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Risk-preparedness mechanism and audit quality: Evidence from mandatory increase of professional indemnity insurance and professional risk fund

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ABSTRACT

We examine the risk-preparing benefits of Chinese audit firms' professional indemnity insurance (PII) and professional risk fund (PRF) by using the *Notice on Adjusting the Application Requirement of Audit Firms for Securities Qualifications* as an exogenous shock. This policy requires audit firms to raise the sum of the cumulative compensation limit of their PII and PRF from 6 million to 80 million yuan. It is found, first, that the capital market regards this policy revision as a signal to strengthen investor protection and responds positively; client firms with high audit risks have a stronger response. Second, auditors' governance of financial information has strengthened, resulting in the significant improvement of their clients' financial reporting quality, with a stronger effect on firms with higher earnings management risk. There is no evidence that audit firms pass the costs on to their clients. Finally, the mismatch between auditors and new client firms is alleviated. We show that in an emerging market with weak investor protection, establishing a sound risk-preparedness mechanism for audit firms and strengthening the capacity for civil compensation ex post greatly improve the adaptive degree between international auditing standards and the legal environment of China, thereby enhancing the overall service quality of the audit market.

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1. Introduction

In economies with relatively sound class action systems, such as the United States (U.S.) and the United Kingdom (U.K.), the purchase of professional indemnity insurance (PII) is the main means by which auditors prepare for potential professional risks. The annual insurance premium of the international Big Four audit firms accounts for 8 % of their business income (Tang and Zhou, 2018). The U.K., Australia, Singapore and other countries stipulate that audit firms and members of audit associations should be covered by PII. In China, audit firms are free to choose PII or the professional risk fund (PRF) to prepare for potential litigation risks, and the total amount of both should meet the minimum limit requirements. PRFs entail setting aside a portion of an audit firm's annual revenue as a reserve for potential civil compensation and related legal costs. If the audit firm assumes liability in civil litigation, it can allocate the compensation from the accumulated PRF (Xu and Zhang, 2012). In contrast, PII for auditors is a professional insurance service provided by a third-party insurance company specifically for the certified public accountant (CPA) industry. Once an insurance contract is established, the insurance company covers any economic losses as well as compensation payable to a plaintiff due to the covered auditors' negligence in the auditing process (Peng and Zhang, 2013). Thus, PII and PRF form audit firms' main mechanism of risk-preparedness and source of funds to pay legal costs, guaranteeing the firms' ability to compensate potential litigants and to protect their investors' interests and the public interest to a certain extent. On 30 July 2021, a notice titled *Opinions of the General Office of the State Council on Further Standardizing the Order of Financial Audit and Promoting the Healthy Development of the Certified Public Accountant Industry* was issued in the name of the State Council, requiring audit firms to improve their audit risk–bearing capacity and strengthening supervision on the provision of PII and PRF. Article 12 of the notice lists its goals:

> Improve the audit risk-taking capacity of audit firms. Improve the PII system and revise the *Interim Measures for Professional Indemnity Insurance of Audit Firms.* Take full account of the objective differences in customer groups and risk status of audit firms and refine the insurance amount and other relevant requirements according to the development of the capital market as well as the status quo of securities business. Strengthen supervision over the provision of PII and PRF, standardize the management and use of PRFs and urge audit firms to improve their risk-prevention capabilities. Explore the implementation of industry-concentrated insurance.

Theoretically, there are two competing explanations for the economic effects of PII and PRFs. The first explanation is that PII and PRFs play a positive governance role, while helping audit firms alleviate professional risks, which in turn facilitates the development of high-quality audit services. The third-party PII provider plays a dual role of knowledge-provider and external supervisor. Frank et al. (2021) find that insurance companies have the motivation and ability to share and transfer risk management knowledge to the audit firms that they insure through free consulting services, premium incentives and other mechanisms. Audit firms can better avoid risks and raise their standards of service by absorbing such risk-control knowledge and making full use of insurance companies' advice. Furthermore, as the settlement costs that the insurance companies must pay out depend on the insured audit firms' business level and litigation risk, insurance companies are also motivated to supervise auditors, whose audit quality and credit level shall be enhanced by the insurer's supervision (Ben Shahar and Logue, 2012). As for PRFs, they tie up funds, which could result in substantial opportunity costs. Furthermore, to avoid the need to replenish PRF accounts when the funds are used, which increases the opportunity cost, audit firms are likely to engage in less risk-taking behavior, which ultimately has a positive impact on audit quality (Deng et al., 2021). The funds accumulated in a PRF account also help to maintain auditors' risk awareness (Xue et al., 2020).

The opposing explanation of the effects of PII and PRFs highlights possible negative implications. Specifically, although the risk-transfer effect of PII and PRFs helps audit firms to control potential civil compensation risks, it also weakens the deterrent effect of legal punishment, and the resulting low litigation risk may induce low-quality audit services (Lennox and Li, 2012; Chy et al., 2021). Driven by the moral hazard problem, auditors who hold PII or PRFs may reduce their diligence and prudence in the process of audit work and, ultimately, reduce the audit quality (Wang et al., 2020).

However, due to data limitations and other reasons, empirical research on auditors' PII and PRFs remains scarce. There are only a few studies using data from China. Using proprietary information from 2010 to 2012 about Chinese audit firms' PII, Qiu and Wu (2014) investigate audit firms' characteristics of demand for PII. Wang et al. (2020) find that audit quality is significantly improved after small audit firms purchase PII and perceive that the improvement in audit quality is due to the external supervision role of the insurance company. Xue et al. (2020) find that audit firms with higher PRFs tend to avoid high-risk clients when undertaking audit engagements for the first time. Deng et al. (2021) examine the economic consequences of audit firms' insurance-holding behavior and find that audit firms with larger PRF provisions exhibit a higher probability and magnitude of audit adjustments, whereas audit firms that hold more PII exhibit a lower probability and magnitude of audit adjustments.

Nevertheless, the above studies (Qiu and Wu, 2014; Wang et al., 2020; Xue et al., 2020; Deng et al., 2021) use the amount of PII and PRFs as explanatory variables because of data limitations. However, this amount may stem from internal decisions made by an audit firm after considering its own quality control system, number of CPAs as well as other factors, which may cause endogeneity problems. Xue et al. (2020) call on scholars to look for exogenous shocks in future research so as to better identify causal problems. In this study, we use the *Notice on Adjusting the Application Requirement of Audit Firms for Securities Qualifications* (Notice [2012], or policy revision) as an exogenous shock to determine the implications of Chinese audit firms' risk-preparedness mechanisms, specifically PII and PRFs. According to Notice [2012], audit firms are required to raise the sum of the cumulative compensation limit of PII and PRFs from 6 million to 80 million yuan. The compulsory increase in the amount of PII and PRFs provides an excellent experimental scenario in which to examine the economic consequences of PII and PRFs, which will help to overcome the endogeneity problems encountered in previous studies.

We find that, first, investors have a positive market reaction to the policy of the Ministry of Finance to mandate audit firms' increase of the total amount of PII and PRFs, and we find that the positive reaction is stronger for non-state-owned firms, new client firms, small client firms and firms with high earnings management risk in this event window. In other words, investors regard the policy revision as a signal that audit firms' compensation ability and capacity to defend against risk will improve. This indicates the prospect of strengthening investor protection, resulting in a positive response. Second, we find that audit firms' PII and PRFs play a more positive role and client firms' financial reporting quality is improved following the policy revision. A more obvious improvement is found wherein the client firm is identified as the firm with higher risk of earnings management. We find no evidence that audit firms pass the input costs of PII and PRFs on to their clients; thus, there is no evidence that audit fees increase simultaneously with the policy revision. Finally, after the policy revision, the mismatch between auditors and new firm clients has also been alleviated.

We contribute to the literature and practice in several ways. First, we extend the research on PII and PRFs (Qiu and Wu, 2014; Xue et al., 2020; Deng et al., 2021). We examine the risk-preparing benefits of PII and PRFs in audit firms by using the quasi-experimental setting provided by compulsory policy revision, which can better establish causal relationships and alleviate endogenous problems more effectively.

Second, we verify part of the conclusions of Simunic et al. (2017) regarding the Chinese legal system and audit quality from a theoretical perspective. Simunic et al. (2017) propose that although China adopted the International Standards on Auditing (ISA), its low-risk legal and institutional environment render ISA unsuitable. To address this, China may create a legal environment that is more suitable for the effective play of ISA by perfecting the securities market litigation law as well as the risk-preparedness mechanism of audit firms, thereby improving the overall service quality of the audit market.

Third, we contribute to the theory and research on audit quality by examining a mechanism based on auditor allocation optimization that possibly links PII and PRFs to enhanced audit quality. Research typically confirms the positive effect of PII and PRFs on audit quality, attributing it to the external supervision function of insurance companies after audit firms purchase PII. However, the regulatory motivation and capacity of insurance companies are controversial (Arrow, 1963; Pauly, 1968). Our findings respond to questions posed by Wu (2009) about how to mitigate the mismatch anomaly of auditor resources through system design. Audit firms can mitigate the risk-aversion behavior of individual auditors by preparing for litigation risk and encouraging experienced auditors to undertake engagement of new client firms, especially high-risk firms, thereby ensuring the audit quality for new clients.

Finally, our findings offer policy implications. We analyze the effects of audit firms' internal risk-preparedness mechanisms (i.e., PII and PRFs) on auditor behavior and audit quality. Our findings provide a reference for regulators and audit firms by clarifying the mechanisms and determining the efficacy of the two risk-prevention alternatives.

2. Institutional background and policy changes

Since the establishment of China's capital market in the 1990 s, China's policy regarding audit firms' PII and PRFs and the associated regulations have undergone many changes. Regulations on audit firms' PRFs dominated the early period. Subsequently, with the development of the insurance industry, PII of audit firms has also seen vigorous development. In this section, we summarize the chronological evolution of the PII and PRF system in China's audit firms.

