A Study of the Impact of the Development of the Digital Economy on the Efficiency of Tax Collection and Administration

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Abstract: Digital economy, as an important engine of economic development in the new era, is profoundly changing the global economy with its unique definition and characteristics. Digital economy, in short, is to take digitised knowledge and information as the key production factors, to take modern information network as the important carrier, and to achieve economic growth and structural optimisation through the effective application of information technology. The digital economy, with its unique innovation and permeability, is continuously promoting the change of tax collection and management mode. Tax departments should keep pace with the times, make full use of the advantages of the digital economy, promote the digital transformation of tax collection and administration, and improve the efficiency and quality of tax collection and administration.

***Keywords*:** Digital economy; Taxation; Collection efficiency

1. Introduction

With the rapid development of digital economy, the traditional tax model is facing unprecedented challenges. With its high efficiency, convenience and globalisation, the digital economy has greatly changed the shape of business activities and transaction methods. This trend has led to the traditional tax collection and management model being overwhelmed in terms of identifying tax sources, determining tax locations and tracking transactions. In the era of digital economy, it is important to focus not only on the efficiency of taxation, but also on the fairness and sustainability of taxation. In the face of the challenges posed by the digital economy to the traditional tax model, it is necessary to continuously innovate tax collection and administration methods, strengthen international cooperation, and jointly build a new tax governance system adapted to the era of the digital economy.

2. The current situation and problems of tax collection and management in the digital economy

2.1 Characteristics of digital economy

The characteristics of the digital economy are mainly reflected in the following aspects: firstly, the digital economy has a high degree of informatisation and networking characteristics. With the wide application of modern information technology such as the Internet, big data, artificial intelligence and so on, the acquisition, processing and dissemination of information have become more rapid and convenient. Second, the core of the digital economy is data resources. As a new type of production factor, the value of data has been fully reflected in the digital economy. Finally, the digital economy is highly innovative and dynamic. The continuous emergence of new technologies and the continuous expansion of application scenarios make the digital economy always in a state of rapid change and continuous innovation [1].

2.2 Problems faced by tax administration in the digital economy

2.2.1 In identifying tax sources

As the transactions in the digital economy are mostly intangible goods and services and the transaction process is highly digitised, it is difficult for traditional means of tax collection and administration to effectively identify and track tax sources. For example, the rise of cross-border e-commerce has made it easy for transactions of goods and services to cross national borders, and it is often difficult for tax authorities to grasp the specifics of these transactions, leading to the increasingly serious problems of tax base erosion and profit shifting. In addition, the numerous participants in the digital economy, including platform enterprises and individual sellers, have diverse and hidden transaction behaviours, which have brought new challenges to tax collection and administration.

2.2.2 In determining the place of taxation

Determining the place of taxation is equally challenging in the digital economy. As transactions in digital products and services are often not subject to geographical location, traditional tax principles based on physical presence are difficult to apply. For example, the provider of digital content may be located in one country while the consumer is located in another, in which case determining the place of taxation becomes a complex issue.

2.2.3 In tracking transactions

In terms of tracking transactions, the anonymity and immediacy characteristics of the digital economy make it difficult for tax authorities to monitor transactions effectively. In the traditional tax system, transaction records are usually more transparent, and tax authorities can obtain transaction information through banks, payment institutions and other channels. However, in the digital economy, transactions are often conducted anonymously or semi-anonymously through cryptocurrencies, third-party payment platforms and other anonymous methods, which makes it extremely difficult for tax authorities to track transactions. At the same time, the instantaneous nature of transactions means that transaction records may quickly disappear within a short period of time, making it more difficult for tax authorities to obtain and preserve evidence of transactions.

2.3 Review of existing tax administration efficiency (DEA and SFA)

2.3.1 Application of data envelopment analysis (DEA) methods

DEA is a non-parametric efficiency evaluation method which assesses the relative efficiency of decision-making units (DMUs) by constructing a production frontier surface. In the evaluation of tax administration efficiency, DEA can be used to compare the administration efficiency of different tax authorities or over different time periods, identify the causes of inefficiency, and provide directions for improving efficiency. Through DEA analysis, resource waste and management deficiencies in the process of tax collection and administration can be identified, so as to promote tax authorities to optimise resource allocation and improve collection and administration efficiency.

2.3.2 Application of Stochastic Frontier Analysis (SFA) Methods

SFA is a parametric efficiency evaluation method, which evaluates efficiency by establishing a production function containing a stochastic error term. Unlike DEA, SFA can separate out the random error and management inefficiency, so as to more accurately assess the efficiency of tax collection and administration.SFA method can provide quantitative analysis of the improvement of the efficiency of tax collection and administration while taking into account the influence of the external random factors, and help the tax authorities to make more scientific management decisions.

3. The impact of the digital economy on the efficiency of tax collection and administration

3.1 The improvement of the efficiency of tax collection and administration by the progress of science and technology

With the rapid development of science and technology, especially the wide application of cutting-edge technologies such as big data, cloud computing, artificial intelligence and other cutting-edge technologies in the field of tax collection and management, the efficiency of tax collection and management has been significantly improved [2]. Taking big data as an example, the tax department, by collecting and analysing huge amounts of data, is able to achieve an accurate portrait of taxpayers' behaviours and effectively identify potential tax risk points, thus significantly improving the pertinence and effectiveness of tax collection and management. The introduction of cloud computing technology enables the tax department to build a more efficient and flexible information system and realise real-time sharing and collaborative processing of tax data. This not only greatly shortens the cycle of tax declaration and audit, but also reduces the manpower cost of the tax department. The application of artificial intelligence technology has even brought revolutionary changes to tax collection and management. Through machine learning algorithms, the tax department is able to automatically identify and process abnormal data in tax declarations, effectively preventing tax fraud. In addition, the introduction of intelligent customer service system also provides taxpayers with more convenient and efficient consulting services, further enhancing the satisfaction and efficiency of tax collection and administration.

