RESEARCH ARTICLE

Problems and countermeasures of fiscal tax base erosion under the background of the digital economy

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Abstract: With the vigorous development of the digital economy, the traditional tax methods are difficult to adapt to the virtual digital trading activities, resulting in the problem of mismatch, and thus causing the related issues of the erosion of the fiscal tax base. By identifying the basic characteristics of the virtual, scale and interconnection of digital economic activities and combining the tax elements, this paper finds that there are problems such as unclear taxpayer, unclear tax object, and difficulty in defining the tax rate, which have caused the erosion of the tax base in many aspects, and the transnational activities have intensified the contradiction of the erosion of the tax base. As a result, the sources of government revenue are damaged, the gap between regional fiscal potential energy is further divided, and the space finance is vacant. Furthermore, it proposes to identify independent taxpayers, add resident offices, and actively integrate into the international tax system based on the independence of taxpayers and transaction businesses.

Keywords: Digital economy, tax base erosion, horizontal imbalance, space finance, and financial system reform

1 Introduction

The rapid development of the digital economy in our country is characterized by the gradual expansion of the digital industry scale, the increasing number of digital enterprises, and significant financial capital entering the digital services sector. Traditional enterprises are seeking rapid transformation and structural optimization, specifically reflected in the digital integration of existing services, the addition of digital services, and the simultaneous provision of online services, relying on platforms to expand multidimensional business lines (Feng Shoudong and Wang Aiqing, 2023). However, the newly added digital services and the tax issues of the numerous new digital enterprises still primarily rely on traditional tax practices. Compared to the traditional economy, the emergence of the digital economy has undoubtedly led to an exponentially large increase in the overall economic volume and scale. Conversely, the digital economy also impacts the traditional economy, exerting pressure on traditional physical industries and leading to resource exploitation behaviors.

The rapid development of industries related to the digital economy has brought transformative breakthroughs in economic production pathways and output efficiency optimization. If we consider statistical definitions, the digital economy comprises two major components: digital industrialization and industrial digitalization. Digital industrialization refers to the value added by the information industry, innovations in digital technology, and the production of digital products, mainly including categories such as electronic information manufacturing, information and communication, the internet industry, and software services. Industrial digitalization involves the application of digital technology in other industries, enhancing value and efficiency in non-digital sectors of the national economy through the penetration and integration of information and communication technology products and services, significantly impacting the economy.

Digital marketing refers to the advertising and marketing activities conducted by digital economy enterprises through media, based on the characteristics of data being the core production factor in the digital economy. A prominent feature is the reduction in tracking costs, making targeted advertising more profitable and giving rise to many zero-cost, low-priced products and services in the economy. For example, Alibaba has reported that actual operating income

from digital marketing exceeds 43%, making it a significant source of revenue for the company.

The absence of tax administration is evident when data production factors are created based on users as the basic unit. Tax administration is severely lacking in virtual spaces. Digital retail enterprises gather data from user behavior and sell this data to marketing advertisers for targeted advertising, which can also be seen as realizing the value of data factors. However, digital enterprises do not charge or pay fees to users in this process; instead, they engage in indirect exchanges of digital services, and the entire process might not even involve monetary transactions. Therefore, tax management in virtual space can be described as a blank slate, and relying on a digital services tax has not fundamentally escaped the traditional model of taxation based on physical entities. Consequently, the essence of the tax base erosion issue lies in the absence of tax administration in non-physical economic activities.

The rich fiscal resources presented by the digital economy are yet to be tapped. From the perspective of bargaining power, the more abundant and private user data, combined with big data mining technologies, naturally possesses higher market pricing, allowing for greater advertising fees and operating profits. Correspondingly, this more efficient value-creation behavior brings about a more effective and enriched fiscal source in the context of the digital economy (Li Hongxia and Zhang Yang, 2022). For digital enterprises, the virtual economy features lower costs and a broader radiation range, making the collection and use of data factors more convenient. Thus, compared to traditional marketing methods, digital enterprises exhibit a superior market competitive position. This abundant fiscal resource currently reflects that if the state imposes regulations on the collection of user information, digital economy enterprises may experience significant revenue declines. Therefore, it can be inferred that in the context of the digital economy, the value of algorithms and user data is equally important, and the foundational issue of tax allocation requires a clear definition of the value of various digital assets, including digital technology, digital algorithms, and data itself.

