

Government Auditing, Government Transparency, and Corruption: Empirical Evidence from Provincial Levels in China

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ABSTRACT

Since the introduction of the information disclosure policy in China in 2007, government transparency has significantly improved. This study examines whether such transparency enhances the anti-corruption effectiveness of government audits. By analyzing data from all 30 Chinese provinces between 2010 and 2021, the research explores the impact of the audit "immune system" theory. A regression analysis was conducted to assess the theory's three key functions: prevention, detection, and deterrence. The findings indicate that government audits primarily serve the functions of detection and deterrence in combating corruption. Furthermore, government transparency plays a significant moderating role, particularly strengthening the deterrence capacity of government audits. This study provides empirical evidence on the role of government audits in the fight against corruption and contributes to the existing literature on public sector auditing, anti-corruption efforts, and government transparency.

INTRODUCTION

China's economy has experienced remarkable growth since the initiation of economic reforms four decades ago. With a total economic output exceeding USD 10 trillion, China now accounts for over 13% of the global economy, driving approximately 25% of global economic growth (Jin et al., 2016). However, this rapid expansion has been accompanied by a significant rise in corruption (Ang, 2020; Wedeman, 2012). In response to the escalating corruption challenges, the Chinese government has intensified its anti-corruption efforts to unprecedented levels (Guo & Li, 2015). While corruption and anti-corruption policies vary across nations, the oversight of power remains a fundamental component of anti-corruption strategies (Johnston, 2005). One effective measure to ensure such oversight is the establishment of anti-corruption agencies. In this context, government auditing plays a critical role in China's anti-corruption framework, serving as a key institution to prevent, detect, and resist corrupt practices. It is integral to the broader system of national governance, contributing substantially to the integrity and functioning of the government (Liu, 2016; Liu, 2015).

For auditing to fulfill its oversight function effectively, a high level of transparency is essential (Kaufmann, 2005). The principal-agent theory suggests that without transparency, government officials may exploit their positions for personal gain, often at the expense of the public, leading to corrupt behavior.

A central tenet of anti-corruption initiatives is the reduction of privileges and the enhancement of governmental accountability. As such, many countries and organizations have advocated for the establishment of government audit institutions as a critical tool in the fight against corruption. Unlike

Western democracies, which typically employ independent audit agencies, China has adopted an administrative audit model (Liu, 2015; Liu & Lin, 2012). In this system, the audit function is integrated within the national administrative apparatus and holds administrative enforcement powers. These powers enable audits to identify violations and compel corrective actions, thereby enhancing accountability (Liu, 2015; Liu & Lin, 2012). However, reliance solely on administrative powers is insufficient to effectively combat corruption. Given the covert nature of corruption, government transparency is an essential factor in combating it (Blundo, 2017; Della et al., 2016; Osifo, 2018).

To address the growing demand for transparency, the Chinese government introduced its first law mandating public disclosure of government information in January 2007. Since its implementation, this law has been continually refined and has become a critical mechanism for enhancing governmental accountability (Liu, 2016) and supporting anti-corruption efforts (Lin, 2020).

While much of the existing research has focused on the relationship between government transparency and corruption (Cifuentes-Faura, 2024; Fan et al., 2009; Hansen & Flyverbom, 2015; Peisakhin & Pinto, 2010; Schnell, 2023; Tsetsura & Luoma-aho, 2020; Tu et al., 2024; Wehmeier & Raaz, 2012), relatively little attention has been given to how government transparency might enhance the effectiveness of government auditing in the anti-corruption context. This study seeks to fill this gap by examining the interaction between government transparency and auditing in the fight against corruption. Drawing on the "immune system" framework, which highlights three primary functions of government audits—prevention, detection, and deterrence—this study empirically explores whether government transparency moderates the anti-corruption impact of government audits. The findings contribute to the existing literature on government audits, anti-corruption strategies, and transparency, and offer insights into how these elements work together to combat corruption in the Chinese context.

This paper is organized as follows: the literature review section discusses the three core functions of government audits in the anti-corruption framework and the role of transparency in influencing these functions. The research design and methodology section details the data, analytical tools, and models employed in the study. The results section presents the empirical findings, while the discussion and conclusion section compares the results to existing literature, proposes potential improvements, and highlights the study's limitations.

