Promoting or Suppressing: The Impact of Tax Collection and Management Reform on the Enterprise Digitalization

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Abstract. Digital transformation is the trend of a new round of technological revolution and industrial transformation. It is worth studying the impact of the wave of digital technology in government tax collection and management on enterprise transformation. This article is based on data from A-share listed companies in China's Shanghai and Shenzhen stock markets and 31 provinces. Using the "Golden Tax" Phase III project as a quasi-natural experiment, a difference in differences model is used to empirically analyze the mechanism by which the reform of tax collection and management methods affects the digital transformation of enterprises. The results show that government tax collection and management reform will promoting enterprise digitalization. The above conclusion has important policy implications for further improving the "Golden Tax" series of projects and better serving the business development of enterprises.

Keywords: Tax collection and management; The "Golden Tax" project; Enterprise digitalization.

1 Introduction

According to the "China Digital Economy Development Report (2022)" released by the China Academy of Information and Communications Technology on July 8, 2022, the development index of China's digital economy has risen from 1000 in 2013 to 5610.6 in 2021, an increase of 4.61 times, far exceeding the GDP growth rate of the same period. The vigorous development of the digital wave has promoted the optimization of China's consumption structure, upgrading of industrial structure, and high-quality economic development. In the digital age, if enterprises want to consolidate their competitive advantage in the market, they must actively promote digital transformation with data as the core[1]. At the same time, the government actively promotes the integration of digital technology and tax administration, greatly improving the efficiency of tax administration. With the iterative update of the "Golden Tax" system, the efficiency of tax collection and management continues to improve. Tax departments can organize income more scientifically, reduce interference with daily operations of enterprises, and

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lower the excessive tax burden of enterprises. What role will tax collection and management reform (TCMR) have in the process of digital transformation of enterprises? Based on the consideration of this issue, this article constructs a double difference model to empirically analyze the mechanism of the impact of TCMR on the enterprise digitalization.

2 Literature Review

The existing literature has extensively studied enterprise digitalization and tax collection and management reform. The results obtained are as follows:

In terms of connotation definition, Wu et al. (2019) defined enterprise digitalization as promoting innovation in production, organization, and business models through information, computing, communication, and connectivity technologies[2]. In the study of driving factors, Wang Hai et al. (2023) found that the reform of value-added tax retention and refund, as well as digital infrastructure policies, have a positive promoting effect on the enterprise digitalization[3]. Tang Xuan et al. (2022) and Liu Xilu et al. (2023) discussed the heterogeneity of executive teams and the role of CEO information technology background in the process of enterprise digitalization[4-5].

The research on the effects of the TCMR can be mainly divided into two aspects: one is the analysis of tax governance practices in the era of big data. The research in this direction focuses on the analysis of tax risk management. For example, Song Xingyi et al. (2020) systematically discussed the practical exploration and path selection of tax risk management in the big data environment[6]. Secondly, regarding the impact of the TCMR on enterprise operations, Ye Yongwei et al. (2021) and Ji Yafang et al. (2023) constructed a difference in differences model and empirically analyzed that big data tax collection and management, represented by the Golden Tax Phase III Project, can significantly improve the accounting conservatism of enterprises, reduce related party transactions, and curb corporate violations[7-8].

There are abundant research results, but no research has yet incorporated the relationship between TCMR and enterprise digitalization into a unified analytical framework. What impact will the launch of the upcoming "Golden Tax" Phase IV project have on enterprise digitalization? Will it promote the in-depth development of enterprise digitalization? This is a practical issue worth exploring in depth. The possible marginal contributions of this article include: (1) innovation in academic theory. Seeking the mechanism of how TCMR affects the enterprise digitalization is an expansion of existing research, which not only enriches and improves the theoretical system of government taxation affecting corporate behavior, but also enriches and develops the relevant theories of the digital economy. (2) Reference from policy practice. The conclusions drawn from the natural experiment based on the third phase of the "Golden Tax" project can provide reference experience for the launch and improvement of the fourth phase of the "Golden Tax" project.

3 Theoretical Assumption

TCMR has changed the external environment of enterprise operation and development, promoting the enterprise digitalization. Firstly, TCMR has brought about new tax policies and procedures, which are mandatory and usually have certain regulatory punishment mechanisms, requiring enterprises to develop towards digitalization. Secondly, with the modernization of tax collection and management methods, digitization has become a new standard for modern tax management and corporate financial reporting. Finally, some large enterprises or those with advanced digital practices are usually the first to adapt to new requirements, while other enterprises observe changes in large enterprises and imitate their behavior, adopting similar digital strategies and tools. Therefore, this article proposes the following hypothesis:

Assumption 1: TCMR has a significant promoting effect on enterprise digitalization.

4 Research Design and Data Explanation

Construct a double difference model as follows:

$$ED_{i,t} = \alpha_0 + \beta_0 \times TCMR_{i,t} + \sum_j \beta_j \times Control_{j,i,t} + \varepsilon_{i,t} \quad (1)$$

In equation (1), ED represents enterprise digitalization, TCMR represents tax collection and management reform, Control represents the control variable, which includes: enterprise size, proportion of fixed assets, total asset turnover rate, number of directors, listing years, equity balance, fiscal pressure, and tax competition.

Enterprise digitalization (ED). Drawing on the approach of Wu Fei et al. (2021), an enterprise digitalization feature lexicon was established from two levels: "underlying technology application" and "technology practice application", and the enterprise digitalization index was calculated based on this[9].

Tax collection and management reform (TCMR). The years before the launch of the "Golden Tax Phase III" project are denoted as 0, and the years after the launch of the "Golden Tax Phase III" project are denoted as 1.