However, the digital services tax, which is closest to digital economy taxation, is far from matching the explosive growth of the digital economy. This mismatch may lead to tax base erosion and profit shifting, resulting in fiscal losses, while the cross-regional nature of digital enterprises exacerbates the issue of fiscal horizontal imbalance (Wang Yongjun and Wang Ranran, 2022). The lack of uniformity in international tax systems intensifies this tax base erosion phenomenon. This issue, due to the theoretical vacancy of spatial finance in the short term, threatens the principles of fiscal fairness and efficiency (Guo Changsheng, 2022).

In summary, the rapid development of the digital economy necessitates a corresponding fiscal system. Existing theories and research struggle to keep pace with the explosive growth rate of the digital economy. Therefore, this paper will explore the issue of tax base erosion in the context of the digital economy and attempt to propose some countermeasures.

2 Problem Analysis

To further explore how the digital economy erodes the fiscal tax base, we first identify the fundamental characteristics of digital economic activities. This analysis will be conducted in conjunction with the three main elements of taxation, considering how globalization exacerbates the issue of tax base erosion through multinational activities.

Identification of the Fundamental Characteristics of Digital Economic Activities

To gain a deeper understanding of the impact of the digital economy on our country's tax base, this paper summarizes three characteristics of the digital economy: virtuality, scalability, and interconnectivity.

First, the virtuality of the digital economy distinguishes it from the traditional economy. The digital economy is fundamentally based on economic activities conducted

within a virtual network. Virtuality and physicality are two corresponding concepts, representing entities that are detached from observable reality, making them difficult to manifest and quantify. Economic activities occurring in the digital world are closely related to our real society while being detached from it, relying on technology and algorithms. This type of economic activity, which is challenging to accurately identify and track, poses significant difficulties for tax recognition.

While the apparent cost of taxation may seem to decrease, it may be increasing. This is because tax authorities need to significantly enhance their understanding of digital technologies. The structural design and business setup of the digital industry are relatively straightforward compared to the challenges of reverse tracing and regulation. The inherent characteristics of the digital economy allow for unlimited scalability across time and space, and breaking through these temporal and spatial limitations means lacking a reliable basis for identification, thereby increasing the difficulty of regulating and taxing digital economic activities.

Secondly, the scale of the digital economy has dramatically increased. By breaking free from the constraints of physical entities, digital networks can facilitate multidimensional and multi-interface collaborative creation through protocol structures. The benefits derived from this process far exceed its inherent investments, exacerbating the aggregation of knowledge to form high-density information crystallizations as carriers for economic interaction. This means that the scale of the digital economy can be exponentially larger than that of the physical economy. From this perspective, the concept of economies of scale is redefined.

In traditional economics, economies of scale are primarily achieved through the expansion of total output, which increases both the area and angle of economic efficiency. However, in the context of the digital economy, economies of scale also encompass the reorganization of intrinsic elements and the construction of diverse structural layers, such as networked, tree-like, and nonlinear digital structures. The visible external manifestation of these structural differences includes the diversification of participating entities, the mutual penetration of various industries, and the deep integration across different fields. This complexity and diversity provide greater possibilities for liberating and developing productive forces, serving as a breakthrough in advancing economic operations.

Thirdly, the interconnectivity of the digital economy strengthens the aforementioned two characteristics. Interconnectivity is a benefit of the Internet age, providing essential technical support and a platform for showcasing the first two characteristics of the digital economy. This interconnectivity deepens the collaborative potential among various sectors. For production factors within different economic components, digital economic tools can bridge their latent connections, overcoming the natural constraints and objective distances imposed by traditional economics, such as geographical limitations and endowment disparities.

Based on these three characteristics of the digital economy, the current fiscal tax system shows a low adaptability to the digital economy, leading to growing concerns among scholars regarding the erosion of the tax base.

3 Analysis of the Impact of the Digital Economy on Tax Elements

According to the three fundamental elements of taxation—taxpayers, tax objects, and tax rates—when examined through the lens of virtuality, scalability, and interconnectivity of the digital economy, several issues arise the difficulty in defining the scope of the tax base, the impact on the existing tax base, and the need to explore new sources of the tax base.