1. LITERATURE REVIEW AND HYPOTHESES

1.1 The Role of Government Auditing in the Fight Against Corruption

Corruption represents a significant obstacle to both economic and political development, undermining market efficiency, eroding public services, and consolidating wealth and power in the hands of a few. This distortion hampers progress and threatens societal stability. Effective governance, characterized by transparency and accountability, is essential for combating corruption. Klitgaard's corruption formula underscores the critical role of transparency and accountability in curbing corrupt practices. Auditing is a foundational component of sound governance and is vital for detecting and preventing corruption. Research indicates that independent and rigorous audits are effective in reducing corruption, with organizations subject to audited financial statements demonstrating lower tendencies to engage in bribery.

Government corruption is often the most pervasive and damaging form of corruption in many countries, making robust government audit mechanisms crucial. Several studies suggest that government audits play a more potent role in controlling corruption compared to other types of audits (DiPietro, 2011; Dye & Staphenurst, 1998; Goodson et al., 2012; Jeppesen, 2019). Although the models and policies governing government audits differ globally, numerous studies have established a clear connection between government audits and the control of corruption (Ahyaruddin & Azmi, 2019; Aswar et al., 2022; Azhar & Setyaningrum, 2015; Bobonis et al., 2010; Budiman, 2021; Flasher et al., 2022; Furqan & Din, 2019; Jeppesen, 2019; Kurniawati & Pratama, 2021; Lichand et al., 2016; Nathan et al., 2022; Olken, 2007; Otor & Eiya, 2013; Ratmono & Darsono, 2022; Saputra & Setiawan, 2021; Suhardjanto et al., 2018).

The administrative model of government auditing in China plays a decisive role in anti-corruption efforts. This model combines the administrative power conferred by audit law (China National Auditing Office, 2021) with a mandate to ensure the lawful use of public financial resources (Liu, 2016; Liu, 2015). Ensuring compliance with legal financial practices and safeguarding public funds are primary responsibilities of China's government audits (Liu, 2016). Under the latest audit law (China National Auditing Office, 2021), the audit process involves detecting illegal activities, disclosing the scope of misuse through audit reports, and making recommendations for corrective actions. In cases of severe misconduct, violations are referred to other authorities for further investigation and prosecution.

Government audits play a crucial role in preventing corruption, such as embezzlement and the misuse of public funds. Liu and Lin (2012) found a positive correlation between the detection of irregularities by local audit agencies and improved corruption control at the provincial level. Furthermore, post-audit rectification measures were negatively correlated with provincial corruption levels. Liu and Liu (2017) concluded that the larger the amounts involved in embezzlement or bribery, the more organized and pervasive the corruption cases tend to be. Corruption cases involving larger sums generally attract heavier criminal penalties, with bribes facing more severe punishment than other offenses. Liu and Gong (2018) emphasized that the broader goal of China's anti-corruption campaign is to sustain economic growth and maintain social stability.

Research also highlights the vital role of government audits in curbing corruption. Liu (2020) noted the influence of economic and social factors on the relationship between corruption and the collusion between business and political interests, reinforcing the importance of government audits in mitigating corruption in China. Wang and Cheng (2020) proposed that emerging technologies, such as blockchain, could enhance auditing models, improve data integrity, and boost efficiency, thereby reducing corruption risks, particularly among executives of state-owned enterprises. Bo et al. (2020) also observed an increase in the misuse of public funds at the county level following administrative restructuring.

The "immune system" theory, widely recognized in China, is a prominent framework for understanding the role of government auditing in corruption control. Developed by Liu Jiayi, the theory posits three core functions of government audits: prevention, revelation, and resistance. These functions contribute to safeguarding economic and social development by identifying and addressing risks, exposing problems, and recommending corrective actions. Previous research has supported the preventive role of audits, showing that the fear of detection and subsequent punishment can act as a significant deterrent to corrupt behavior (Liu & Ge, 2020; Liu, 2010; Su et al., 2023; Wu & Wang, 2016; Zhang et al., 2022). Effective preventive measures can substantially reduce corruption occurrences. Scholars such as Li et al. (2022) and Liu (2010) have defined the "revelation" function as the identification and public disclosure of past illegal activities, fraud, or other misconduct. According to Liu & Ge (2020), the "resistance" function focuses on preventing future corruption by identifying systemic vulnerabilities and addressing them proactively.

