Research on the Impact of Tax Administration Digitalization Reform on the Quality of Government Audit: Empirical Evidence from the Golden Tax III Project

Yuquan Tang*

Taxation school of JLUFE, Jilin University of Finance and Economics, Jilin, China, 130117

*Corresponding author: 16607106618@163.com

Abstract. Digital Conversion is an essential step towards tax administration reform, as it expands the methods of tax administration and enhances its efficiency. This text probes into the influence of tax governance digitalization reform on the quality of government audits, using the Golden Tax III Project in an almost natural setting. A double difference pattern is constructed for this purpose. The digitization reform of tax governance has been found to enhance the quality of government audit by increasing the diaphaneity of government fiscal message and tax revenues. However, the impact of this reform on the quality of government audit varies across provinces due to their different geographic locations. This paper proposes three suggestions. Firstly, enhance the execution endeavors of Golden Tax IV based on the Golden Tax III project. Secondly, use different policy measures for tax digitization reforms in provinces with varying geographic locations. Thirdly, improve tax legal system to increase the transparency of government financial information and tax revenues.

Keywords: Digital reform of tax administration, Quality of government audits, Golden Tax III Project.

1. Introduction

The update of China's capability and system of national government is a core objective and key driver of its economic development. To enhance the country's governance capacity, China has implemented the the Golden Tax III initiative. This initiative builds a smart e-tax platform to digitize tax revenue and uses a big data platform to assist tax authorities in carrying out tax services, tax collection, tax audits, and other related work, thereby modernizing the governance capacity. Golden Tax III is a crucial ingredient of Chinese numerical government system, ensuring efficient, secure, standardized, and fair tax collection and administration through effective digital supervision. Samuel, Mutarindwa, and Rutikanga Jean De Dieu(2014) 's study shows a clear link between government auditing and state finances. The private sector's payment of taxes is the principal origin of revenue for the government. The government auditing function effectively prevents misappropriation of tax money by government officials and provides timely disclosure of information to the government, which supervises the amount of state tax revenues[1]. Therefore, the interaction between the government audit system and the tax system can effectively prevent irregular operations by tax officials and tax avoidance by enterprises, thereby protecting state revenue. Therefore, it is importance to investigate the influence of government numerical transformation on the quality of national audit and establish the intrinsic connection between the two. This will facilitates the digitization of taxes, enhance government audit quality, and impel the national governance system and governance capacity[2].

The development of the digital economy is driving the progressive numerical transformation of various institutions, which is significantly impacting the country's governance system[3]. The Golden Tax III Project was proposed at a State Council meeting in September 2005 and fully implemented in October 2016. The Golden Tax III Project involves integrating and unifying data from the State Administration of Taxation (SAT) and the Local Taxation Administration (LTA). This includes tax-side, enterprise-side, third-party, and internet-based data sources, enabling the interconnection of information between multiple departments. This helps to track real-time tax-related information of enterprises, keep track of their business dynamics, and implement all-round supervision of the tax collection process. By implementing the Golden Tax III reform measures, China is developing a high-

quality intelligent government platform. This will improve the convenience of tax enforcement, reduce government enforcement costs, and ease the burden on taxpayers who comply with the law. The significance of digitisation in tax imposition and governance for the development and construction of China is evident. Therefore, the growth of a digital intelligent tax system should not be delayed. Numerous studies have found that the digitalisation of tax governance has a important influence on China's development and construction, in line with current policy background. According to Wang Tao and Wang Jianxin (2023), digital tax administration has the hidden capability to improve the mess of corporate information disclosure and grow the diaphaneity of corporate financial message. This can be achieved through the use of tax governance mechanisms and information mechanisms, which can help to reduce government audit costs and effectively control the operation of corporate surplus profits and high-risk tax planning behaviour[4].

On the two topics of the Golden Tax III initiative and the digital transformation of tax governance and collection, many scholars have written a great deal of research. As the research has progressed, some scholars have noted a significant correlation between government audit and tax administration and levies, which mutually facilitates and constrain each other[5]. Currently, many scholars are studying digital tax collection and enterprise-level [6-8], but few are examining the intrinsic connection between digital tax collection and government audit at the macro level. This paper aims to fill this gap by using Golden Tax Phase III as the experimental basis to probe into the influence of tax digitization reform on the quality of government audit.