3.2 Data-driven Accurate Tax Administration

Under the background of digital economy, data-driven accurate tax management has become an important means to improve the efficiency of tax collection and management. Through advanced technologies such as big data and artificial intelligence, tax authorities can collect, process and analyse massive tax-related data in real time, and achieve an accurate

portrait of the tax payment behaviour of enterprises and individuals. Data-driven accurate tax management is also reflected in the early warning, prevention and control of tax risks. By building a tax risk early warning system, tax authorities can monitor taxpayers' tax-related behaviour in real time, and discover and warn potential tax risks in a timely manner. This early warning mechanism not only helps the tax department to intervene in advance and dispose of the situation in time, but also effectively avoids the occurrence of tax loss and tax offences. At the same time, based on the accurate analysis of data, the tax department can also provide taxpayers with more personalised tax services, such as customised tax policy push, intelligent tax consultation, etc., to further enhance taxpayers' satisfaction and compliance.

3.3 Challenges and opportunities for tax administration in digital transformation

In the wave of digital transformation, tax collection and administration faces unprecedented challenges and opportunities.

On the one hand, with the wide application of big data, cloud computing, artificial intelligence and other technologies, tax collection and administration can be carried out more efficiently and accurately [3]. For example, through big data analysis, the tax department can monitor the transaction data of enterprises in real time, effectively combat tax evasion, and improve the efficiency and accuracy of tax collection and management.

In terms of opportunities, digital transformation provides unprecedented innovation space for tax collection and management. Take blockchain technology as an example, its decentralised and tamper-proof characteristics provide a brand new solution for tax collection and management. Through blockchain technology, a transparent and traceable tax collection and management system can be constructed to ensure the authenticity and integrity of tax data [4]. In addition, the application of artificial intelligence technology makes the tax collection and management work more intelligent and automated. For example, through machine learning algorithms, the financial statements of enterprises can be automatically identified and classified, greatly improving the efficiency of tax collection and management.

4. Strategic Suggestions for Optimising the Efficiency of Tax Collection and Administration

4.1 Strengthening the Informatisation Construction of Tax Collection and Administration

In order to cope with the challenges brought by the digital economy, the tax department needs to further strengthen the informatisation construction of tax collection and administration. First of all, the integration of tax information system with big data, cloud computing and other technologies should be accelerated to build an efficient and safe tax collection and administration platform. Through this platform, tax departments can achieve real-time data collection, processing and analysis, thus improving the efficiency and accuracy of tax collection and administration. Secondly, tax departments should strengthen cooperation with third-party data providers to broaden data sources and ensure that they can comprehensively grasp information on taxpayers' economic activities [5]. In addition, tax departments should also strengthen internal data management to ensure data security and privacy protection and avoid the risk of data leakage.

4.2 Strengthening the institutional guarantee for tax collection and management

In order to ensure the smooth progress of tax collection and management, a strong guarantee mechanism is needed.

On the one hand, it is necessary to further develop and improve the legislation on tax collection and administration of the digital economy, and in the process of the development of the digital economy, it is necessary to clarify and improve the legal policies of the relevant digital development, so as to ensure that the tax collection and administration is legal, rigorous, fair and scientific. Based on the digital economy, the core framework of tax collection and administration centred on the digital economy should be constructed, so as to achieve the coordination of tax collection and administration mechanisms at all three levels: local, regional and international. In order to better understand the development of the digital economy, when formulating and improving the law, it is necessary to clarify its tax rate, tax objects, tax procedures and tax information. At the same time, while strengthening the regulation of tax collection and administration, it is also necessary to consider two different tax payment processes and policies, online and offline. For example, Tibet has established and improved a new type of supervision mechanism based on ‘credit + risk’, adopted a differentiated management mode, and accurately delineated with the help of big data analysis, so as to carry out key supervision for industries with a higher probability of tax problems, and to promote the ‘double-random, one-public’ supervision, so as to achieve supervision and control. ‘ supervision, in order to achieve the maximisation of regulatory effectiveness [6]. In the process of tax collection and management in China, we should pay attention to the supervision of the central and local governments and the supervision of the taxpayers' government, and the two supervision systems are supervised at the same time, which provides a strong guarantee for the political system under the environment of the digital economy and improves the efficiency of tax collection and management.

5. Conclusion

In summary, with the rapid development of technology, especially the wide application of artificial intelligence, big data, blockchain and other emerging technologies, the field of tax collection and administration is experiencing unprecedented changes. In the future, the impact of technological trends on tax collection and management will become more and more significant. Therefore, while enjoying the convenience brought by technology, tax departments also need to strengthen information security protection and ensure the stable operation of the tax collection and administration system. Only in this way can they adapt to the needs of the development of the digital economy, improve the efficiency of tax collection and administration, safeguard the rights and interests of the national tax revenue, and promote the sustainable and healthy development of the economy.

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