From the perspective of virtuality, the identification and recognition of taxpayers within the digital economy is quite challenging. Especially after transcending traditional production methods, there have been significant changes in both the supply and demand sides of the digital economy.

In this era, the identities of buyers and sellers may not be clear-cut; there can be instances of role reversals or even co-positioning between them. Consequently, identifying taxpayers becomes increasingly complex, making it difficult to discern whether the taxpayer is a business or an individual.

Any type of virtual product has almost no actual restrictions on the identity of the trading parties, but taxpayer identity recognition is the foundation of taxation, leading to an unclear tax base.

Unclear Taxpayer Entities: The digital economy relies not only on the internet for traditional online transactions but also has the potential for a wide range of uses based on virtually constructed identities for trade under digital technologies. It can engage in transactions with both individuals and enterprises. However, our current tax system is primarily based on identifying taxpayer identities to define corresponding taxable entities and tax rates, which may not apply to actual trade in the future virtual universe. For instance, the methods of taxation, types of taxes, and tax rates applied to individuals as taxable entities differ significantly from those applied to businesses. In the context of the digital economy, interim tax methods may require substantial adjustments concerning fairness and efficiency. Identifying reasonable and lawful taxpayer entities and taxable objects in the digital economy requires the government to gain a more timely, comprehensive, in-depth, and professional understanding of basic digital operations. Such understanding is essential to counter the motivations for tax evasion by individuals and enterprises, indirectly increasing the government's tax collection costs.

Unclear Taxable Objects: In the era of the digital economy, the complexity of the types and methods of business operations has increased. As discussed earlier, the digital economy has redefined and rewritten theoretical scale effects, making it evident that defining corresponding taxable objects will also become more challenging. In this era, enterprises have transcended traditional trading methods based on goods exchange, and the provision of digital services tends towards customization and diversification. A noticeable phenomenon is that many internet companies provide free yet fully functional services to hundreds of millions of users, and their financial statements contradict their market strategies. The way enterprises generate revenue has changed; they are essentially profiting through economies of scale—first expanding their networks significantly before reaping the rewards. This market strategy often spans across tax years, and an enterprise may show losses in its long-term profit statements, while in reality, the taxes paid during each tax year do not match their overall gains across a longer tax period. This discrepancy creates a conflict of interest for our country's overall fiscal revenue. The scale economy resulting from its virtual nature makes it difficult to trace and define, and relying solely on enterprise financial conditions for taxation is evidently unsustainable, potentially leading to violations of tax fairness and efficiency.

Thus, both the business methods of enterprises and the production modes in the digital economy that transcend the limitations of time and transaction space are difficult to identify and verify.

Difficulty in Defining Tax Rates: Tax rates are essentially a pricing issue in the fiscal sense, and determining tax rates cannot be separated from pricing the taxable objects themselves, i.e., the pricing of digital products. Existing digital service taxes are far from meeting the taxation conditions required in the current digital economy era. Objectively, digital pricing can be extremely challenging, which may lead to potential erosion of the government’s tax base.

For many digital enterprises, their operations are primarily light-asset investments, as these enterprises typically have no substantial fixed assets and lack collateral that can be traced through financial systems. Therefore, this light-asset operational model tests the government's ability to assess the business behavior and pricing of digital products in firms whose core production methods center

around data factors. As the complexity of input production factors increases, the pricing of such products also becomes more virtual.

From the perspective of Marxist economic theory, the socially necessary labor time may not actually be increasing; through digital technology, the average necessary labor time in society becomes harder to estimate. This difficulty arises because the quality of labor and skill proficiency significantly affect labor time focused on intellectual work, leading to substantial individual variances that decrease the assessment ability of digital product prices. The non-replicability of digital products and the increased technological barriers further widen this gap. Additionally, due to core technology limitations, the discretion in pricing digital products is difficult for the government to fully grasp. These combined factors correspondingly elevate the difficulty and complexity of tax pricing.

Furthermore, due to the first two factors, the taxpayer and the tax object are unclear, making it difficult to determine the corresponding tax rates. This also complicates how to regulate taxation on corporate activities in the digital economy, which requires further examination and analysis by experts and scholars.