This paper examines the correlation between government auditing and the digital reform of tax administration and levies, using Golden Tax Phase III in an almost natural setting. The paper's main contributions are as follows: Firstly, it is on the basis of Chinese tax system and provides ample evidence and experience for the research topic. The study focuses on the reform programs and measures proposed by the nation in recent years. It centres on the important reform measure of the Golden Tax III, which has been discussed in depth. Additionally, it complements the research path of tax digital transformation for government audit quality improvement. The existing literature typically focuses on enterprise information transparency[9] and audit input cost[10] as research paths. However, this topic proposes to investigate the government fiscal information diaphaneity as a research path. By studying the impact of tax digitalization reform on the government fiscal information diaphaneity, the ultimate goal is to enhance the quality of government audit. This text analyses the influence of numerical tax on government audit quality from both interior and exterior government angle using scientific and comprehensive empirical methods.

2. Theoretical Analysis and Hypothesis Formulation

The objective of the third phase of the Golden Tax Project is to promote the digital reform of tax administration and levies. This will be achieved by accelerating the construction of tax informatisation and enhancing the efficiency of law execution by taxation authorities through the use of technology and scientific methods, including big data, cloud computing, and the Internet of Things. These means will be used for the integration of tax information, such as tax registrations and declarations, and for multi-departmental sharing in order to realise highly efficient tax supervision. Simultaneously, the implementation of the third phase of the Golden Tax Project allows government auditing authorities to efficiently obtain information and data through the intelligent network platform, thereby enhancing the efficiency of government auditing. The implementation of the Golden Tax Phase III Project accelerates the digitisation of tax administration and levies. Additionally, it improves the quality of government audits by increasing the efficiency of government audit departments. The quality of government auditing can be analysed from two perspectives: internal factors and external environmental factors. This can be achieved by focusing on internal government-related factors. To improve the quality of government auditing, it is essential to enhance the ability of government auditing agencies to acquire and process data and information. The government audit department has improved its ability to acquire data information through the tax cloud data platform, which allows for

rapid collection and sharing of government tax information. This digital reform of tax administration and levies effectively avoids information asymmetry within the government. The collected data information can be efficiently integrated and processed using cloud computing and other technological means, providing accurate tax-related information data for the audit. This improves the quality of government audit. The following section analyses the external environmental factors of government auditing. Government auditing and data processing requirements are rigorous, often resulting in low efficiency due to the time and effort required to find and collect data in traditional ways. The digital reform of tax administration and levies has strengthened the availability of tax-related data required for government auditing. This has improved the data processing ability of the audit department, resulting in increased efficiency of the government audit department and further enhancing the quality of government auditing. However, the reform of digitalizing tax administration and levies enhances the efficiency of government audit departments, creates positive external incentives for government audits, and increases their income. This, further, enhances the quality of government audits. Therefore, the digitalization reform will promote the enhancement of government audit quality.

In light of the study above, this work puts forth the theory H_1.

H_1: The digitalization of tax administration reform has contributed to improving the quality of government audits.

2.1. Impact of Tax Administration Digitisation Reforms on Fiscal Transparency

The government fiscal information transparency refers to the extent to which fiscal message related to the work of the government is disclosed accurately and in a timely manner to the public[11]. As a supervisory and inspection organization, the main function of the government audit department is to oversee and regulate the behaviour of government agencies to a certain extent, and to ensure that government agencies can make reasonable use of government budget funds. As education levels progress, citizens gain a clearer understanding of their tax obligations and their right to supervise financial funds. To ensure the security of government fiscal revenue and the fairness of distribution, government auditing organs and citizens must exercise their rights together. This encourages increased public disclosure of government financial data as well as public oversight of government revenue and expenditure. At the same time, greater transparency in government financial information leads to more timely and accurate data for government auditing authorities. This provides more convenient conditions for auditing, enabling auditors to better identify financial problems and provide rectification programs, ultimately improving the quality of government auditing. The implementation of the Golden Tax Phase III reform has created a high-quality intelligent tax platform using big data, the Internet of Things, and other scientific and technological means. This platform digitizes information on tax-related data of various enterprises and governmental tax revenues. It also discloses information related to governmental fiscal revenues and expenditures in a timely and accurate manner through the online platform, thereby increasing the transparency of governmental fiscal information. Promoting the diaphaneity of government fiscal information enhances the availability and accuracy of data required for government auditing. This not only increases the efficiency of government auditors and reduces the human and material costs required for data collection, but also enables them to analyse and study more accurate government financial data to identify issues with government financial revenue and expenditure. By doing so, auditors can produce higher quality audits. It's crucial to remember that the text already uses the appropriate language and qualities.

