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Financial ecological environment and internal audit outsourcing: evidence from survey in China

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ABSTRACT

This paper examines the determinants of internal audit outsourcing from the macro perspective of financial ecological environment. We find that in regions with a poor financial ecological environment, firms are more likely to outsource internal audit and more inclined to outsource to other service providers than to accounting firms that provide financial report audit services for them. Furthermore, those firms with high financing constraints and non-state-owned firms are more likely to outsource internal audit in poor financial ecological environments. Firms outsourcing internal audit in poor financial ecological environments will have low debt financing costs. These results suggest firms in weak financial ecological environments tend to use internal audit outsourcing to enhance investor confidence and reduce financing costs. This paper helps expand the literature related to the determinants of internal audit outsourcing from a macro perspective, and provide a reference for improving the resource-allocation efficiency of the governance-oriented internal audit.

KEYWORDS

Financial ecological environment; internal audit outsourcing; external audit; financing costs

1. Introduction

The ‘Opinions of the State Council on Strengthening Audit Work’ clearly states that internal audit work should be strengthened, innovation in audit methods should be promoted, and audit services should be explored for purchase from the public. Internal audit plays an important role in improving business management and realising value addition. However, due to resource-allocation consideration and inherent deficiencies of internal audit, some companies have begun to seek external solutions, and internal audit outsourcing has emerged. As pointed out by the Institute of Internal Auditors (IIA) Research Foundation, the biggest challenge that chief audit executives face at present is that the internal audit department often lacks sufficient auditors and audit skills to ensure its functions. In response to this challenge, many chief audit executives employ third parties to undertake part of the internal audit activities of companies (Barr-Pulliam, 2016).

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In practice, a survey on the global internal audit profession by PwC in 2018 found that 63% of respondents indicated they would seek appropriate talent support through internal audit outsourcing (PwC, 2018). The amount of engineering investment savings is approximately 1 billion RMB in Sinopec, which outsources internal audit, including the engineering budget, completion, settlement, and cost to service providers (National Audit Office, 2019). Internal audit outsourcing has been accepted and adopted by many organisations and has become one of the important features of internal audit development.

Despite the late start of the internal audit function in China, government departments have gradually begun to pay attention to internal audit outsourcing in recent years. In 2018, the National Audit Office issued the 'Regulations of the National Audit Office on Internal Audit', which for the first time stated clearly that internal audit departments should have reasonable personnel arrangements and may purchase internal audit services from the public to meet the needs of internal audit except for confidential matters. In 2019, the China Institute of Internal Audit officially issued 'No. 2309 Internal Audit Specific Standard – Management of Internal Audit Outsourcing', which further addressed issues related to internal audit outsourcing. The release of many documents implies internal audit outsourcing in the capital market has increasingly attracted the attention of regulatory authorities.

With the intensive attention of regulatory authorities and the practice community, scholars have discussed the determinants of internal audit outsourcing, including company size, asset specificity, audit frequency, transaction costs, auditor professional competence, and audit committee effectiveness (e.g. Abbott et al., 2007; Abdolmohammadi, 2013; Liu & Shi, 2008; Prawitt et al., 2012). Furthermore, Mubako (2019) proposes that future research could focus on the impact of the macroenvironment on internal audit outsourcing. The development of the financial ecological environment has a longstanding impact on enterprises' behaviours (Wei et al., 2014), and the poor financial ecological environment leads to high financing constraints and costs for firms (e.g. Zhu & Chen, 2009). The existing literature suggests that outsourcing internal audit can reduce corporate transaction costs (Abbott et al., 2012; Everaert et al., 2010) and accounting risks (e.g. Prawitt et al., 2012), which may facilitate financing for firms in poor financial ecological environments. On this basis, what is the relationship between the financial ecological environment and firms' decision-making regarding internal audit outsourcing? Previous literature has provided little discussion of this question, which deserves to be explored in depth.

This paper empirically examines the association between the financial ecological environment and internal audit outsourcing. The results show that firms in regions with a relatively poor financial ecological environment are more inclined to outsource internal audit rather than keep it in-house. We further find that firms in poor financial ecological environments are more likely to outsource to other service providers than to accounting firms that provide financial reporting audit services for them. Outsourcing internal audit can improve firms' internal audit effectiveness. In a poor financial ecological environment, firms with high financing constraints or non-state-owned firms are more likely to outsource internal audit, and firms that outsource internal audit are less likely to violate laws and regulations and thus afford relatively low debt costs, and high-quality external audit can strengthen the inhibitory effect of internal audit outsourcing on debt costs. Even

though internal audit outsourcing does not directly play a role in alleviating debt costs of firms in the good financial ecological environment, it helps enhance the effect of high-quality external audit in reducing corporate debt costs.

The contributions of this paper are mainly reflected as follows: First, this paper not only expands the literature on the determinants of internal audit outsourcing from a macro perspective, but also enriches the micro consequences of the financial ecological environment. The existing literature rarely considers macro factors as determinants of internal audit outsourcing and mostly focuses on the economic consequences such as corporate financing and earnings quality (e.g. Xie & Chen, 2009; Zhang et al., 2015; Zhu & Chen, 2009), with little discussion of the impact of the financial ecological environment on corporate governance. This paper explores the determinants of internal audit outsourcing from the view of the financial ecological environment, which not only expands the existing literature on the factors influencing internal audit outsourcing and responds to the current academic call for research on the macroenvironment and internal audit outsourcing (e.g. Mubako, 2019), but also deepens our understanding of the consequence of the financial ecological environment on corporate governance.

Second, this paper helps enrich empirical studies on internal audit outsourcing and adds new knowledge about the practice of internal audit outsourcing in the Chinese context. Due to the limitation of data resources, the existing literature on internal audit outsourcing is dominated by normative discussions, and empirical studies, especially with large sample, are scarce. By using the data obtained from a survey of Chinese listed companies conducted by the China Securities Regulatory Commission, this paper explores the determinants of internal audit outsourcing from a perspective of the financial ecological environment, which is helpful to supplement and enrich empirical studies on internal audit outsourcing.

Third, this paper provides empirical evidence on how enterprises can better realise the value-added of internal audit and improve organisational operations in terms of internal audit outsourcing. Internal audit is considered one of the four cornerstones of modern corporate governance. However, due to resource-allocation consideration and inherent deficiencies of internal audit, some enterprises have started to seek external solutions. This paper finds internal audit outsourcing in China is developing rapidly, and enterprises in a weak financial ecological environment prefer to use internal audit outsourcing as an effective governance approach to enhance investor confidence and reduce financing costs, which has implications for how enterprises can better realise the value-added of internal audit and improve organisational operations.