These three functions—prevention, revelation, and resistance—are interrelated and mutually reinforcing. The revelation function not only exposes past corrupt acts but also serves a preventive role by deterring others from similar behavior. This exposure, in turn, strengthens the preventive and resistance effects of auditing (Liu & Ge, 2020; Xiong, 2022; Zhang et al., 2022). By addressing systemic weaknesses and implementing corrective measures, the resistance function reduces the likelihood of corruption reoccurring, further enhancing the preventive capacity of audits (Liu & Ge, 2020). Additionally, the resistance function helps prevent corruption from becoming entrenched within systems (Xiong, 2022).

Given the preceding analysis, the following hypotheses are proposed:

Hypothesis 1: Chinese government audits have three anti-corruption functions.

Hypothesis 1a: Government audits have the function of preventing anti-corruption.

Hypothesis 1b: Government audits have the function of revealing anti-corruption.

Hypothesis 1c: Government audits have the function of resisting anti-corruption.

1.2 The Moderating Role of Government Transparency in Government Auditing to Fight Corruption

A fundamental responsibility of government auditing is to ensure the proper allocation and use of public funds, as well as to expose any instances of financial misconduct. However, achieving this goal depends not only on the authority vested in government audits but also on the integration of several complex factors, including public participation (Su et al., 2023), government transparency policies (Su et al., 2023), legal reforms (Liu & Gong, 2018), democratic governance (Yang et al., 2008), educational levels (Liu & Lin, 2012), and other socio-political variables. Among these, transparency is recognized as one of the most effective means by which governments can foster openness and reduce corruption (Carlo Bertot et al., 2012). Since corruption often originates within government agencies, transparency is crucial in countering such malpractices. Openness in government actions and decision-making processes is essential for informing the public and enabling oversight. Transparency incorporates principles from the public relations model and stakeholder management theory, both of which advocate for the inclusion of diverse stakeholders in communication processes (Fairbanks et al., 2007).

Government transparency empowers citizens by granting them greater access to information about the actions of public officials. This increased visibility facilitates more effective detection and addressing of corrupt practices. The anti-corruption efficacy of China's government auditing system, which operates under an administrative model with compulsory powers, relies heavily on transparency. Once the audit department uncovers the illicit use of public funds, it first reveals the misconduct, then imposes penalties and holds individuals accountable, which contributes to more effective prevention (Liu, 2016; Liu, 2015). However, this process is contingent upon robust government transparency, as transparent information serves as the foundation of audit evidence and is both a prerequisite and outcome of the audit process (de Fine Licht, 2019).

In 2007, China introduced its first national regulation on government information disclosure, which clearly defined the principles of government transparency and accountability. Liu (2016) emphasized that government transparency and accountability are as integral to China's governance and civil society as democratic systems. This regulation required all local governments to establish websites for disclosing government information, with the aim of encouraging public oversight of government activities and combating corruption (Ma et al., 2005). In recent years, audit departments have used information from these online disclosures to investigate numerous cases of misconduct and irregularities (Su et al., 2023).

According to principal-agent theory, transparency enhances accountability by narrowing the information gap between citizens (the principals), elected officials, and government bureaucrats (the agents). This increased transparency allows the public to better monitor the actions of government officials, leading to greater compliance with public expectations. In China, government auditing has leveraged transparency to enhance governance effectiveness. Shi (2016) empirically demonstrated that government transparency significantly influences the effectiveness of government auditing in controlling corruption. Pan and Shen (2021) also found that the efficiency of government auditing is higher in provinces with strong legal frameworks and greater fiscal transparency. Lu and Ma (2016) highlighted that the government's "three public expenses" disclosure policy has strengthened the effectiveness of government audits in governance.

The information provided by government transparency is vital not only for the revelation function of auditing but also for its prevention and resistance functions. Transparency serves as the primary source of audit evidence, which is critical for subsequent punitive actions and accountability measures. This, in turn, determines the overall impact of audits on corruption control. Liu (2021) empirically demonstrated that the preventive, revealing, and resistance functions of government audits play an essential role in improving fiscal transparency. Shen (2018) further showed that the more effective the revelation and resistance functions of audits, the higher the fiscal transparency at the local government level. Li (2023) found that fiscal openness significantly enhances the ability of government audits to detect, rectify, and report irregularities. Wang (2021) suggested that the governance function of government auditing can contribute to increased government transparency, though this function is often gradual and continuous. Specifically, the immediate governance impact of audits relies on the prevention and resistance functions, while the revelation function has not been fully realized under current conditions. Over the long term, the governance impact of audits is closely tied to the extent of their implementation and coverage.

