

Green Transition and External Auditing

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Abstract

This paper examines whether and how the green transition affects external auditing. Specifically, we investigate the effects of China's *Green Audit of Outgoing Officials* (GAOO) policy that directly links environmental performance to public officials' promotions, creating strong political incentives for officials at all levels of local governments to transit to a green economy. Employing a DID approach, we observe a significant reduction in audit fees for high-polluting firms during the transition toward green practices. The decrease is stronger among firms located in regions with departing public officials. We identify two channels driving this trend: (1) Auditors rely on public information generated from intensified governmental efforts, thereby economizing on their *efforts* (i.e., a substitution effect); (2) High-polluting firms improve their environmental performance, leading to diminished client *risk*. Additional analyses show that GAOO does not lead to the deterioration in audit quality or the switch to lower-ranked audit firms.

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Green Transition and External Auditing

1. Introduction

Over the past decades, the significance of environmental risks has steadily increased. It is widely acknowledged that the conventional economic development model, heavily reliant on environmentally harmful practices, poses substantial climate risks and is inherently unsustainable. In 2011, the United Nations Environment Program unveiled the notion of a “green transition,” advocating for a profound shift toward an economic framework that minimizes environmental harm. The green transition signifies a major transformation, not only in production and consumption systems but also in infrastructure, institutions, societal values, regulations, and politics. As environmental issues can pose significant misstatement risks in financial reporting, the green transition may impact auditors’ assessment of audit risks and their overall audit processes.¹ For example, in BP’s 2021 annual report, the auditor highlighted a key audit matter related to “the potential impact of climate change and the energy transition on the valuation of Property, Plant, and Equipment (PPE), goodwill, and intangible assets.” This study aims to further our understanding of whether and how the green transition affects external auditing for firms in high-polluting industries. Specifically, our primary analyses focus on audit fees, which reflect the direct costs for conducting an audit (audit effort) and costs of potential liability losses (audit risk) (e.g., Simunic 1980).

We investigate this research question by focusing on the green transition in China. China is the research setting for the following reasons. First, is the second-largest economy in the world and the world’s largest emitter of greenhouse gases. Second, China exhibits a high degree of state

¹ See International Auditing Practice Statement (IAPS) 1010 and Chinese Standard of Auditing (CSA) 1631 titled “Consideration of Environmental Matters in Financial Statement Auditing.” Section 2.3 provides further details.

autonomy, and its society is accustomed to the exertion of coercive power; thus, its system facilitates a more expedited transition than in Western countries. This makes it feasible to observe effects (if any) with fewer confounding factors. Third, China implemented the *Green Audit of Outgoing Officials* policy (GAOO), directly linking environmental performance to public officials' promotions. This creates strong political incentives for officials at all levels of local governments to transit to a green economy.² This top-level reform represents a substantial movement toward a green economy and has immediate effects on social and business environments. Therefore, it provides a valuable opportunity to investigate the impact of the green transition.

There are two contrasting arguments about the effects of green transition on audit fees. On one hand, the green transition through the GAOO is accompanied by intensified oversight and heightened regulatory measures that escalate the penalty risks associated with environmental issues, potentially resulting in increased audit fees.

On the other hand, government-led green initiatives are likely to result in more intense government monitoring and greater availability of public information about firms' environmental performance. As auditors rely on a variety of information sources to assess audit risks, such as public environmental information, reports issued by and correspondence with regulatory agencies, and public records or plans related to environmental issues,³ the greater availability of public information has the potential to reduce the cost of collecting audit evidence. In other words, the policy may reduce the external auditor's need to expend *audit effort* as before (i.e., a *substitution* effect). Further, firms' transition to green production could lead to enhanced environmental

² Institutional background of the GAOO policy is discussed in Section 2.

³ See CSA 1631.

performance and diminished environmental risks, affecting the *audit risk* assessment of the client firm by the auditor and consequently reducing the audit fees.

We empirically examine the effects of GAOO on audit fees using a large sample of Chinese listed firms from 2014 to 2018. Our main analyses employ a difference-in-differences (DID) regression model around the implementation of GAOO. The treatment group comprises firms within high-polluting industries, identified due to their more severe environmental issues and greater sensitivity to the green transition, while firms in other industries form the control group. Our primary analyses compare firms in high-polluting industries with other firms before and after the implementation of GAOO. In sensitivity analyses, we match the two sets of firms using entropy balancing.

After first confirming that GAOO had the intended positive *real effects* on environmental quality, we observe a significant decrease in the audit fees of high-polluting firms following the implementation of GAOO compared to other firms. This finding is robust across specifications without and with firm fixed effects, as well as without and with entropy balancing. Additionally, we find that the decrease is more pronounced for firms located in cities where leading public officials are leaving office within the next two years, suggesting that the GAOO policy effectively drives the reduction of audit fees.

We further explore *how* the green transition can reduce the audit fees of high-polluting firms by examining two channels.⁴ First, GAOO broadens the sources of evidence in the auditor's audit process. When government officials are incentivized to improve environmental performance within their jurisdiction, increased efforts in *monitoring* polluting firms also generate *more public*

⁴ Although our analyses are richer than this parlance may imply, these mechanisms could be viewed as reflecting either (1) auditors' effort or (2) auditors' client-firm risk assessment.

information about firms' environmental performance. Auditors can then rely on this heightened public monitoring and expanded public information to reduce their efforts in private verification. Our empirical analyses support this channel. We show that the reduction in fees for high-polluting firms is stronger in regions with more effective governmental audits, indicating that heightened monitoring leads to a reduction of audit fees. Next, we utilize the Pollution Information Transparency Index (PITI) rank to measure the availability of public environmental information and find that the effects are more pronounced when the government increases the transparency of public environmental information. Additionally, we document that high-polluting firms reduce the lag time of annual reports (often used as a proxy for auditors' effort level), indicating a reduction in audit efforts. Together, the empirical evidence is consistent with auditors relying on stricter governmental monitoring and expanded public information, thereby reducing their efforts.

Second, GAOO can reduce potential litigation losses associated with environmental issues. In the transition to a green economy, high-polluting firms are likely to increase investments in improving their environmental performance, leading to a lower misstatement risk associated with environmental issues. For example, hidden liabilities linked to environmental concerns are expected to decrease. Research also documents that better environmental performance is associated with lower risk, lower cost of capital, and improvement of efficiency (e.g., Kim, Li, and Li, 2014; Chava, 2014; King and Lenox, 2002). Because lawsuits targeting auditors may arise following corporate failures, a reduction in the client firm's risk can contribute to diminished litigation losses for auditors.

Our empirical analyses provide supporting evidence for this channel. We observe that high-polluting firms significantly increase their green investments after the implementation of GAOO,

suggesting a responsive approach to the green transition by making more environment-related investments. These firms also apply for and receive more green patents, validating the efficacy of their green investments. Furthermore, we demonstrate that high-polluting firms exhibit a reduced likelihood of inclusion in the intensive government monitoring list and fewer instances of violations concerning environmental laws or regulations after GAOO. These findings indicate a decrease in *risks* for the auditors. Taken together, the empirical results are consistent with the idea that firms respond to GAOO by making more investments to improve their environmental performance, resulting in decreased audit risks associated with firms' environmental issues.

In additional analyses we also examine the effects of GAOO on other audit outcomes. We observe that audit quality does not decrease after GAOO, suggesting that reduced audit fees do not come at the expense of audit quality. Additionally, we do not find evidence that treatment firms switch to lower-ranked audit firms. Finally, we rule out the alternative explanation that the reduction in audit fees for treatment firms following the GAOO policy is attributed to a decrease in their operational scale.

Our paper makes several contributions. First, as countries around the world transit toward sustainability, Environmental, Social, and Governance (ESG) factors have garnered increasing attention from investors, practitioners, other stakeholders, and researchers. While accounting and finance scholars have started to explore the interactions between the environment and capital markets, extant research predominantly focuses on investors (e.g., Bolton and Kacperczyk, 2021) and creditors (e.g., Chava, 2014; Seltzer, Starks, and Zhu, 2022), largely overlooking an important market participant — auditors. Given that environmental factors are critical inputs in the auditing

process and auditing outcomes, we systematically investigate the effects of the green transition from the perspective of auditors.

Our findings indicate that as the economy shifts toward a greener system, external auditors adjust their auditing process. In particular, due to heightened governmental monitoring and improved environmental performance of client firms, auditors reduce their efforts and, in turn, lower their fees. These results suggest that the change in the economic development model significantly impacts financial market participants. In addition, we empirically establish that the green transition influences the audit process and identify synergy between public information transparency and auditors' private verification.

Second, our study sheds new light on how auditors respond to changes in clients' external environments. Although auditing standards emphasize the importance of understanding client firms' external environment to assess audit risks and design audit processes, research on such external environment factors is relatively scarce (DeFond and Zhang, 2014). We contribute new evidence by demonstrating that changes in the external environment due to the green transition affect audit fees, indicating that auditors formally consider such changes in the external environment. Given that the green transition is likely to continue for the foreseeable future, our study offers timely insights for the auditing literature and practice.

Third, the paper adds to research that examines the role of political incentives and politicians in capital markets. The literature suggests that political incentives and politicians have significant influence on the market participants, such as banks' risk-taking behavior (Kostovetsky, 2015), SEC enforcement against financial misconduct (Mehta and Zhao, 2020), and bank opacity (Yue, Zhang, and Zhong 2022), etc. Our research extends such inquiry by investigating whether and how

introducing environmental protection in public officials' performance evaluation and promotion system shapes the external auditor's practice.

Finally, as the country with the largest energy consumption and greenhouse emissions, China plays a crucial role in global environmental efforts. This article provides empirical evidence about China's initiatives to address environmental issues. By integrating environmental protection into the performance evaluation of public officials, China has substantially altered the external environment in which high-polluting firms operate, with tangible effects on pollution control and market participants.

2. Institutional Background and Hypothesis Development

2.1 Institutional Background for Green Transition in China

“Clear waters and green mountains are as good as mountains of gold and silver!” This political slogan, formulated by Chairman Xi Jinping, has been widely used in China to promote environmental awareness in recent years. Despite persistent environmental challenges, China has made significant progress in moving toward a green, or at least greener, economy.⁵ In September 2020, China announced its commitment to reach its carbon-emissions peak before 2030 and achieve carbon neutrality before 2060.

China's journey toward environmental sustainability has been long and challenging. In the early 2000s, after decades of rapid economic growth, China emerged as one of the largest global economies. However, this economic success was accompanied by severe environmental

⁵ The public and private investment in clean energy in China was \$381 billion in 2021, which outstrips all of North America by \$146 billion. See <https://www.ica.org/data-and-statistics/data-product/world-energy-investment-2022-datafile>.

degradation.⁶ Although the central government recognized the importance of environmental protection and enacted numerous laws and regulations, their enforcement was often ineffective.⁷ Lo et al. (2006) point out that the implementation of environmental protection largely depends on local governments and officials. Since the launch of economic reforms in the 1990s, the central government in China has established a GDP tournament among local government officials, closely tying the promotion or demotion of officials to the economic performance in their jurisdictions (Li and Zhou, 2005). Fearing that stringent environmental requirements might hinder economic growth, local government officials were hesitant to enforce environmental regulations. Political incentives for economic growth also drove officials to attract industries with high pollution or shield local firms from penalties for environmental violations (Wu et al., 2014; Jiang, Lin, and Lin, 2014). Consequently, rapid economic development in China was coupled with severe environmental deterioration (Wang, Wijen, and Heugens, 2018). According to the World Bank (2014), China became the world's largest emitter of greenhouse gases by 2006.