In December 1993, the Ministry of Finance promulgated the *Trial Procedures for the Establishment and Approval of Partnership Audit Firms*, in which Article 16 stipulates, "Partnership audit firms should set up a fund to protect against malpractice risks or purchase professional indemnity insurance. The amount of funds withdrawn each year shall not be less than 10 % of audit firms' business income." In 1994, the Ministry of Finance issued the *Interim Provisions on Certain Issues of Audit Firms' Financial Management*, Article 10 of which reads, "[A] PRF shall be accrued yearly at 10 % of business revenue as a reserve for inevitable work mistakes," again clarifying that audit firms must reserve part of their business income to fund possible civil litigation compensation.

In October 2005, the Ministry of Finance promulgated the *Management Measures for PRF in Audit Firms (Draft)*. Article 9 states, "If the balance of risk funds stored in the special account reaches more than 3 times the average annual audit business revenue of the audit firm in the last three years, or the balance of risk funds reaches more than 5 times the average annual audit business revenue in the last three years, the withdrawal may be suspended." This addresses the ceiling problem of PRF by limiting the total amount of risk funds to be held in reserve.

In March 2007, to encourage audit firms to "enhance their awareness of professional liability risks and improve their ability to resist professional liability risks," the Ministry of Finance formulated the *Management Measures for PRF in Audit Firms*. Article 3 states, "Audit firms shall accrue PRF yearly based on the audit business revenue, at a proportion of no less than 5 %," thereby reducing the reserving ratio from 10 % to 5 %. In addition, Article 4 points out that audit firms can also build up their capacity to protect themselves against risks by purchasing PII, which may be used to offset the amount of PRF accrued in the insurance benefit year according to a certain proportion.

In April 2007, the *Notice of the Ministry of Finance and China Securities Regulatory Commission on Issues Concerning Audit Firms Engaging in Securities and Futures Related Businesses* (Notice [2007]) set forth the following requirement: "[W]hen applying for securities qualification, audit firms shall meet the following conditions.... Fifthly, the sum of the accumulative compensation limit of the PII of the audit firm and the accumulative PRF shall not be less than 6 million yuan." In January 2010, the Ministry of Finance issued the *Interim Measures for the Management of Branch Offices of Audit Firms*, Article 11 of which stipulates that "audit firms should uniformly purchase PII or accrue PRF." According to these two regulations, China's audit firms can freely choose PII and/or PRFs to deal with potential litigation risks, and the total amount available from the two alternatives should reach the minimum requirement of 6 million yuan.

In 2012, the Ministry of Finance set new PII and PRF minimum limits for audit firms. On 30 January 2012, the Ministry of Finance promulgated Notice [2012], revising audit firms' mandatory amount of reserves to protect against litigation risk, stating, "The sum of the compensation limit of PII and accumulated PRF should be no less than 80 million yuan.".

In June 2015, the Ministry of Finance and the China Insurance Regulatory Commission issued the *Interim Measures for PII of Audit Firms*, of which Article 3 states, "Audit firms are encouraged to hold PII according to the operation situation and development needs. If the accumulative compensation limit of PII insured by an audit firm reaches the amount prescribed in Article 9 or 10 of these Measures, the audit firm shall no longer accrue PRF." Articles 8 to 10 provide for the accumulative compensation limit of PII, for example, "For audit firms engaged in high-risk audit services such as listed companies and financial enterprises, the accumulative

Table 1
Policy adjustments involved in Notice [2012].

Revised content	Notice [2007]	Notice [2012]
Establishment time	Established for more than 3 years	Established for more than 5 years
Business revenue	Business revenue from audit engagements of the previous year should be no less than 16 million yuan.	Prior year business revenue shall be no less than 80 million, of which revenue from audit engagements should be no less than 60 million yuan.
Number of CPAs	No fewer than 80 auditors; no fewer than 35 auditors who have held a CPA certificate in the last 5 years and have been working continuously	No fewer than 200 auditors; no fewer than 120 auditors who have held a CPA certificate in the last 5 years and have been working continuously
Number of audit partners	–	At least 25 audit partners
PII and PRFs reserve amount	**No less than 6 million yuan**	**No less than 80 million yuan**
Other aspects	–	Additional requirements for securities qualified audit firms to set up branches, etc.

compensation limit shall not be less than the higher amount calculated according to the following two methods: (1) the product of 1 million yuan and the number of partners; (2) 50 million yuan ..."

Audit firms are free to choose PII and/or PRFs to prepare for litigation risk; however, most audit firms chose to use only PRFs before 2010. Starting in 2010, regulators began to promote organizational restructuring for audit firms, and such firms took on more risks. Against this background, audit firms began to purchase PII, transferring part of their professional risks to insurance companies. By the end of 2010, about 63 % of securities-qualified audit firms had purchased PII. By the end of 2015, the PII purchase rate had reached 92 % (excluding the Big Four audit firms) (Qiu and Wu, 2014). Thus, audit firms began to use both PII and PRF to cushion themselves against potential civil litigation risks. Meanwhile, the Ministry of Finance encouraged audit firms to hold more PII. As the *Interim Measures for PII of Audit Firms*, issued in 2015, pointed out, "Audit firms established before the implementation of these measures are encouraged to complete the transition from accruing PFR to holding PII as soon as possible within 5 years."

3. Research questions and hypotheses

3.1. Market response to increase of audit firms' PII and PRF compensation amounts

We take the release of Notice [2012] as the research event. Notice [2012] revises the mandatory amount of audit firms' reserves to address litigation risk; specifically, it states that "the sum of compensation limit of PII and accumulated PRF should be no less than 80 million yuan." The policy revision adjusts the criteria for securities qualification, including audit firms' size, business revenue, number of CPAs, time since establishment and PII and PRFs reserves. To achieve a more nuanced understanding of the revised content of Notice [2012] and ensure that the substantive revised content is relatively "clean" for further event study research, we compare the original text of Notice [2007] to Notice [2012] and summarize the policy adjustments in Table 1, below. Notably, the increase in the required sum of PII and accumulated PRF compensation amounts from 6 million yuan to 80 million yuan represents an increase of over one order of magnitude. This kind of substantive change shows the determination of the Ministry of Finance and the China Securities Regulatory Commission (CSRC) to require audit firms to improve their risk-resistance ability, especially with respect to civil compensation ability *ex post*.

We also conduct a comparative analysis of audit firms' policy adjustment items before (i.e., in 2011[1]) and after (i.e., in 2012) the policy was promulgated, based on information about the top 100 audit firms disclosed

[1] As audit firms only disclosed their business revenue information in 2011, the information regarding revenue from audit engagements and CPAs' age range in Table 2 are from 2009 or 2010.

Table 2
Audit firms' revenue and number of certified public accountants in 2010 and 2012.

Year	Audit firm	Rank	Business revenue (million [yuan])	Revenue from audit engagements (million [yuan])	Number of CPAs	Number of CPAs under the age of 35
2011	HuaMing (Ernest & Young)	3	2,277.49	1,861.11	816	844
2012	HuaMing (Ernest & Young)	4	2,236.46		884	
2011	TianYuanQuan	41	115.25	60.09	179	97
2012	TianYuanQuan	39	118.48		223	
2011	BeiJingXingHua	19	354.14	169.59	526	228
2012	BeiJingXingHua	16	524.81		509	
2011	YongTuo	26	175.78	87.22	293	191
2012	YongTuo	26	186.83		314	
2011	BeiJingZhongZhengTianTong	38	142.85	52.70	247	142
2012	BeiJingZhongZhengTianTong	37	161.17		253	
2011	HuaZhen (KPMG)	4	1,928.42	1,507.26	588	643
2012	HuaZhen (KPMG)	6	2,135.76		615	
2011	DaHua	10	820.30	397.06	868	407
2012	DaHua	10	1,020.98		960	
2011	DaXin	11	986.58	393.85	826	390
2012	DaXin	7	1,591.56		1,056	
2011	Huayong (Deloitte & Touche)	2	2,928.44	1,655.95	728	670
2012	Huayong (Deloitte & Touche)	2	3,044.51		747	
2011	FuJianHuaXing	42	90.83	62.52	121	94
2012	FuJianHuaXing	40	102.39		154	
2011	ZhengZhongZhuJiang	40	117.99	55.64	123	86
2012	ZhengZhongZhuJiang	35	152.03		133	
2011	GuoFuHaoHua	9	887.48	433.52	899	553
2013	RuiHua	3	2,775.93		2,335	
2011	HuaPuTianJian	21	335.62	109.74	263	144
2012	HuaPuTianJian	25	342.32		268	
2011	HuaYin	56	119.46	60.39	264	143
2012	HuaYinWuZhou	18	354.10		440	
2011	GongZhengTianYe	29	211.96	111.12	135	70
2012	GongZhengTianYe	29	224.04		158	
2011	SuYaJinCheng	28	203.77	112.07	173	82
2012	SuYaJinCheng	24	323.27		206	
2011	TianHeng	31	203.37	107.38	139	95
2013	TianHeng	21	414.42		284	
2010	JingDuTianHua	16	346.79	263.52	482	320
2011	LiXin	5	1,703.27	490.94	1,431	502
2012	LiXin	5	2,162.82		1,612	
2011	LiXinZhongLianMinDu	39	115.16	49.91	147	94
2012	LiXinZhongLianMinDu	30	182.54		290	
2011	LiAnDa	17	390.62	304.22	676	533

Table 2 (*continued*)