Finally, this paper helps regulators understand internal audit function from a macro perspective and provides references for policymakers to improve the efficiency of the capital market and optimise the allocation of audit supervision resources. Meanwhile, this paper discusses in depth the mechanism of the relationship between the financial ecological environment and internal audit outsourcing, which provides new knowledge for the practitioners to understand the governance effect of internal audit outsourcing.

2. Literature review

Internal audit outsourcing emerged in Western countries at the end of the twentieth century, and a stream of research has investigated its influencing factors. Some have explored how audit committees influence internal audit outsourcing. For example, Abdolmohammadi

(2013) finds audit committee involvement is significantly positively related to internal audit outsourcing. However, Abbott et al. (2007) argue that firms with independent, active, and expert audit committees are less likely to outsource routine internal audit activities, and the outsourcing of nonroutine internal audit activities are not negatively related to effective audit committees. The more effectively audit committees operate, the less likely firms are to outsource internal audit (Liu & Shi, 2008). Some research has discussed internal audit outsourcing from perspectives other than audit committees. For example, DeSimone and Abdolmohammadi (2016) find internal audit outsourcing is not related to the CEO's ability. Abdolmohammadi (2013) shows fewer internal auditors and their skill shortages can prompt firms to outsource internal audit, but the age, education, major, and professional certificate of the chief audit executive are not significantly related to internal audit outsourcing. Previous studies that discuss internal audit outsourcing mainly from the microenvironment perspective within organisations ignore the macroenvironment that may play an important role in internal audit outsourcing (Mubako, 2019). How is the financial ecological environment, a factor that has a significant impact on firms' behaviours (Wei et al., 2014), associated with internal audit outsourcing? The literature exploring it is scant, and in-depth research is needed.

The financial ecological environment is an important concept that has emerged in recent years to reflect the strengths and weaknesses of the financial environment at the macro level (Wei et al., 2014). Li et al. (2005) were the first to evaluate the financial ecological environment of Chinese cities, followed by Wang and Feng (2015). Some empirical studies examine the relationship between the financial ecological environment and financing constraints or costs of enterprises and find that improving the financial ecological environment is conducive to alleviating financing constraints or reducing financing costs (e.g. Deng & Zeng, 2011; Wei et al., 2014). In addition, some research examines the other consequences of the financial ecological environment, including debt governance (Xie & Chen, 2009), earnings quality (Zhang et al., 2015), and audit opinion (Zhu & Chen, 2009).

On the one hand, the existing literature focuses on internal audit outsourcing from the perspective of organisational factors and pays less attention to the association between the financial ecological environment and internal audit outsourcing. On the other hand, although academia is gradually recognising the far-reaching impacts of the financial ecological environment on firms' behaviours, previous studies are mainly interested in corporate financing and its related issues and rarely investigate the consequences of the financial ecological environment on corporate governance activities. The findings in this paper not only help further expand the boundaries of research on the financial ecological environment and firms' behaviours, but also provide important empirical evidence at the macro level for internal audit outsourcing.

3. Hypothesis development

3.1. Internal audit vs. external audit

After the financial scandals of Enron, WorldCom, and other famous companies at the beginning of the twenty-first century, which led to a public trust crisis, the call for strengthening internal audit of companies has been increasing, and the demand for corporate governance has gradually shifted from external to internal. Internal audit, as an in-process audit, focuses on legal compliance, strategic implementation, fraud detection, resource

allocation and other aspects. It is an important approach to improving the effectiveness of corporate governance, which lacks an important micro foundation without a complete internal audit system (Qin, 2013). By contrast, external audit, as an ex-post audit, is the inspection and verification of potential false and deceptive behaviours of enterprises. Therefore, the roles of internal audit and external audit in corporate governance are different.

External audit mainly provides corporate information for stakeholders who are outside companies, and the results of external audit are required to be disclosed to the public, whereas internal audit is mainly aimed at corporate insiders, and regulators do not compel companies to disclose the results of internal audit to the public. However, banks, as one of the stakeholders, have the ability, motivation, and demand to be informed of companies' information. First, banks are not ordinary stakeholders in the capital market, and companies' borrowing in banks is generally large in scale and long in period, and banks have information advantages, expertise, and professional talents, which enable them to implement effective supervision of companies (Stiglitz, 1996). Because banks provide companies with loans, this convenience in business not only allows banks to obtain first-hand information, but also provides companies incentives to accept bank supervision to improve their own reputations (Li, 2020). Thus, although fully understanding companies depending on the public information in the capital market is difficult for ordinary stakeholders, banks can also conveniently access companies' private information in order to allocate credit resources more reasonably.

Second, although companies are not required to publicly disclose information related to internal audit, the board of directors and managers are gradually raising their expectations of the internal audit function (PwC, 2009, 2014). Internal audit can help companies improve their organisational operations and value enhancement (IIA, 2009), which contribute to the effective fulfilment of debt covenants and the realisation of creditors' benefits. Therefore, banks are motivated to investigate and understand internal audit arrangements of companies when allocating credit resources.

Third, to comply with the regulatory requirements, banks need to be informed of companies' internal audit information. The 'Interim Measures for Loan Management of Current Funds' clearly requires that lenders should have a comprehensive understanding of customer information and perform due diligence, including borrowers' organisational structure, corporate governance, internal control. Bank credit officers must have detailed knowledge of borrowers' governance, internal control, and other information in order to make reasonable and prudent lending decisions. Because internal audit is closely related to corporate governance and internal control (IIA, 2009; Lin et al., 2011), bank credit officers must fully collect and identify relevant information that affects internal audit effectiveness in order to perform a good pre-lending due diligence.

3.2. The governance mechanism of internal audit outsourcing

Although the increasing importance of internal audit in corporate governance has triggered an urgent demand for internal auditors in companies (Mubako, 2019), the number of candidates seeking jobs related to internal audit in the labour market is decreasing (Sanglier, 2015). Internal audit outsourcing, as a form of internal audit arrangement, has been accepted and adopted by more and more organisations.

Theoretically, the potential mechanisms for internal audit outsourcing to enhance the governance effectiveness of internal audit are as follows. First, independence is necessary for the internal audit function to be effective, and internal audit outsourcing may be helpful to enhance the independence of the internal audit function as opposed to being in-house. For example, Abbott et al. (2016) argue that internal auditors may be reluctant to report managers in order not to lose their jobs, and outsourcing can enhance internal audit independence by overcoming the pressure internal auditors feel when facing managers. DeFond and Zhang (2014) point out that one of the advantages of outsourcing internal audit relative to in-house audit is independence. Desai et al. (2011) also argue external auditors are more optimistic about the independence of outsourcing service providers and are more willing to rely on internal audit work involving outsourcing services.

