph 1 (a). Interaction effect magnitude of 'LSOE . MDI'



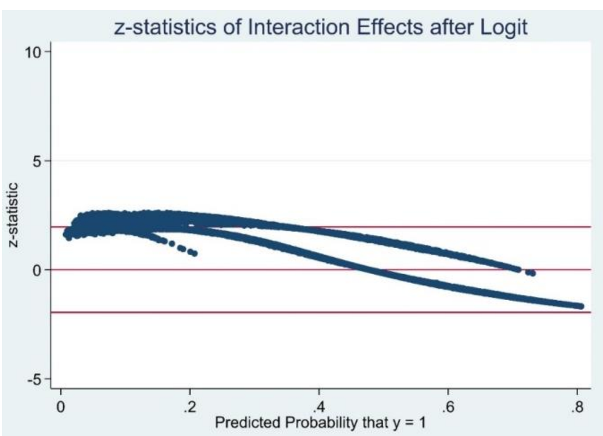
Graph 1 (b). Interaction effect significance of 'LSOE . MDI'

The interaction effect of LSOE . SSSR (National Big 6 relative to non-Big-10 audit firms).

Graph 2 analyses that the interaction effect for 'LSOE . SSSR'. The interaction effect is mainly positive for all observations. However, it is only significant when the likelihood that the firm will pick a national Big 6 audit firm is relatively small. Therefore, the SSSR increases the probability that an LSOE firm will pick a national Big 6 auditor when the probability for this tendency is relatively small.



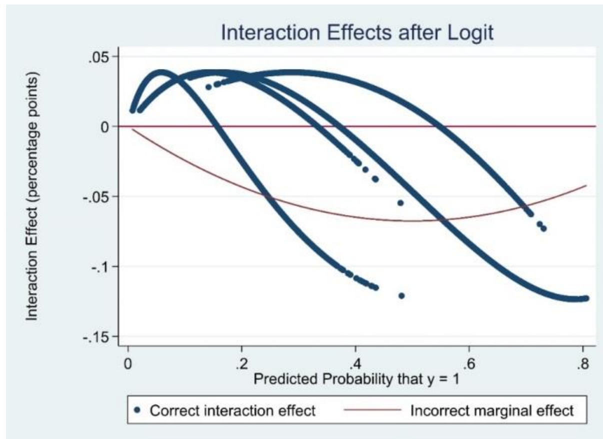
Graph 2 (a). Interaction effect magnitude of 'LSOE . SSSR'



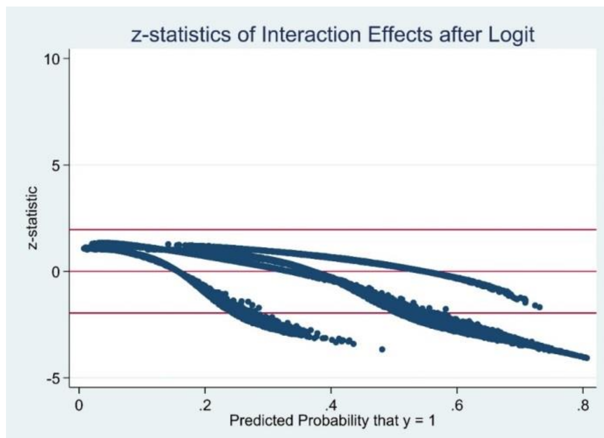
Graph 2 (b). Interaction effect significance of 'LSOE . SSSR'

(a) The interaction effect of LSOE. Document 56 (National Big 6 relative to non-Big-10 audit firms).

In Graph 3, we test the magnitude and significance of the moderating role of Document 56 on state influence. The graph shows a positive interaction effect for observations with low probability to pick a national Big 6 audit firm, while a negative impact for observations with high likelihood to pick this type of firms. Nonetheless, only the negative interaction effect seems to be significant.



Graph 3 (a). Interaction effect magnitude of 'LSOE . Document 56'

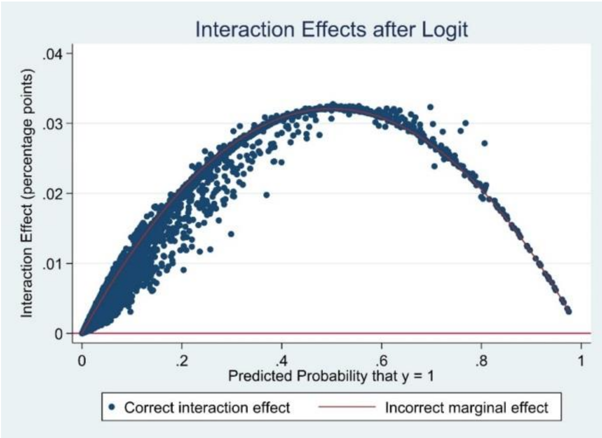


Graph 3 (b). Interaction effect significance of 'LSOE . Document 56'