Year	Audit firm	Rank	Business revenue (million [yuan])	Revenue from audit engagements (million [yuan])	Number of CPAs	Number of CPAs under the age of 35
2012	LiAnDa	19	434.62		525	
2011	ZhongTian (PricewaterhouseCoopers)	1	2,956.74	2,438.84	771	651
2012	ZhongTian (PricewaterhouseCoopers)	1	3,226.29		895	
2011	ShanDongZhengYuanHeXin	53	60.65		114	
2012	ShanDongZhengYuanHeXin	76	69.21		113	
2011	ShangHaiShangHui	47	99.62	78.58	135	94
2012	ShangHaiShangHui	43	111.38		128	
2011	ShangHaiZhongHuaHuYin	25	266.63	124.46	167	89
2012	ShangHaiZhongHuaHuYin	23	323.87		252	
2011	SiChuanHuaXin (Group)	36	120.91	63.08	195	71
2012	SiChuanHuaXin (Group)	34	157.54		214	
2011	TianJian	7	911.22	385.17	1,047	587
2012	TianJian	8	1,105.15		1,169	
2011	TianZhiGuoJi	12	768.83	345.80	704	477
2012	TianZhiGuoJi	11	811.95		714	
2011	Sigmar	37	116.77	66.43	178	107
2012	Sigmar	31	167.84		221	
2011	Shinewing	8	841.39	439.08	1,051	817
2012	Shinewing	9	1,041.03		983	
2011	AsiaPacific (Group)	45	85.08	36.23	217	114
2012	AsiaPacific (Group)	41	114.21		252	
2011	ZhiTong	13	676.76		701	
2012	ZhiTong	12	746.13		724	
2011	ZhongHui	15	486.43	67.54	217	165
2012	ZhongHui	14	529.23		269	
2011	ZhongQinWanXin	24	194.57	126.60	320	225
2012	ZhongQinWanXin	27	244.27		316	
2011	ChinaAuditAsiaPacific	14	468.86	351.91	575	389
2012	ChinaAuditAsiaPacific	13	572.32		642	
2011	Jonten	22	242.78	101.12	321	191
2012	Jonten	20	351.28		394	
2011	ZhongXi	46	133.91	65.23	206	115
2012	ZhongXi	38	162.75		243	
2011	ZhongXingCaiGuangHua	20	261.38	71.70	545	170
2012	ZhongXingCaiGuangHua	17	880.75		563	
2011	ZhongZhun	30	205.05	146.13	370	227
2012	ZhongZhun	28	235.32		308	
2011	Union Power	18	374.84		343	
2012	Union Power	15	440.82		353	

by CISA every year. We present the results in Table 2, below. In view of the policy adjustments involved in Notice [2012], we find that the 40 audit firms applying for securities qualification all have a long history, having been registered and engaged in the audit business since 2000 or earlier. Therefore, the adjustment of audit firms' required establishment time in Notice [2012] is shown to have no effect. Second, in terms of audit firms' revenue, nearly all of the firms reached the new criteria of 80 million yuan (total business revenue) and 60 million yuan (revenue from audit engagements) before the promulgation of Notice [2012]. Most of the firms also met the requirement of 200 auditors before that time. Given that we cannot obtain the number of employees holding CPA certificates in audit firms in the previous 5 years, we use the number of CPAs under the age of 35 disclosed by CICPA to roughly estimate the figure. We find that most of the audit firms reached the criteria of 120 auditors before Notice [2012] was promulgated.

As audit firms' business revenue and number of talents met the new requirements before Notice [2012] was promulgated, the audit firms were more likely to focus on increasing their PII and PRF reserves, thereby improving their *ex ante* risk resistance capacity and civil compensation ability *ex post*. Therefore, we propose that after the implementation of Notice [2012], the main regulatory pressure perceived by audit firms concerned the areas in which they had not yet met the requirements, that is, the amount of PII and PRF reserves. Against this background, we take Notice [2012] as an exogenous policy revision requiring audit firms to increase the amount of their PII and PRFs reserves.

On the one hand, from the perspective of client firms and investors, the development of CPAs' PII and PRFs guarantees compensation for client firms' losses, improves the social reputation of audit firms and safeguards the interests of investors and the public. We expect that investors took Notice [2012] as a strong signal regarding the improvement of audit firms' capacity to withstand risks and the improvement of investor protection, causing a positive stock price reaction in the capital market. On the other hand, according to the moral hazard hypothesis, the audit firms' responsibility for compensating for litigation losses is transferred to the insurance companies, which greatly reduces the deterrent effect of litigation (Götze and Gürtle, 2020). That is, driven by the moral hazard problem, auditors may reduce their diligence and prudence in their performance of audit work, thus reducing the credibility of the financial reports, which may generate negative reactions from investors. Given the potential positive and negative effects of the mandatory increase in the total amount of PII and PRF reserves, it is unknown whether and in what direction the market reacts to such a policy revision. Based on the above discussion, we propose the following alternative hypotheses:

H1-a. There is a positive response in the capital market after audit firms are compelled to increase their PII and PRF reserves.

H1-b. There is a negative response in the capital market after audit firms are compelled to increase their PII and PRF reserves.

We further consider the impact of cross-section differences between client firms in reaction intensity. There are differences in audit risks between client firms. Smaller firm size, greater potential legal risk, lower corporate governance efficiency, lower audit firm reputation and lower customer concentration, *ceteris paribus*, result in greater client firm audit risk (Wang et al., 2014). Audit firms should carefully consider such factors when pricing audit services for high-risk firms. This type of listed company, specifically non-state-owned enterprises, new client firms, firms with small size and those with high earnings management risk may be associated with greater audit risk and are more likely to make false statements (Wu et al., 2010).

Investors of such listed companies may perceive higher risk and may, therefore, have higher expectations for the insurance efficacy of financial audits and be more concerned about the compensation capacity of audit firms. That is, investors of different types of client firms may have reacted differently to Notice [2012]. On the one hand, investors may perceive a new requirement that audit firms be more fully prepared for potential litigation risks as meaning that their invested capital is guaranteed to a greater extent, leading to a positive stock price reaction in the capital market. On the other hand, if investors are more concerned about auditors' moral hazard problem caused by an increase of the PII and PRF quota, they are more likely to have a negative atti-

tude toward firms with high audit risks, thereby inducing a negative stock price reaction in the capital market. Therefore, determining the relationship between the cross-sectional differences of client firms and the associated market reaction should provide a more nuanced understanding of the reaction to the policy revision in the capital market as well as the effect of Notice [2012] expected by investors. Such a determination lays the groundwork for further research on the actual economic consequences of the policy. Based on the above inferences, we propose the following hypotheses:

H2-a. After the mandated increase of audit firms' PII and PRF reserves, the capital market responds more positively to listed companies with high audit risk.

H2-b. After the mandated increase of audit firms' PII and PRF reserves, the capital market responds more negatively to listed companies with high audit risk.

3.2. Economic effect ex post of mandatory increase of audit firms' PII and PRF reserves

3.2.1. Audit quality effects

Audit firms' risk-preparedness behavior of purchasing insurance may have both positive and negative effects on audit quality. On the one hand, as discussed above, third-party insurance companies have the incentive to share risk management knowledge with the insured audit firms and to play an active external supervisor role, leading to improved audit quality (O'Sullivan, 1997; Donelson and Yust, 2017; Frank et al., 2021).

At the underwriting stage, an insurer calculates premium rates based on the insured audit firm's history of litigation, industry reputation and internal quality control management system. Article 7 of the *Interim Measures for PII of Audit Firms* issued by the Ministry of Finance and the CIRC on 30 June 2015 states, "Insurance companies shall establish a market-based floating premium rate mechanism and adjust the premium rate according to the risk status as well as the historical payout records of audit firms, so as to promote the strengthening of quality control and risk management of audit firms," clearly requiring insurance companies to examine the litigation risk and industry reputation of the audit firms they insure. Therefore, to obtain more favorable premium rates, audit firms require better internal management systems and may develop a positive tendency to guarantee the quality of their own services. At the same time, as insurance companies' claim-settlement costs depend on the business acumen and litigation risk levels of their audit firm clients, insurers are also motivated to supervise the auditors, thereby improving their audit quality and credit level (Ben-Shahar and Logue, 2012; Donelson and Yust, 2017). In addition to this external supervision, the insurer also provides knowledge to its auditor clients. Frank et al. (2021) find that insurance companies have the incentive and ability to share and transfer risk-management knowledge to the audit firms that buy their insurance. Insurers can transfer such knowledge through a variety of mechanisms, including free advisory services and premium incentives. Audit firms, especially small audit firms with limited resources, rely on and benefit from this knowledge. By taking advantage of insurance companies' extensive knowledge of risk management and heeding their advice, audit firms can better understand the risks they face in a particular engagement, position themselves accordingly and reduce the losses associated with their audit services (O'Sullivan, 1997).

On the other hand, according to the risk transfer effect of insurance and the moral hazard hypothesis, PII enables audit firms to transfer part of their litigation risk to insurance agencies, reducing the *ex-post* compensation risk of auditors, thereby possibly inducing opportunistic behaviors (Gillan and Panasian, 2015; Götze and Gürtle, 2020; Deng et al., 2021). Insurance is often considered as an *ex-post* compensation mechanism to reduce the cost of risky activities through risk pooling and risk transfer and is now widely used in a number of areas, such as food safety, personal safety and securities (Ben-Shahar and Logue, 2012). As a kind of liability insurance, PII provides policyholders with protection against litigation risk. By paying a small premium, auditors can pass on part of their loss to the insurance industry. As the insurer assumes the role of payer of last resort, PII mitigates the professional risk of auditors, diminishes the deterrent effect of legal discipline and reduces the cost of audit failure (Wang et al., 2020). Studies show a positive correlation between litigation risk and audit quality. That is, higher litigation risk encourages auditors to work hard, whereas lower litigation risk is more likely to induce lower-quality audit services (Lennox and Li, 2012; Rothenberg, 2019; Chy et al., 2021). Francis and Krishnan (2002) and Lee and Mande (2003) find that following the passage of

the Private Securities Litigation Reform Act[2] (the Act) by the U.S. Congress, the exposure of audit firms to civil litigation decreased, resulting in U.S. auditors' becoming "less strict" with their clients and an increase in client firms' discretionary accruals. Moreover, the impact was more pronounced for larger audit firms. The U.S. Big Six audit firms were less likely to issue modified audit opinions after the Act, whereas this effect was not seen in the non-Big Six audit firms (Geiger et al., 2006). Similarly, the Notice [2012] adjusted audit firms' amount of risk-preparedness—that is, the sum of cumulative compensation limit of PII and PRF reserves—from 6 million to 80 million yuan. Under this mandatory requirement, audit firms may accrue more in PRFs or hold more PII to absorb part of the civil liability risk internally by accumulating risk funds or transfer part of the risk to third-party insurers, respectively. These two litigation-risk responses serve to control audit firms' potential legal exposure, which may have a negative impact on audit quality and may induce *ex ante* opportunistic behavior on the part of auditors (Götze and Gürtle, 2020). Gillan and Panasian (2015) find that management's diligence and prudence decrease when companies purchase their directors' and officers' liability insurance (D&O liability insurance). By the same token, it can be surmised that auditors who hold PII, driven by moral hazard, are less diligent and prudent in the course of their audit work, ultimately compromising audit quality.