To address issues stemming from promotion-incentive distortions, the central government initiated adjustments to the promotion-evaluation standards for local officials starting with the release of the 11th Five-Year Plan in 2006. Specifically, the State Council explicitly regulated that environmental pollution would be considered in the performance appraisal of local officials. Integrating environmental protection into the evaluation system for government officials aimed to create incentives for local governments to strike a balance between economic development and

⁶ According to the World Bank (2007), among the twenty most polluted cities in the world, twelve were located in China.

⁷ According to an expert in Chinese environmental law, the National People's Congress and its Standing Committee have passed as many as 280 pieces of legislation, of which 29 relate to environmental resources, energy, and clean production. See <https://chinadialogue.net/en/pollution/3831-china-s-green-laws-are-useless/>. The central government also sets clear targets for protecting the environment. For example, in the eleventh Five-Year-Plan issued in 2005, the central government set the objective to reduce major pollutants by 10% each year and reduce energy consumption per unit of GDP by about 20% from the 2005 level.

environmental protection. Studies confirm that this reform has significantly impacted environmental performance (e.g., Wang, 2013; Zheng et al., 2014).

However, as noted by Wang (2013), several issues plagued the system. First, the evaluation was based on indicators that were easily measured and collected, with real environmental problems not specified as indicators and receiving scant attention. For instance, officials received credit for investments in environmental infrastructure without necessarily ensuring the effective operation of these infrastructures. Second, officials often focused on short-term activities that temporarily met targets. For example, officials received credit if the annual count of blue-sky days exceeded 85% of the year.⁸ Consequently, some local governments temporarily shut down energy-intensive companies to meet the criteria, technically improving quantitative targets without substantial real long-term effects on environmental protection.⁹ Empirically, Cao et al. (2019) document that officials relaxed environmental regulations at the end of their tenure, as the effects of pollution might only manifest after officials leave office.

Third, the central government often had to rely on self-reported data from local governments. In the face of asymmetric information, local officials may engage in data manipulation (Ghanem and Zhang, 2014). Consequently, environmental issues persisted even after a decade of implementing the system. According to the Ministry of Ecology and Environment of China, in 2014, only 16 out of 161 cities at or above prefecture level met air-quality standards, and 60.5% of underground water had poor or extremely poor quality.¹⁰

Due to these problems, the *Green Audits of Outgoing Officials* (GAOO) emerged as the next

⁸ A blue-sky day is defined as a day with an API (Air Pollution Index) lower than 100.

⁹ It was also reported that local governments cut power to households, schools, and even hospitals, to temporarily achieve energy-reduction targets (Yan 2011). Also, a local government reportedly painted an entire barren mountainside green to fool environment inspectors. See <http://news.cntv.cn/special/lanse/shuashan/index.shtml>

¹⁰ <http://english.mee.gov.cn/Resources/Reports/soe/soe2011/201606/P020160601592064474593.pdf>.

and important stage of reform. In September 2015, the Central Committee of the Communist Party of China (CCCPC) and the General Office of the State Council (GOSC) issued an “Integrated Reform Plan for Promoting Ecological Progress.”¹¹ The GAOO is a crucial initiative within this plan to enforce audits of public officials’ management of natural resource assets when they leave their posts.¹² In November 2015, the CCCPC and GOSC issued a detailed working plan for the green audit, which explicitly stated that formal regulations and guidance would be issued in 2017. It is important to note that this plan provides all government officials with a clear expectation of the schedule for GAOO implementation.

In December 2015, during a historic UN conference in Paris, China formally announced its adoption of the Paris Climate Change Agreement, signaling its determination to fully engage in global efforts to protect the environment.¹³ As anticipated, in June 2017, Chairman Xi Jinping approved the “Regulations on the Natural Resource Audit on the Outgoing Cadres (Trial),” which was formally released in November 2017.¹⁴ This regulation underscores the importance of supervising and protecting natural resources and the environment, mandating GAOO implementation nationwide.

GAOO targets principal leaders at all levels of local governments, such as city mayors or party secretaries, and aims to effectively address the three problems in the old system mentioned above. First, the auditing areas encompass natural resources (such as land, water, forest, mines, etc.),

¹¹ CCCPC and COSC represent the top authority in the Chinese Community Party and the central government, respectively.

¹² See the full text of the government announcements at : http://english.www.gov.cn/policies/latest_releases/2015/09/22/content_281475195492066.htm#:~:text=This%20reform%20is%20designed%20to,incentives%20and%20restraints%20by%202020.

¹³ China also set the following targets for 2030: to reach peak carbon-dioxide emissions, if possible, earlier than 2030; to lower carbon-dioxide emissions per unit of GDP by 60% to 65% from the 2005 level; to increase the share of non-fossil fuels in primary energy consumption to around 20%; and to increase the forest-stock volume by around 4.5 billion cubic meters compared with the 2005 level.

¹⁴ See http://www.xinhuanet.com/politics/2017-11/28/c_1122025649.htm

environmental protection, and gas pollution control., within the officials' jurisdiction. GAOO is thus much more comprehensive than the few indicators used in earlier years. Second, the auditing covers not just the year when officials leave office but the entire period they are in charge. This approach establishes a system of lifelong accountability for major ecological and environmental damage that may become apparent after an official has left office and for which they are found liable. Third, because the audit is executed after officials leave office, it eliminates (or at least greatly reduces) the potential for data manipulation while officials are still in power. In Appendix A (1), we present excerpts from a GAOO report.

GAOO holds officials accountable for environmental matters, and the audit results have direct implications for their political careers. Individuals found responsible for environmental damage may face a range of consequences based on the severity of their misconduct. This could include reprimands, public apologies, disciplinary actions within the government or party, demotions, or removal from office.¹⁵ GAOO serves as a very strong motivating factor for government officials to genuinely prioritize environmental concerns and contribute to green growth. As reported by media, by the end of 2021, the government had executed approximately 8,400 green audit projects, involving more than 12,000 leaders and officers at various levels.¹⁶

2.2 Related Literature

Our study relates to three streams of literature. The first examines the *impact of environmental factors* on the financial market, an area that has gained increasing attention. Studies find that

¹⁵ According to the *Green Audit Report of Ping Zeng during His Tenure as the Chief of Tianmen Water Conservancy Bureau*, the former chief did not perform well in fulfilling the responsibilities of natural resource asset management and ecological protection. After the departure audit of green performance, Ping Zeng was demoted to investigator in the Bureau, which is not a leadership role (i.e., a major demotion).

¹⁶ See http://www.news.cn/2021-11/01/c_1128019769.htm.

environmental factors can affect cost of capital (Chava, 2014), firm valuation (Bolton and Kacperczyk, 2021), credit ratings and yield spreads (Seltzer, Starks, and Zhu, 2022), and stock performance (Pástor, Stambaugh, and Taylor, 2022). Further, a few studies highlight the challenges of obtaining accurate information about firms' environmental risk. Christensen et al. (2022) document significant disagreement about firms' environmental performance, suggesting that ESG disclosure exacerbates ESG rating disagreements. Avramov et al. (2022) propose that a prominent challenge for ESG investors is the substantial uncertainty about the true ESG profile of a firm, which significantly affects the risk-return trade-off. Gibbons (2023) reveals that mandatory reporting of environmental and social information correlates with increased investment from institutional owners, influencing firms' investment and financing decisions. To summarize, this stream of literature offers ample evidence that environmental factors influence the financial market, while few studies focus on the effects of the green transition on a crucial market participant — auditors. The lack of consensus on environmental performance also underscores the difficulty of assessing firms' environmental risks.

The second stream of research explores the *influence of external factors* on the audit process and audit outcomes. Knechel (2007) contends that auditors must comprehend the entire organization and its operating environment to understand the audit challenges they may encounter. The external operating environment, along with potential changes, not only influences the strategy and operations of client firms but also shapes the audit process and the allocation of audit efforts. In recent studies, there is an emerging focus on whether and how auditors consider the external environment in which firms operate. Jha, Kulchania, and Smith (2021) use corruption data in the U.S. to show that audit fees are higher for firms headquartered in more corrupt regions. Wu and Ye

(2020) find that auditors respond to changes in client firms' external environment, as proxied by the names of their owners included in the "rich list." They demonstrate that auditors charge higher audit fees to address political risks associated with heightened public scrutiny. Eierle et al. (2022) review the literature on external factors affecting audit pricing using the PESTLE framework (Political, Economic, Sociological, Technological, Legal, and Environmental). They note that while most studies focus on the legal environment, "environmental factors remain under-researched despite their importance in public discourse" (p. 112). Our research addresses this gap by investigating how auditors adjust audit fees when client firms are located in a society undergoing a rapid transition to a green economy.

The third area of research concerns the role of *political factors* in capital markets. Gul (2006) uses a sample of firms in Malaysia and observes that auditors respond to political factors by adjusting audit fees. Chaney, Faccio, and Parsley (2011) find that politically connected firms are associated with lower quality accounting information. Additionally, a growing body of literature links politics to real effects. Chen, Tang, Wu, and Yang (2021) conclude that newly appointed local leaders, to demonstrate economic achievement, tend to collect more taxes to expand fiscal expenditures, underscoring the critical role of political incentives in corporate tax behaviors. The overarching message from this literature is that political factors and incentives play an important role in shaping the economic behaviors of market participants. Our paper contributes to this research by examining how auditors respond to changes in the external environment toward a green economy, induced by shifts in the political incentives of government officials.

2.3 Hypothesis Development

China has historically emphasized environmental protection through regulations. However, the enforcement of these regulations often faltered due to misaligned incentives among local government officials (Beeson, 2010; Marquis and Qian, 2014). The introduction of GAOO has significantly altered the political incentives of local government officials. The governmental audit, focusing on officials' adherence to central government policies regarding sustainable development, achievement of natural resource management and environmental protection targets, and fulfillment of monitoring responsibilities, directly shapes officials' performance evaluation and political careers. Crucially, GAOO establishes a lifelong responsibility system for environmental damage, linking environmental protection with officials' political trajectories. Given the dominant role of the government in China, this represents a substantial move toward a green economy.

Auditing standards explicitly mandate auditors to consider their client firms' external environments, encompassing political factors, regulations, environmental requirements, and more, when making audit-planning decisions (e.g., ISA 315; IAPS 1010). Anecdotal evidence shows that auditors consider environmental issues to be essential risk factors. For example, in BP's 2021 annual report, the auditor highlighted a key audit matter related to environmental issues. An analogous Chinese example can be found in ZZMD's 2018 annual report, a coal enterprise (Stock Code 600121), where the auditor stressed that a key audit matter was "the projected liability pertaining to environmental restoration."¹⁷

In Chinese auditing standards, environmental issues are covered in CSA 1631, titled "*Consideration of Environmental Matters in Financial Statement Auditing*," issued in 2007. CSA

¹⁷ An analogous Chinese example can be found in ZZMD's 2018 annual report, a coal enterprise (Stock Code 600121), where the auditor stressed that a key audit matter was "the projected liability pertaining to environmental restoration." We provide practical examples in Appendix A (2).