Second, competence is also necessary for the internal audit function to be effective. Wang et al. (2013) find auditors' competence is significantly related to internal audit effectiveness. Outsourcing service providers tend to have stronger professional competence than companies' internal audit departments (e.g. Mubako, 2019; Prawitt et al., 2012), because the former generally receive intensive professional training, accumulate rich experience from previously undertaking the internal audit work of other companies, and thus have more comprehensive knowledge of internal audit (Abbott et al., 2007). By contrast, employees in the internal audit department rarely have the opportunity to perform internal audit of other companies, and the resources in internal audit training may be insufficient (Abbott et al., 2012), which prompts companies to prefer to take advantage of the expertise from outsourcing service providers when performing internal audit. The survey in this paper shows that more than 90% of companies consider competence as one of the main reasons for outsourcing internal audit.

3.3. Financial ecological environment and internal audit outsourcing

The financial ecological environment has a non-negligible impact on firms. La Porta et al. (1997) point out that in underdeveloped financial markets, effectively protecting investors' benefits is difficult, thus leading to high expected rates of returns and an increase in corporate financing costs. Rajan and Zingales (1998) argue that in poor financial environments, investors have difficulty exactly setting the prices of capital based on accounting information quality, which inevitably leads to adverse selection and thus the increase in corporate financing costs. To reduce financing costs, firms need to convey more sound information to the capital market through other means than accounting information to alleviate information asymmetry with investors so as to avoid their demand for excessive returns on capital.

As mentioned earlier, internal audit outsourcing can improve internal audit competence and independence, thus helping to convey positive information beyond accounting information to the capital market. However, firms may not be motivated to outsource internal audit in certain financial environments. Previous studies find that in a good financial ecological environment, investors pay more attention to accounting information quality and rely more on audit opinions to price corporate financing (Wei et al., 2012; Zhu & Chen, 2009). The auditing of corporate accounting information is mandatory, and audit

opinions must be disclosed to the capital market regardless of internal audit function, so that investors can price corporate financing depending only on audit opinions. Firms may not have strong motivation to convey additional positive information to the public through strengthening the internal audit function. By contrast, in regions with a poor financial ecological environment, financial institutions may not pay enough attention to or have difficulty effectively identifying accounting information quality when making credit decisions. In this case, firms that outsource to improve internal audit competence and independence, thereby enabling investors to perceive that internal audit function can perform well, send a positive signal about corporate governance beyond accounting information to the capital market.

According to signalling theory, inimitability is one of the important prerequisites for effective signalling, which means that because the costs of transmitting the signal are lower for 'good' firms than for 'bad' firms, the signal can only be the action adopted by the former so as to help investors identify 'good' firms in the capital market (e.g. Scott, 2003). The reasons 'good' firms outsourcing internal audit can bear lower costs than 'bad' firms are as follows. First, outsourcing may expose firms to higher internal audit costs relative to in-house audit, and 'good' firms have a greater ability and willingness than 'bad' firms to bear these costs. Although previous studies do not agree on whether the costs of outsourcing internal audit are higher than the costs of in-house audit (e.g. Aldhizer et al., 2003; Caplan & Kirschenheiter, 2000; Prawitt et al., 2012), the survey based on the Chinese context in this paper finds most firms believe the costs after outsourcing internal audit are increasing. For example, the survey investigates the costs of internal audit for firms not outsourcing and shows the percentage of those who strongly agree or relatively agree that 'higher costs of outsourcing internal audit is the main reason for having it in-house' is as high as 70%. In general, 'good' firms have better financial health than 'bad' firms and therefore are able to bear the higher internal audit costs of outsourcing. Additionally, 'good' firms are more willing to bear the higher internal audit costs of outsourcing, because outsourcing can help reduce the incidence of internal control deficiencies. By contrast, 'bad' firms have severe agency problems, and fewer internal control deficiencies after outsourcing means agents' room for personal gains is compressed. As a result, 'bad' firms are less willing and able to outsource internal audit.

Second, outsourcing internal audit to third-party service providers is likely to result in the leakage of negative information about 'bad' firms to stakeholders, causing these firms to have to bear more costs. Employees in internal audit departments are likely to conceal negative information about firms because they are concerned about their jobs and have high identification with firms (Abbott et al., 2016). Third-party service providers, unlike employees in internal audit departments, are likely to leak negative information about firms to information seekers in the capital market. Because much more negative information exists in 'bad' firms, third-party service providers' transmission of this information to stakeholders will lead to a full understanding of 'bad' firms' operations, resulting in market penalties for these firms. Therefore, 'bad' firms have a strong incentive to keep internal audit in-house to facilitate the hiding of negative information. Unlike 'bad' firms, 'good' firms own much positive information. If third-party service providers transmit this information to stakeholders, such information will not incur market penalties but may benefit 'good' firms. For this reason, 'good' firms are more willing to outsource internal audit.

Collectively, in regions with a poor financial ecological environment, firms have an incentive to send more positive signals of corporate governance to stakeholders by internal audit outsourcing in order to facilitate stakeholders identifying the 'good' attributes and thus reduce financing costs in the case of a limited role of accounting information signalling. Thus, our hypothesis is as follows:

H1: Firms in regions with a poor financial ecological environment are more likely to outsource internal audit, *ceteris paribus*.

4. Research design

4.1. Description of the survey

The data on internal audit outsourcing used in this paper are obtained from the survey issued by China Securities Regulatory Commission to the listed companies in China in September 2014. The questions in the survey are designed according to Abbott et al. (2007) and Prawitt et al. (2012) and are responded by chief audit executives. Among them, the question about corporate decision-making of internal audit outsourcing is designed as follows: 'Do you use *any* outsourced internal audit services? A. Yes, B. No'. For the other information on internal audit outsourcing used in this paper, the corresponding questions are designed as follows:

(1) If you do outsource internal audit, please indicate your level of agreement with the following reasons for doing so: A. Expertise of outside service provider, B. Fewer internal audit staff in the firm, C. Legal liability insurance of outside service provider, D. Scheduling flexibility, E. Reducing overall costs of internal audit, F. Improve internal audit quality. Each of the six (from A to F) is with five options: strongly disagree, disagree, neutral, agree and strongly agree.