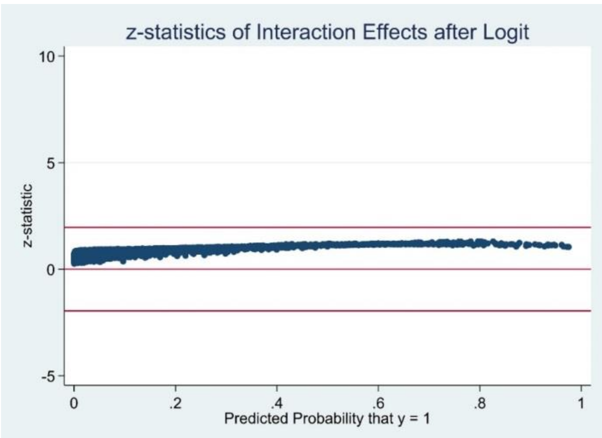
The interaction effect of LSOE. MDI (International Big 4 relative to non-Big-10 audit firms)

The remaining graphs test the magnitude and significance of the same interaction effect (i.e. LSOE with MDI, SSSR and Document 56), for the other audit choice comparisons (i.e. International Big 4 relative to non-Big-10 audit firms and National Big 6 relative to International Big 4 audit firms).

Graph 4 shows an overall positive interaction effect of LSOE and MDI. However, the interaction effect is not statically significant.



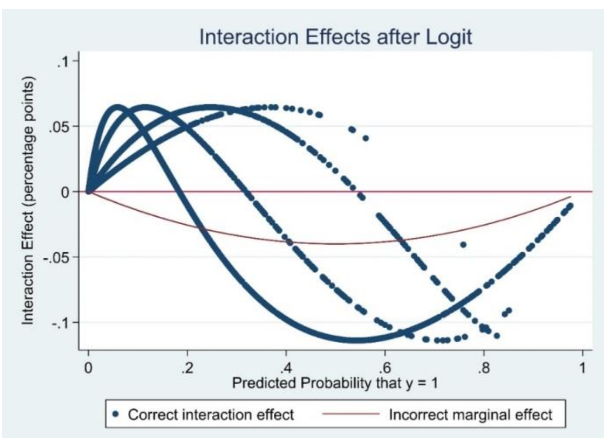
Graph 4 (a). Interaction effect magnitude of 'LSOE . MDI'



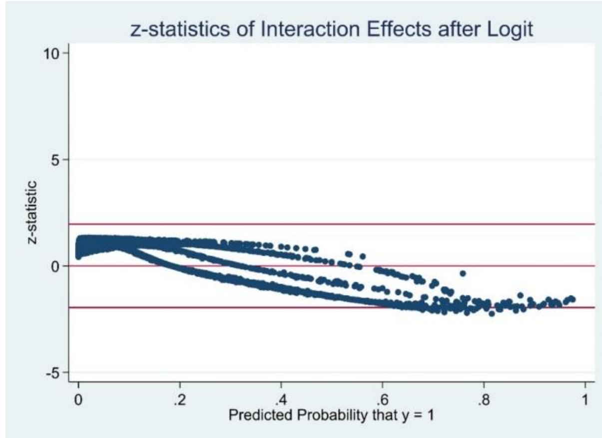
Graph 4 (b). Interaction effect significance of 'LSOE . MDI'

(b) The interaction effect of LSOE . SSSR (International Big 4 relative to non-Big-10 audit firms).

Graph 5 shows a fluctuation in the magnitude of the interaction effect of LSOE and SSSR. However, these interaction effects are not significant.