In light of the study above, this work puts forth the theory H_2.

H_2: The quality of government audits is improved by increasing fiscal transparency through the reform of tax administration digitalization.

2.2. Impact of Digitalization of Tax Administration on Tax Revenues

Government auditing, as an important instrument of State governance, is an essential part of improving state institutions and strengthening national economic management, and should fulfil its important function of promoting national governance[12]. Government revenues primarily come from regional tax revenues[13], Regional tax revenues can increase government revenue. The quality of government audits is affected by the openness of financial tax revenue data, as well as the productivity of tax administration and levies. The higher the productivity of government tax administration and levies, the higher the efficiency of government auditing. Therefore, improving the openness of government data can improve the quality of government audits. The Golden Tax Phase III Project unifies tax information from the State Administration of Taxation and local tax administrations, enabling tax data sharing through the Smart Tax Platform. This facilitates tax authorities' acquisition of tax information on enterprises and supervision of tax-related behaviours, aiding tax collection and inspection work. To detect tax-related risk behaviours of enterprises in a timely manner and issue corresponding risk alerts. This makes it easier to identify tax-related illegal behaviours of enterprises, allowing for the imposition of fines and requiring them to make up for any discrepancies through the data they possess. As a result, government tax revenues are increased. Enterprises' tax-related illegal behaviours can be more easily discovered through the data they possess. This enables the government to demand supplementary payments and impose fines, thereby increasing tax revenues. The increase in government tax revenue has raised the government budget, and the government has more funds to invest in the construction of a high-quality smart tax platform, which makes the e-tax platform smarter and discloses tax-related information in a more comprehensive, timely and accurate manner, which further increases the availability of data, and also makes the degree of data retention by government departments smaller and smaller, which improves the efficiency of government auditing and allows government audit departments to The government audit department can make use of the data released by the intelligent tax collection and management platform to conduct in-depth audit investigation and put forward more effective audit rectification suggestions, thus enhancing the quality of government audit.

In light of the study above, this work puts forth the theory H_3 .

H_3 : Reforms aimed at digitising tax administration have led to an increase in government tax revenues. This, in turn, has improved the quality of government audits.

3. Research design

3.1. The establishment of simulation model

This paper constructs a double difference model to look into the influence of tax administration digitisation reform on the quality of government audits. The digitalization of tax administration is measured using the Golden Tax III quasi-natural experiment as a proxy variable. In order to investigate the overall effects of the tax administration digitization change on the caliber of government audits, the article builds a model. The model eliminates interference caused by differences before and after the implementation of the Golden Tax III project in the same province, as well as differences between pilot and non-pilot provinces. It ensures a more objective evaluation of the experiment:

$$quality_{it} = \alpha + \beta_1 T - tax_{it} + \sum \beta_j X_{jit} + u_i + v_t + \varepsilon_{it} \quad (1)$$

The paper quantifies the effect of the digital reform of tax governance on the quality of government audit through regression analysis. The individual of each province is denoted by 'i ' and the year by 't '. The explanatory variable is the quality of government audit, denoted by '$quality_{it}$ '. The core explanatory variable of the paper is whether to participate in the digital reform of tax administration, denoted by '$T - tax_{it}$ '. The pilot of the Golden Tax III is chosen to represent the digital reform of tax

administration. The work uses exact word choice and keeps a formal register. X_{jit} comprises a series of control variables, including key factors that affect the quality of government audits, such as industrial structure, human capital level, foreign direct investment, financial development level, employment density, and Egyptian President. The model includes individual fixed effects (u_{it}), time fixed effects (v_{it}), and a random error term (ε_{it}).