In summary, the erosion of the government tax base in the context of the digital economy can be considered quite severe. Compared to the traditional economy, the emergence of the digital economy has undoubtedly led to an exponential increase in the overall economic volume and scale that is difficult to quantify. However, in contrast, the digital economy also has a counteracting effect on the traditional economy, exerting a certain degree of squeeze and pressure on traditional industries, as well as engaging in resource plundering. Meanwhile, our primary tax base still largely comes from the taxation of traditional economic activities. Therefore, despite the expansion in total scale, the corresponding tax base has not seen a sufficient increase, while the traditional tax base has been somewhat squeezed. In order to protect traditional industries, the government also needs to provide more support and subsidies, which indirectly contributes to the erosion of the tax base. The blurring of the boundaries of the tax base further complicates the government's ability to identify, collect, and regulate taxes, significantly increasing the difficulty and cost of tax collection, thereby resulting in the erosion of the government tax base.

Cross-border Activities Further Intensify Tax Base Erosion

Based on the identification of the basic characteristics of digital economic activities and an analysis of the three major tax elements, it can be observed that digital economic activities have a certain impact and erosion on the government’s tax base. Moreover, global digital industry activities and cross-border trade exacerbate this phenomenon. Digital enterprises typically exhibit “light asset” characteristics; their services extend globally. The virtual online digital services they provide can reach thousands of households, and once they capture market share, user loyalty tends to be high. Cross-border digital businesses are not restricted by the geographical boundaries of the countries in which they operate and have strong universality, making global promotion feasible. Most digital enterprises usually register in ways that significantly minimize their tax burdens, often establishing subsidiaries or branches in “tax havens” or jurisdictions with low or no tax rates. Through business segmentation and profit shifting, they can achieve reasonable tax avoidance or illegal tax evasion.

It can be said that multinational digital enterprises are a major area of tax avoidance on a global scale. For example, with corporate income tax, digital enterprises typically establish subsidiaries in countries with low or no tax rates to shift the actual location of most of their profitable business to that country. They then transfer funds to their company registration location through methods such as dividend distribution or reinvestment. In this manner, enterprises can reap over 90% of their global digital business at an

extremely low tax rate while paying relatively low taxes at their actual registration locations.

On one hand, they can freely transfer their corporate operations and profits worldwide. On the other hand, governments of various countries provide varying degrees of financial support or subsidies to encourage the development of the digital economy and the establishment of technology companies domestically. The differences in tax systems among countries offer significant tax incentives and opportunities for tax avoidance for multinational internet companies or digital enterprises. According to the OECD's 2021 BEPS report, the tax base erosion and profit-shifting behaviors of multinational companies could result in financial losses for governments ranging from $10 billion to $240 billion.

As achieving a unified international tax system in the short term is challenging, competition and conflicts among countries in the field of the digital economy exacerbate the differences in fiscal systems, providing many opportunities for tax avoidance for digital enterprises while increasing the regulatory difficulties for governments worldwide.

4 Impact Analysis

Loss of Fiscal Benefits

Regarding the issue of fiscal benefit loss in the context of the digital economy, the loss of fiscal benefits due to tax base erosion is manifested in a significant decline in government fiscal revenue sources. This can primarily be divided into the following three aspects:

(1) For the diverse digital economy industries and products that are difficult to qualify, companies face direct motivations and conditions for tax avoidance. For example, during cloud computing operations, digital enterprises create value and engage in business activities; however, due to the nature of cloud computing, these activities are difficult for local tax authorities to detect and identify. Therefore, the actual taxation is often simply classified based on income into the enterprise's operating profits or special use fees. In the process of business allocation, digital companies can adjust their profits in various ways, which leads to actual corporate income not accurately reflecting the established production or business activities of digital enterprises. As a result, this portion of tax revenue is effectively not collected. For instance, when a company provides 3D printing services, the actual design process and the location of printing may be different from the location of business operations. Thus, across the four locations of design, printing, circulation, and usage, companies have sufficient motivation and options to choose the most tax-efficient methods, which further erodes the tax base of different regions and harms the actual fiscal interests of other service-providing areas. Similarly, when providing product services in the authorized location, businesses can also set the place of occurrence or purchasing registration in a way that benefits them in terms of tax credits or tax incentives. Therefore, it can be seen that digital economic activities pose a challenge to the defense of traditional tax benefits and the collection of new fiscal sources.