In the case of audit firms' PRF, the risk compensation effect and the potential moral hazard issues have a negative impact on audit quality. However, the problems of idle capital cost (opportunity cost) and the large amount of funds accumulated in audit firms' PRF account may help to maintain auditors' risk awareness and thus improve the quality of audits. The annual accrual of an audit firm's PRF is transferred to its dedicated risk fund account after the year-end closing of the accounts. If the audit firm suffers a civil lawsuit and assumes compensation liability, it may first pay from the risk fund account (Xu and Zhang, 2012). It follows that PRF can only be used for civil litigation payouts and cannot be easily diverted to other uses. However, the number of civil cases successfully litigated against audit firms is relatively small, and most audit firms' PRFs have been left idle, resulting in opportunity cost. The requirement in Notice [2012] that auditors accrue more PRF reserves or hold more PII increases the associated opportunity cost; therefore, audit firms prefer not to use the amount of risk funds already accumulated, which would necessitate allocating more funds to the PRF or PII (Deng et al., 2021). For this reason, audit firms may become more conservative when undertaking audit engagements, to avoid having to deplete the accumulated risk fund in the event of audit failure. Furthermore, the risk funds accumulated in audit firms' books serve as a constant reminder of the professional risks faced by CPAs in conducting audits, thereby urging auditors to exercise due professional care in their practice (Xu and Zhang, 2012; Xue et al., 2020).

Moreover, with reference to the incentive effect of D&O liability insurance on management (O'Sullivan, 1997; Ling, 2020), the risk-preparedness mechanism of PII and PRFs somewhat relieves auditors of their risk concerns and mitigates their risk-averse behavior. This may help mitigate the "brain drain" of high-end CPA talents and contribute to the quality of audit services. Examining the allocation of auditors among client firms, Wu (2009) finds that new, high-risk client firms are staffed with less experienced auditors, which is attributed to the personal risk-averse behavior of experienced auditors. Audit firms' PII and PRFs have weakened auditors' fear of litigation for negligence and oversight, thus motivating more experienced auditors to be proactive in contributing to the improvement of service quality in the auditing profession.

Although all Chinese audit firms and the client firms they audit were hit by Notice [2012] at the same time, different audit risks result in different effects from the policy revision. Audit firms received signals from the Ministry of Finance to increase their reserves in preparation for litigation and to improve investor protection. In response, the audit firms applied different risk-management strategies with respect to their more vulnerable client firms (e.g., firms with high audit risk and high earnings management risk), including in the allocation of auditors (Wu, 2009).

To avoid exacerbating opportunity costs by draining their PRFs in litigation, audit firms may take the initiative to raise their awareness of professional risks and mitigate them by implementing more audit procedures when undertaking audit engagements of client firms with higher levels of earnings management risk. Further-

[2] On 22 December 1995, the U.S. Congress passed the Private Securities Litigation Reform Act, which changed the auditors' allocation system of litigation compensation as well as the upper limit of loss compensation, and it changed the unlimited joint and several liability of audit firms in the Securities Act of 1933 and the Securities Exchange Act of 1934 to mixed proportional liability.

more, the risk-management knowledge transferred from insurers to audit firms is especially valuable with respect to such client firms. Insurance companies pay particular attention to audit firms' business modules or clients displaying higher risk and provide targeted risk management advice accordingly. With audit firms' active adoption of their insurers' opinions and knowledge, the quality of such clients' audits is enhanced.

In summary, there are both positive and negative effects of audit firms' PII and PRFs on audit quality; it is not known which effect is superior. Based on the above inferences, the following opposing hypotheses are proposed:

H3-a. After the mandated increase of audit firms' PII and PRF reserves, client firms' financial reporting quality improves, with a more obvious improvement for firms with higher levels of earnings management risk.

H3-b. After the mandated increase of audit firms' PII and PRF reserves, client firms' financial reporting quality declines, with a more obvious decline for firms with higher levels of earnings management risk.

3.2.2. Audit fee effects

As mentioned above, the policy adjustments due to Notice [2012] may have an impact on audit quality, and the resulting changes in audit input, audit costs, legal risks and other factors may also affect the pricing of audits. Simunic (1980) incorporates the audit clients' risk factor into the audit pricing model, and other scholars conduct research and further refine the audit pricing model (Houston et al., 2005). That is, audit fees are mainly influenced by two major components, namely audit costs and risk premiums. On the one hand, PII and PRFs reduce the risk premium and counteract the triggering of audit risk, which in turn may reduce audit fees. Most research supports a positive correlation between legal risk and audit fees (Magnan, 2008; Choi et al., 2018). Seetharaman et al. (2002) examine the impact of the litigation environment in auditors' countries on audit fees and find that auditors seek compensation for the stress and risk associated with high legal risk by increasing their audit fees. With a sample of audit clients from 15 countries with different legal systems, Choi et al. (2008) confirm that a country's litigation environment is an important factor in determining audit effort, audit fees and audit fee differences between Big Four and non-Big Four audit firms.

On the other hand, the amount paid for PII and the opportunity costs caused by charging PRFs against audit firms' revenue may lead to higher audit costs and, ultimately, higher audit fees. As large and small audit firms differ in their ability to absorb premium costs, small and medium audit firms, having relatively weak internal management systems and low wealth accumulation, have a greater incentive to pass on premium costs to audit clients (Wang et al., 2020).

This raises the question of whether the reduced risk premium on audit fees compensates for the increased audit costs and opportunity costs related to increased mandated amounts for audit firms' PII and PRFs. Based on the above inferences, the following opposing hypotheses are proposed:

H4-a. After the mandated increase of audit firms' PII and PRF reserves, client firms' audit fees increase, with a more significant increase for firms with higher levels of earnings management risk.

H4-b. After the mandated increase of audit firms' PII and PRF reserves, client firm's audit fees decrease, with a more significant decrease for firms with higher levels of earnings management risk.

3.2.3. Auditor resource misallocation

Wu (2009) examines personnel allocation in audit firms and finds that small and medium-sized audit firms assign auditors who are insufficiently experienced to new, high-risk client firms. Wu (2009) argues that the anomaly of such auditor mismatching may be due to the risk aversion behavior of experienced auditors. As regulators pay more attention to auditors and audit firms that undertake new clients, this creates resistance in experienced auditors to taking on high-risk clients (Wu, 2009). Wu (2009) raises the question of whether audit firms might adopt mechanisms to mitigate this "mismatch anomaly" and ensure the audit quality of new clients.

Audit firms' PII and PRF systems may alleviate the problem of auditor misallocation. According to the incentive effect of D&O liability insurance on managers (O'Sullivan, 1997; Ling, 2020), the risk-preparedness mechanism of audit firms relieves auditors of extra worries, which may alleviate the risk aversion behavior of individual auditors. Specifically, audit firms' PII and PRFs diminish auditors' fear of being sued for negligence, thus motivating them to engage with high-risk clientele. This may also help to alleviate the brain drain of high-end CPA talents, which is conducive to the improvement of audit service quality.

Research (Qiu and Wu, 2014; Wang et al., 2020; Xue et al., 2020; Deng et al., 2021) confirms the positive effect of PII and PRFs on audit quality but mostly attributes it to the external supervision role of the insurance company. In fact, the motivation and ability of insurance companies to regulate audit firms is a controversial topic (Arrow, 1963; Pauly, 1968). If auditors are more effectively allocated between high-risk, new client firms and old client firms following the policy revision in 2012, can we assume that improved audit quality is partly due to the mitigation of auditor misallocation?

Auditors' personal characteristics, such as industry expertise, years on the job, gender and other demographic characteristics are shown to have effects on audit quality and audit fees (Luo et al., 2014; Wang et al., 2014; Han, 2016). Chin and Chi (2009) find that auditors' industry expertise can reduce the occurrence of financial report restatement. Chen et al. (2008) find auditors' experience to lead to a significant decline in client firms' absolute value of discretionary accruals after controlling audit firms' tenure, in the setting of Taiwan's double-auditor signature system. Liu et al. (2010) document that auditors' industry expertise can improve audit quality in China's audit market. Yuan and Han (2012) investigate further through role-division of two auditors and find that the industry specialization and audit experience of the engagement audit partner can significantly improve the audit quality, while these characteristics of the review partner do not significantly affect audit quality. Pan et al. (2019) find that these two types of auditors seem to be instrumental in promoting the comparability of firms' accounting information.

Studies document the positive correlation between auditors' individual practical experience and audit quality. An auditor's understanding of the macro environment and customers' business modes grows with experience. Experienced auditors are more familiar with the whole audit process, common audit risks in financial reports and accounts prone to error; thus, they are more likely to find client firms' misstatements or intentional manipulations (Wang et al., 2016). Under reputation theory, as auditors engage in more audit projects, the cost of audit failure via reputation loss also increases. Thus, experienced auditors are more motivated to maintain their audit quality (Yuan and Han, 2012). Therefore, we expect that after the mandatory increase of PII and PRFs reserves, the risk aversion behavior of auditors is alleviated and auditors are more effectively allocated among new clients. This may be another potential explanation of the increased audit quality after the policy revision. Based on the above inference, we propose the following hypothesis:

H5: After the mandated increase of audit firms' PII and PRF reserves, the anomaly of auditor misallocation is alleviated, with audit firms assigning more experienced auditors to new client firms with high levels of earnings management risk.