3.2. Variable selection

(1) Explained variable: government audit quality. This text weighs the quality of government auditing by examining the intensity of audit investigations and penalties. The proportion of audit penalty amounts to the total value of GDP is used as a measurement indicator. At the micro level, government auditing quality relates to the efficiency and effectiveness of the government's review of individual audits. The number of audit penalties reflects the strength of government auditing and investigation. However, it is important to note that provinces and municipalities under the central government are influenced by various external factors and have varying levels of economic development. Therefore, a uniform amount of audit penalties can only assess changes in the government's investigative and punitive efforts within the same province or municipality under the central government over time, and cannot be compared across different regions. Therefore, this text uses the proportion of audit penalties to GDP as a measurement indicator. This eliminates the influence of audit penalties by the different economic volume of provinces and municipalities, and accurately reflects changes in the intensity of the government's audit investigation and punishment. This, in turn, reflects changes in the quality of the government's audit.

(2) Explanatory variable: digital reform of tax administration. In this text, the Golden Tax Project III is used in an almost natural setting, while the implementation of the Golden Tax Project III is used to measure the outcomes of the advancement of the digital reform of tax administration. The year of the official start of the Golden Tax Project III and the following years in each province and city are recorded as 1, while the previous years are recorded as 0.

(3) Control variables: drawing on existing research, this paper selects the following influencing factors affecting the quality of government audits as control variables: The ratio of employment to the area of provincial administrative divisions indicates the level of financial development; the total value of GDP per capita (based on a deflated 2000 base period) indicates the level of economic development; and the sum of all deposits and all loans of all provinces and cities relative to the total value of GDP indicates the level of employment density; and the level of informatisation is measured by the total volume of postal and telecommunication services in relation to the total value of GDP.

3.3. Data sources

Panel data from thirty Chinese provinces and cities between 2009 and 2021 are used as research samples in this paper. Due to incomplete data, data from the Tibet Autonomous Region were not included. The information regarding the pilot provinces and municipalities, as well as the year of implementation for the Golden Tax III Project, was obtained from the official site of the State Administration of Taxation (SAT) and the official websites of the tax bureaus of provinces and municipalities directly governed by the federal government. The data on the amount of penalties for auditing was sourced from the China Audit Yearbook. The China Statistical Yearbook provides data on various economic indicators such as the total GDP value, output value of the secondary and tertiary sectors, number of higher education students, total population, foreign direct investment, and import/export values. Meanwhile, to enhance the accuracy of this study, linear interpolation and ARIMA time series forecasting models were used to fill in missing values and replace extreme values. The descriptive statistics for each variable are displayed in the table below:

Table 1. Descriptive stats

Variable category	Variable	acronyms	Obs	Mean	Std.Dev.	Min	Max
Interpreted variable	Audit detection efforts	punish-quality	390	0.019	0.019	0	0.145
explanatory variable	Golden Tax Pilot III	$T-tax$	390	0.459	0.499	0	1
control variables	Industrial structure	industry	390	1.193	0.686	0.5	5.297
	Human capital level	human	390	0.02	0.006	0.008	0.042
	Overseas foreign direct investment	investment	390	0.02	0.016	0	0.082
	Egyptian President	open-door	390	0.271	0.304	0.008	1.548
	Financial development level	financial	390	3.198	1.162	1.506	8.131
	Job density	employment	390	259.235	374.801	3.835	2170.662
	Level of economic development	economic	390	12578.51	7970.921	4287.05	48075
	Information level	informatization	390	0.074	0.046	0.018	0.29

4. Empirical analysis

4.1. Benchmark regression

The paper conducted a benchmark regression on equation (1) and found significant results, as displayed in table 2's column (1). The conclusion was drawn that the digital reform of tax administration can directly impact the Government audit quality. As demonstrated in column (2) of Table 2, this paper adds eight control variables that affect the quality of government auditing sequentially. These variables include industrial structure, human resource level, overseas foreign direct investment, egyptian president, financial development level, employment density, economic development level, and level of informatisation. The purpose of this addition is to enhance the credibility of the study's results. In the regression process, we controlled for the time fixed effect and individual fixed effect of the variables, eliminating the interference of time and individual differences on the outcomes of the study. The study's findings were significantly positive, illustrating that the digital reform of tax administration and levies promotes the improvement of the quality of government audits, confirming the hypothesis H_1.