1631 explicitly states that auditors “should consider environmental matters that may result in significant misstatement risks in the financial statements.” More specifically, CSA 1631 requires that when conducting risk assessment procedures, auditors should consider the environmental protection requirements and issues that significantly impact the industry and operations of the audited entity, including: (1) Major environmental risks present in the industry, including existing and potential risks; (2) Common environmental protection issues faced by the industry; (3) Environmental laws and regulations applicable to the audited entity; (4) Whether the materials, technologies, processes, and equipment used by the audited entity in its products or production processes are subject to mandatory elimination or voluntary elimination under laws and regulations; (5) Whether actions taken by regulatory authorities or reports issued by them may significantly affect the audited entity and its financial statements; (6) Measures planned by the audited entity to prevent, mitigate, or compensate for environmental damage, or to protect renewable and non-renewable resources; (7) Records and reasons for penalties and lawsuits suffered by the audited entity due to environmental matters; (8) Pending litigation related to compliance with environmental laws and regulations; and (9) Whether insurance coverage includes environmental risks. Thus, the green transition (and GAOO in particular), which fundamentally alters companies’ approach to the environment, can potentially affect the audit process.

There are two contrasting arguments regarding the effects of GAOO on the audit fees of high-polluting firms. On one hand, GAOO might conceivably lead to increased audit fees. International auditing standards require auditors to ensure client compliance with environmental regulations, as noncompliance can affect operations, result in significant penalties, and potentially affect financial statements (ISA 250). GAOO enhances government officials’ accountability for environmental

issues, prompting closer monitoring of high-polluting firms and increasing the likelihood of penalties. For instance, the JAC Group (600418.sh) listed in Shanghai was fined 1.7 billion RMB due to environmental issues.¹⁸

On the other hand, there are strong reasons to expect that GAOO may negatively impact the audit fees of high-polluting firms. Heightened monitoring and increased public information about environmental risks may result in lower audit costs (i.e., a substitution effect). According to the Guidance to Application of CSA 1631, to assess the environmental risks associated with audited entities, auditors can rely on public environmental information, environmental regulatory authorities' actions and reports, correspondence with regulatory agencies, and the records and reasons of environment-related penalties and lawsuits. Cordis, Hsu, and Zhang (2022) find that the availability of public information from the government leads to a decrease in industrial pollution. Chow et al. (2022) demonstrate that auditors exert less effort and charge lower fees when clients are subject to more stringent external tax authorities, indicating positive spillover effects. Choy, Jiang, Liao, and Wang (2024) conclude that regulators' public disclosure of environmental violations improves the effectiveness of lender monitoring in reducing borrowers' polluting activities. In the context of GAOO, incentivizing government officials to enhance external monitoring of high-polluting firms allows auditors to rely on external governance and government-provided public information, thereby potentially reducing audit efforts and fees.¹⁹

Second, high-polluting firms, in response to increased regulatory requirements and heightened environmental enforcement, are incentivized to enhance their environmental performance. The Guidance to Application of CSA 1631 states that auditors "should consider measures taken by the

¹⁸ See <http://news.eastday.com/eastday/13news/auto/news/finance/20200628/u7ai9359427.html>

¹⁹ In Appendix A (3) we present some anecdotal evidence that auditors rely on governmental agencies to assess their clients' potential environmental risks.

audited entity to prevent, mitigate, or compensate for environmental damage, or to protect renewable and non-renewable resources.” Brown, Martinsson, and Thomann (2022) show that environmental policies encourage high-polluting firms to invest in transformative measures for their production processes. Improved environmental performance can reduce firm risk (Kim, Li, and Li, 2014) and lower the cost of capital (Sharfman and Fernando, 2008; Chava, 2014; Seltzer, Starks, and Zhu, 2022). Therefore, if firms enhance their environmental performance, it may lead to reduced cost of capital, lower default probability, decreased risk, and earnings management, subsequently resulting in lower audit *risks* and audit fees. We note that China has a highly competitive audit market relative to most Western countries (e.g., Chen, Sun, and Wu 2010; Pan, Shroff, and Zhang 2023), including a much smaller share by the Big-4 audit firms. For example, Li, Liu, Ye, and Yu (2023) conclude that “... the size of domestic [audit] firms is now comparable and competitive with their international counterparts.” As a result, the reduced efforts and/or lower risk assessments may lead to lower audit fees that auditors can charge. We also examine possible audit-firm switches in Section 5.

Moreover, when firms make green investments to reduce pollution, it often involves a systematic redesign of the production process, creating efficiency gains and mitigating litigation or compliance risks. Porter (1991) views pollution as a waste of resources and argues that measures to reduce pollution can strengthen a firm’s competitiveness. King and Lenox (2002) suggest that firms may underestimate the value of pollution-reduction means, and implementing them can lead to financial gains. Dai, Duan, and Ng (2021) find that regulation-induced green innovation helps firms improve their competitive advantage and differentiate themselves from rivals. In response to increased efficiency or decreased compliance risks, auditors may adjust audit fees downward. In

summary, client firms exert additional efforts to transition to greener operations, reducing potential environmental liability and resulting in lower audit risks and audit fees.

The above analyses suggest that the impact of GAOO on audit fees for high-polluting firms is an empirical question. We formalize this prediction in the following hypothesis (stated in the null form):

H1: The Green Audit of Outgoing Officials (GAOO) has no effect on audit fees of high-polluting firms.

3. Data and Methodology

3.1 Data

We extract financial information and audit-fee data from the China Stock Market & Accounting Research Database. Our sample period includes four years of data, 2014 and 2015 are years before the event, and 2017 and 2018 are years after the event. We drop year 2016 because it is a transition year. Note, although the regulation of GAOO was formally approved by President Xi Jinping in the middle of 2017, it was well expected by the end of 2015. Accordingly, we use 2017 as the first post year.²⁰

GAOO mainly affects high-polluting firms because these firms have a stronger effect on the environment. In contrast, low-polluting firms have weaker effects on the environment and are less likely to affect the audit results of GAOO. The guidance on the application of CSA 1631 states that “for audited entities operating in high-polluting industries (according to the State Environmental Protection Administration), their business operations may have a significant impact on the

²⁰ Our inferences remain consistent if we set years 2016 and 2017 as the post-event period (i.e., if we do not drop year 2016).

environment, ..., auditors need to design specific audit procedures to obtain sufficient and appropriate audit evidence to ensure that the financial statements are not materially misstated (relating to environmental issues).” Thus, we use high-polluting firms as the treatment firms and use other firms as the control firms. To identify the treatment firms, we rely on the Industry Classification Directory of the Inspection of Environmental Protection for Listed Corporations issued by the State Environmental Protection Administration in China. The following industries are high-polluting industries and have a larger impact on the environment: (1) metallurgical, (2) chemical, (3) petrochemical, (4) coal, (5) thermal power, (6) building materials, (7) paper, (8) brewing, (9) pharmaceutical, (10) fermentation, (11) textiles, (12) leather, (13) mining, and (14) steel. Firms in these industries are more likely to be affected by GAOO and represent treatment firms. Other firms are used as control firms.

3.2 Methodology

To evaluate the effects of GAOO on audit pricing of high-polluting firms, we employ the following DID regression model:

$$AUDITFEE_{i,t} = \beta_0 + \beta_1 \times TREAT_i + \beta_2 \times Post_{i,t} + \beta_3 TREAT_i \times Post_{i,t} + Controls + e_{i,t}, \quad (1)$$

AUDITFEE is the log of audit fees. *TREAT* is an indicator variable equal to 1 if the firm belongs to a high-polluting industry. *POST* is an indicator variable equal to 1 if the observation is in year 2017 or 2018 and 0 otherwise. *TREAT* × *POST* is the variable of interest, which captures the effects of GAOO on high-polluting firms compared to low-polluting firms.

We include several control variables motivated by extant research, including firm size (*SIZE*), leverage ratio (*LEV*), market-to-book ratio (*MB*), return on asset (*ROA*), operating loss (*LOSS*), current ratio (*CR*), quick ratio (*QUICK*), ratio of inventory and accounts receivable to total assets (*INVREC*), an indicator variable for Big-4 auditor (*BIG4*), modified opinion (*MAO*), total accruals (*TA*), volatility of stock return (*SDRET*), special items (*SPCTERM*), managerial ownership (*MNOWN*), firm age (*AGE*), the proportion of independent directors (*INDDIR*) and the volatility of operating cash flow (*SDCFO*) (e.g., Kim, Liu, and Zheng, 2012; Donohoe and Knechel, 2014; Hope, Hu, and Zhao, 2017).

We estimate a regression both with firm and year fixed effects and a regression without firm and year fixed effects. Firm fixed effects control for any unobserved time-invariant heterogeneity across firms, and year fixed effects account for possible time trends in audit fees. We cluster standard errors by firm to mitigate possible serial correlation in the error terms (Petersen, 2009). All variables are defined in Appendix B.

4. Empirical Results

4.1 Descriptive Statistics

Table 1 presents the descriptive statistics for our main sample. There are a total of 8,960 firm-year observations for the analyses. The mean of *AUDITFEE* is 13.904, which translates to an average of 1.09 million RMB audit fees. The mean of *TREAT* is 0.298, implying that 29.8% of the observations belong to the high-polluting industries. The mean of *SIZE* is 23.155, which translates to an average of firm's market value of 11.38 billion RMB. The average *ROA* is 2.8%, 17.4% of

observations have negative operating earnings, and 4.3% of observations receive modified audit opinions in our sample period.

4.2 Preliminary Analyses: Did GAOO Have Its Intended Effects on the Environment?

Our research focuses on the effects of the green transition on audit fees. Therefore, it is useful to first check whether the GAOO, our proxy for green transition, has tangible effects on the environment. If GAOO proves to be merely a “Paper Tiger,” it should not influence the behavior of government officials and firms, and consequently it should not determine environmental quality or audit fees. Conversely, if GAOO has the capacity to affect environmental quality, it implies that the new policy has indeed prompted changes in the behavior of government officials and firms, potentially influencing audit fees as well.