Due to the difficulties faced by established tax systems in comprehensively and effectively regulating digital economic activities, especially the segmentation of subsidiary company types, businesses can find sufficient opportunities for tax avoidance, resulting in significant and large-scale fiscal losses.

(2) Companies can harm fiscal revenue sources by concealing income or inflating expenses. As mentioned earlier, there is considerable discretion in the pricing of digital products under the digital economic activities of companies. The differences in tax systems and fiscal support subsidies among countries, as well as the geographical advantages, provide companies with numerous tax incentives and very low tax avoidance costs.

By adjusting the actual production and business operations of companies in different markets, such as in interest transfers, cost allocations, profit distributions, and the use and approval of special funds, many issues

related to payments between affiliated enterprises arise. These companies can lower their actual profits in their home country by inflating payment amounts, achieving tax avoidance or income concealment. Moreover, there is currently a lack of a unified market standard for the actual pricing of digital intellectual property and for the rental, sale, and operation of usage rights. The discretion in pricing mainly lies with the companies involved in related transactions, creating favorable conditions for tax avoidance among these enterprises. Through such mixed business-related transactions, they can minimize tax burdens, allowing purpose-driven companies to maximize deductible tax expenses. Additionally, throughout the entire circulation process, intangible asset ownership can freely transfer between companies via the establishment of special purpose vehicles (SPVs) or intermediate holding companies, with minimal associated risks, which can even be isolated by the special purpose vehicle companies. Consequently, multinational digital enterprises can establish holding companies in low-tax jurisdictions while generating substantial profits in economically vibrant and developed regions.

(3) The actual tax amounts paid by enterprises and the effective tax rates may be artificially manipulated and smoothed out, leading to a decline in traditional tiered tax categories. Taking the value-added tax (VAT) rate of customs duties in our country as an example, different tax rates are set for various business activities. For instance, the VAT rate for e-commerce was established at 17% in Document No. 18 of the Ministry of Finance in 2016, while the VAT rate for life services is only 6%, and the VAT rate for modern services is also just 6%. Furthermore, as 3D printing technology matures, initially, 3D-printed products were calculated based on a VAT rate of 17%, but when calculated at the 6% rate applicable to electronic services, companies can gain greater tax avoidance benefits.

Although relevant policy documents strictly categorize the nature of such business activities and services, enterprises providing e-commerce in the digital economy era can simultaneously offer modern services and life services, with the specific forms of modern services and life services potentially unfolding as e-commerce or digital consulting. This creates a tax reporting discrepancy of 9% between 6% and 17% during the value-added tax reporting process for business activities. This tax rate difference significantly increases the likelihood of companies artificially manipulating tax processes through their own production and operational activities, making it difficult to achieve the intended tiered tax rates and segmented tax objectives. This is also the root of the current controversies and market discrepancies in tax issues within the digital economy, as the boundaries of relevant tax policies are unclear and outdated, failing to meet the actual tax collection needs of the increasingly developed and growing digital business market. Consequently, businesses can achieve substantial tax avoidance at very low costs, significantly eroding the fiscal revenue base in our country.

5 Horizontal Fiscal Imbalance

The digital economy will further exacerbate the horizontal fiscal imbalance. The horizontal imbalance in fiscal revenue is associated with the method of tax collection, and its determining factor is the distribution system of the tax base. For example, in the case of corporate income tax, tax authorities distribute the net profit declared by companies based on their registered locations and according to the actual place of transaction based on consumption amounts. This can create significant disparities in tax revenue among different provinces.

The horizontal imbalance in fiscal capacity can be measured from the perspectives of fiscal revenue and expenditure capabilities, as well as net fiscal benefits. Fiscal revenue and expenditure generally refer to the deficit, which is the difference between actual fiscal revenues and actual fiscal expenditures in a locality. Fiscal capacity, on the other hand, can be measured by the standard deficit between standardized fiscal revenues and expenditures. The imbalance of net fiscal benefits is reflected in the comparison

of the welfare derived from per capita fiscal expenditures versus the relative level of per capita contributions to fiscal benefits. In macro policy analysis, the imbalance in fiscal revenue and expenditure is often the focal point. Currently, the issue of horizontal fiscal imbalance in our country is primarily adjusted through a transfer payment system led by the central government. However, this government-driven approach, characterized by overdue deficits, makes it challenging to objectively and accurately assess the actual fiscal situation of localities.