Table 2. Benchmark regression

variable	(1) punish-quality	(2) punish-quality
$T-tax$	0.006	0.006*
	(1.459)	(1.675)
industry		0.010**
		(2.101)
human		1.238*
		(1.917)
investment		-0.071
		(-0.776)
open-door		-0.011
		(-0.823)
financial		-0.004
		(-1.144)
employment		-0.000
		(-0.855)
economic		-0.000
		(-1.042)
informatization		0.128***
		(3.115)
time-fixation effect	Yes	Yes
individual fixed effect	Yes	Yes
R^2	0.208	0.257
Constant	0.008***	0.004
	(3.354)	(0.162)
Observations	390	390

t statistics in parentheses* p < 0.1, ** p < 0.05, *** p < 0.01

4.2. Robustness testing

4.2.1 Parallel trend test

This text utilises the double difference pattern to investigate the influence of the numerical reform of tax administration policy on the quality of government audits. In order to assess the policy, the model necessitates that there be no discernible difference between the experimental group's and the control group's trend prior to the policy's implementation. Therefore, a parallel trend test must be conducted before the experiment. This paper uses the year of policy performance as the base period and analyses the significance of the regression coefficients before and after implementation to determine if the conditions of the parallel trend test are met. Figure 1 displays the test findings. The figure shows that the regression coefficient of the digital reform of tax administration and levies was not significant prior to policy performance. This shows that prior to the adoption of the digital reform program, there was no discernible difference between the experimental and control groups. Both groups exhibited the same trend of change, meeting the conditions of the parallel trend test. However, following the implementation of the policy, the regression coefficient for the digital reform of tax administration and levies is significantly positive and shows an uptrend. This explains that with the full promotion of the policy, the influence of the digital reform of tax administration and levies on the improvement of the quality of government auditing gradually increases.

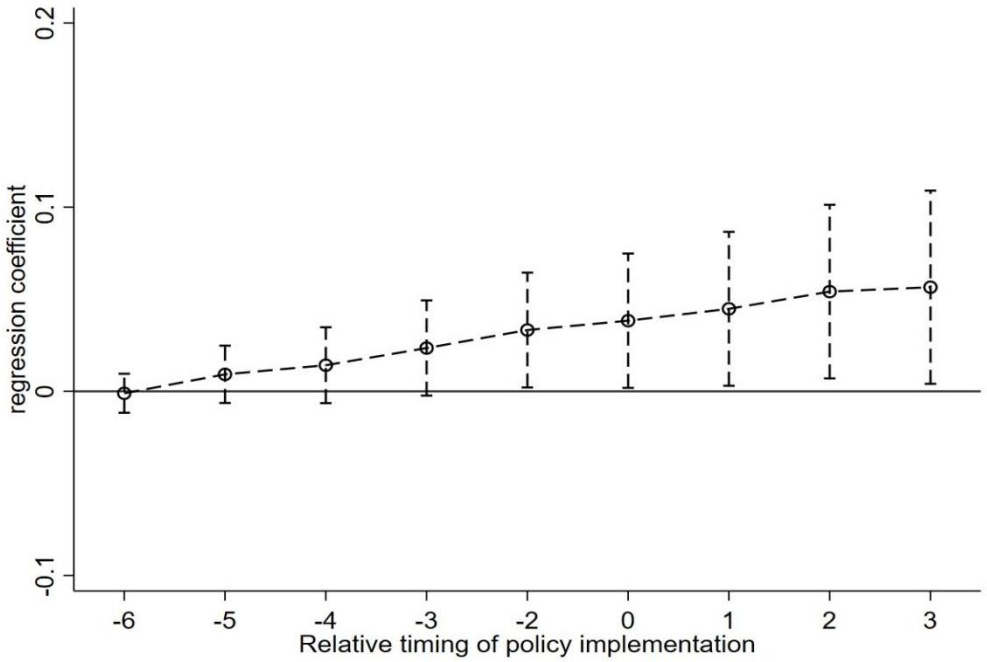


Figure 1. parallel trend test

4.2.2 First 1 per cent shrinkage test

Due to external factors such as geographic location and varying levels of economic development, there are extreme values in some provinces and cities that differ significantly from others. To ensure the precision of the study's outcomes, a benchmark regression was conducted by ranking the explanatory variables and excluding the top 1% of the data. Table 2 presents the findings. Table 2's column (1) regression results demonstrate that, after excluding extreme values, the regression coefficient of the numerical reform of tax administration and levies is positive throughout the regression process. The experimental outcomes remain significant, showing that the conclusion that the digital reform of tax administration and levies promotes the improvement of the quality of government audits is robust.