In conclusion, government transparency plays a pivotal role in enhancing the effectiveness of audits in curbing corruption. The integration of transparency with auditing functions not only aids in the prevention and detection of financial misconduct but also reinforces the broader governance framework aimed at ensuring accountability and integrity in the public sector.

Based on the above analysis, this study draws the following hypotheses:

Hypothesis 2: Government transparency moderates the anti-corruption function of government auditing.

Hypothesis 2a: Government transparency moderates the anti-corruption prevention function of government auditing.

Hypothesis 2b: Government transparency moderates the anti-corruption revealing function of government auditing.

Hypothesis 2c: Government transparency moderates the anti-corruption resistance function of government auditing.

2. RESEARCH DESIGN AND METHODS

2.1 Research Variables, Samples, and Data Sources

Explained Variable:

In this study, corruption (Corr) serves as the dependent variable. A common method of measuring corruption involves using indices compiled by international organizations, with two of the most authoritative being the World Bank's Business Integrity (BI) index (Ahmad et al., 2012; Dincă et al., 2021) and Transparency International's Corruption Perception Index (CPI) (Bozhenko, 2022; Dincă et al., 2021; Gründler & Potrafke, 2019; Huang, 2016). However, given the unique context of China and drawing from previous research, this study employs an alternative measure of corruption: the ratio of the number of individuals found guilty of corruption per 100,000 population in each province. This approach is informed by previous studies (Dong & Torgler, 2010; Li et al., 2021; Liu & Lin, 2012; Lu et al., 2021; Xu & Yano, 2017; Xu et al., 2017). A higher value on this index suggests a greater effectiveness of auditing in revealing, preventing, and resisting regional corruption, thus reflecting better overall governance of corruption.

Explanatory Variables:

In line with prior studies (Ma & Wu, 2019; Su et al., 2023; Zhang et al., 2022), this research measures the three key functions of government auditing—prevention, revelation, and resistance—based on the audit immune system theory. The revealing function is quantified by the logarithmic value of the amount uncovered through annual audits in each province (lnAQ) (Li, 2023; Liu & Lin, 2012; Shen, 2018; Su et al., 2023; Zhang et al., 2022). The resistance function is represented by the logarithm of the

amount rectified following the audit (lnRA) in each province annually (Li, 2023; Liu, 2021; Liu & Lin, 2012). The preventive function is measured by the percentage of individuals held accountable and transferred for punishment (PAR) in each province per year (Su et al., 2023; Wu & Wang, 2016; Zhang et al., 2022).

Moderating Variable:

While several studies have explored the link between government transparency and corruption, many focus primarily on fiscal transparency assessments as a proxy for broader governmental transparency (Dong & Ju, 2023; Shi, 2016; Zhang & Wang, 2021). However, fiscal transparency represents just one dimension of overall government transparency. In contrast, this study adopts the Chinese Government Transparency Index (Lv et al., 2022), which captures a more comprehensive view, including transparency in decision-making, public service delivery, performance outcomes, information platforms, and public access to government data. This approach aligns with earlier work by Peng and Zhong (2021), Yu (2012), and Su (2023).

Control Variables:

To account for other factors that may influence government auditing and corruption, this study includes several control variables. Openness, measured as the ratio of total trade to GDP, reflects the economic integration of each province. Wage level, represented by the average provincial wage, serves as an indicator of income disparities. The government revenue level, captured by the ratio of fiscal revenue to GDP, provides insight into the province's financial resources. Education level, measured by the proportion of individuals with higher education, indicates the province's educational attainment. Finally, the marketization level, assessed through the provincial marketization index, reflects the extent of market-oriented reforms. These control variables help offer a more nuanced understanding of the relationship between government auditing, transparency, and corruption.

Data and Sample:

Since 2010, China has grown to become the world's second-largest economy (Morrison, 2013), accompanied by significant policy changes across various sectors. Due to the availability and accuracy of corruption-related data, this study focuses on a sample of 30 provinces in China (excluding Hong Kong, Macao, Taiwan, and Tibet) from 2010 to 2021, yielding a total of 360 observations. The corruption data for each province is sourced from the annual procuratorate work reports. Data on government audits is drawn from the China Audit Yearbook (China National Auditing Office, 2017). The measure of government transparency comes from the China Government Transparency Report (Lv et al., 2022). However, because the transparency scores for 2010 and 2016 were only available for provincial capitals, the scores for these years were substituted with the transparency index of the respective provincial capitals. Data for the five control variables is obtained from the statistical yearbooks of the 30 provinces.