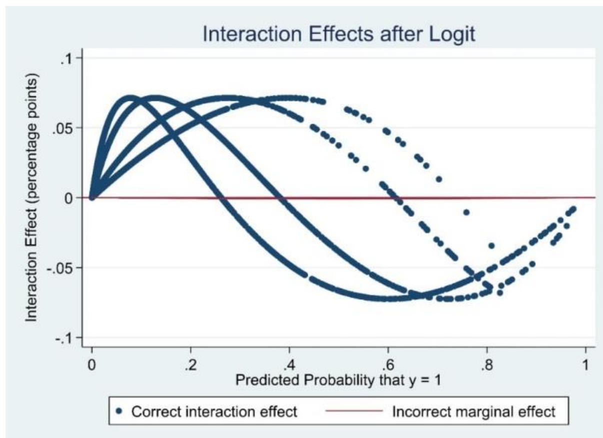
Graph 5 (a). Interaction effect magnitude of 'LSOE . SSSR'



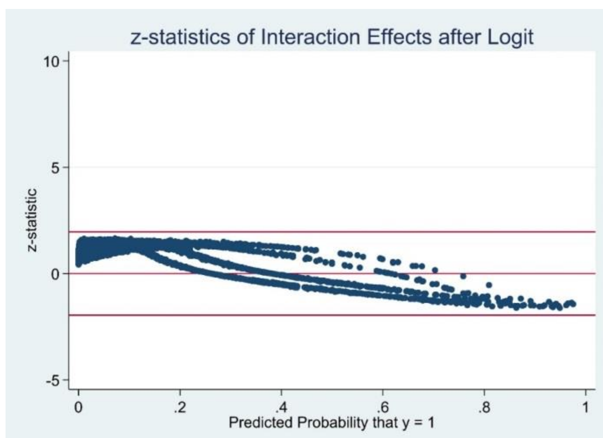
Graph 5 (b). Interaction effect significance of 'LSOE . SSSR'

(c) The interaction effect of LSOE. Document 56 (International Big 4 relative to non-Big-10 audit firms).

Similarly, Graph 6 shows an insignificant impact of Document 56 in moderating state influence.



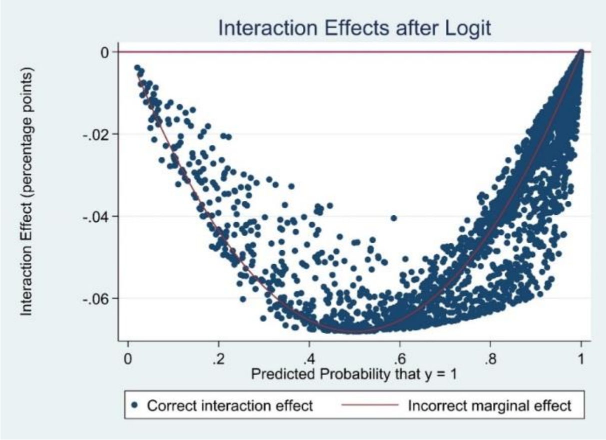
Graph 6 (a). Interaction effect magnitude of 'LSOE . Document 56'



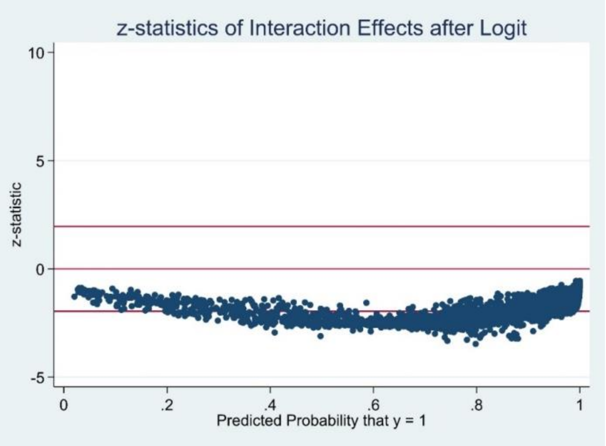
Graph 6 (b). Interaction effect significance of 'LSOE . Document 56'

(d) The interaction effect of LSOE . MDI (National Big 6 relative to International Big 4 audit firms).

The third and final comparison is between national Big 6 auditor choice relative to the international Big 4 audit firms. Graph 7 shows a negative interaction effect of LSOE and MDI, which is significant for observations with high probability to pick a national Big 6 audit firm. Hence, the results show that in regions with higher market development scores, LSOEs are more likely to pick international Big 4 audit firms.