4.2.3 Exclusion of other policies

To ensure the accuracy of the research conclusions and exclude the influence of other policies on the experiment, it is important to control for other policies as explanatory variables during the performance of the Golden Tax Pilot Policy. The national policy of universalising the law has led to an increase in citizens' legal awareness, recognising their right to supervise the government. As a result, there has been a growing demand for the disclosure of government financial information. This has further promoted the disclosure of government financial information, enhancing the availability of data needed for government auditing and improving its efficiency. Consequently, the quality of government auditing has improved. This paper controls for the explanatory variable of the national popularisation policy and excludes its influence on the quality of government audit. Table 3 presents the findings. Table 3, column (2), shows a significantly positive regression coefficient for the Golden Tax III pilot policy. This explains that the numerical reform of tax governance continues to improve government audit quality, even after excluding the influence of other policies.

Table 3. The first 1 per cent shrinkage test and the exclusion of other policy disturbances

variable	(1) punish-quality	(2) punish-quality
$T-tax$	0.006*	0.006*
	(1.683)	(1.667)
national Literacy Policy		-0.015
		(-0.720)
control variables	Yes	Yes
time-fixation effect	Yes	Yes
individual fixed effect	Yes	Yes
R^2	0.255	0.258
Constant	0.005	0.019
	(0.173)	(0.568)
Observations	386	390

t statistics in parentheses* p < 0.1, ** p < 0.05, *** p < 0.01

5. Further analysis

Referring to the existing research literature (Avis E et al.)[14], the conclusion that factors with variability, such as temporal heterogeneity and spatial heterogeneity, may all affect the significance of the experimental results is obtained. Therefore, this paper utilises the group regression method, cuts from the two perspectives of location and the digital economic development level, and conducts a heterogeneity analysis to explore whether the discrepancies in the distribution of location and the level of development of the digital economics may affect the effect of the digital reform of tax administration to promote the improvement of government audit quality.

5.1. Analysis of locational heterogeneity

To investigative the influence of tax administration and levies digitisation reform on the quality of government audits, this paper analyses the provinces in China divided by the Hu Huanyong line into eastern and western regions. Benchmark regression is conducted on both samples, and the results are presented in Table 4. Table 4 shows the benchmark regression test results for the eastern and western regions. In column (1), the regression coefficient of the tax administration and levies digital reform in the eastern region is significantly positive. In column (2), however, the regression coefficient of the tax administration and levies digital reform in the western region is not significant. The table below shows that the digital reform of tax administration and levies has a more significant impact on promoting the quality of government audits in the eastern region. This result also confirms that the geographic location distribution has a significant impact on the influence of tax governance digitalisation reform on the quality of government audits. The variation in tax revenues among provinces, caused by differences in geographic location, industrial structure, and economic development, may explain the disparate impacts of the digital reform of tax administration and levies on the quality of government audits across regions. The economic development of China's eastern region has been greatly enhanced by the rapid growth of new industries. The region's convenient transportation and superior geographical location have attracted large-scale enterprises, resulting in higher tax revenues for the eastern provinces compared to the western region. This has led to a stronger effect of digital tax administration and levies reforms on improving the quality of government audits in the east, compared to the west. Specifically, the Western region may experience different effects compared to other regions. In summary, the effect of tax administration digitalisation reform on promoting the quality of government is affected by regional distribution.