This comprehensive dataset allows for a robust analysis of the relationship between government auditing, transparency, and corruption, accounting for a wide range of influencing factors.

2.2 Research Model

This study used Python 3.9.1 software for data regression analysis. The following model was designed based on hypothesis 1 (1a, 1b, 1c):

$$\begin{aligned} \text{Corri, } t &= \beta_0 + \beta_1 \ln \text{AQi, } t + \beta_2 \text{ELi, } t + \beta_3 \text{RVi, } t + \beta_4 \text{WLi, } t + \beta_5 \text{Openi, } t + \beta_6 \text{MKi, } t + \lambda t + \varepsilon_{i,t} \\ \text{Corri, } t &= \beta_0 + \beta_1 \ln \text{RAi, } t + \beta_2 \text{ELi, } t + \beta_3 \text{RVi, } t + \beta_4 \text{WLi, } t + \beta_5 \text{Openi, } t + \beta_6 \text{MKi, } t + \lambda t + \varepsilon_{i,t} \\ \text{Corri, } t &= \beta_0 + \beta_1 \text{PARi, } t + \beta_2 \text{ELi, } t + \beta_3 \text{RVi, } t + \beta_4 \text{WLi, } t + \beta_5 \text{Openi, } t + \beta_6 \text{MKi, } t + \lambda t + \varepsilon_{i,t} \end{aligned}$$

The model employs the following variables: lnAQ, lnRA, and PAR to measure the functions of government audits; Corr to measure corruption; and GT to represent government transparency. The data

includes provinces (i) and periods (t). Regional and time-specific effects are controlled using dummy variables (β_i and λ_t), while ε represents the error term. Based on the proposed hypotheses, it is anticipated that the coefficients for all three audit functions will be positive, suggesting that government auditing effectively combats corruption in its preventive, revealing, and resistance roles.

Based on hypothesis 2 (2a,2b,2c) this study designed the following model:

$$\begin{aligned} \text{Corr} &= \beta_0 + \beta_1 \ln \text{AQ}_{i,t} + \beta_2 \text{GT}_{i,t} + \beta_3 \ln \text{AQ}_{i,t} * \text{GT}_{i,t} + \beta_4 \text{EL}_{i,t} + \beta_5 \text{RV}_{i,t} + \beta_6 \text{WL}_{i,t} + \beta_7 \text{Open}_{i,t} + \beta_8 \text{MK}_{i,t} + \lambda_t + \varepsilon_{i,t} \\ \text{Corr} &= \beta_0 + \beta_1 \ln \text{RA}_{i,t} + \beta_2 \text{GT}_{i,t} + \beta_3 \ln \text{RA}_{i,t} * \text{GT}_{i,t} + \beta_4 \text{EL}_{i,t} + \beta_5 \text{RV}_{i,t} + \beta_6 \text{WL}_{i,t} + \beta_7 \text{Open}_{i,t} + \beta_8 \text{MK}_{i,t} + \lambda_t + \varepsilon_{i,t} \\ \text{Corr} &= \beta_0 + \beta_1 \text{PAR}_{i,t} + \beta_2 \text{GT}_{i,t} + \beta_3 \text{PAR}_{i,t} * \text{GT}_{i,t} + \beta_4 \text{EL}_{i,t} + \beta_5 \text{RV}_{i,t} + \beta_6 \text{WL}_{i,t} + \beta_7 \text{Open}_{i,t} + \beta_8 \text{MK}_{i,t} + \lambda_t + \varepsilon_{i,t} \end{aligned}$$

Model 2 introduces the interaction term between government transparency (GT) and audit function to study whether government transparency moderates the anti-corruption function of audit. Hypothesis 2 (2a, 2b, 2c) predicts that the interaction terms between government transparency (GT) and the three audit functions (lnAQ, lnRA, and PAR) will be negative. This suggests that government transparency moderates the relationship between these audit functions and anti-corruption efforts.

2.3 Descriptive Statistics and Pearson's Coefficient Analysis

Table 1 reveals substantial variation in corruption levels across Chinese provinces. The average number of corrupt individuals per 100,000 people is 3.03, with a standard deviation of 1.62 and a range from 0.08 to 9.21. This indicates a significant disparity in corruption rates among different regions of China. The data exhibits varying degrees of dispersion. AQ and RA values are relatively concentrated around their means of 16.75 and 14.26, respectively.