4. Research design

4.1. Research design for H1 and H2

To test H1-a, we adopt the event research method and examine the cumulative abnormal rate of return of the policy revision in the event window, testing the direction and intensity of investor reaction caused by Notice [2012]. Specifically, we regard 30 January 2012 as the event day, and we select the event day as the observation window.[3] We choose the 120 trading days before this event (-31, −150) as the estimation window. The market model ($R_{i,t} = \beta_0 + \beta_1 R_{m,t} + \varepsilon_{i,t}$) is regarded as the predictive model of the normal return of the stock, with which the abnormal return (AR) of a single stock is calculated. Based on this, we calculate the cumulative abnormal return (CAR) of a single stock of a listed company within a given window. We expect

[3] In an event study, the earliest possible date of information release can be selected to avoid the impact of "information dilution." The policy was signed on 21 January 2012; however, according to the announcement on the official website of the Ministry of Finance, Notice [2012] was publicly issued on the official website for the first time on 30 January 2012. Therefore, we select this date as the event date in this study. After changing the event window to (-1, +1), (0, 1), (-2, +2) and other commonly used windows, the results remain significant.

that on the event day, the abnormal return of all sample firms is significantly greater than 0 (H1-a) or significantly less than 0 (H1-b).[4]

To test H2, we construct the following multivariate regression model:

$$AR = \beta_0 + \beta_1 Treat + \beta_2 Nonsoe + \beta_3 Newclient + \beta_4 Firm\_size + \beta_5 Controls + \beta_6 \times \sum Industry + \varepsilon \quad (1)$$

where the dependent variable, *AR*, is the abnormal return of a single stock of an A-share listed company on the day of the event. The main variables of concern are client firms' earnings management risk (*Treat*), a variable identifying whether it is a non-state-owned enterprise (*Nonsoe*), a variable identifying whether it is a new client for audit engagement (*Newclient*) and the firm size (*Firm_size*). We also control the relevant characteristics of listed companies in the year before the incident, including *Lev*, *Roa* and *Big4*, and we control the fixed effects of industry.

4.2. Research design for H3 and H4

As China's accounting and auditing policies are mostly implemented nationwide, affecting all audit firms and the listed companies that they audit, it is difficult to use the traditional difference-in-differences design to divide the research samples into a treatment group affected by the policy and a control group unaffected by the policy. However, although all of the client firms are affected by the mandatory increase of the PII and PRF quota in 2012, the degree of influence differs according to the firms' levels of audit risk. Referring to Li et al. (2020), we use the influence intensity of Notice [2012] on each firm to group the treatment firms and control firms. As client firms with high levels of earnings management risk possess more audit risks and stronger motivation to make false statements, the auditors of those firms are more likely to assume the associated liability for compensation due to audit failure. In other words, firms with high levels of earnings management risk are more vulnerable to the policy revision. If the client firm's earnings per share is between 0 and 0.01, for the purpose of avoiding supervision, it may control profits through earnings management. The audit risk level of such small-profit enterprises is relatively high (Li and Zhou, 2013). Therefore, in this study, client firms with high levels of earnings management risk are regarded as the treatment group, which is more influenced by Notice [2012]. If the client firm belongs to the treatment group, the variable *Treatment* is set to 1, and 0 otherwise. The PII and PRF–related policy revision leads to differences in the same client firm with the same audit firm before and after the policy as well as differences between firms with different audit risk levels at each time point. The estimation based on a difference-in-differences model effectively controls the influence of other coinciding factors and *ex-ante* differences in firms' characteristics. Thus, the causal effect brought by the policy revision is identified.[5]

To test H3 and H4, we construct the audit quality model (2) and audit fee model (3) as follows:

[4] To eliminate the influence of other information released on the event date as much as possible, we also conduct the following work. Referring to the practice of Li and Shen (2010) and Xu and Xin (2011), we rule out media events in the *China Securities Journal*, *Securities Daily*, *Securities Times*, *Shanghai Securities News*, *China Business*, *21st Century Business Herald*, *Economic Observer* and *China Business News*, which are the eight most widely influential, well-known and authoritative national financial newspapers in China. The original reports from these papers are recorded in a Chinese major newspaper full-text database. We do not find any other good economic news on 30 January 2012 concerning the A-share market. In the absence of other major good news, if a significant positive anomaly in the capital market on the event day is found in this study, we assume that it is related to the issuance of Notice [2012].

[5] To exclude the influence of other alternative explanations as much as possible, we manually collect data regarding the sum of the audit firms' cumulative compensation limit of PII and PRF in the earliest available year (2018). We attempt to explain the effect of PII and PRFs on audit quality, audit fee and auditor allocation from the perspective of the degree of increase in audit firms' PII and PRFs. As of 2018, the PII and PRF reserves of only six of the audit firms exactly reached the mandatory requirement of 80 million yuan in Notice [2012] (the "mandatory meet" group), while the other 34 audit firms voluntarily accrued excess PII and PRF reserves (the "voluntary excess" group). We perform a grouped regression on models (2)–(4) according to whether the audit firms voluntarily accrued excess PII and PRFs. The empirical results show that only in the "voluntary excess" group do PII and PRF reserves have a significant effect on improving audit quality and alleviating auditor mismatch, and only in the "mandatory meet" group do audit fees increase after the policy is enacted. We believe that audit firms that voluntarily accrue excess PII and PRF reserves are more affected by Notice [2012] than the audit firms that barely meet the threshold of 80 million. Therefore, the impact of Notice [2012] on improving audit quality and mitigating auditor misallocation of "mandatory meet" audit firms is more obvious.

$$DA = \beta_0 + \beta_1 Post + \beta_2 Treat + \beta_3 Post * Treat + \beta_4 Controls + \beta_5 \sum Industry + \varepsilon \quad (2)$$

$$Auditfee = \beta_0 + \beta_1 Post + \beta_2 Treat + \beta_3 Post * Treat + \beta_4 Controls + \beta_5 \sum Industry + \varepsilon \quad (3)$$

where *POST* is a time indicator variable, set to 1 after Notice [2012] is issued, and 0 otherwise. We focus on the coefficients of the interaction term *Treat*Post*. According to H3-a, after the enactment of Notice [2012], the financial reporting quality of listed companies is improved due to the active supervision and risk management knowledge-sharing of insurance companies. In contrast, according to H3-b, the audit quality is damaged due to the opportunistic behavior of auditors triggered by the risk-transfer function of PII and PRFs. Thus, we expect the coefficient of *Treat*Post* in model (2) to be significant, but we are uncertain about the sign direction. In addition, following Heo et al. (2021) and Ernstberger et al. (2020), we also control the fundamental characteristics of listed companies. The control variables in model (2) are *Big4*, *Firm_size*, *Nonsoe*, *Lev*, *Roa*, *Dloss*, *Age*, *BM*, *CFO*, *Newclient* and *Firstshare*. We also control fixed effects at the industry level of the sample[6] and calculate cluster-robust standard errors at the industry level.

According to H4, if the coefficient of *Treat*Post* in audit pricing model (3) is significantly positive, H4-a is verified, indicating that the inhibitory effect of PII and PRFs on risk premiums cannot offset the rising effect of audit cost and that audit fees are ultimately increased after the policy revision. In contrast, if the coefficient of *Treat*Post* is significantly negative, H4-b is verified. Following Hsieh et al. (2020) and Florou et al. (2019), we control characteristics of both audit firms and their clients. Specifically, the control variables are *Big4*, *Firm_size*, *Nonsoe*, *Lev*, *Roa*, *Dloss*, *Age*, *BM*, *Current* and *Inv_rec*. We also control fixed effects at the industry level and calculate cluster-robust standard errors at the industry level.

4.3. Research design for H5

Balsam et al. (2003) point out that auditors' practical experience comes from their accumulation and repeated implementation of the same matters. The number of each auditor's yearly audit engagements varies greatly; therefore, it is not comprehensive to measure an auditor's practical experience by years on the job. Therefore, more recent studies use variables such as the number of auditors' cumulative engagements to measure auditors' personal experience (Wu, 2009; Yuan and Han, 2012).

Han (2016) finds that the number of a review partner's cumulative audit engagements is usually higher than that of an engagement partner (19.733 and 6.113, respectively). Furthermore, the experience and industry expertise of an engagement partner may significantly improve audit quality, while a review partner's does not (Yuan and Han, 2012). In other words, engagement audit partners, who have an impact on the level of audit quality, possess less professional experience than review partners. Therefore, in the current study, we take the natural logarithm of the number of an auditor's cumulative audit engagements as a proxy variable that measures the auditor's work experience, taking the minimum number of projects for which two auditors are responsible. We construct the following multivariate regression model (4):

$$Exp = \beta_0 + \beta_1 Post + \beta_2 Treat + \beta_3 Newclient + \beta_4 Treat * Post + \beta_5 Treat * Post * Newclient + \beta_6 Treat * Newclient + \beta_7 Post * Newclient + \beta_8 Controls + \beta_9 \sum Industry + \varepsilon \quad (4)$$

According to H5, if the coefficient of *Treat*Post*Newclient* in model (4) is significantly positive, H5 is verified, indicating that after Notice [2012] is issued, audit firms tend to allocate more experienced auditors to new clients with greater audit risk (i.e., earnings management risk), and the anomaly of auditor misallocation is alleviated. This may be another explanation for the improvement of audit quality.

4.4. Research sample, variable definitions and data sources

Using China A-share-listed enterprises as the sample, this paper mainly studies the risk-preparing benefits of audit firms' PII and PRFs. We exclude firms in the financial sector, firms with "special treatment" (ST) sta-

[6] As the dummy variable of *POST* is added to models (2)–(4), the time fixed effect is not controlled, to prevent multilinear problems.

Table 3
Variable definitions.

Variable	Definition
AR	The abnormal return in the event window
CAR	The cumulative abnormal return within a given window
DA	The absolute value of discretionary accruals calculated based on the performance-adjusted Jones model
Auditfee	Natural logarithm of audit fees
Exp	Natural logarithm of the number of all previous audit reports of listed companies signed by the auditor (taking the minimum number of projects for which two auditors are responsible)
Post	The time indicator variable that equals 1 after Notice [2012] is issued, and 0 otherwise
Treat	A dummy variable that equals 1 if the client firm's earnings per share is between 0 and 0.01, and 0 otherwise
Firm_size	Natural logarithm of total assets
Nonsoe	A dummy variable representing the nature of the ownership of the company, set at 1 if the firm is a non-SOE, and 0 otherwise
Lev	The ratio of total liabilities to total assets
Roa	The ratio of net profit to total assets
Dloss	An indicator equal to 1 if firms have a negative net profit, and 0 otherwise
Age	Number of years that the firm has been listed
CFO	The ratio of operating cash flow to total assets
Current	The ratio of current assets to current liabilities
BM	The ratio of book value to market value
Inv_rec	The ratio of the sum of total receivables and total inventory to total assets
Newclient	A dummy variable that equals 1 if the firm changes the audit firm in the year, and 0 otherwise
First_share	Percentage of shareholding of the largest shareholder
OP	A dummy variable that equals 1 if previous year's annual report is issued by an auditor with a modified audit opinion, and 0 otherwise

tus and those with missing data. The annual rank of audit firms comes from the CISA website, and other financial data from 2008 to 2015 are drawn from the CSMAR database. All of the continuous variables are winsorized at the 1 % and 99 % levels to mitigate the potential problem of outliers. Table 3 provides the specific definitions of the variables used in this study.