5 Empirical Result Analysis

5.1 Benchmark Regression and Robustness Testing

The first and second columns of Table 1 report the benchmark regression results of the impact of TCMR on the enterprise digitalization. The first column is the regression without control variables, while the second column includes control variables. Both the first and second columns control for fixed effects of year and company. Overall, the coefficients of TCMR are significantly positive at the 1% level, indicating that TCMR has promoted the enterprise digitalization.

Considering that the launch of the "Golden Tax Phase III" project in the second half of the year may have a lag effect and will not immediately affect the behavior of local

enterprises. We have taken July 1st as the boundary, provinces, cities, and districts with an online time before July 1st will have a value of 1 for the current year, while provinces, cities, and districts with an online time after July 1st will still have a value of 0 for the current year and 1 for the following year. The regenerated treatment group was regressed again, and the results are shown in the third column of Table 1. The estimated coefficients are significantly positive at the 1% level, consistent with the baseline regression results, indicating the robustness of the baseline model.

Considering that using different methods to measure enterprise digitalization can also have a significant impact on empirical results, we have reconducted word frequency statistics on enterprise digitalization to obtain ED2, which was then input into the benchmark regression model again. The results are shown in the fourth column of Table 1. From the results, it can be seen that they are consistent with the benchmark regression results, indicating that even if the measurement method of enterprise digitalization is changed, the same conclusion can still be drawn, which verifies the robustness of the benchmark regression results.

Table 1. Benchmark regression results

variable	(1) ED	(2) ED	(3) ED	(4) ED2
TCMR	0.476***	0.375***		
	(5.09)	(3.82)		
lag_TCMR			0,327***	
			(3.22)	
TCMR				0,241***
				(2.71)
_cons	0.184***	-7.237***	-7,232***	-6,029***
	(8.36)	(-21.66)	(-21.65)	(-19.90)
control variable	Not controlling	control	control	control
Fixed effect	YES	YES	YES	YES
sample size	14392	14392	14392	14392
R^2	0.400	0.427	0.427	0.427

5.2 Parallel Trend Test

Figure 1 shows the results of the parallel trend test. Using the first phase before the implementation of the "Golden Tax Phase III" project as the benchmark year, there was no significant difference in the time trend of enterprise digitalization in the years before the implementation of the "Golden Tax Phase III" project. However, after the launch of the "Golden Tax Phase III" project, enterprises in various provinces, were impacted by TCMR, and the time trend of digital transformation began to change significantly. This indicates that the benchmark regression results in this article have good robustness.

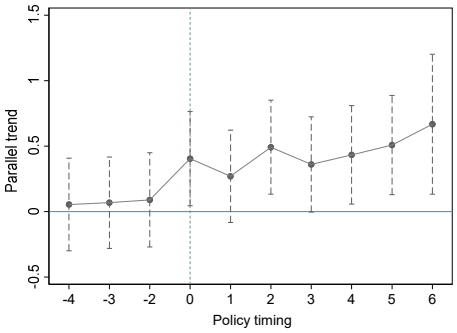

Fig. 1. Parallel trend.

5.3 Placebo Test

In order to eliminate the influence of non-policy factors on the research results, we borrowed the approach of Cornaggia(2019) [10] and re randomly allocated the online time of the third phase of the Golden Tax Project in each province, city, and district, and generated a pseudo experimental group. Model (1) was re subjected to 500 random independent experiments, and the final results are shown in Figure 2. From the results shown in Figure 2, we can observe that the newly obtained estimated coefficients are concentrated around 0, exhibiting a normal distribution, while the true estimated coefficients are less concentrated near 0, indicating a low probability event. This suggests that the benchmark regression results in this paper do not have randomness, and the conclusions drawn are true and reliable.

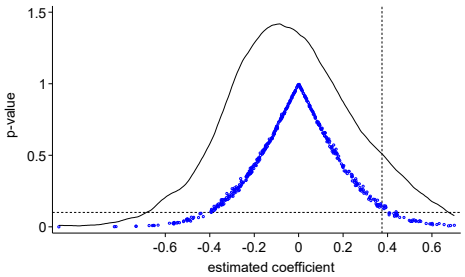

Fig. 2. Placebo test

6 Conclusion and Policy Suggestions

Based on the double difference model, an empirical analysis was conducted on the mechanism of TCMR on the enterprise digitalization. The following conclusions were drawn: tax collection and management reform significantly promoted the enterprise digitalization. According to the above research conclusions, the following suggestions are proposed:

Firstly, strengthen the construction and improvement of the "Golden Tax" project: the government should continue to increase investment and support for the "Golden Tax" project to ensure its smooth construction and stable operation. At the same time, advanced technologies such as artificial intelligence and big data can be considered to enhance the intelligence level of the tax department, continuously improve and optimize the functions and services of the "Golden Tax" system, and improve user experience and satisfaction.

Secondly, optimize the business environment: further reducing administrative fees, simplifying approval processes, and other methods to lower the cost burden of enterprises. This will help alleviate the operational pressure on businesses and make it easier for them to undergo digital transformation.

Finally, strengthen policy support for enterprise digital transformation: by introducing a series of measures to help enterprises overcome difficulties and challenges in the process of digital transformation. For example, providing financial subsidies, tax incentives and other incentive measures to encourage these enterprises to increase their digital investment; Establish a digital transformation service platform to provide technical consulting, talent training, and other services for these enterprises; Strengthen cooperation with universities and research institutions to promote the integration of industry, academia, and research.

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