In contrast, PAR values are more spread out. Government transparency levels (GT) also vary significantly across provinces, ranging from 0.60 to 8.98. Control variables such as RV, OP, and EL show minimal variation and are relatively concentrated. However, MK and SL, representing marketization level and average wage level, exhibit substantial differences across provinces.

Table 1. Descriptive Statistical Analysis

Variables	Measure	Symbo l	Coun t	Min	Max	Mean	Std
Corruption	Number of corrupt persons/100,000 population in each province	Corr	360	0.082027	9.209316	3.030556	1.621801
Preventive function	Rate of punishment and accountability among transferred persons	PAR	360	0.000000	22.666667	0.586436	1.406732
Revealing functions	The logarithm of the amount in question	lnAQ	360	13.685209	20.218269	16.749469	1.002469
Resistance function	The logarithm of the amount in question rectified	lnRA	360	8.732143	16.658695	14.262299	1.268526

Variables	Measure	Symbo l	Coun t	Min	Max	Mean	Std
Government transparency	Government Transparency Report Index	GT	336	0.600000	8.988000	6.597381	1.212526
Wage level	Average annual wage level in each province	WL	359	2.330000	20.150400	6.338375	2.561730
Education level	The ratio of higher education graduates to the total population of each province in each year	EL	359	0.002021	0.010415	0.005149	0.001398
Marketization level	Marketability Assessment Index	MK	300	3.360000	11.490000	7.780567	1.893019
openness	The ratio of total imports and exports to the GDP of each province	OPEN	360	0.007627	1.463781	0.277329	0.294548
Government revenues	The ratio of provincial government revenue to GDP	RV	360	0.058402	0.245150	0.114002	0.031695

Table 2 displays unexpected negative correlations between government audit function variables and corruption levels. This contradicts initial expectations and necessitates further regression analysis. Corruption is significantly associated with several variables, particularly openness (OP) and the resistance function (RA). Additionally, a strong positive relationship exists between the resistance (RA) and prevention (PAR) functions, as well as between marketization (MK) and openness (OP). However, according to the VIF evaluation, its index shows that the multicollinearity between the predictor variables in the regression model is relatively low. Except for lnAQ, lnRA, and WL, whose VIF is more significant than 2.5, the rest are less than 2.5. To overcome this problem, this study regresses the explained and three explanatory variables separately.

Table 2. Pearson correlation analysis

Variables	Corr	lnAQ	lnRA	PAR	GT	WL	EL	MK	OPEN	RV	VIF
Corr	1										-
lnAQ	-0.35	1									2.93
lnRA	-0.35	0.79	1								2.77
PAR	-0.07	0.09	0.11	1							1.04
GT	-0.28	0.38	0.42	0.02	1						1.53
OPEN	-0.32	0.13	0.08	0.05	0.22	1					1.88
EL	-0.08	0.24	0.19	0.19	0.25	0.29	1				1.42
MK	-0.2	0.44	0.37	0.04	0.38	0.48	0.49	1			1.59
RV	0.01	-0.17	-0.15	0.08	0.17	0.5	0.28	-0.04	1		1.61
WL	-0.44	0.35	0.31	0.13	0.46	0.21	0.35	0.33	0.24	1	3.58

2.4 Regression Results

This study conducted an autocorrelation test to make the multiple regression results more accurate. The most common autocorrelation test is the Durbin test. Before introducing the lagged variable, the DW statistic was 0.7698, much less than 2. The data has a solid positive autocorrelation, which means there is a positive correlation between the error terms, which may lead to an incorrect estimate of the significance of the coefficient. This study introduced the lagged variable (Push back one year) and tested it again: The DW statistic was 1.9454, close to 2. This shows that the autocorrelation problem has been significantly improved after introducing the lagged variable.