5. Empirical results

5.1. Descriptive statistics

Table 4 reports the descriptive statistics of the main variables. The minimum value of the main dependent variable, *DA*, is 0.0009, and the maximum value is 0.4164, indicating that the quality of financial reports varies between listed companies. This is the prerequisite for us to study the factors affecting the difference in financial report quality between listed companies. It is shown that 51.29 % of the firms are non-state-owned firms and that 8.29 % of the client firms' earnings per share is between 0 and 0.01. This kind of small-profit enterprise has motivation to manipulate profits; therefore, their earnings management risk level is high. The statistical results of the other variables are close to those in previous studies, and no normal value is found.

Table 5 reports the Pearson correlation coefficient among variables, and the results show that *Post* is significantly negatively correlated with *DA* (–0.104) and significantly positively correlated with *Auditfee* (0.202), which indicates that the overall audit quality improved after the release of Notice [2012]. However, the causality must be tested through subsequent regressions. The absolute values of the correlation coefficients among the variables are less than 0.5, indicating that there is no serious multicollinearity problem.

5.2. Market response to mandatory increase of audit firms' PII and PRFs

We choose the event day as the short window and test whether 1,863 client firms' abnormal return on that day is significantly greater than 0. Table 6 reports the *t*-test on abnormal returns on the event day.

Table 4
Descriptive statistics results[7].

Variable	N	Mean	SD	Min.	p25	Median	p75	Max.
AR	1,863	0.0113	0.0159	–0.0232	0.0013	0.0101	0.0196	0.0669
DA	13,264	0.0741	0.0734	0.0009	0.0241	0.0527	0.099	0.4164
Auditfee	13,264	13.5674	0.7294	12.3014	13.1224	13.4588	13.9108	16.3881
Post	13,264	0.6261	0.4838	0	0	1	1	1
Big4	13,264	0.0635	0.2438	0	0	0	0	1
Treat	13,264	0.0829	0.2757	0	0	0	0	1
Firm_size	13,264	22.0188	1.264	19.6887	21.0973	21.8329	22.7386	25.8784
Nonsoe	13,264	0.5129	0.4999	0	0	1	1	1
Lev	13,264	0.4493	0.2107	0.047	0.283	0.4544	0.6163	0.8834
Roa	13,264	0.04	0.051	–0.1494	0.0141	0.036	0.0652	0.194
Dloss	13,264	0.0898	0.2859	0	0	0	0	1
Age	13,264	9.517	6.0896	0	4	9	15	25
Current	13,264	2.41	2.8583	0.2746	1.0432	1.5265	2.4814	19.2405
BM	13,264	0.6076	0.2402	0.1197	0.4196	0.6112	0.7996	1.0876
CFO	13,264	0.0449	0.0746	–0.1864	0.004	0.044	0.0885	0.2496
Inv_rec	13,264	0.2716	0.1771	0.0055	0.1379	0.2457	0.3709	0.784
Newclient	13,264	0.1643	0.3705	0	0	0	0	1
Firstshare	13,264	36.6343	15.5886	0.29	24.03	35.027	47.88	89.99
Exp	12,902	0.4509	0.5172	0	0	0	0.6931	2.3026
OP	12,902	0.0184	0.1343	0	0	0	0	1

Note: The data of 362 audit opinions are missing; therefore, the sample size of auditor allocation model (4) is 12,902.

As shown in Table 6, the abnormal return on the day of the event is significantly greater than 0 at the 1% level. This indicates that when audit firms were required to raise the sum of their cumulative compensation amounts of PII and PRFs from 6 million to 80 million yuan, the security market released a strong signal to strengthen investor protection. In response, investors expected higher audit quality and greater information transparency, which is reflected in a positive response in the capital market. This is consistent with H1-a. The market's average abnormal return (*AAR*) on the event day is 0.011416, indicating that the market as a whole made a positive evaluation and reaction to the release of Notice [2012], which again verifies H1-a.

Based on this, we calculate the cumulative abnormal return (*CAR*) of a single stock of a listed company within the given window (–1, +1). We check whether the cumulative abnormal returns of the 1,863 companies within this window are significantly greater than zero. The *t*-value in Table 7 shows that the cumulative abnormal returns are significantly greater than zero at the 1 % level, which is consistent with H1-a.

In the further transverse check, Table 8 shows the regression results with the abnormal return on event day as the explanatory variable, and with *Nonsoe*, *Firm_size*, *Newclient* and *Treat* as the main observed variables. The results in Table 8 show that the coefficients of *Treat*, *Nonsoe* and *Newclient* are significantly positive, whereas the coefficient of *Firm_size* is negative, which indicates that the market reaction is more obvious for client firms with greater risk of earnings management, as well as for non-state-owned, new client firms of small size. Such firms have greater audit risks, and their investors, accordingly, have greater perceived risks; thus they may hold higher expectations for the insurance effect of financial statement audits and care more about the economic compensation ability of audit firms. Therefore, we find that client firms with higher audit risks have a more positive market reaction within this event window, and H2-a is supported.

[7] There are missing values of the dependent variable *Exp* in model (4); thus, the number of observations is less than 13,264. In addition, because we need only calculate the abnormal market return on the day when Notice [2012] was released, there are only 1,863 observations of variable *AR* in 2012 used in model (1).

Table 5
Correlation coefficients.

Variable	*DA*	*Auditfee*	*Post*	*Big4*	*Treat*	*Firm_size*	*Nonsoe*	*Lev*	*Roa*	*Dloss*	*Age*	*Current*	*BM*	*CFO*	*Inv_rec*	*Newclient*	*Firstshare*
DA	1																
Auditfee	–0.048***	1															
Post	–0.104***	0.202***	1														
Big4	–0.035***	0.519***	–0.029***	1													
Treat	0.031***	–0.009	0.031***	–0.023***	1												
Firm_size	–0.013	0.770***	0.073***	0.388***	–0.055***	1											
Nonsoe	0.040***	–0.215***	0.174***	–0.142***	–0.056***	–0.341***	1										
Lev	0.094***	0.324***	–0.105***	0.105***	0.169***	0.492***	–0.312***	1									
Roa	0.033***	–0.023***	–0.065***	0.043***	–0.607***	–0.017*	0.132***	–0.397***	1								
Dloss	0.027***	–0.001	0.037***	–0.022**	0.943***	–0.046***	–0.064***	0.180***	–0.609***	1							
Age	0.048***	0.238***	0.040***	0.059***	0.097***	0.285***	–0.408***	0.379***	–0.172***	0.108***	1						
Current	–0.031***	–0.242***	0.069***	–0.096***	–0.094***	–0.304***	0.261***	–0.625***	0.224***	–0.101***	–0.305***	1					
BM	–0.023***	0.312***	–0.078***	0.184***	–0.006	0.510***	–0.212***	0.363***	–0.220***	0.001	0.039***	–0.177***	1				
CFO	–0.248***	0.046***	–0.039***	0.085***	–0.152***	0.030***	–0.039***	–0.144***	0.377***	–0.155***	–0.021**	–0.001	–0.122***	1			
Inv_rec	0.176***	–0.030***	0.013	–0.059***	–0.033***	–0.001	0.109***	0.275***	–0.074***	–0.038***	0.004	–0.088***	0.030***	–0.336***	1		
Newclient	0.049***	–0.074***	–0.099***	0.001	0.003	–0.052***	–0.025***	0.001	0.021**	–0.004	–0.064***	0.029***	0.065***	0.010	0.010	1	
Firstshare	0.021**	0.180***	–0.035***	0.146***	–0.052***	0.262***	–0.205***	0.081***	0.082***	–0.051***	–0.058***	–0.056***	0.193***	0.064***	–0.010	0.030***	1

Note: This table presents the Pearson correlation coefficients. *, ** and *** indicate significance at the 0.1, 0.5 and 0.01 levels, respectively.

5.3. Economic effect of mandatory increase of audit firms' PII and PRF reserves on audit quality and audit pricing

Table 9 reports the regression results for models (3) and (4). Column (1) of Table 9 displays the impact of compulsory increase of PII and PRFs on audit quality, namely that the coefficient of *Treat*Post* is significantly negative (–0.0101). The increasing effect of insurance companies' external supervision and risk control knowledge transfer on audit quality offsets the reducing effect of PII's risk transfer and auditors' moral hazard on audit quality, which ultimately leads to the improvement of the financial statement quality of client firms. Thus, H3-a is verified.

Column (2) examines the impact of the compulsory increase in PII and PRF reserves on audit fees. The coefficient of *Treat*Post* is positive (0.0218) but insignificant, indicating that there is no evidence that audit firms transfer the costs of PII and PRFs to their clients, resulting in an increase in audit fees. This finding may be attributed to the fierce competition in China's audit market. As a service provider, the audit firm is weaker in terms of bargaining power than the client; hence, it is difficult for audit firms to transfer the costs of PII and PRFs to their clients. In addition, when negotiating audit fees with audit firms, client firms generally sign the engagement contracts for a term of years to obtain fee discounts, resulting in a slow transmission of the impact of PII and PRF reserve increases on audit fees.

5.4. Economic effect of mandatory increase of audit firms' PII and PRFs on auditor allocation

The results in Table 10 show that the coefficient of the term *Treat*Post*Newclient* is significantly positive, indicating that after Notice [2012] is issued, audit firms tend to allocate more experienced auditors to new clients with greater audit risk, and the risk aversion behavior of individual auditors is alleviated. This may be another explanation for the improvement in audit quality after the mandatory increase in the PII and PRF quotas.