Table 4. Analysis of locational heterogeneity

variable	East (1) punish-quality	Western (2) punish-quality
$T-tax$	0.010***	-0.014
	(2.616)	(-0.596)
control variables	Yes	Yes
time-fixation effect	Yes	Yes
individual fixed effect	Yes	Yes
R^2	0.291	0.372
Constant	-0.001	0.064
	(-0.047)	(0.419)
Observations	325	65

t statistics in parentheses* p < 0.1, ** p < 0.05, *** p < 0.01

5.2. Analysis of heterogeneity in the level of development of the digital economy

This paper aims to investigate whether the economic development level significantly impacts the effect of digital tax collection and management reform on promoting government audit quality. The entropy law is used in obtaining the composite index of digital economic development indicators in each province. Based on the mean value of all sample indexes, the provinces with digital economic development indexes higher than the mean are grouped together, while those with lower indexes are grouped separately. A baseline regression is then carried out on the groups, and the results are presented in Table 5. Table 5 presents the regression coefficients of the digital reform of tax collection and administration for groups with different levels of digital economic development. Column (1) shows a significantly positive coefficient for the group with a low level of digital economic development, while column (2) shows no significant coefficient for the group with a high level of digital economic development.The regression results suggest that tax administration and levies reforms have a more remarkable impact on promoting the quality of government audits in provinces with a low level of digital economy development. One possible reason for this result is that provinces with low levels of digital economic development often lack adequate internet infrastructure and advanced big data and cloud computing platforms. This can result in fewer opportunities to disclose government financial information, leading to lower transparency. However, the digital reform of tax administration and levies has accelerated the construction of high-quality smart tax platforms in all provinces, which has advanced the level of digital economic development throughout the country. The development of the digital economy has significantly impacted provinces with low levels of digital economy development. This has led to a notable increase in the transparency of government financial information, resulting in improved government audits. Therefore, variations in the digital economy's development level will impact the efficiency of the tax administration and levies digitalisation reform in enhancing the quality of government audits.

Table 5. Analysis of heterogeneity in the level of development of the digital economy

variable	Low level of development of the digital economy	High level of development of the digital economy
	(1)	(2)
	punish-quality	punish-quality
$T-tax$	0.010*	0.002
	(1.701)	(0.702)
control variables	Yes	Yes
time-fixation effect	Yes	Yes
individual fixed effect	Yes	Yes
R^2	0.322	0.368
Constant	0.029	-0.036
	(0.823)	(-0.926)
Observations	273	117

t statistics in parentheses* p < 0.1, ** p < 0.05, *** p < 0.01

6. Mechanism analysis

Based on the previous analysis, the digitalisation of tax administration reform has the potential to enhance government audit quality. The regional distribution of provinces and the level of development of the digital economy can significantly impact the effectiveness of the digitalisation of tax administration reform on the quality of government audits. This text explores the effect of tax administration digitalisation on the quality of government audits. The mechanism of tax administration digital reform on government audit quality is analysed to reveal the path of tax administration digital reform on government audit quality.

6.1. Analysis of mechanisms based on financial transparency

The tax collection and administration digitalisation reform is argued to enhance the quality of government auditing by increasing the transparency of government financial information, based on the previous hypothesis. This paper conducted a benchmark regression to investigative the effect of tax administration and levies digital reform on government financial information transparency[15]. The government financial transparency index of each province was used as a measure and as an explanatory variable, along with tax collection and management digital reform. Table 6 presents the findings. Table 6, column (1), shows a significantly positive regression coefficient for tax collection and administration digital reform, passing the 5% significance test. This indicates that the reform significantly improves the transparency of government financial information. The performance of the Golden Tax III Project reflects the impact of digital tax governance reform on government fiscal information transparency. The project achieves tax-related data sharing by building a high-quality smart tax platform that discloses timely and accurate information related to government fiscal revenue and expenditure, thereby increasing the transparency of government fiscal information. The financial information transparency in government enhances the availability and accuracy of data required by the government audit department, improves its efficiency, and enhances the quality of government audits. Therefore, this paper concludes that the government financial information transparency is one of the ways in which the digital reform of tax governance promotes the improvement of government audit quality. The digital reform of tax governance improves the quality of government audit by increasing the transparency of government financial information. This verifies the hypothesis.