Table 3. Empirical findings for Model 1(1a,1b,1c)

Variables	B-P test	Hausman test	Prevention function	Revealing Function	Resistance function
lnAQ	Statistics: 40.29 P-value: 3.99e-07	Statistics: -660.33 P-value: 1.0		0.0754***	
lnRA	Statistics: 40.29 P-value: 1.11e-07	Statistics: -660.33 P-value: 1.0			0.0619**
PAR	Statistics: 33.69 P-value: 7.71e-06	Statistics: -194.77 P-value: 1.0	-0.0140		
OPEN			-3.2524***	-2.8638 ***	-2.9757***
EL			114.22**	70.054	85.398
MK			0.2108***	0.1531***	0.1721***
RV			18.451***	15.414***	17.079***
WL			-0.0514	-0.1013 **	-0.1017***
N			360	360	360
F-statistic			93.437	90.862	108.93
R			0.9325	0.9436	0.9433

Note: $p < 0.01$: '***', $p < 0.05$: '**', $p < 0.1$: '*'.***, **and * indicate that the regression coefficient is significant at the levels of 1%,5% and 10% respectively.

From Table 3, we can see that the P values of the BP test in the second column are all significant and unsuitable for the mixed effect model. Then, we do the Hausman test again. Since the P values are all 1, the random effect model is selected for all three models.

The fifth and sixth columns of Table 3 present the regression results for the revealing and resistance functions of government auditing about corruption levels. The coefficients for lnAQ and lnRA are positive and statistically significant, indicating that these audit functions effectively uncover and deter corrupt activities. This also verifies Hypothesis 1b and 1c: government audits play the revelation and resistance functions of their "immune system" and have an excellent anti-corruption effect. The fourth column of Table 3 displays the regression results for the prevention function of government auditing about corruption levels. The coefficient for PAR is negative and statistically insignificant, suggesting that the audit prevention function is ineffective in preventing corruption.

Among the control variables, openness and wage level show a negative but nearly significant relationship with government audits' revealing and resisting functions. Education level has a positive but insignificant impact. Conversely, marketization level and government revenue are positively and significantly associated with the revealing and resisting functions, suggesting they contribute to effective corruption control. Regarding the prevention function, openness, wage level, education level, marketization level, and government revenue all exhibit positive and significant relationships, indicating their positive roles in preventing corruption.

Table 4. Moderating Effects of Model 2

Variables	B-P test	Hausman test	Prevention function	Revealing Function	Resistance function
lnAQ	Statistics: 42.39 P-value: 1.15e-06	Statistics: 3904.38 P-value: 0.0		-0.1203	
lnRA	Statistics: 46.83 P-value: 1.65e-07	Statistics: -5495.17 P-value: 1.0			0.1665 ***
PAR	Statistics: 35.26 P-value: 2.39e-05	Statistics: 88388.01 P-value: 0.0	0.1104		
GT			-0.0314	0.4228	0.8527***
LnAQ*GT				-0.0277	
LnRA*GT					-0.0637 ***
PAR*GT			-0.0146		
OPEN			-2.4713***	-2.2164 ***	-2.2785***
EL			106.47**	123.33**	66.257
MK			0.0726	0.0963**	0.1362 ***
RV			8.0095 ***	4.4434	10.171***
WL			-0.0301	-0.0221	-0.1124***
N			360	360	360
F-statistic			12.327	14.980	108.52
R			0.4658	-0.8778	0.9572

Note: $p < 0.01$: '***', $p < 0.05$: '**', $p < 0.1$: '*'. ***, **, and * indicate that the regression coefficient is significant at the levels of 1%, 5% and 10% respectively.

Table 4 shows that the P values of the second column BP test are all significant and unsuitable for the mixed effect model. Then we do another Hausman test. Since the P values of the prevention function (PAR) and the revelation function (lnQA) are both 0, the fixed effect model is selected for these two models. Since the P value of the resistance function (lnRA) is 1, the random effect model is chosen for this model.

Model 2 results, presented in Table 4, demonstrate that government transparency significantly enhances the anti-corruption role of the audit resistance function. This is evidenced by the negative and statistically significant coefficient of the interaction term between government transparency and the resistance function. However, transparency does not influence the relationship between the audit revealing and prevention functions and corruption, as indicated by the insignificant coefficients of their respective interaction terms. Consequently, hypotheses related to the moderating effect of transparency on the revealing and prevention functions are not supported.

Among the control variables, the coefficients of education level (EL) in prevention and revealing functions, marketization level (MK) in revealing and resistance functions, and government revenue (RV) in prevention and resistance functions are all positive and significant, which indicates that they have an excellent anti-corruption effect.