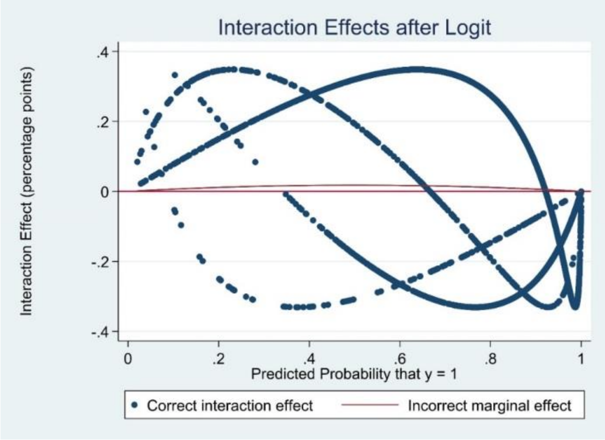
Graph 7 (a). Interaction effect magnitude of 'LSOE . MDI'



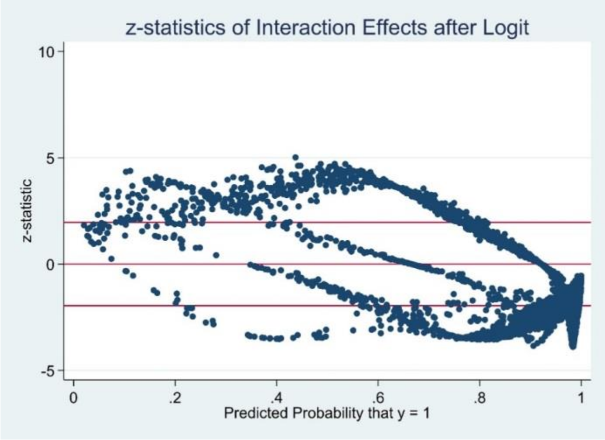
Graph 7 (b). Interaction effect significance of 'LSOE . MDI'

(e) The interaction effect of LSOE. SSSR (National Big 6 relative to International Big 4 audit firms).

Graph 8 shows a fluctuation in both the magnitude and the significance of the interaction between LSOE. SSSR for the case of national Big 6 relative to international Big 4 audit firms. This fluctuation indicates that the interaction effect depends on each observation, and that we cannot provide a single magnitude and significance test for this interaction term using the coefficient of the interaction term like in linear regressions.



Graph 8 (a). Interaction effect magnitude of 'LSOE . SSSR'

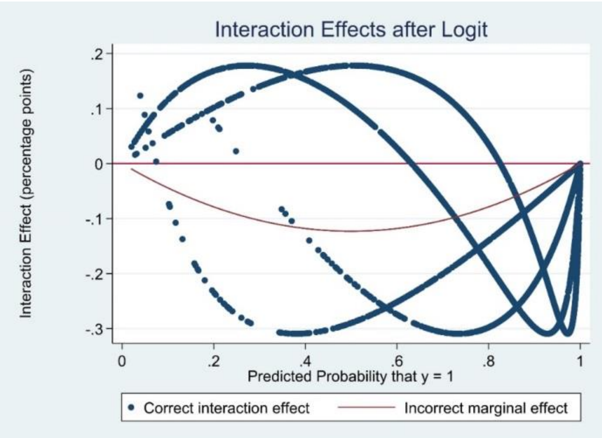


Graph 8 (b). Interaction effect significance of 'LSOE . SSSR'

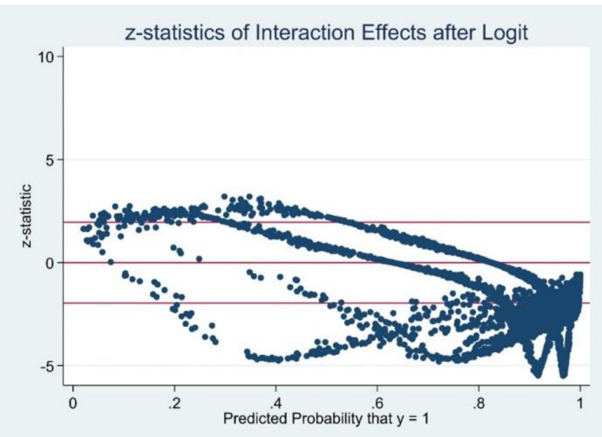
(f) The interaction effect of LSOE. Document 56 (National Big 6 relative to International Big 4 audit firms).

A similar result is provided in Graph 9 for the moderating effect of Document 56. In particular, the interaction effect magnitude and significance level highly dependent on how the other variables affect each observation.

In summary, the analysis of the interaction effects for nonlinear regressions (i.e., logit and probit) provides more detailed and accurate results for the interaction effects compared with testing the magnitude and significance of the coefficient of the interaction terms. This section provides these additional estimates and analyses each of the interaction terms used in the estimation models and discusses them individually and in the light of the other estimates provided in the results section of this paper.



Graph 9 (a): Interaction effect magnitude of ‘LSOE . Document 56’



Graph 9 (b): Interaction effect significance of ‘LSOE . Document 56’

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