(2) If you do *not* outsource internal audit, please indicate your level of agreement with the following reasons for not doing so: A. Confidentiality of information, B. Alignment with organizational culture, C. Outside service provider do not understand the position of the firm, D. Outside service provider lacks a sense of ownership to the firm, E. Scheduling flexibility, F. Increase the overall costs of internal audit. Same as before, each of the six (from A to F) is with five options: strongly disagree, disagree, neutral, agree and strongly agree.

(3) Which answer best describes your primary internal audit outside service provider? A. Current accounting firm providing financial reporting audit services for the firm, B. Other accounting firm, C. Other.

The reliability and validity of the survey, as well as the specific details of the questionnaires' collection and processing, can be found in Zhao et al. (2015) and Li et al. (2017). Due to space limitations, this paper does not elaborate on them.

4.2. Sample and data

This paper takes 2,154 A-share listed companies that fill in the questionnaires as the initial sample. We remove the sample of companies that do not respond to whether they outsource internal audit. Even though a company may respond to whether internal

audit is outsourced, we delete it if its answer conflicts with that of other questions. For example, the company responds that it does outsource internal audit but also answers question (2): 'If you do *not* outsource internal audit, please indicate your level of agreement with the following reasons for not doing so'. The company responds that it does not outsource internal audit but also answers question (1): 'If you do outsource internal audit, please indicate your level of agreement with the following reasons for doing so'. The company answers both question (1) and (2). The missing data related to control variables are also eliminated. Table 1 shows our sample selection.

The data on the financial ecological environment comes from the book titled *Assessment on Financial Ecological Environment in China's Area (2013–2014)*, edited by Wang Guogang and Feng Guanghua, which has been widely accepted and adopted by scholars in the field of financial ecological environment (e.g. Wei et al., 2014; Xie & Chen, 2009; Zhang et al., 2015; Zhu & Chen, 2009). The data on internal control are obtained from Shenzhen DIB Internal Control Database, and other data on corporate finance and governance are from CSMAR Database. We winsorise the continuous variables in our main regressions at the 1st and 99th percentiles to eliminate the potential influence of outliers.

4.3. Empirical model and definition of variables

To test our hypothesis, we estimate the following logistic model:

$$OS_{i,t} = \alpha_0 + \alpha_1 EN_{i,t-1} + \sum \beta_k CONTROLS_{i,t-1} + INDUSTRY FE + \varepsilon_{i,t} \quad (1)$$

The dependent variable *OS* indicates whether one firm outsources internal audit. The independent variable *EN* proxies for the financial ecological environment, which is measured by *RANK* and *DUMRANK*, respectively. *RANK* is equal to the ranking of each region's financial ecological environment. The smaller value of *RANK* means a better financial ecological environment of the corresponding region. *DUMRANK* is a dummy variable that takes the value of 1 when the financial ecological environment of this region is relatively poor, and vice versa. This paper also controls for other potential factors that affect internal audit outsourcing. Table 2 shows the variable definitions.

5. Main results

5.1. Descriptive statistics

Figure 1 reports the percentage of internal audit outsourcing. In 2014, 26.84% of the firms located in regions with a poor financial ecological environment (*DUMRANK* = 1) outsource internal audit, which is higher than the outsourcing percentage (16.39%) of firms located

Table 1. Sample selection.

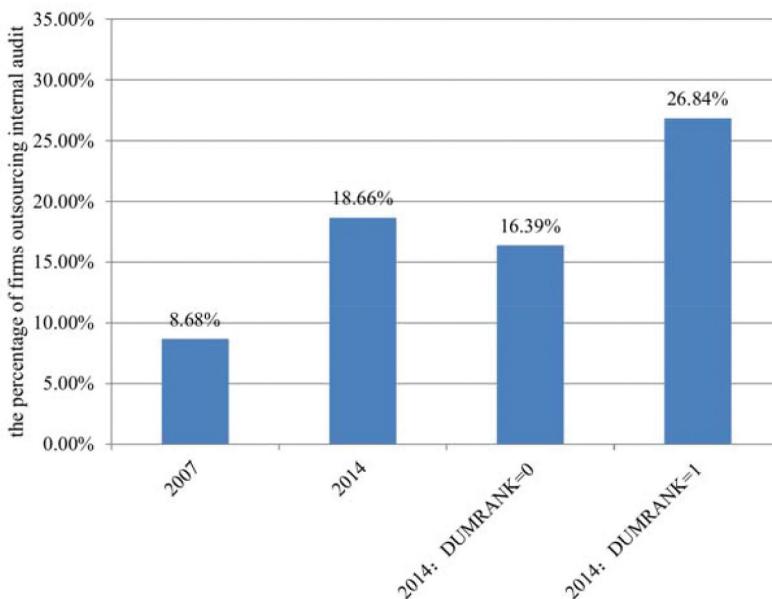
	Total
Initial sample	2,154
Delete:	
Sample without responding to whether internal audit is outsourced	598
Sample that there exist some conflicts between answers	113
Sample with missing data related to control variables	31
Final sample	1,412

Table 2. Variable definitions.

Variables	Definitions
<i>OS</i>	Dummy variable, equal to 1 if internal audit is outsourced, and 0 otherwise.
<i>RANK</i>	The ranking of regional financial ecological environment in 2014.
<i>DUMRANK</i>	Dummy variable, equal to 1 if the ranking of a region' financial ecological environment is greater than the median of <i>RANK</i> , and 0 otherwise.
<i>DUMIC</i>	Dummy variable, equal to 0 if there exist any internal control deficiencies, and 1 otherwise.
<i>BIG10</i>	Dummy variable, equal to 1 if the financial statement of a company is audited by the top 10 domestic accounting firms, and 0 otherwise.
<i>SIZE</i>	The natural logarithm of total assets.
<i>LEVERAGE</i>	The ratio of total liabilities to total assets.
<i>LNFFEE</i>	The natural logarithm of the financial reporting audit fees.
<i>GROWTH</i>	Sales growth, measured by sales in year <i>t</i> minus sales in year <i>t</i> -1, divided by sales in year <i>t</i> -1.
<i>ROA</i>	Return on assets, measured by the ratio of net profit to total assets.
<i>LOSS</i>	Dummy variable, equal to 1 if a company incurs a loss, and 0 otherwise.
<i>SOE</i>	Dummy variable, equal to 1 if a company is state-owned, and 0 otherwise.
<i>INDUSTRY FE</i>	Industry fixed effects.

in regions with a good financial ecological environment ($DUMRANK = 0$). Liu and Shi (2008) find that only 8.68% of the listed companies performing internal audit function in China outsource internal audit in 2007. As shown in Figure 1, even though the percentage of firms in regions with a good financial ecological environment who outsource internal audit is relatively low in 2014, it has increased significantly compared with that in 2007.