6.2. Analysis of mechanisms based on tax revenues

The following section of this paper proposes that tax revenue serves as a mechanism for the effect of tax administration digitisation reform on the quality of government audits. To test this hypothesis, a benchmark regression was conducted using tax revenue as the explanatory variable and tax administration digitisation reform as the independent variable. Table 6 presents the findings. Table 6, column (2), indicates that the result passes the 10% level of significance test. The regression coefficient of tax collection and administration digitalisation reform is significantly positive, indicating that the reform has led to significantly boost government tax revenues. To carry out the digital reform of tax administration and levies, the main measure is the full implementation of the Golden Tax Phase III Project. This project assists in the supervision of tax sources, tax collection, and tax inspection through four subsystems: the VAT anti-counterfeit tax-control invoicing subsystem. The system includes three subsystems: the anti-counterfeit tax-control authentication subsystem, the VAT audit subsystem, and the invoice co-checking subsystem. These subsystems are designed to monitor the tax-related behaviours of enterprises strictly, reducing corporate tax evasion and leakage, and ensure the security of tax revenue, ultimately increasing tax revenue. The increase in tax revenue boosts the government's financial budget. This allows for more investment in research and development to build a high-quality intelligent tax platform. The aim is to enhance the existing platform with more diverse functions and fields of use. This will enable the government auditing department to obtain accurate and timely data from the platform, increasing data availability and improving the efficiency of government auditing. Ultimately, this will lead to an improvement in the quality of government auditing. Thus, we confirm the hypothesis that the digital reform of tax administration and levies improves the quality of government audit by increasing government tax revenue.

Table 6. Mechanism analysis

variable	(1) Fiscal transparency	(2) tax revenue
$T-tax$	7.272**	233.202*
	(2.505)	(1.839)
control variables	Yes	Yes
time-fixation effect	Yes	Yes
individual fixed effect	Yes	Yes
R^2	0.701	0.726
Constant	6.023	6504.061***
	(0.306)	(7.551)
Observations	390	390

t statistics in parentheses* p < 0.1, ** p < 0.05, *** p < 0.01

7. Conclusions

This paper examines the impact of the digital reform of tax administration and levies on the quality of government audit, using the Golden Tax III project in an almost natural setting. A double difference model is established to analyse the data. The study found that the digital reform of tax administration and levies has a significantly positive impact on the quality of government auditing. The digital transformation utilizes big data, cloud computing, and other scientific and technological means to better manage tax-related data and achieve data sharing. The government auditing department makes reasonable use of the data disclosed by the high-quality smart tax platform, which improves the efficiency of government auditing and enhances its quality. The tax collection and administration digitalisation reform has promoted the performance of the Golden Tax Phase III pilot policy. This policy has improved the quality of government audits by increasing the government fiscal information transparency. The digital reform of tax administration and levies has resulted in the construction of a

network platform that covers one platform, two levels of processing, three covers, and four types of systems through the Golden Tax Phase III. This has led to an increase in tax revenues and an improvement in the quality of government audits. Upon analysing the heterogeneity of the study, this paper concludes that the tax collection and administration digitalisation reform has a notably stronger impact on the improvement of the quality of government audits in the eastern provinces compared to the western provinces. Additionally, the tax collection and administration digitalisation reform has a notably stronger impact on the improvement of the quality of government audits in provinces with a low level of digital economy development compared to those with a high level of digital economy development.

8. Policy recommendations

Regarding the research findings, this paper proposes the following policy recommendations: Firstly, enhance the implementation of the Golden Tax Phase IV based on the Golden Tax Phase III Project. During the implementation of the Golden Tax Phase IV project, it is important to learn from the experiences and lessons of the previous Golden Tax Phase III project. This will help to ensure the success of the Golden Tax Phase IV project. Additionally, it is necessary to implement different strategies for tax collection and administration digital reform in provinces with varying geographical distributions. This paper concludes that the digital reform of tax collection and management in different areas of the government audit quality will be affected by the degree of accessibility of the provinces, differences in industrial structure, and other factors. Therefore, in the process of promoting the digital reform of tax administration and levies, the treatment of different provinces should be tailored to suit the local conditions, using policies and measures in line with the actual development of the province. To achieve shared development, it is important to improve the digital reform of tax collection and management. This will increase the government's financial transparency and tax revenue. The digital reform of tax administration and levies aims to improve the quality of government audit by enhancing financial transparency and increasing tax revenue. The quality of government audits can only be continuously improved and the internal management system of China's government perfected by continuously improving Chinese tax law system, strictly supervising the legality of tax administration and levies procedures, guaranteeing the rights and interests of Chinese citizens, and increasing the disclosure of the government's tax revenue and financial information.

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