To assess the real effects of GAOO, we adopt the method employed by Chen, Hung, and Wang (2018). Specifically, we regress city-level pollution measures on *POST*, an indicator variable for the most impacted cities (*Most Impacted City*), and their interaction. To gauge the degree of influence by GAOO for each city, we first calculate the total assets of high-polluting firms within the city as a percentage of the total assets of all firms within that city (*Impact%*). Then we define an indicator variable *Most Impacted City* equal to 1, if *Impact%* for this city exceeds the sample median, and 0 otherwise. In our regression, we incorporate controls for city GDP (*GDP*), city population (*POPULATION*), the size of listed firms in the city (*LISTFIRMS*), and the marketization index (*MARKETIZATION*). We also include province fixed effects. Note that in examining the

effects on the environment, the regression is conducted at city-year level due to the lack of firm-specific pollution data.²¹

Our dependent variables are (1) industrial soot emissions (tons); (2) industrial wastewater (in ten thousand tons); and (3) SO₂ emissions (tons), all scaled by city GDP. The results are presented in Table 2. We find that *POST* is negative and significant in all three models, implying that GAOO had a positive effect on the environment. Further, the interaction between *Most Impacted City* and *POST* is also negative and significant, which is consistent with the positive effect being amplified in cities that are more affected by GAOO. Overall, the evidence is consistent with GAOO influencing the behaviors of government officials and firms, thus providing validation for our focus on GAOO in the ensuing empirical analyses.

4.3 Primary Analyses: The Effects of GAOO on Audit Fees (including Dynamic Analyses and Tests for Departing Officials)

Having established that GAOO had its intended effects of improving the environment, Table 3 presents our regression results from estimating equation (1), conducted on a firm-year basis. Column (1) presents the baseline results without any controls and fixed effects, where *TREAT*×*POST* yields a coefficient of -0.0807 (t=-4.40). This suggests a reduction in audit fees post-policy for the treated firms. With the introduction of a set of control variables in Column (2), *TREAT*×*POST* coefficient diminishes to -0.0473 yet remains significant at the 1% level (t=-3.28), further confirming the GAOO's effect on reducing audit fees among treated firms. *TREAT* is not significant, suggesting no significant difference in audit fees between treatment and control firms

²¹ Again, the sole purpose of these preliminary analyses is to check whether there are real effects associated with the regulatory reform.

before GAOO. *POST* is positive and significant, indicating an upward time trend for audit fees. In Column (3), the further inclusion of *firm* and year fixed effects to control for time-invariant firm characteristics and time trends, leads to the absorption of *TREAT* and *POST*. We can see that *TREAT*×*POST* remains negative at -0.0469 with a t-stat of -3.58, underscoring the significant effect of the policy. In summary, the results suggest an approximately 5% decrease in audit fees for treatment firms after the implementation of GAOO.²²

Table 4 presents the dynamic change of audit fees around the event. We include interactions between *TREAT* and year indicators with year fixed effects. The coefficients for *TREAT*×*Year 2014* and *TREAT*×*Year 2015* are insignificant, while those for *TREAT*×*Year 2017* and *TREAT*×*Year 2018* are significantly negative (t-stat=-3.86 and -2.83). These results support the argument that GAOO leads to reduced audit fees for high-polluting firms. In untabulated analysis, we also perform the “Honest DID” diagnostic tests developed by Rambachan and Roth (2023). We find that the observed significant DID effect remains robust even when accommodating violations of parallel trends up to 1.8 times the maximum violation observed in the pre-treatment period.

We conduct additional analyses to verify the effects of GAOO. GAOO primarily focuses on officials who leave their current positions; thus, we expect the effects to be amplified when the officials are about to leave. To empirically assess this prediction, we identify cities where top officials (mayors or Secretaries of the Municipal Committee of the CPC) are about to leave within the next two years. Two variables are introduced to differentiate the GAOO effect in this context: *TREAT_DEPART* equals one for treated firms located in regions with departing officials, and zero otherwise; *TREAT_NODEPART* is set to one for treated firms in areas without departing officials,

²² Section 5.3 provides results of employing entropy balancing to ensure our inferences are not affected by uncontrolled heterogeneity between the treatment and control samples.

and zero otherwise. The results in Table 5 confirm our prediction, showing that the magnitude of the coefficient on $TREAT_DEPART \times POST$ is larger than $TREAT_NODEPART \times POST$. Furthermore, the difference in coefficients is statistically significant at the 1% level. This evidence is consistent with the notion that the pressure of GAOO leads to the reduction of audit fees.

In summary, the results from Tables 3-5 provide empirical support for GAOO leading to a reduction of audit fees for high-polluting firms.

4.4 Channel Analysis: Heightened Governmental Monitoring as Substitution

After showing that GAOO leads to the reduction of audit fees for high-polluting firms, we next explore potential channels for these effects. The first is a *substitutional* effect, wherein *heightened governmental monitoring* generates more public information. This information could serve as a possible substitute for the collection of audit evidence, resulting in the reduction of audit fees. We present several pieces of evidence from different perspectives.

First, GAOO is conducted by the national audit office and its local affiliates at different levels.²³ Despite being a national policy, the quality of green audits may vary across regions due to China's substantial variation in economy, institutional development, and government administrative quality. To assess this possibility, we measure the effectiveness of government audits based on irregular funds identified in government auditing scaled by regional GDP, following the approach of Lin, Mills, Zhang, and Li (2018). We divide the sample into two subsamples based on the effectiveness of government audit. The results in Panel A of Table 6 show that $TREAT \times POST$ has a negative and significant coefficient (Coef=-0.0775, t-stat=-4.43) when

²³ The GAOO is listed as one of the major responsibilities of the national audit offices. See <http://www.audit.gov.cn/n10/n14/index.html>

the effectiveness of government audit is high, supporting the notion that stricter enforcement of GAOO leads to a decrease in audit fees for high-polluting firms.

Second, the substitutional effect implies that heightened governmental monitoring generates more public information that auditors can utilize. To examine this idea, we consider whether the reduction in audit fees is stronger when the government increases the transparency of environmental disclosure. For this purpose, we employ the Pollution Information Transparency Index (PITI) rank, which is collaboratively compiled by the Institute of Public and Environmental Affairs (IPE) and The Natural Resources Defense Council (NRDC), to measure the transparency of pollution information disclosure across 120 cities nationwide.²⁴ Panel B of Table 6 shows that in the group with higher changes in government disclosure quality, $TREAT \times POST$ has a negative and significant coefficient (Coef=-0.0825, t-stat=-3.34), while in the group with lower changes, $TREAT \times POST$ is not significant (Coef=-0.0197, t-stat=-1.00). This evidence supports the idea that when the government improves the disclosure quality of environmental information, auditors can rely more on heightened external monitoring, leading to a stronger reduction in audit fees.²⁵

Third, we evaluate whether *audit efforts* for high-polluting firms decrease after GAOO. We use audit lag, defined as the number of days between a client's fiscal year-end and the release of the audit report, as a measure of audit effort (e.g., Knechel and Payne, 2001; Chan, Chen, Chen, and Yu, 2012). The results are presented in Table 7. We find that $TREAT \times POST$ has a negative and

²⁴ The PITI rank is evaluated according to five indicators: *Regulatory Information, Automatically-Monitoring Information, Interactive Responses of Regulator, Emission Data, and Environmental Assessment Information*. These primary indicators are further divided into eight secondary indicators. Each indicator is assigned a specific weight. The assessment of each indicator is quantitatively measured across four dimensions, including systematic implementation, timeliness, completeness, and user-friendliness. Thus, PITI can serve as an appropriate measurement for the transparency of environmental information.

²⁵ We employ subgroup regression due to the regional-level nature of the conditional variable. This approach, diverging from the previous methodologies, allows for a distinct and clear depiction of the green audit effects across various regions.

significant coefficient in both specifications (Coef=-2.6376, t-stat=-3.33 in the model without fixed effects; Coef=-1.5680, t-stat=-1.99 with fixed effects), indicating a decrease in audit efforts for high-polluting firms after GAOO.

In summary, our findings suggest that the reduction of audit fees is stronger when governmental auditing is more effective and when auditors are more capable of relying on public information from the government. Additionally, audit efforts decrease after GAOO, indicating that auditors substitute their efforts with external governmental monitoring, leading to a decrease in audit fees.

4.5 Channel Analysis: Increased Green Investments?

Another potential channel we consider is that GAOO can impact firms' business risk by motivating polluting firms to make green investments to reduce pollution and protect the environment, leading to reduced environmental risks (a risk factor for auditors) or improved competitive advantage.²⁶ To examine this channel, we conduct the following tests.

First, we examine whether high-polluting firms increase their green investments. We define green investments as expenditures on projects related to environmental protection, scaled by total assets. We extract this information from the notes of the financial reports. Our regression model is similar to that in Equation (1), except that we replace the dependent variable with green investment. We control for factors documented to influence corporate green investments (e.g., Di Giuli and Kostovetsky, 2014; Chen, Dong, and Lin, 2020). In particular, we control for firm size (*SIZE*), leverage ratio (*LEV*), return on asset (*ROA*), stock return (*RET*), firm age (*AGE*), KZ index (*KZ*)

²⁶ Dai, Duan, and Ng (2021) find that stricter environmental regulation can induce green innovation, which helps competitive firms better achieve product differentiation and earn higher market share.

Index), cash holding (*CASH*), research and development expenditures (*R&D*), advertisement expenditure (*ADVERTISING*), dividend payment (*DIVIDEND*), property, plant, and equipment (*PPE*), capital expenditure (*CAPEX*), the percentage of independent directors (*INDDIR*), the age of CEO (*CEO age*), and an indicator variable for female CEO (*CEO Female*).

The results are presented in Table 8. We observe that the coefficient of $TREAT \times POST$ is positive and statistically significant in both models (Coef=0.1259, t-stat=2.76 in the model without fixed effects; Coef=0.0985, t-stat=2.16 in the model with fixed effects), supporting the idea that treatment firms increase their green investments after GAOO. The evidence is consistent with the argument that treatment firms invest more to improve environmental performance, reducing environmental risks and, in turn, audit fees.

Next, we assess whether high-polluting firms, in response to the green transition, obtain more green patents to improve their environmental performance. Brown, Martinsson, and Thomann (2022) suggest that environmental policy motivates high-polluting firms to expand their capacity to absorb external knowledge and technical know-how. Consistent with this argument, we examine whether high-polluting firms apply for and receive green utility model patents after GAOO.²⁷ We employ two measures: the number of green utility-model patents that firms apply for in year $t+1$ and the number of green utility-model patents awarded to the firm in year $t+2$. Here, one or two lag years are used to allow the time for generating innovations and approving patents. We use these variables as dependent variables and run a similar DID regression to examine the effects of GAOO.

The results, presented in Table 9, show that the coefficient of $TREAT \times POST$ is positive and

²⁷ China's patent system provides three types of patent rights: invention, utility model, and design. Design patents refer to the creation of new designs for the shape, patterns, etc., and thus are not relevant to our study. Invention patents are more related to the development of new innovation and usually take three to five years to grant. It is thus difficult to link invention patents to the event. In contrast, utility-model patents relate to technical solutions and take about one year to grant.

significant in all four models, suggesting that high-polluting firms have applied for and been awarded more green patents after GAOO. These green patents may transform their production processes and improve their environmental performance, reducing their potential environmental liability (a risk factor for auditors).