Descriptive statistics are reported in Table 3. The mean of *OS* is 0.19, which means nearly 20% of the firms outsource internal audit. The mean and the median of *RANK* and *DUMRANK* show that regions with a good financial ecological environment in our sample have more firms. The median of *DUMIC* is 1, indicating more than half of the firms do not have internal control deficiencies. The mean of *BIG10* is equal to 0.61, indicating 61% of

**Figure 1.** Overview of internal audit outsourcing in China.

the firms are audited by the top 10 domestic accounting firms. The mean of *ROA* is 0.04, the maximum is 0.24, and the minimum is -0.25 , indicating the profitability of the firms varies widely. The mean of *LOSS* is 0.08, which means most of the firms are profitable.

The results of the mean difference tests in Table 4 show most of the variables involved in the regression exhibit statistically significant differences between good and poor financial ecological environments. Specifically, the percentage of firms that outsource internal audit is high in regions with a poor financial ecological environment, which is consistent with the hypothesis in this paper. Also, we find in Table 4 that firms in a poor financial ecological environment exhibit significantly low internal-control quality, large size, high leverage, low sales growth, low profitability, and a high likelihood of loss. Additionally, the percentage of SOEs in regions with a poor financial ecological environment is high. These results are generally in line with our intuitive perceptions.

5.2. Baseline regression results

Table 5 reports the baseline regression results. We find in columns (1) and (3) that the coefficients of *RANK* and *DUMRANK* are significantly positive, which initially indicates firms in the regions with a poor financial ecological environment are more inclined to outsource internal audit. Furthermore, columns (2) and (4) show the relationship between the financial ecological environment and internal audit outsourcing remains substantially

Table 3. Descriptive statistics.

Variable	N	Mean	SD	Min	Median	Max
<i>OS</i>	1,412	0.19	0.39	0	0	1
<i>RANK</i>	1,412	8.75	7.47	1	5	30
<i>DUMRANK</i>	1,412	0.22	0.41	0	0	1
<i>DUMIC</i>	1,412	0.99	0.12	0	1	1
<i>BIG10</i>	1,412	0.61	0.49	0	1	1
<i>SIZE</i>	1,412	21.73	1.16	18.80	21.56	25.35
<i>LEVERAGE</i>	1,412	0.41	0.21	0.11	0.38	0.83
<i>LNFEED</i>	1,412	13.49	0.60	12.04	13.38	15.73
<i>GROWTH</i>	1,412	0.15	0.28	-0.65	0.12	1.78
<i>ROA</i>	1,412	0.04	0.05	-0.25	0.04	0.24
<i>LOSS</i>	1,412	0.08	0.27	0	0	1
<i>SOE</i>	1,412	0.31	0.46	0	0	1

Table 4. The mean difference tests.

	Good Financial Ecological Environment (<i>DUMRANK</i> = 0)		Poor Financial Ecological Environment (<i>DUMRANK</i> = 1)		DIFF.
	N	MEAN	N	MEAN	
<i>OS</i>	1,102	0.16	310	0.27	-0.11^{***}
<i>DUMIC</i>	1,102	0.99	310	0.97	0.02^{**}
<i>BIG10</i>	1,102	0.62	310	0.62	0.00
<i>SIZE</i>	1,102	21.83	310	22.04	-0.21^{***}
<i>LEVERAGE</i>	1,102	0.41	310	0.46	-0.05^{***}
<i>LNFEED</i>	1,102	13.49	310	13.49	-0.00
<i>GROWTH</i>	1,102	0.15	310	0.06	0.09^{***}
<i>ROA</i>	1,102	0.04	310	0.02	0.02^{***}
<i>LOSS</i>	1,102	0.08	310	0.17	-0.09^{***}
<i>SOE</i>	1,102	0.26	310	0.50	-0.24^{***}

Note: *** , ** , * represents statistical significance at the 1%, 5% and 10% level, respectively.

Table 5. Financial ecological environment and internal audit outsourcing.

	<i>Dep. Var. = OS</i>			
	(1)	(2)	(3)	(4)
<i>RANK</i>	0.036*** (4.05)	0.026*** (2.72)		
<i>DUMRANK</i>			0.568*** (3.60)	0.367** (2.20)
<i>DUMIC</i>		-0.944* (-1.85)		-0.941* (-1.85)
<i>BIG10</i>		-0.021 (-0.14)		-0.043 (-0.29)
<i>SIZE</i>		0.181* (1.65)		0.194* (1.78)
<i>LEVERAGE</i>		-0.763 (-1.55)		-0.721 (-1.47)
<i>LNFFEE</i>		0.092 (0.51)		0.049 (0.27)
<i>GROWTH</i>		-0.010 (-0.03)		-0.010 (-0.03)
<i>ROA</i>		-1.385 (-0.73)		-1.458 (-0.77)
<i>LOSS</i>		0.146 (0.46)		0.134 (0.42)
<i>SOE</i>		0.793*** (4.78)		0.811*** (4.90)
<i>CONSTANT</i>	-1.047*** (-2.66)	-5.116*** (-2.69)	-0.787** (-2.09)	-4.630** (-2.46)
<i>INDUSTRY FE</i>	YES	YES	YES	YES
<i>Observations</i>	1,412	1,412	1,412	1,412
<i>Pseudo-R²</i>	0.034	0.069	0.032	0.067

Note: ***, **, * represents statistical significance at the 1%, 5% and 10% level respectively, with z values in parentheses.

unchanged even after controlling for other potential influencing factors. This finding suggests that when firms are in regions with a poor financial ecological environment, they are more willing to outsource in terms of internal audit arrangement. Therefore, H1 is verified.

6. Additional tests

6.1. Omitted variables

Despite controlling for firm-level characteristics in the empirical tests, the main results in this paper may be disturbed by omitted variables. First, firms may outsource internal audit because of the low competence of internal audit departments, and they use third-party professional audit resources to compensate for their internal audit work in order to improve internal audit quality. Second, characteristics such as the CFO's work experience and the importance he or she attaches to internal audit may also influence the firm's decision regarding internal audit outsourcing. Finally, the financial ecological environment and regional marketisation may be related, and internal audit outsourcing may depend on regional marketisation rather than the financial ecological environment. Therefore, alternative explanations may exist for the relationship between the financial ecological environment and internal audit outsourcing.