5.5. Robustness tests

5.5.1. Parallel trend test

Following Bertrand and Mullainathan (2003), we incorporate the interaction terms between *Treat* and a series of time dummy variables into model (2) and present the dynamic effect test diagram in Fig. 1, where *pre_1* is a dummy variable that equals 1 for the first year before the policy revision, and 0 otherwise; *current* is a dummy variable that equals 1 for the year Notice [2012] took effect, and 0 otherwise; and *post_1* is a dummy variable that equals 1 for the first year after policy adjustments, and 0 otherwise. To prevent multi-

Table 6
Abnormal return on the day of the mandatory increase of audit firms' PII and PRF reserves.

	Obs.	Mean	St. Err.	*t*-value
AR	1,863	0.011	0.001	28.317***

Note: This table reports the results of the abnormal return on the event day. *, ** and *** indicate significance at the 0.1, 0.5 and 0.01 levels, respectively.

Table7
Cumulative abnormal return in the (–1, 1) window of the mandatory increase of audit firms' PII and PRF reserves.

	Obs.	Mean	St Err	t value
CAR	1,863	0.009	0.001	12.3***

Note: This table reports the results of cumulative abnormal return with the (–1, 1) window. *, ** and *** indicate significance at the 0.1, 0.5 and 0.01 levels, respectively.

collinearity problems, *pre_3* (the year of 2009) is selected as the base period. The results show that before Notice [2012] is issued, the coefficients of the interaction terms between *Treat* and each time dummy variable are not significant (except that *pre_2* is significant and negative). However, in the year of Notice [2012] and the second and third years after the policy is implemented (*post_2* and *post_3*), the coefficients of the interaction terms between *Treat* and those time dummy variables are significantly negative. This shows that after the mandatory increase of the PII and PRF quotas, the audit quality of client firms with high earnings management risk is significantly improved, and the impact of this policy is sustainable.

Table 8
Transverse check to the market reaction.

Variable	IV: *AR*	
	Coefficient	*t*-value
Treat	0.0031*	1.83
Nonsoe	0.0015**	2.13
Newclient	0.0028***	3.18
Firm_size	–0.0037***	–10.15
Big4	–0.0006	–0.58
Lev	0.0007	0.35
Roa	0.0081	1.40
Constant	0.0979***	10.31
Industry	Yes	
N		1863
Adj. R^2		0.1843

Note: This table reports the OLS regression results for Eq. (1). *, ** and *** indicate significance at the 0.1, 0.5 and 0.01 levels, respectively. *t*-statistics are based on standard errors adjusted for industry-level clustering.

Table 9
Effects of mandatory increase of audit firms' PII and PRF reserves on audit quality and audit pricing.

Variable	IV: *DA*		IV: *Auditfee*	
	Coefficient	*t*-value	Coefficient	*t*-value
Post	–0.0135**	–2.56	0.2022***	19.53
Treat	0.0353***	3.89	–0.0373	–0.74
*Treat*Post*	–0.0101**	–2.15	0.0218	0.44
Big4	–0.0024	–0.95	0.7984***	25.83
Firm_Size	–0.0022	–1.47	0.4153***	21.86
Nonsoe	0.0091***	4.50	0.0682***	2.95
Lev	0.0438***	6.59	–0.1799***	–3.91
Roa	0.3605***	6.68	–0.5533**	–2.27
Dloss	0.0043	0.83	0.064	1.36
Age	0.0003	1.72	0.0051	1.58
BM	–0.0149***	–3.46	–0.1989***	–3.27
CFO	–0.288***	–6.12		
Newclient	0.0089**	2.89		
Firstshare	0.0002***	3.85		
Current			–0.0109***	–5.12
Inv_rec			0.0841	1.04
Constant	0.1054***	3.43	4.4194***	12.22
Industry	Yes		Yes	
N		13,264		13,264
Adj. R^2		0.154		0.695

Note: This table reports the OLS regression results for Eqs. (2)–(3). *, ** and *** indicate significance at the 0.1, 0.5 and 0.01 levels, respectively. *t*-statistics are based on standard errors adjusted for industry-level clustering.

Table 10
Effects of mandatory increase of audit firms' PII and PRF reserves on auditor allocation.

Variable	IV: *Exp*	
	Coefficient	*t*-value
Post	0.0237	1.63
Treat	–0.0108	–0.22
Newclient	–0.0227*	–1.75
*Treat*Post*	–0.0498	–1.50
*Post*Newclient*	–0.0573***	–3.55
*Treat*Post*Newclient*	0.1606**	2.53
*Treat*Newclient*	–0.0638**	–2.29
Firm_Size	–0.0009	–0.13
Lev	–0.2094***	–3.12
Op	–0.0361	–0.92
Age	–0.0031	–1.49
Big4	–0.3043***	–16.32
Dloss	0.0374	0.72
Inv_rec	–0.0081	–0.19
Constant	0.5233***	3.70
Industry	Yes	
N		12,902
Adj. R^2		0.041

Note: This table reports the OLS regression results for Eq. (4). *, ** and *** indicate significance at the 0.1, 0.5 and 0.01 levels, respectively. *t*-statistics are based on standard errors adjusted for industry-level clustering.

5.5.2. Placebo test

Based on the proportion of the treatment group and the control group, the samples are randomly assigned to either the control group or the treatment group, then the difference-in-differences regression model is carried out again. We repeat this process 1,000 times to obtain 1,000 estimated coefficients and *t*-values of *Treat*Post*, and we show their distribution in Fig. 2. As shown, the *t*-values of the coefficients of *Treat*Post* in the randomized placebo test are mostly distributed around 0; that is, the regression coefficients are not statistically significant.

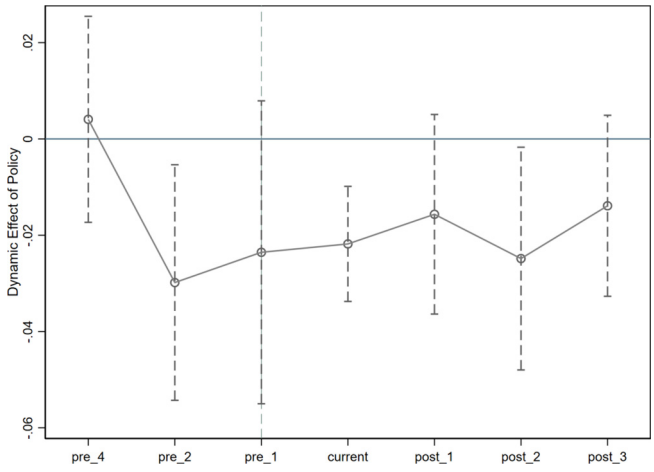

Fig. 1. Parallel trend test.

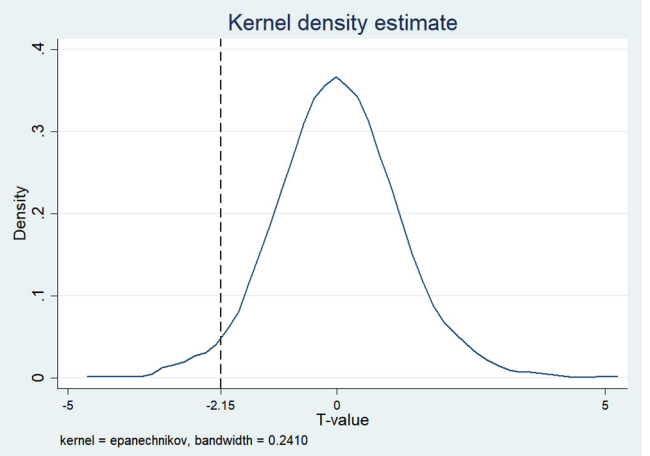

Fig. 2. Placebo test.

6. Conclusion

We empirically examine the market reaction to Notice [2012] by using data from 2008 to 2015 and further investigate the risk-preparing benefits of Chinese audit firms' PII and PRFs by using this policy revision as an exogenous shock. First, it is found that investors regard the mandatory increase of PII and PRF reserves as a signal to improve audit firms' civil litigation compensation ability and risk-preparedness capacity, producing the expectation of strengthening investor protection and causing the investors to respond positively. The non-state-owned firms, new client firms, small client firms and firms with high earnings management risk have a more positive reaction in this event window. Second, Notice [2012] has a significant effect. Specifically, the increase in audit firms' PII and PRF reserves play a more active role after the implementation of Notice [2012], resulting in a significant improvement in client firms' financial reporting quality. The audit quality of firms with higher earnings management risk is more obviously enhanced. Furthermore, there is no evidence that audit firms pass the input costs of their PII or PRFs on to their clients. Finally, and most importantly, the mismatch between auditors and new client firms is alleviated.

We contribute to the literature and practice in several ways. First, we examine the economic effects of policy related to PII and PRFs by using the quasi-experimental setting of a mandatory increase in PII and PRF reserves. This setting effectively alleviates endogenous problems. Furthermore, we use the event study method to examine the market reaction to the signal released by the CSRC and the Ministry of Finance of requiring audit firms to fully prepare for potential litigation risks and of enhancing investor protection, and we further examine cross-sectional differences between client firms.

Second, we propose another explanation for the improvement in audit quality after the mandatory increase in the PII and PRF quotas, namely the alleviation of auditor misallocation. Research typically confirms the positive effect of PII and PRFs on audit quality and attributes it to the external supervision function of insurance companies after audit firms purchase PII. However, the regulatory motivation and capacity of insurance companies are controversial (Arrow, 1963; Pauly, 1968). Our findings respond to questions posed by Wu (2009) regarding how to mitigate the mismatch anomaly of auditor resources through the audit system design. Audit firms can mitigate the risk aversion behavior of individual auditors by preparing for litigation risk and encouraging experienced auditors to undertake the engagement of new client firms, especially high-risk firms, thereby ensuring the audit quality of new clients.