We further directly evaluate whether the environmental risk of high-polluting firms decreases after GAOO. We use two measures. The first is an indicator that equals 1 if the firm is under national intensive monitoring and control and 0 otherwise. Each year, the Ministry of Environmental Protection announces a list of firms that generate significant pollution and need to receive intensive monitoring. In other words, being included in the list implies that the firm has poor environmental performance. The Guidance to the Application of CSA 1631 also suggests that auditors need to pay special attention if “the name of the audited entity is listed in public records or plans related to ecological/environmental restoration.” The second is an indicator variable that equals 1 if the firm violates environmental laws or regulations during the year and 0 otherwise. We run logistic regressions with these two variables as dependent variables. The results presented in Table 10, show that $TREAT \times POST$ is negative and significant in both models, suggesting that high-polluting firms are less likely to be included in the intensive monitoring list and have fewer violations of environmental laws or regulations following the regulation (relative to control firms).

Taken together, the evidence signifies that after GAOO, high-polluting firms make more green investments and receive more green patents, significantly reducing their environmental risks. This evidence is consistent with the risk-reduction channel.

5. Further Analyses

5.1 Additional Audit Outcomes

In previous sections, we mainly focus on audit fees to assess the effects of GAOO on audit efforts and audit risks. In this section, we consider two additional audit outcomes.

The first audit outcome is audit quality. Our evidence suggests that after GAOO, auditors substitute audit efforts with strengthened governmental monitoring. An interesting question arises: does this substitution lead to lower audit quality? To measure audit quality, we use *RESTATEMENT*, an indicator equal to 1 if the financial statements of the firm in the current year are restated later and 0 otherwise. In Panel A of Table 11, the results show that the coefficient of $TREAT \times POST$ is insignificant, suggesting that the reduction in audit efforts in post-GAOO period does not lead to lower audit quality.²⁸

The second audit outcome is the switch of audit firms. If GAOO reduces the difficulty of audit and the demand of audit, firms may switch to lower-ranked audit firms. In Panel B of Table 11, we do not find any evidence of significant downward switches, either from Big-4 to non-Big-4 auditors, or from Big-10 to non-Big-10 auditors.²⁹ Thus, GAOO does not motivate firms to switch to low-ranked audit firms. It also suggests that the observed reduction in audit fees is not caused by client firms switching to lower-priced audit firms. In untabulated analyses, we include the switching variables as additional controls in the primary regression, and conclusions remain unaltered. We also run a specification with *audit-firm fixed effects*, and inferences are unaffected (untabulated).

²⁸ In untabulated analyses we include *RESTATEMENT* as an additional control in the primary regression. No inferences are affected.

²⁹ The Big-10 versus non-Big-10 analysis is common in China-related research because of the considerably smaller market share by the Big-4 firms in China. Note that the number of observations is lower for these tests because for logistic regressions with fixed effects, observations with no variations are dropped.

5.2 Treatment Firm Scale

It has been well documented that audit fee is positively related to firm scale (See for example Simunic 1980). Thus, an alternative explanation of the decrease of audit fees in the post-GAIO period is the scale of treatment firm is reduced after GAIO. To deal with this alternative explanation, we have already explicitly included time-varying controls for firm size in our DID analyses, and also have employed firm fixed effects. Further, in Panel C of Table 11, we use scale as the outcome variable measured with total assets, market value of equity, and total revenues. We do not discern any significant reduction in the scale of the treatment firms. This suggests that scale is not a likely alternative explanation for our findings.

5.3 Entropy Balancing

We identify treated firms based on industry membership, which is a reasonable approach as industries are affected by GAIO to varying degrees. However, systematic differences across high-polluting and other firms could threaten the credibility of inferences drawn from the DID analyses. To address potential covariate imbalances, we employ the entropy balancing procedure to equalize the distributions of underlying variables across treatment and control groups. As shown in Panel A of Table 12, treated firms and control firms have differences in several firm characteristics before matching, while the differences in firm characteristics are not significant after entropy balancing. This indicates that the control firms, reweighted by the entropy-balancing approach, can serve as a credible counterfactual for treated firms. The regression results based on entropy balancing (both with and without firm and year fixed effects), presented in Panel B of Table 12, demonstrate that our inferences are robust to this methodological adjustment.

6. Conclusion

This study empirically assesses the impact of the green transition on the external auditing of firms in high-polluting industries. Leveraging the implementation of the *Green Audit of Outgoing Officials* policy in China, we document a significant decrease in audit fees for firms in high-polluting industries following the reform. We further provide evidence for two channels: (1) Auditors rely on intensified governmental efforts, especially in instances of effective government audits and enhanced transparency in public environmental disclosure, thereby economizing the private audit process (i.e., a substitution effect resulting in lower audit effort); (2) High-polluting firms improve their environmental performance, leading to diminished client risk and lower audit demand. Additional analyses reveal that the reduction in audit fees is not accompanied by a deterioration in audit quality, and there is no evidence of treatment firms switching to lower-priced auditors.

Countries worldwide are currently in the midst of the green transition, a trend that is expected to continue for the next several decades. Our study investigates the effects of this green transition on audit outcomes, adding insights to the literature on ESG, auditing, and political economy.

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Table 1: Descriptive Statistics of Main Variables

	N	Mean	SD	Percentile		
				P25	P50	P75
<i>AUDITFEE</i>	8,960	13.904	0.689	13.459	13.816	14.286
<i>TREAT</i>	8,960	0.298	0.457	0.000	0.000	1.000
<i>SIZE</i>	8,960	23.155	1.019	22.419	23.008	23.754
<i>LEV</i>	8,960	0.094	0.103	0.016	0.056	0.141
<i>MB</i>	8,960	2.877	2.381	1.418	2.086	3.359
<i>ROA</i>	8,960	0.028	0.069	0.010	0.029	0.057
<i>LOSS</i>	8,960	0.174	0.379	0.000	0.000	0.000
<i>CR</i>	8,960	2.142	2.167	1.071	1.536	2.369
<i>QUICK</i>	8,960	1.661	1.964	0.682	1.097	1.837
<i>INVREC</i>	8,960	0.265	0.172	0.134	0.241	0.361
<i>BIG4</i>	8,960	0.059	0.236	0.000	0.000	0.000
<i>MAO</i>	8,960	0.043	0.204	0.000	0.000	0.000
<i>TA</i>	8,960	0.057	0.067	0.017	0.038	0.071
<i>SDRET</i>	8,960	0.024	0.008	0.018	0.023	0.029
<i>SPCTERM</i>	8,960	0.019	0.064	0.001	0.004	0.012
<i>MNOWN</i>	8,960	0.051	0.116	0.000	0.000	0.024
<i>AGE</i>	8,960	4.887	0.598	4.431	4.990	5.412
<i>INDDIR</i>	8,960	0.375	0.054	0.333	0.364	0.429
<i>SDCFO</i>	8,960	0.052	0.040	0.026	0.041	0.064

This table reports descriptive statistics of the main variables. The sample period includes two years before the policy (i.e., 2014 and 2015) and two years after the policy (i.e., 2017 and 2018). Variable definitions are presented in Appendix B. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the effects of outliers.

Table 2: Preliminary Analyses on GAOO and Environmental Performance (Real Effects)

	<i>SOOT</i>	<i>WASTEWATER</i>	<i>SO₂</i>
	(1)	(2)	(3)
<i>Most Impacted City</i> × <i>POST</i>	-0.0028** (-2.52)	-0.0004*** (-2.92)	-0.0046*** (-4.16)
<i>Most Impacted City</i>	0.0019* (1.80)	0.0002 (1.49)	0.0027*** (2.87)
<i>POST</i>	-0.0033*** (-5.54)	-0.0003*** (-6.37)	-0.0038*** (-7.50)
<i>GDP</i>	-0.0035*** (-4.41)	-0.0004*** (-4.81)	-0.0043*** (-4.99)
<i>POPULATION</i>	0.0002 (0.26)	-0.0001 (-0.84)	-0.0005 (-0.53)
<i>LISTFIRMS</i>	0.0004 (1.28)	0.0001** (2.19)	0.0006* (2.41)
<i>MARKETIZATION</i>	-0.0004 (-1.08)	0.0000 (1.09)	0.0002 (1.48)
Province Fixed Effects	YES	YES	YES
Observations	872	872	873
Adjusted <i>R</i> ²	0.413	0.314	0.464

This table reports the results of the effects of *Green Audit of Outgoing Officials* (GAOO) on environment performance, based on the city-year observations. The dependent variables are city-level pollution variables: 1) *SOOT*: industrial soot emissions (tons) scaled by city GDP; 2) *WASTEWATER*: industrial wastewater (in 10 thousand tons) scaled by city GDP; 3) *SO₂*: *SO₂* emissions (tons) scaled by city GDP. The variable of interest is *Most Impacted City* × *POST*. We define an indicator variable for *Most Impacted City* and set it equal to 1 for cities whose ratio of the assets of high-polluting firms to the assets of all firms is greater than the sample median, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. *GDP* is the natural logarithm of the city's GDP; *POPULATION* is the natural logarithm of population; *LISTFIRMS* is the natural logarithm of the aggregate total assets of city's listed firms; *MARKETIZATION* is the market development index. Standard errors are clustered at the city level. T-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 3: GAOO and Audit Fees

	Dependent Variable= <i>AUDITFEE</i>		
	(1)	(2)	(3)
<i>TREAT</i> × <i>POST</i>	-0.0807*** (-4.40)	-0.0473*** (-3.28)	-0.0469*** (-3.58)
<i>TREAT</i>	0.0721** (2.37)	-0.0193 (-1.05)	
<i>POST</i>	0.2969*** (30.23)	0.1825*** (15.63)	
<i>SIZE</i>		0.4166*** (41.10)	0.3646*** (19.70)
<i>LEV</i>		-0.1300 (-1.46)	0.0658 (1.04)
<i>MB</i>		-0.0430*** (-14.36)	-0.0480*** (-14.21)
<i>ROA</i>		-0.7868*** (-6.59)	-0.2706*** (-3.86)
<i>LOSS</i>		0.0449** (2.48)	0.0227** (2.20)
<i>CR</i>		-0.0391*** (-2.97)	-0.0227* (-1.71)
<i>QUICK</i>		0.0194 (1.29)	0.0090 (0.61)
<i>INVREC</i>		-0.0814 (-1.56)	0.0525 (0.76)
<i>BIG4</i>		0.5963*** (14.23)	0.2387*** (3.78)
<i>MAO</i>		0.0990*** (3.56)	0.0587*** (2.71)
<i>TA</i>		-0.0928 (-1.07)	-0.0473 (-0.89)
<i>SDRET</i>		-1.5512** (-2.04)	-1.0203* (-1.76)
<i>SPCTERM</i>		0.0531 (0.55)	0.1093* (1.67)
<i>MNOWN</i>		-0.0006 (-0.01)	-0.1130* (-1.81)
<i>AGE</i>		0.0729*** (4.93)	0.1581*** (4.81)
<i>INDDIR</i>		0.1482 (1.19)	-0.1609 (-1.52)
<i>SDCFO</i>		-0.0151 (-0.09)	0.2143 (1.34)
<i>Constant</i>	13.7472*** (855.28)	3.9948*** (17.24)	5.0448*** (11.89)
Firm & Year Fixed Effects	NO	NO	YES
Observations	8,960	8,960	8,960
Adjusted <i>R</i> ²	0.040	0.631	0.913