To mitigate the problem of omitted variables, this paper performs additional tests as follows. First, based on the survey data, we measure the competence of internal audit departments as the number of internal audit staff, work experience, and possession of professional certificates. Specifically, the variable *ADJ_IA* is measured as the total number of full-time internal audit staff adjusted by the medians in industries, the variable *EXPRC* is measured as the number of internal audit staff with more than six years of work experience in accounting or auditing divided by the total number of internal audit staff, and the variable *CERTF* is measured as the number of internal audit staff with domestic or overseas accounting certificates divided by the total number of internal audit staff. This paper also controls for the work experience and possession of professional certificates of the chief audit executive. Specifically, the variable *EXPRC_A* is assigned as 0 to 3 when the accounting or auditing work experience of the chief audit executive is less than 3 years, 3–5 years, 6–10 years, and more than 10 years, respectively. The variable *CERTF_A* is assigned as 1 if the chief audit executive holds domestic or overseas accounting certificates, and 0 otherwise.

Second, this paper controls for the characteristics of CFO, including the importance that CFO attaches to internal audit and CFO work experience. The question regarding the former is designed as ‘How do you view the position of internal audit department in the company management?’ and the respondents have five options (i.e. not important at all, not important, neutral, important, and very important), and the variable *IMPT* is assigned 1 to 5 correspondingly. Regarding CFO’s work experience, the variable *EXPRC_F* is assigned 0 to 3 when he or she has less than 3 years, 3–5 years, 6–10 years, and more than 10 years work experience in accounting, finance, or internal audit, respectively.

Third, this paper controls for regional marketisation. Specifically, according to the data from the book titled *Marketisation Index of China’s Provinces: NERI Report 2016* (Wang et al., 2017), when the independent variable in this paper is the ranking of the regional financial ecological environment (*RANK*), the variable *RANKMAR* is measured as the ranking of regional marketisation, and a smaller *RANKMAR* means a higher regional marketisation. When the independent variable is *DUMRANK*, the variable *DUMMAR* is a dummy equal to 1 if the marketisation of one region is greater than its median, and 0 otherwise. Additionally, we use the residuals *RSD_RANK* (*RSD_DUMRANK*) from the regression of *RANK* (*DUMRANK*) on *RANKMAR* (*DUMMAR*) as an independent variable, which captures the part of the financial ecological environment that regional marketisation cannot explain.

Untabulated results show that the relationship between the financial ecological environment and internal audit outsourcing remains unchanged when addressing the problem of omitted variables.

6.2. The types of outsourcing service providers

If firms in poor financial ecological environments need to send positive signals to stakeholders, they need to alleviate the latter’s doubts about internal audit independence. Therefore, they should be more inclined to outsource internal audit to other service providers rather than the accounting firms that provide financial reporting audits for them.

To verify this inference, the sample is divided into three groups, where the variable *OS_TYPE* is equal to 1 for the group that outsources internal audit to accounting firms that provide financial reporting audits for them, 2 for the group that outsources to other

service providers, and 0 for the group that keeps internal audit in-house. The multinomial-logit model is used to estimate whether firms in poor financial ecological environments are more likely to outsource to accounting firms that provide financial reporting audits for them or to other service providers, where the group of $OS_TYPE = 0$ is the benchmark. Columns (1) and (3) of Table 6 show the coefficients of $RANK$ and $DUMRANK$ are insignificant, indicating that in regions with a poor financial environment, the likelihood that firms outsource to accounting firms that provide financial reporting audits for them is not significantly higher. However, the coefficients of $RANK$ and $DUMRANK$ are significantly positive in columns (2) and (4), implying the likelihood that firms outsource to other service providers increases significantly in regions with a poor financial ecological environment. The above inference is supported.

6.3. Internal audit outsourcing and internal audit quality

Previous literature suggests internal audit outsourcing may be helpful in improving internal audit quality (e.g. Mubako, 2019; Trotman & Duncan, 2018) due to the high independence (e.g. Abbott et al., 2016; Desai et al., 2011) and competence (e.g. Mubako, 2019; Prawitt et al., 2012) of outsourcing service providers. Thus, external auditors are more willing to rely on the work of outsourcing service providers (Desai et al., 2011). We next examine whether internal audit outsourcing can improve firms' internal audit quality.

Academia has no widely accepted measures of internal audit quality at present (DeFond & Zhang, 2014). We find the existing studies mainly measure internal audit quality from the perspective of the input of internal audit (e.g. Lin et al., 2011; Prawitt et al., 2009), and little to evaluate internal audit quality from the perspective of the output. However, if we want to verify the proposition that 'Outsourcing improves internal audit quality', measuring internal audit quality based on input factors may be inappropriate because both internal audit outsourcing and these input factors are part of the factors influencing internal audit quality. To examine whether outsourcing would improve internal audit quality, measuring internal audit quality based on the outcome-oriented (output) factors may be more appropriate.

Table 6. Financial ecological environment and internal audit outsourcing: different types of outsourcing service providers.

	(1) $OS_TYPE = 0$ VS. $OS_TYPE = 1$	(2) $OS_TYPE = 0$ VS. $OS_TYPE = 2$	(3) $OS_TYPE = 0$ VS. $OS_TYPE = 1$	(4) $OS_TYPE = 0$ VS. $OS_TYPE = 2$
$RANK$	0.007 (0.52)	0.035*** (2.90)		
$DUMRANK$			-0.036 (-0.14)	0.570*** (2.71)
$CONSTANT$	-6.114** (-2.26)	-5.932** (-2.53)	-5.845** (-2.18)	-5.355** (-2.30)
$CONTROLS$	YES	YES	YES	YES
$INDUSTRY\ FE$	YES	YES	YES	YES
$Observations$	1,408	1,408	1,408	1,408
$Pseudo-R^2$	0.085	0.085	0.084	0.084

Note: ***, **, * represents statistical significance at the 1%, 5% and 10% level respectively, with z values in parentheses. As some respondents answer whether to outsource internal audit but do not further answer the types of outsourcing service providers, the sample here is less than that in the baseline regression.

In the output of internal audit, high-quality internal audit helps curb corporate earnings manipulation (Prawitt et al., 2009), reduce the risk of financial fraud (Prawitt et al., 2012), and thus improve financial reporting quality (e.g. Abbott et al., 2016). Therefore, this paper first examines the relationship between internal audit outsourcing and corporate financial reporting quality. Following Guan et al. (2016), we measure financial reporting quality by the absolute value of the regression residuals of the performance-adjusted Jones model $|KLV_DA|$ (Kothari et al., 2005) and the absolute value of the regression residuals of the modified DD model $|DD_DA|$ (Dechow & Dichev, 2002). Then, we regress $|KLV_DA|$ and $|DD_DA|$ on *OS* respectively, and control for potential influencing factors. Columns (1) and (2) of Table 7 show the coefficients of *OS* are both significantly negative, indicating firms that outsource internal audit have a higher financial reporting quality.