Third, our empirical results verify the conclusion of Simunic et al. (2017) that countries with weak legal systems can improve the fitness of their own and international audit standards by enhancing the compensation capacity of audit firms, positively affecting the overall service quality of the audit industry. Audit firms' risk-preparedness mechanism (i.e., PII and PRFs), by improving the civil liability compensation ability of audit

firms, can improve the service quality of intermediary agencies. Our findings provide a reference for regulators and audit firms to clarify the mechanism and actual efficacy of the two risk-preparedness alternatives of PII and PRFs.

References

Arrow, K.J., 1963. Uncertainty and the welfare economics of medical care. Am. Econ. Rev. 53 (5), 941–973.

Balsam, S., Krishnan, J., Yang, J.S., 2003. Auditor Industry Specialization and Earnings Quality. Audit. J. Pract. Theory 22 (2), 71–97.

Ben-Shahar, O., Logue, K.D., 2012. Outsourcing Regulation: How Insurance Reduces Moral Hazard. Mich. Law Rev. 111 (2), 197–248.

Bertrand M., and S. Mullainathan. 2003. Enjoying the Quiet Life? Corporate Governance and Managerial Preferences. Social Science Electronic Publishing.

Chen, C., Lin, H., Lin, Y., 2008. Audit Partner Tenure, Audit Firm Tenure, and Discretionary Accruals: Does Long Auditor Tenure Impair Earnings Quality? Contemp. Account. Res. 25 (2), 415–445.

Chin, C., Chi, H., 2009. Reducing Restatements with Increased Industry Expertise. Contemp. Account. Res. 26 (3), 729–765.

Choi, J., Kim, J.B., Liu, X., Simunic, D.A., 2008. Audit Pricing, Legal Liability Regimes, and Big 4 Premiums: Theory and Cross-country Evidence. Contemp. Account. Res. 25 (1), 55–99.

Choi, A., Sohn, B.C., Yuen, D., 2018. Do Auditors Care about Real Earnings Management in Their Audit Fee Decisions? Asia-Pac. J. Account. Econ. 25 (1–2), 21–41.

Chy, M., Franco, G.D., Su, B., 2021. The Effect of Auditor Litigation Risk on Clients' Access to Bank Debt: Evidence from a Quasi-Experiment. J. Account. Econ. 71 (1) 101354.

Deng, Y. W., G. Lobo, M. Zhang, and J. Xue. 2021. Relation between Auditors' Risk-Preparedness and Audit Adjustments: Evidence from Professional Risk Fund and Professional Indemnity Insurance. Working Paper.

Donelson, D.C., Yust, C.G., 2017. Insurers and Lenders as Monitors During Securities Litigation: Evidence from D&O Insurance Premiums, Interest Rates, and Litigation Costs. Journal of Risk and Insurance 86 (3), 663–696.

Ernstberger, J., Koch, C., Schreiber, E.M., Trompeter, G., 2020. Are Audit Firms' Compensation Policies Associated with Audit Quality? Contemp. Account. Res. 37 (1), 218–244.

Florou, A., Morricone, S., Pope, P.F., 2019. Proactive Financial Reporting Enforcement: Audit Fees and Financial Reporting Quality Effects. Account. Rev. 95 (2), 167–197.

Francis, J.R., Krishnan, J., 2002. Evidence on Auditor Risk-Management Strategies before and after The Private Securities Litigation Reform Act of 1995. Asia-Pac. J. Account. Econ. 9 (2), 135–157.

Frank, M., Maksymov, E., Peecher, M., Reffett, A., 2021. Beyond Risk Shifting: The Knowledge-Transferring Role of Audit Liability Insurers. Contemp. Account. Res. 38 (3), 2224–2263.

Geiger, M.A., Raghunandan, K., Rama, D.V., 2006. Auditor Decision-Making in Different Litigation Environments: The Private Securities Litigation Reform Act, Audit Reports and Audit Firm Size. J. Account. Public Policy 25 (3), 332–353.

Gillan, S.L., Panasian, C.A., 2015. On Lawsuits, Corporate Governance, and Directors' and Officers' Liability Insurance. Journal of Risk and Insurance 82 (4), 793–822.

Götze, T., Gürtler, M., 2020. Risk Transfer and Moral Hazard: An Examination on the Market for Insurance-Linked Securities. J. Econ. Behav. Organ. 180, 758–777.

Han, W.F., 2016. Auditor's Experience, Industry Expertise and Audit Fees. Accounting and Economics Research 6, 92–109, In Chinese.

Heo, J.S., Kwon, S.Y., Tan, H.T., 2021. Auditors' Responses to Workload Imbalance and the Impact on Audit Quality. Contemp. Account. Res. 38 (1), 338–375.

Houston, R.W., Peters, M.F., Pratt, J.H., 2005. Nonlitigation Risk and Pricing Audit Services. Audit. J. Pract. Theory 24 (1), 37–53.

Hsieh, T.S., Kim, J.B., Wang, R.R., Wang, Z., 2020. Seeing is Believing? Executives' Facial Trustworthiness, Auditor Tenure, and Audit Fees. J. Account. Econ. 69 (1) 101260.

Lee, H.Y., Mande, V., 2003. The Effect of the Private Securities Litigation Reform Act of 1995 on Accounting Discretion of Client Managers of Big 6 and Non-Big 6 Auditors. Audit. J. Pract. Theory 22 (1), 93–108.

Lennox, C., Li, B., 2012. The Consequences of Protecting Audit Partners' Personal Assets from the Threat of Liability. J. Account. Econ. 54 (2), 154–173.

Li, M.C., Zhou, H., 2013. Auditing standards, audit risk and client portfolio. The Chinese Certified Public Accountant 6, 88–93, In Chinese.

Li, G.Z., Li, J., Zheng, Y., Egger, P.H., 2020. Does Property Rights Protection Affect Export Quality? Evidence From a Property Law Enactment. J. Econ. Behav. Organ. 183, 811–832.

Ling, S.X., 2020. Directors' and Officers' Liability Insurance and Audit Fees Increase: Supervision, Incentives or Indulgence? An Empirical Study Based on the Data of Chinese A-Share. Journal of Audit & Economics 35 (01), 51–60, In Chinese.

Liu, W.J., Mi, L., Fu, J.X., 2010. Auditor Industry Specialization and Audit Quality: Evidence from financial fraud companies. Auditing Research 1, 47–54, In Chinese.

Luo, C.H., Tang, J.X., Wang, Y.S., 2014. Study on CPA's Individual Characteristics and Accounting Conservatism. Auditing Research 1, 71–78, In Chinese.

Magnan, M.L., 2008. Discussion of 'Audit Pricing, Legal Liability Regimes, and Big 4 Premiums: Theory and Cross-country Evidence'. Contemp. Account. Res. 25 (1), 101–108.

O'Sullivan, N., 1997. Insuring the Agents: The Role of Directors' and Officers' Insurance in Corporate Governance. J. Risk Insur. 64 (3), 545–556.
Pan, L., Hao, L.L., Zhang, L.P., 2019. Auditor Experience and Accounting Information Comparability: Evidence From China. Journal of Audit & Economics 34 (04), 44–56, In Chinese.
Pauly, M.V., 1968. The economics of moral hazard: Comment. Am. Econ. Rev. 58 (3), 531–537.
Peng, Z.G., Zhang, Q.L., 2013. Discussion on the Form CPA's Professional Liability Insurance. Auditing Research 3, 81–85, In Chinese.
Qiu, Y., Wu, X., 2014. Voluntary Demand for Professional Liability Insurance by Audit Firms: An Empirical Analysis. Accounting Research 10, 74–80, In Chinese.
Rothenberg, N.R., 2019. Auditor Reputation Concerns, Legal Liability, and Standards. Account. Rev. 95 (3), 371–391.
Seetharaman, A., Gul, F.A., Lynn, S.G., 2002. Litigation Risk and Audit Fees: Evidence from UK Firms Cross-Listed on US Markets. J. Account. Econ. 33 (1), 91–115.
Simunic, D.A., 1980. The Pricing of Audit Services: Theory and Evidence. J. Account. Res. 18 (1), 161–190.
Simunic, D.A., Ye, M., Zhang, P., 2017. The Joint Effects of Multiple Legal System Characteristics on Auditing Standards and Auditor Behavior. Contemp. Account. Res. 34 (1), 7–38.
Tang, Y.K., Zhou, Y.L., 2018. Current situation and countermeasures of Professional Liability Insurance in Audit Firms. China Market 10, 54–55, In Chinese.
Wang, L.C., Dong, L., Yang, D.L., Sun, F., 2014a. Gender Differences, Career Stages, and Auditor Independence. Journal of Audit & Economics 6, 32–41, In Chinese.
Wang, J., Qiu, Y., Wu, X., 2020. Professional Liability Insurance Contracts for Auditors: Differential Pricing and The Audit Quality Effect. China Journal of Accounting Studies 2, 1–18.
Wang, X.Y., Wang, P., Zhang, J.P., 2014b. Customer Concentration and Audit Fee: Customer Risk or Integration. Auditing Research 6, 72–82, In Chinese.
Wang, X.K., Wang, Y.Y., Yu, L.S., Zhao, Y.P., Zhang, Z.Y., 2016. Auditor's personal experience and audit quality. Accounting Research 9, 75–81, In Chinese.
Wu, X., 2009. Do Audit Firms Assign the More Experienced Engagement Partners to New Clients Switching from Other Firms ?. China Accounting and Finance Review 3, 1–59.
Wu, L.N., Zheng, X.B., Yue, H., 2010. Audit Liability and Investor Protection: A Test of Audit Insurance Hypothesis in Emerging Capital Market. Journal of Management World 3, 32–43, In Chinese.
Xu, Z.Y., Zhang, W., 2012. Several Reflections on Audit Firm's Withdrawal of Professional Risk Fund. The Chinese Certified Public Accountant 9, 48–50, In Chinese.
Xue, J., Deng, Y.W., Zhang, M., 2020. Audit Firms' Professional Risk Fund, Professional Indemnity Insurance and Client Acceptance. Accounting Research 11, 152–169, In Chinese.
Yuan, H.Q., Han, W.F., 2012. Individual Auditor's Characteristics and Audit Quality. China Accounting Review 3, 275–302, In Chinese.