This table provides our main results of the effects of GAOO on firm audit fees. Column (1) presents baseline regression results without any controls. Column (2) adds a set of control variables. Column (3) further incorporates firm and year fixed effects. The dependent variable (*AUDITFEE*) is the natural logarithm of annual audit fees. *TREAT* is an indicator variable for firms most impacted by GAOO, equal to one if firms are in high-polluting industries, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. Please see Appendix B for variable definitions. Standard errors are clustered at the firm level. T-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 4: GAOO and Audit Fees: Dynamic Analysis

	Dependent Variable= <i>AUDITFEE</i>
<i>TREAT</i> × <i>Year 2014</i>	-0.0214 (-1.14)
<i>TREAT</i> × <i>Year 2015</i>	-0.0098 (-0.49)
<i>TREAT</i> × <i>Year 2017</i>	-0.0795*** (-3.86)
<i>TREAT</i> × <i>Year 2018</i>	-0.0577*** (-2.83)
Other Controls	YES
Year Fixed Effects	YES
Observations	8,960
Adjusted <i>R</i> ²	0.636

This table examines the change of audit fees around the adoption of GAOO policy. The dependent variable (*AUDITFEE*) is the natural logarithm of annual audit fees. *TREAT* is an indicator variable for firms most impacted by GAOO, equal to one if firms is in high-polluting industries, and 0 otherwise. *Year 2014* (*2015*, *2017*, *2018*) is an indicator variable for year 2014 (*2015*, *2017*, *2018*), and 0 otherwise. Please see Appendix B for variable definitions. Standard errors are clustered at the firm level. T-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 5: The Role of Politician Departure Pressure

	Dependent Variable= <i>AUDITFEE</i>
<i>TREAT_DEPART</i> × <i>POST</i>	-0.0952*** (-4.76)
<i>TREAT_NODEPART</i> × <i>POST</i>	-0.0272* (-1.81)
<i>Dif: TREAT_DEPART</i>×<i>POST</i>- <i>TREAT_NODEPART</i>×<i>POST</i>	-0.0680*** (F-statistics=8.93)
Other Controls	YES
Firm Fixed Effects	YES
Year Fixed Effects	YES
Observations	8,960
Adjusted <i>R</i> ²	0.913

This table reports the moderating effects of politician departure on the effects of green audit policy. The sample firms are partitioned into sub-samples based on whether the core leaders (i.e., mayor and Secretary of Municipal Committee of the CPC) of the city that the firm is located in are about to departure within two years. The dependent variable (*AUDITFEE*) is the natural logarithm of annual audit fee. *TREAT* is an indicator variable for firms most impacted by politician green audit, equal to one if firms is in high-polluting industries, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. Please see Appendix B for variable definitions. Standard errors are clustered at the firm level. T-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 6: Channel Analysis: Heightened Monitoring as Substitution**Panel A: The Role of Government Audit Effectiveness**

	Dependent Variable= <i>AUDITFEE</i>	
	Effective Government Audit	Ineffective Government Audit
	(1)	(2)
<i>TREAT</i> × <i>POST</i>	-0.0775*** (-4.43)	-0.0054 (-0.27)
<i>Difference</i>	-0.0721*** (<i>Z</i> -statistic=-2.75)	
Other Controls	YES	YES
Firm Fixed Effects	YES	YES
Year Fixed Effects	YES	YES
Observations	4,655	4,305
Adjusted R ²	0.914	0.913

Panel B: The Role of Government Disclosure Quality about Environmental Information

	Dependent Variable= <i>AUDITFEE</i>	
	High Quality	Low Quality
	(1)	(2)
<i>TREAT</i> × <i>POST</i>	-0.0825*** (-3.34)	-0.0197 (-1.00)
<i>Difference</i>	-0.0628** (<i>Z</i> -statistic=-1.98)	
Other Controls		YES
Firm Fixed Effects		YES
Year Fixed Effects		YES
Observations	2,466	5,171
Adjusted R ²	0.902	0.918

In Panel A, the sample firms are partitioned into sub-samples based on the sample median of government audit effectiveness of the province that the firm is located in. The effectiveness of government audit is measured using the amount of irregular fund detected in government auditing scaled by regional GDP. In Panel B, the sample firms are partitioned into sub-sample based on the median of changes in city-level disclosure quality measured by Pollution Information Transparency Index (PITI) rank. The PITI, collaboratively compiled by Institute of Public and Environmental Affairs (IPE) and The Natural Resources Defense Council (NRDC), is a comprehensive measure of the transparency of pollution information disclosure across 120 cities nationwide. The dependent variable (*AUDITFEE*) is the natural logarithm of annual audit fee. *TREAT* is an indicator variable for firms most impacted by politician green audit, equal to one if firms is in high-polluting industries, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. Please see Appendix B for variable definitions. Standard errors are clustered at the firm level. T-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 7: Audit-Report Lag (Auditor Effort)

	Dependent Variable=AUDITLAG	
	(1)	(2)
<i>TREAT</i> × <i>POST</i>	-2.6376^{***} (-3.33)	-1.5680^{**} (-1.99)
<i>TREAT</i>	0.2812 (0.39)	
<i>POST</i>	6.4670 ^{***} (13.05)	
<i>SIZE</i>	1.2451 ^{***} (4.26)	5.3445 ^{***} (6.60)
<i>LEV</i>	-0.8621 (-0.33)	5.3005 (1.45)
<i>MB</i>	-0.2628 ^{**} (-2.02)	-1.1345 ^{***} (-5.96)
<i>ROA</i>	-33.1007 ^{***} (-7.08)	-27.1368 ^{***} (-5.68)
<i>LOSS</i>	2.7020 ^{***} (3.98)	2.1312 ^{***} (2.97)
<i>CR</i>	0.7773 (1.48)	0.8042 (0.86)
<i>QUICK</i>	-0.8973 (-1.49)	-1.0457 (-1.02)
<i>INVREC</i>	0.7587 (0.42)	4.2943 (1.18)
<i>BIG4</i>	-7.2019 ^{***} (-6.68)	0.0063 (0.00)
<i>MAO</i>	8.8541 ^{***} (8.57)	7.4592 ^{***} (6.16)
<i>TA</i>	-8.3905 ^{**} (-2.24)	-2.6283 (-0.70)
<i>SDRET</i>	79.0045 ^{***} (2.69)	-41.2360 (-1.16)
<i>SPCTERM</i>	-4.5540 (-1.14)	-3.7442 (-0.91)
<i>MNOWN</i>	1.8120 (0.81)	-1.1849 (-0.31)
<i>AGE</i>	-1.7918 ^{***} (-3.69)	6.6006 ^{***} (3.43)
<i>INDDIR</i>	0.6691 (0.16)	3.9212 (0.68)
<i>SDCFO</i>	3.1305 (0.47)	-8.3164 (-0.91)
<i>Constant</i>	72.5877 ^{***} (10.60)	-56.4604 ^{***} (-2.81)
Firm & Year Fixed Effects	NO	YES
Observations	8,917	8,917
Adjusted <i>R</i> ²	0.074	0.386

This table provides the results of the effects GAOO on audit report lag. The dependent variable (*AUDITLAG*) is the number of days between a firm's fiscal year-end and audit report date. *TREAT* is an indicator variable for firms most impacted by politician green audit, equal to one if firms is in high-polluting industries, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. Please see Appendix B for variable definitions. Standard errors are clustered at the firm level. T-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 8: Channel Analysis: Green Investment (Risk)

	Dependent Variable= <i>GREENINV</i>	
	(1)	(2)
<i>TREAT</i> × <i>POST</i>	0.1259^{***} (2.76)	0.0985^{**} (2.16)
<i>TREAT</i>	0.0322 (0.72)	
<i>POST</i>	-0.0032 (-0.12)	
<i>SIZE</i>	-0.0373 ^{***} (-2.77)	0.0132 (0.40)
<i>LEV</i>	0.7301 ^{***} (3.93)	0.5275 ^{***} (2.75)
<i>ROA</i>	0.2032 (1.46)	0.1849 (1.24)
<i>RET</i>	-0.0296 (-1.49)	-0.0052 (-0.27)
<i>AGE</i>	-0.0186 (-0.64)	0.1241 (1.21)
<i>KZ Index</i>	-0.0015 (-0.10)	-0.0056 (-0.34)
<i>CASH</i>	-0.0253 (-0.29)	0.0830 (0.74)
<i>R&D</i>	0.0072 ^{***} (3.58)	0.0037 (1.19)
<i>ADVERTISING</i>	-3.9071 ^{***} (-6.64)	-1.4142 (-1.56)
<i>DIVIDEND</i>	-2.1583 ^{**} (-2.13)	-1.8943 (-1.43)
<i>PPE</i>	0.4691 ^{***} (4.36)	0.0133 (0.06)
<i>CAPEX</i>	5.5445 ^{***} (9.21)	5.1174 ^{***} (9.19)
<i>INDDIR</i>	-0.3895 [*] (-1.70)	0.1118 (0.44)
<i>CEO Age</i>	-0.0340 (-0.34)	-0.0482 (-0.41)
<i>CEO Female</i>	-0.0360 (-0.65)	0.0156 (0.22)
<i>Constant</i>	1.0710 ^{**} (2.38)	-0.7908 (-0.77)
Firm Fixed Effects	NO	YES
Year Fixed Effects	NO	YES
Observations	8,960	8,960
Adjusted <i>R</i> ²	0.097	0.510

This table examines the green investments by firms around GAOO. The dependent variable is green investments scaled by total Assets (*GREENINV*). *TREAT* is an indicator variable for firms most impacted by politician green audit, equal to one if firms is in high-polluting industries, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. Standard errors are clustered at the firm level. T-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 9: Green Patents (Risk)

	Patent Application for Year t+1		Patent Grant for Year t+2	
	(1)	(2)	(3)	(4)
<i>TREAT</i> × <i>POST</i>	0.1018*** (3.10)	0.0727** (2.36)	0.1221*** (3.79)	0.0916*** (3.10)
<i>TREAT</i>	-0.2625*** (-7.22)		-0.2546*** (-7.03)	
<i>POST</i>	0.1556*** (6.89)		0.0872*** (3.93)	
<i>SIZE</i>	0.3552*** (16.40)	0.1518*** (5.79)	0.3300*** (15.17)	0.0749*** (2.65)
<i>LEV</i>	-0.0487 (-0.30)	-0.0561 (-0.41)	0.0590 (0.37)	-0.0689 (-0.56)
<i>ROA</i>	0.4389*** (2.59)	0.1870 (1.45)	0.4371*** (2.63)	0.3754*** (2.87)
<i>RET</i>	-0.1054*** (-5.16)	0.0245 (1.50)	-0.1116*** (-5.63)	-0.0062 (-0.37)
<i>AGE</i>	-0.0465 (-1.53)	-0.0405 (-0.56)	-0.0299 (-0.98)	-0.1351* (-1.95)
<i>KZ Index</i>	0.0561*** (3.37)	-0.0097 (-0.60)	0.0526*** (3.28)	-0.0104 (-0.68)
<i>CASH</i>	0.0512 (0.41)	0.1219 (1.21)	0.0214 (0.18)	0.1034 (1.02)
<i>R&D</i>	0.0419*** (21.12)	0.0103*** (4.07)	0.0407*** (20.65)	0.0077*** (3.13)
<i>ADVERTISING</i>	-7.9546*** (-7.88)	-2.3556*** (-3.15)	-7.7873*** (-7.77)	-2.9422*** (-3.25)
<i>DIVIDEND</i>	0.0300 (0.02)	-0.9245 (-0.83)	0.2299 (0.18)	-0.1371 (-0.13)
<i>PPE</i>	0.3651*** (3.76)	0.0268 (0.22)	0.3515*** (3.68)	0.1315 (1.14)
<i>CAPEX</i>	0.9701*** (2.75)	0.5949** (2.29)	0.8966** (2.53)	0.2232 (0.93)
<i>INDDIR</i>	-0.0943 (-0.33)	0.1004 (0.42)	-0.0981 (-0.35)	0.0435 (0.19)
<i>CEO Age</i>	0.0230 (0.23)	-0.0407 (-0.48)	0.0433 (0.44)	-0.0550 (-0.68)
<i>CEO Female</i>	-0.1481*** (-2.62)	-0.0640 (-1.24)	-0.1127** (-2.05)	0.0015 (0.03)
<i>Constant</i>	-8.0886*** (-12.74)	-2.5542*** (-3.39)	-7.6495*** (-12.05)	-0.1528 (-0.19)
Firm Fixed Effects	NO	YES	NO	YES
Year Fixed Effects	NO	YES	NO	YES
Observations	8,888	8,888	8,838	8,838
Adjusted R ²	0.251	0.717	0.234	0.731