Second, to verify whether outsourcing improves financial reporting quality by improving internal audit quality or enhancing external auditors' effort in financial report auditing, this paper examines the relationship between internal audit outsourcing and external auditors' effort. If we find in the empirical test that the two are not significantly related, we can argue that in the absence of more effort by the external auditor in financial reporting auditing, the improvement in financial reporting quality is likely to be brought about by the improvement in internal audit quality triggered by outsourcing. This paper follows Pincus et al. (2017) in measuring the external auditor's effort as audit fees (*LNFEF*), equal to the natural logarithm of financial reporting audit fees. Column (3) of Table 7 shows the coefficient of *OS* is not statistically significant, which supports our argument above.

Third, if internal audit outsourcing helps strengthen the governance function of internal audit, it should improve internal control effectiveness. Internal audit and internal control are closely linked, and internal audit largely influences the improvement of internal control. Internal audit that is found to be ineffective will directly lead to internal control evaluated as ineffective (Chen, 2010). Therefore, effective internal audit helps prevent the occurrence of internal control deficiencies in enterprises (Lin et al., 2011). If the proposition that internal audit outsourcing improves internal control effectiveness holds, such a finding would suggest internal audit outsourcing helps companies strengthen their internal audit function. Column (4) of Table 7 reports that the coefficient of *OS* is significantly positive, implying firms that outsource internal audit are less likely to have internal control deficiencies, which is consistent with the above inference.

Table 7. Internal audit outsourcing and internal audit quality.

	(1) $ KLV_DA $	(2) $ DD_DA $	(3) <i>LNFEF</i>	(4) <i>DUMIC</i>	(5) <i>DISIC</i>
<i>OS</i>	-0.008*** (-2.73)	-0.007* (-1.49)	-0.002 (-0.06)	1.148** (1.76)	0.826** (1.93)
<i>CONSTANT</i>	0.127*** (2.86)	0.165** (2.26)	3.853*** (9.31)	2.224 (0.32)	6.801 (1.02)
<i>INDUSTRY FE</i>	YES	YES	YES	YES	YES
<i>CONTROLS</i>	YES	YES	YES	YES	YES
<i>Observations</i>	1,328	1,328	1,328	1,328	1,328
<i>Pseudo-R² / R²</i>	0.132	0.101	0.617	0.231	0.128

Note: ***, **, * represents statistical significance at the 1%, 5% and 10% level respectively, with t/z values in parentheses.

One-tailed tests are done when a specific direction is predicted and the sign of the coefficient is consistent with that prediction.

Finally, because high-quality internal audit can convey more positive information about internal governance to stakeholders, we should be able to infer that outsourcing can help improve the disclosure of internal governance information if outsourcing can improve internal audit quality. Internal control is an important mechanism in corporate internal governance (Chen et al., 2019). Therefore, the disclosure quality of corporate internal governance can be reflected by the disclosure quality of internal control. This paper takes the disclosure index of internal control information (*DISIC*) as the measure of the disclosure quality of internal control, and column (5) of Table 7 shows firms that outsource internal audit have higher disclosure quality of internal control, which confirms our inference.

6.4. The path of internal audit outsourcing affecting corporate financing costs

In regions with a poor financial ecological environment, investors have difficulty effectively pricing capital according to financial reporting quality (Rajan & Zingales, 1998), and thus internal audit outsourcing is unlikely to reduce financing costs by improving financial reporting quality. So, what are the paths through which internal audit outsourcing affects firms' financing costs in regions with a poor financial ecological environment? Given that legal compliance is an important concern of internal audit (Qin, 2013), this paper further explores whether internal audit outsourcing reduces financing costs by improving firms' legal compliance. Legal compliance is measured as the number of illegal events, and financing costs are equal to interest expenses divided by total long- and short-term debts.

Untabulated results suggest that, First, firms in regions with a poor financial ecological environment are less likely to be illegal if they outsource internal audit. Second, the test of the mediating effect shows that in regions with a poor financial ecological environment, internal audit outsourcing helps reduce the cost of debt by decreasing firms' violation. That is, legal compliance is a mediator in the relationship between internal audit outsourcing and the cost of debt.

6.5. Financial constraints, financial ecological environment, and internal audit outsourcing

As mentioned earlier, in regions with a poor financial ecological environment, investors pay less attention to or have difficulty identifying accounting information and thus have little understanding of corporate governance. In this case, they require high return on capital to defend their interests, resulting in high financing costs in the capital market. To enhance the latter's confidence and reduce their capital pricing in a poor financial ecological environment, firms with financial constraints have an incentive to send positive governance signals to investors through other means except accounting information quality. Internal audit is an important part of internal governance. Therefore, investors are able to get a better picture of firms' internal governance, depending on internal audit arrangements. When investors learn a firm outsources internal audit and thus has higher internal audit independence and competence, they will perceive a better governance mechanism and be willing to reduce the return on capital. By contrast, in regions with a good financial ecological environment, because investors are more concerned about and capable of

identifying the accounting information quality of firms and pricing capital accordingly, financially constrained firms may pay more attention to improving accounting information quality and lack incentives to outsource internal audit to strengthen internal audit governance mechanisms.

To test the above theoretical inference, this paper first identifies the extent of financial constraints to which a firm is subject. Given that financial constraints can be reflected by many key financial variables, Kaplan and Zingales (1997) construct a comprehensive index of financial constraints followed by many literatures (e.g. Wei et al., 2014) using five variables: net cash flow from operating activities scaled by total assets, cash dividends scaled by total assets, cash and cash equivalent holdings scaled by total assets, the ratio of total liabilities to total assets, and Tobin's Q. Consistent with this construction, we calculate the KZ index for each firm. If this index is less than the median, the dummy variable *FC* takes the value of 0, indicating low financial constraints, and takes 1 otherwise. Based on the identification of financial constraints, this paper examines the differences in the relationship between financial constraints and internal audit outsourcing under different financial ecological environments. We find in untabulated results that firms with high financial constraints are more likely to outsource internal audit in regions with a poor financial ecological environment, which is consistent with the inference above.