3. DISCUSSION

The findings of Model 1 support Hypotheses 1b and 1c, confirming that government auditing plays a crucial role in revealing and resisting corruption. These results align with previous research by Wang (2020) on the revealing function and Li (2017) and Li et al. (2018) on both the revealing and resisting functions. As a vital component of national governance, government auditing acts as an "immune system" against corruption, with prevention, revelation and resistance as its core functions. This study empirically validates the revealing function as the most potent of these three, as it involves ongoing monitoring, exposes corrupt activities, and sets the stage for subsequent corrective actions (Su et al., 2023).

This study also empirically proves that government audits have a significant role in resisting corruption. Because this function belongs to post-event monitoring, it is an "immune system" follow-up function. Auditing investigates corruption cases, reveals the amount in question, and then forces rectification and punishment. This can punish various types of corruption and achieve the effect of resisting corruption. The prevention function focuses on pre-event monitoring and results from the revelation and resistance functions of the "immune system". Corruption is first revealed, rectified, and punished to resist, and finally, the prevention effect is achieved. However, this study empirically shows that the prevention function of auditing has no significant impact on anti-corruption. This is consistent with the results of Wu and Wang (2016). This may be because the punishment and accountability rates of the transferred personnel are lower, which does not achieve the prevention effect.

The study findings confirm that government transparency strengthens the ability of government audits to resist corruption. The government transparency policy provides valuable information, leaving corruption nowhere to hide. More importantly, the audit uses this advantage to rectify the amount of violations. However, the information provided needs to be more sufficient, and the degree of government transparency still needs to be higher. The audit can only use this advantage to reveal more problematic amounts, and it can achieve a preventive effect. This study empirically proves that government transparency does not significantly affect government audits' revealing and preventative functions.

4. CONCLUSIONS

This research examined government audit data from 30 Chinese provinces between 2010 and 2021 to assess its impact on corruption. Findings indicate that government audits effectively reveal and resist corruption, as the "immune system" theory suggests. However, the study did not find significant evidence supporting the preventive role of government audits in combating corruption. In addition, the study confirmed that government transparency has a moderating impact on the resistance function of government audits in anti-corruption. Therefore, this study has important guiding significance for government audit monitoring and governance policies.

To effectively combat corruption, government auditing should prioritize prevention. However, this study's findings indicate that the preventive role of auditing is not significant. The study measured the prevention function by calculating the proportion of individuals punished or held accountable among transferred individuals. This variable has no significant anti-corruption effect, indicating that the subsequent accountability and punishment of auditing are weak and cannot prevent more corrupt persons. After transferring corrupt persons, the audit department should cooperate with relevant departments to track the punishment and accountability promptly to ensure that corrupt persons are severely punished to achieve the effect of prevention.

Secondly, combined with the government transparency policy, the revelation function of auditing should be realized to discover more corruption. This study selected the logarithm of the amount found by the audit to measure the revelation function. However, government transparency has no moderating effect. One of the main reasons is that audits have yet to make better use of this advantage to uncover more illegal amounts. The Chinese government has implemented the information disclosure policy since 2007, and now most government departments have implemented the information disclosure policy. The audit department should seize the opportunity to use Internet information technology to collect more reliable information promptly and discover more illegal behaviours.

To effectively combat corruption, government audits should be integrated with transparency measures. However, this study's findings indicate that while audits can reveal and resist corruption, their preventive role is limited. Moreover, the importance of government transparency in preventing corruption is evident. These results suggest that the current audit system's early warning mechanisms

may need to be revised. In addition to the tracking above and ensuring the punishment and accountability of the transferred personnel, it is more important to obtain more information through multiple channels and initiate audit procedures promptly to identify potential risks as early as possible (Su et al., 2023). To enhance the preventive function of government audits, it is essential to implement transparency policies and establish a robust early warning system for risk assessment and management. Additionally, integrating the audit process into the decision-making of government agencies and public institutions is crucial. Combining these strategies with transparency initiatives makes it possible to effectively reveal, resist, and prevent corruption (Su et al., 2023).

This study has some limitations. First, the data on government transparency needs to be more thorough because the relevant departments did not publish the scores of some provinces, especially in 2010 and 2016, and the provincial capital cities were used instead. Secondly, although the corruption data come from provincial procuratorates' annual work reports, due to changes in the standards for filing corruption cases in 2018, there are some inconsistencies in the statistics on corrupt officials. However, the above limitations do not affect this study's conclusions, let alone its contribution to the literature and practice of government auditing, government transparency, and anti-corruption.

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