This table provides the results of the effects on green patents. The dependent variable in Columns (1)-(2) is the logarithm of one plus the number of green patents applied in year t+1. The dependent variable in Columns (3)-(4) is the logarithm of one plus the number of green patents granted in year t+2. *TREAT* is an indicator variable equal to one if firms is in high-polluting industries, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. Standard errors are clustered at the firm level. T-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 10: Regulation Risk (Direct Evaluation of Risk)

	Key Monitoring	Environmental Violation
	(1)	(2)
<i>TREAT</i> × <i>POST</i>	-0.5578*** (-2.84)	-1.1057** (-2.03)
<i>TREAT</i>	2.0141*** (10.17)	1.5871*** (2.86)
<i>TPATENT</i>	0.1328*** (3.26)	0.0110 (0.09)
<i>MetStandard</i>	-1.0647** (-2.24)	-1.9123** (-2.39)
<i>SIZE</i>	0.1934*** (3.83)	-0.3509** (-2.55)
<i>LEV</i>	-0.2631 (-0.51)	-2.4369* (-1.90)
<i>ROA</i>	1.0712* (1.86)	0.5049 (0.36)
<i>RET</i>	-0.0258 (-0.27)	0.4935* (1.73)
<i>AGE</i>	0.5924*** (5.96)	0.1013 (0.38)
<i>KZ Index</i>	-0.0553 (-0.95)	0.0125 (0.07)
<i>CASH</i>	-0.0211 (-0.05)	-3.2426** (-2.41)
<i>R&D</i>	0.0722*** (8.52)	0.0392 (1.54)
<i>ADVERTISING</i>	-1.2954 (-0.51)	11.1808 (1.20)
<i>DIVIDEND</i>	-4.3264 (-1.10)	-11.6935 (-0.72)
<i>PPE</i>	2.9171*** (10.12)	1.6613*** (2.77)
<i>CAPEX</i>	1.8471* (1.90)	3.1534 (1.33)
<i>INDDIR</i>	-1.1263 (-1.49)	-0.0946 (-0.05)
<i>CEO Age</i>	0.4111 (1.32)	-0.7318 (-0.91)
<i>CEO Female</i>	0.0762 (0.44)	-0.3875 (-0.69)
<i>Key Monitoring</i>		1.0627*** (3.25)
<i>Constant</i>	-10.7336*** (-6.37)	7.6661* (1.75)
Year Fixed Effects	YES	YES
Province Fixed Effects	YES	YES
Observations	8,945	8,050
Pseudo <i>R</i> ²	0.316	0.161

This table reports the logistic results of the effects of green audit policy on regulation risk. The dependent variable is an indicator variable, equal to 1 if the firm is included in key monitoring list (column 1) or if the firm violates environmental laws or regulations (column 2) during the year, and 0 otherwise. *TREAT* is an indicator variable equal to one if firms is in high-polluting industries, and 0 otherwise. Standard errors are clustered at the firm level. Z-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 11: Further Investigation**Panel A: Is Audit Quality Sacrificed?**

	Dependent Variable= <i>RESTATEMENT</i>	
<i>TREAT</i> × <i>POST</i>	0.1496	(1.30)
<i>TREAT</i>	-0.0384	(-0.40)
<i>SIZE</i>	-0.0573*	(-1.74)
<i>LEV</i>	-0.0908	(-0.30)
<i>MB</i>	0.0308**	(2.19)
<i>ROA</i>	-1.4152***	(-2.66)
<i>LOSS</i>	0.0067	(0.08)
<i>CR</i>	-0.0187	(-0.31)
<i>QUICK</i>	0.0090	(0.13)
<i>INVREC</i>	0.0828	(0.42)
<i>BIG4</i>	-0.5905***	(-4.38)
<i>MAO</i>	0.3209**	(2.42)
<i>TA</i>	-0.2317	(-0.51)
<i>SDRET</i>	7.8362*	(1.74)
<i>SPCTERM</i>	-0.0138	(-0.03)
<i>MNOWN</i>	0.4251	(1.56)
<i>AGE</i>	0.2339***	(3.98)
<i>INDDIR</i>	-0.1818	(-0.36)
<i>SDCFO</i>	2.0652***	(2.85)
<i>Constant</i>	-0.4906	(-0.60)
Year Fixed Effects	YES	
Province Fixed Effects	YES	
Observations	8,960	
Pseudo <i>R</i> ²	0.098	

This table reports the logistic results of the effects of green audit policy on restatements probability. The dependent variable (*RESTATEMENT*) is an indicator variable, equal to 1 if the financial statement of the firm in the current year is restated later, and 0 otherwise. *TREAT* is an indicator variable for firms most impacted by GAOO, equal to one if firms is in high-polluting industries, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. Please see Appendix B for variable definitions. Standard errors are clustered at the firm level. Z-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Panel B: Do Treatment Firms Switch to Smaller Audit Firms?

	Dependent Var.=Downward Switch	
	(1)	(2)
	downward move from Big-4 to non-Big-4	downward move from Big-10 to non-Big-10
<i>TREAT</i>×<i>POST</i>	-0.1559 (-0.17)	0.5286 (1.55)
<i>TREAT</i>	-0.0174 (-0.03)	-0.3449 (-1.20)
Year Fixed Effects	YES	YES
Province Fixed Effects	YES	YES
Observations	6,234	8,792
Pseudo R^2	0.141	0.051

This table reports the logistic results of the whether the treatment firms switch to lower-priced auditors following GAOO. *TREAT* is an indicator variable for firms most impacted by GAOO, equal to one if firms is in high-polluting industries, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. Please see Appendix B for variable definitions. Standard errors are clustered at the firm level. Z-statistics are presented in parentheses.

Panel C: Do Treatment Firms Experience a Reduction in Scale?

Dependent Var.	<i>Assets</i>	<i>MV</i>	<i>Revenues</i>
	(1)	(2)	(3)
<i>TREAT</i>×<i>POST</i>	-0.0223 (-0.95)	0.0031 (0.14)	-0.0080 (-0.30)
Other Controls	YES	YES	YES
Firm Fixed Effects	YES	YES	YES
Year Fixed Effects	YES	YES	YES
Observations	8,960	8,960	8,960
Adjusted R^2	0.933	0.905	0.921

This table reports the results of the whether the treatment firms experience a reduction in scale following GAOO. *TREAT* is an indicator variable for firms most impacted by GAOO, equal to one if firms is in high-polluting industries, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. Please see Appendix B for variable definitions. Standard errors are clustered at the firm level.

Table 12: Entropy Balancing (Sensitivity Tests for Primary Analyses)**Panel A: Descriptive Statistics**

	Treat	Control firms without Weighting	Control firms with Weighting
<i>SIZE</i>	23.4135	23.4106	23.4135
<i>LEV</i>	0.1054	0.0889***	0.1054
<i>MB</i>	3.7258	4.5548***	3.7258
<i>ROA</i>	0.0220	0.0295***	0.0220
<i>LOSS</i>	0.2812	0.2001***	0.2812
<i>CR</i>	1.9287	2.2737***	1.9287
<i>QUICK</i>	1.5038	1.7514***	1.5038
<i>INVREC</i>	0.1965	0.2935***	0.1966
<i>BIG4</i>	0.0632	0.0545	0.0632
<i>MAO</i>	0.0481	0.0285**	0.0481
<i>TA</i>	0.0643	0.0547***	0.0643
<i>SDRET</i>	0.0317	0.0341***	0.0317
<i>SPCTERM</i>	0.0204	0.0276**	0.0204
<i>MNOWN</i>	0.0396	0.0634***	0.0396
<i>AGE</i>	4.9031	4.7527	4.9031
<i>INDDIR</i>	0.3724	0.3783**	0.3724
<i>SDCFO</i>	0.0527	0.0535	0.0527

Panel B: Regression Results Based on Entropy Balancing

	Dependent Variable= <i>AUDITFEE</i>	
	(1)	(2)
<i>TREAT</i> × <i>POST</i>	-0.0387** (-2.40)	-0.0363** (-2.54)
<i>TREAT</i>	-0.0190 (-0.91)	
<i>POST</i>	0.1761*** (12.25)	
Other Controls	YES	YES
Firm Fixed Effects	NO	YES
Year Fixed Effects	NO	YES
Observations	8,495	8,495
Adjusted <i>R</i> ²	0.638	0.920

This table reports the results based on entropy balancing weighted on the first moment. Panel A presents the mean values of the firm characteristics just before the policy enactment, both unweighted and weighted. *, **, *** indicate that firm characteristics are significantly different between treatment and control firms at the 10 percent, 5 percent, and 1 percent levels, respectively. Panel B reports the regression results for estimating equation (1) using the entropy balancing procedure. The dependent variable (*AUDITFEE*) is the natural logarithm of annual audit fees. *TREAT* is an indicator variable for firms most impacted by GAOO, equal to one if firms are in high-polluting industries, and 0 otherwise. *POST* is an indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 otherwise. Please see Appendix B for variable definitions. Standard errors are clustered at the firm level. T-statistics are presented in parentheses. *, **, *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Appendix A: Examples from Practice (Anecdotal Evidence)

(1). Excerpts from a GAOO report (<https://www.tja.gov.cn/public/118323205/1258575387.html>)

GAOO report of Chen Bo, the Secretary of Cao'an Town Party Committee, and Xu Jie, the Mayor of Cao'an Town, in Relation to Their Term in Office

In accordance with the requirements of the Third Plenary Session of the 18th Central Committee of the Communist Party of China regarding the "Audit of Natural Resource Assets upon Departure of Leading Cadres," ..., the District Audit Bureau dispatched an audit team to conduct a pilot audit of the natural resource assets of Chen Bo, the Secretary of Cao'an Town Party Committee, and Xu Jie, the Mayor of Cao'an Town, starting from June 1, 2020. The audit period covered the time from January 2016 to December 2019, focusing on natural resources such as water, land, forests, and the environment. Departments such as the District Land and Resources Bureau, the District Agriculture and Water Bureau, and the District Environmental Protection Bureau were emphasized for audits. Cao'an Town and related units provided written commitments regarding the authenticity and completeness of the financial and other relevant information. The responsibility of the District Audit Bureau is to conduct audits independently in accordance with the law and issue an audit report.