6.6. Property rights, financial ecological environment, and internal audit outsourcing

The absence of owners and the special agency problems of SOEs, coupled with their large size and complex operations, make performing the supervision of 'comprehensive coverage, authoritative and efficient' difficult for internal audit departments. To meet the strict requirements for internal audit from regulatory authorities, SOEs may have many more incentives to rely on the competence and independence of outsourcing service providers to enhance the effectiveness of internal audit supervision. However, in regions with a poor financial ecological environment, because economic development is relatively backward, financial markets are underdeveloped, and government intervention in bank operations is strong, SOEs have more severe 'soft budget constraints'. The ability and willingness of financial risk control in SOEs are weak due to their easy access to funds (Xie & Chen, 2009). Additionally, the lack of integrity culture in regions with a poor financial ecological environment (Xie & Zhang, 2007) may lead to executives in SOEs becoming corrupt and illegal. Under the background of China's strong demand for comprehensive audit coverage, if SOEs in regions with a poor financial ecological environment outsource internal audit, these problems are more likely to be exposed, which is against the political promotion of executives. Therefore, we infer that SOEs in regions with a poor financial ecological environment are less likely to outsource internal audit.

Based on the above analysis, this paper further examines the relationship between property rights and internal audit outsourcing in different financial ecological environments. The untabulated results confirm our inference.

6.7. The signalling roles of internal audit outsourcing and external audit in different financial ecological environments

The prerequisite for a sound corporate governance structure is the establishment of an effective synergistic relationship between corporate governance systems, which includes the synergy between internal audit and external audit. In regions with a poor financial ecological environment, investors are unable to effectively price the capital based on firms' accounting information quality, which leads to adverse selection and thus increases financing costs (Rajan & Zingales, 1998). The signalling of accounting information quality is likely to fail regardless of whether firms in these regions hire high-quality external auditors. To reduce financing costs, firms have an incentive to compensate for the failure in signalling accounting information quality by outsourcing internal audit, which may help strengthen the competence and independence of internal audit. By doing so, firms can send additional positive signals of corporate internal governance to stakeholders. Note that although investors may not effectively identify high-quality accounting information brought by high-quality external audit, high-quality external audit has always played its role of external supervision. If outsourcing service providers are not diligent, resulting in great risks to businesses, the firm is likely to find these risks through communication with high-quality external auditors. Hence, we infer that internal audit outsourcing will be more helpful in alleviating the financing costs of enterprises in regions with a poor financial ecological environment if they hire high-quality external auditors.

In regions with a good financial ecological environment, investors focus on and can effectively identify accounting information differences among companies, resulting in companies with different accounting information quality bearing different financing costs accordingly (Zhu & Chen, 2009). High-quality accounting information contributes to mitigating information asymmetry between stakeholders and companies, and thereby reduces financing costs. Furthermore, external auditors performing financial reporting audits need to evaluate the firm's internal audit quality to determine the extent to which external auditors rely on the work of internal audit (Qin, 2013), and external auditors are more likely to rely on this work when the firm outsources internal audit (e.g. Desai et al., 2011). It can be seen that internal audit outsourcing helps strengthen external auditors' approval of the work of internal audit. By relying on the results of internal audit, external auditors can comprehensively understand the problems or risks in firms' businesses so that they can objectively and reasonably audit financial statements, which further enhances investors' confidence and reduces financing costs.

To verify whether the above theoretical inference holds, the empirical tests are done. Untabulated results suggest that in regions with a poor financial ecological environment, internal audit outsourcing helps reduce the cost of debt, and high-quality external audit can enlarge the effect of internal audit outsourcing on reducing the cost of debt even though external audit itself is difficult to play a signalling role. In regions with a good financial ecological environment, high-quality external audit is conducive to reducing the cost of debt, and internal audit outsourcing can help enlarge the effect of high-quality external audit on reducing the cost of debt although it cannot play a signalling role.

7. Conclusion and discussion

This paper investigates the determinants of internal audit outsourcing from the perspective of the financial ecological environment. We find firms are more likely to outsource internal audit in regions with a poor financial ecological environment. Furthermore, internal audit outsourcing can help improve the effectiveness of internal audit. In regions with a poor financial ecological environment, firms are more likely to outsource internal audit to other service providers than to accounting firms that provide financial reporting audit for them, and financially constrained or non-state-owned firms are more inclined to outsource internal audit. In regions with a poor financial ecological environment, firms that outsource internal audit are less likely to have violations, thus resulting in a low cost of debt, and high-quality external audit can strengthen the effect of internal audit outsourcing on decreasing the cost of debt. In regions with a good financial ecological environment, internal audit outsourcing does not directly play a role in reducing the cost of debt but helps enhance the effect of high-quality external audit on reducing the cost of debt.

In terms of time series, China's financial environment has been improving while the proportion of firms outsourcing internal audit has increased. This phenomenon may indicate enterprises outsource internal audit for other reasons, but it is not contradictory to the conclusion of this paper. First, other reasons are possible for internal audit outsourcing. China's government in recent years has attached great importance to audit and has required strengthening internal audit function. Therefore, internal audit departments' personnel and technology will have increasing difficulty ensuring the function of internal audit. To meet this challenge, enterprises will be more likely to hire third parties to undertake internal audit activities. Meanwhile, the guidance of internal audit-related policies on the purchase of social audit services also helps promote internal audit outsourcing. Nevertheless, the emphasis on internal audit and the relevant policies do not differ geographically in their scope of application and are stable in the given year. Therefore, the cross-sectional model established in this paper can mitigate the interference of the above factors that cause the increase of firms with internal audit outsourcing.

Second, despite a common time trend between the improvement of the financial environment and the increase of firms with internal audit outsourcing, we cannot assume a positive relationship exists between the two. The reason is that obtaining the relationship between two variables only by the fact that each variable increases over time is likely to lead to spurious regression problems (Wooldridge, 2006).

Finally, if the proportion of firms with internal audit outsourcing increases over time and the overall financial ecological environment also improves over time, as long as the increase in the proportion of firms outsourcing internal audit in regions with a poor financial ecological environment is more rapid than that in regions with a good financial ecological environment, the hypothesis in this paper still can be supported.

Collectively, in a poor financial ecological environment, firms are more inclined to take internal audit outsourcing as an effective way to improve investors' confidence and reduce financing costs. Given that internal audit outsourcing directly affects the allocation of internal and external audit resources as well as the effectiveness of corporate internal governance, our study helps deepen the understanding of the consequences of the macroenvironment on firms' internal audit arrangement, expand the existing literature

on the determinants of internal audit outsourcing, and provide a reference for decision-making to improve the resource-allocation efficiency of governance-oriented internal audit.

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