Overall Air Quality: The overall air quality Cao'an Town is one of the towns in Tianjia'an District with relatively good air quality. In 2018, the average PM2.5 concentration for the entire district was 53.2 micrograms per cubic meter, which marked an improvement of three places and ranked 5th in the city, with a decrease of 20.9%. The average PM10 concentration was 90.3 micrograms per cubic meter, showing a decrease of 15.4%. The air quality excellent rate was 66.8%, an increase of 12.7 percentage points. The town successfully achieved the PM2.5 assessment target set by the municipal government for the year 2018.

Air Pollution Control: In June 2018, Cao'an Town conducted an investigation of environmental pollution sources, covering a total of 23 high polluting enterprises. Six projects have been rectified, and seven concrete mixing plants have been phased out. ... In conjunction with Cao'an Town Land Office's land renovation work, two wood processing enterprises with noise and dust pollution were closed. Weekly inspections and rectifications of pollution from mobile vehicle repairs and special industries in the catering sector were carried out, with a total of 34 catering establishments inspected and rectified. Seventeen central and provincial environmental protection inspection cases were processed, including 4 cases from the central environmental protection inspection in 2018 and 13 cases from the provincial environmental protection inspection in 2019, all of which have been completed. Since 2016, a total of 53 environmental complaints have been accepted.... The processing rate is 98%, and the satisfaction rate of the masses is 96%.

The sewage treatment plant was unable to operate normally. The Cao'an Town Wastewater Treatment Plant was designed by the Anhui Environmental Science Research Institute and officially began operations in September 2009 with a daily processing capacity of 280 tons. During the audit period, the sewage treatment plant could not operate in normal condition due to pump damage.

Environmental information: The environmental protection department of Cao'an Town Government and other departments responsible for environmental protection supervision and management have indeed disclosed environmental information in accordance with the relevant regulations, but public participation is low.

(2). Excerpts from Annual Reports with Environmental Issues as Key Audit Matters

(a) From 2018 annual report of ZZMD (Full company name: Zhengzhou Coal Industry and Electric Power Co., Ltd; Stock ID: 600121)

As described in the financial statements in Note 3-15 and Note 3-22, and in Note 5-(11) and Note 5-(25), ZZMD established a Mine Geological Environmental Remediation and Restoration Fund in accordance with the “Guidance on Canceling Mine Geological Environmental Remediation Guarantee Deposits and Establishing Mine Geological Environmental Remediation and Restoration Fund” (Caijian [2017] No. 638) issued by the Ministry of Finance, Ministry of Land and Resources, and Ministry of Environmental Protection, as well as the “Notice on Canceling Mine Geological Environmental Remediation Guarantee Deposits and Establishing Mine Geological Environmental Remediation and Restoration Fund” (Yucui Huan [2017] No. 111) issued by the Henan Provincial Department of Finance, Henan Provincial Department of Land and Resources, and Henan Provincial Department of Environmental Protection.

Various production units under ZZMD have recognized the estimated liabilities related to mine geological environmental remediation and have also confirmed the corresponding abandoned assets. The depreciation expenses calculated based on abandoned assets have been included in the cost items. Additionally, the financial expenses calculated based on the amortized cost and discount rate of estimated liabilities during the reporting period have been recognized as estimated liabilities.

Because the amount of recognized estimated liabilities is significant and the subsequent measurement of estimated liabilities and corresponding abandoned assets has a significant impact on the total profit for the year 2018, we have identified this as a key audit matter.

(b) From 2016 annual report of SDHH (Full company name: Shandong Haihua Co., Ltd.; Stock ID: 000822)

On January 29, 2016, a slope protection failure occurred in the northern slurry pit of the SDHH soda ash plant, leading to a production halt and economic losses to external entities. SDHH entrusted the Weifang Binhai Economic and Technological Development Zone Management Committee to coordinate the compensation work for the external entities that suffered losses. As of the date of the financial statements, an insurance claim amount of CNY 43.3273 million has been received for the external losses. However, the nature of the event has not been determined, and the loss assessment and compensation work with the affected parties are ongoing.

As of December 31, 2018, the estimated compensation to external entities for the slope protection failure in the northern slurry pit amounts to CNY 349.5693 million. Of this, CNY 346.2009 million has been settled, with CNY 105.2009 million settled in the current year, and an estimated amount of CNY 3.3684 million still to be compensated to external affected entities. Due to the significant amount of the claim for the slope failure incident and its involvement in significant management estimates and judgments, we have determined the recognition of the estimated liability for compensation for the slope failure incident as a key audit matter.

We conducted interviews on this matter with the Weifang Binhai Economic and Technological Development Zone Safety Production Supervision Administration, Weifang Environmental Protection Bureau Binhai District Branch, China People's Property Insurance Company, Sunshine Property Insurance Company, Lin Gang Industrial Park Management Service Center, and Weifang Binhai Economic and Technological Development Zone Appraisal Center to understand the progress of the incident, including the determination of the event's nature, its impact on the external environment, the insurance claim amount for external losses, the loss assessment by the assessment company for external compensation, as well as the signing of compensation agreements with the affected parties and the payment of compensation funds.

(3). Examples that Auditors Use Public Environmental Information

(a) Excerpts from the report of Gongzheng Tianye Accounting Firm for YDNY's application of private place (Full company name: Far East Smarter Energy Co., Ltd.; Stock ID: 600869)

The Ecological and Environmental Office of Gaocheng Town, Yixing City, has issued an "Explanation of the Company's Environmental Protection Situation." New Far East Cable (a subsidiary of YDNY) has paid all the environmental fines and completed the necessary corrective measures. From January 1, 2021, to the present, the company has been able to strictly comply with the laws, regulations, and rules related to environmental protection at the national and local levels. There have been no instances of being penalized for violations of environmental protection laws, regulations, or rules during this period.

The Ecological and Environmental Bureau of Yichun City has issued a reply regarding the "Request for Assistance in Handling Enterprise Compliance Certificates." They have confirmed that Jiangxi Far East Battery (a subsidiary of YDBY) has undergone rectification and replaced the relevant upgrading pumps annually. They have also ensured that domestic sewage is connected to the company's sewage treatment plant for treatment. The water quality discharged daily has been verified through the online monitoring system to meet the discharge standards, thus completing the environmental credit restoration. Thus, the company does not result in severe environmental pollution, or significant harm to the interests of the listed company, investors' legal rights, or damage to the public interest.

(b) Excerpts from the report of Lixin Accounting Firm for ZJRS's application of private place (Full company name: RONGSHENG ENVIRONMENT.; Stock ID: 603165)

Regarding the entities within the scope of the company's consolidated financial statements involved in production and pollution emissions, the relevant authorities have issued compliance certificates as follows:

On September 16, 2022, the Pinghu Branch of the Jiaying Ecology and Environment Bureau issued a certificate stating, "ZJRS has not been subject to administrative penalties by our bureau for environmental violations." On September 7, 2022, the Ecological and Environmental Bureau of Quanjiao County issued a certificate stating, "Anhui Rongsheng Packaging New Materials Technology Co., Ltd., since its establishment in Quanjiao, has not violated environmental laws and regulations and has not been subject to administrative penalties by our bureau." ... In summary, the company has completed the project records and environmental impact assessment procedures for the existing annual paper production capacity of 600,000 tons, and long-term overcapacity production is in line with the requirements of the environmental impact assessment approval. There is no need to re-submit project records or environmental impact assessment procedures, and this does not constitute a major violation of laws and regulations, nor has it resulted in administrative penalties.

In June 2022, Zhejiang Qixin Testing Co., Ltd. issued the "Environmental Protection Acceptance Monitoring Report for the Completion of the Green Upgrade and Renovation Project of ZJRS." After the technological upgrade of the "Green Upgrade and Renovation Project," the total paper production capacity of the entire plant reached 600,000 tons per year. The environmental protection measures of the project have been implemented, and various pollutant indicators in the monitoring have met the corresponding emission standards and relevant environmental quality standards, complying with the requirements of the completion of the environmental protection acceptance inspection.

Appendix B: Definitions of Main Variables

Variables	Definitions
<i>AUDITFEE</i>	The natural logarithm of annual audit fees.
<i>TREAT</i>	Indicator variable for firms most impacted by the policy, equal to one if firms is in the most polluting industries, and 0 otherwise. The most polluting industries are classified according to the <i>Industry Classification Directory of the Inspection of Environmental Protection for Listed Corporations</i> (上市公司环保核查行业分类管理名录) issued by Environmental Protection Administration in China, including: (1)metallurgical, (2) chemical, (3) petrochemical, (4) coal, (5) thermal power, (6) building materials, (7) paper, (8) brewing, (9) pharmaceutical, (10) fermentation, (11) textiles, (12) leather, and (13) mining industries, (14) steel.
<i>POST</i>	Indicator variable for post-policy period, equal to 1 if it is year 2017 or 2018, and 0 if it is year 2014 or 2015.
<i>SIZE</i>	Firm size, calculated as the natural logarithm of firm's market value at year end.
<i>LEV</i>	Leverage ratio, calculated as long-term liabilities divided by total assets.
<i>MB</i>	Market-to-book ratio, calculated as the total assets minus book equity plus market equity, divided by total assets.
<i>ROA</i>	Return on assets, calculated as net income divided by total assets.
<i>LOSS</i>	Indicator variable for loss firm, equal to 1 if net income before extraordinary items is negative, and zero otherwise.
<i>CR</i>	Current ratio, calculated as current assets divided by current liabilities.
<i>QUICK</i>	Quick ratio, equal to quick assets (i.e., current assets less inventories) divided by current liabilities.
<i>INVREC</i>	Ratio of inventory and accounts receivable to total assets
<i>BIG4</i>	Indicator variable for Big-4 auditor, equal to 1 if Big-4 auditors audit the firm, and 0 otherwise.
<i>MAO</i>	Indicator variable equal to 1 if a firm receives a modified audit opinion, and 0 otherwise.
<i>TA</i>	The absolute value of total accruals, scaled by total assets.
<i>SDRET</i>	The standard deviation of residuals from the market model estimated by daily returns during the year.
<i>SPCTERM</i>	Absolute value of special items, divided by total income.
<i>MNOWN</i>	Percentage of firm shares owned by managers and directors.
<i>AGE</i>	Firm age, calculated as the natural logarithm of the number of months since listing.
<i>INDDIR</i>	The percentage of independent directors on the board, calculated as the number of independent directors divided by the total number of directors on the board.
<i>SDCFO</i>	Standard deviation of cash flows from operations over most recent five-year period.