Both developed and underdeveloped regions have motivations to obscure their actual fiscal capacities, resulting in subjective and objective disparities in horizontal equalization. Developed regions may have incentives to inflate their fiscal expenditure figures from an actual expenditure perspective, manipulating data to show a higher apparent deficit. This indicates that, in reality, they have "enough" money, but to maintain a relatively equitable horizontal balance, developed regions may have incentives to downplay their actual fiscal deficit levels by either increasing fiscal expenditures or reducing fiscal revenues on the books. Conversely, underdeveloped regions, seeking more fiscal support from the central government, may have incentives to underreport their fiscal revenues, further portraying themselves as resource-deficient areas, thus inflating their reported fiscal deficits. Under the current system, the principle of fiscal autonomy is compromised; the decentralization of fiscal power between the central and local governments leads to a gap between actual fiscal revenues and standardized fiscal autonomy. The average actual tax rates and levels of tax effort among local provinces vary significantly, resulting in an objective disparity in fiscal capacity between fiscal advantaged and disadvantaged regions.

From the perspective of the digital economy, the gap between fiscal advantage and disadvantaged regions will widen further. This is primarily due to geographical disparities caused by the location of business settlements, the occurrence of profits, or the actual place of business operations relative to the actual consumption of digital services. For example, while most internet companies are headquartered in first-tier cities, major e-commerce platforms like JD and Taobao receive digital business from consumers all across the country. One contribution of digital enterprises to local fiscal resources is the digital rent they pay, which is allocated according to their registered locations. As a result, the differences between the registered locations of these digital enterprises and their actual business operation locations exacerbate horizontal fiscal capacity disparities at the corporate income tax level.

In contrast, underdeveloped regions are likely to be at a significant disadvantage in the distribution of tax bases in the digital economy. Because underdeveloped regions have their own production factor needs, the consumption and product purchases from other parts of the country and developed regions do not differ drastically, particularly for essential goods necessary for production and living, such as energy or durable consumer goods. As consumption in these areas transitions from offline to primarily online, similar to the purchasing of other digital products and services, underdeveloped regions are more likely to become net exporters of production factors.

At the same time, underdeveloped regions are more likely to become net importers of goods and services, closely related to residents' social activities, such as being major suppliers of goods and digital services, which are predominantly provided by internet companies based in developed regions. Thus, the disparity in current account balances between regions in the context of the digital economy will further widen the horizontal fiscal capability imbalance among regions in our country. This is due to the concentration of digital enterprises' registered locations and actual business operations mainly in developed regions, leading underdeveloped regions to become net importers in current accounts.

Furthermore, from the perspective of the flow of human capital, underdeveloped regions typically experience a higher

net inflow of population, mainly consisting of young and middle-aged laborers from China who work in developed regions. This deepens the concentration of data, capital, and labor factors available to developed regions, making them the primary beneficiaries in the distribution of national business profits within the digital economy framework.

6 The Absence of Spatial Finance

In the context of the digital economy, the traditional fiscal boundaries formed by geographical spatial patterns have been breached. However, the relevant theories of spatial finance have not yet been fully developed. The absence of spatial finance theory, coupled with outdated taxation technology, has resulted in a lack of sufficient theoretical support for tax activities in practice, making them quite challenging. Spatial finance should be based on a multidimensional space that includes both physical and virtual spaces (Liu Shangxi, 2022), such as the fiscal aspects within the metaverse.

In addressing tax base erosion against the backdrop of the digital economy, the solution lies in exploring new dimensions of tax sources within a multidimensional space. From the perspective of national governance, the fiscal system should proactively align with the national governance framework, and the corresponding tax powers should similarly extend within their relevant operational spaces. Fiscal policies, which serve as the foundation and crucial support for national governance, essentially represent a multidimensional expansion of fiscal authority. This expansion can be categorized into vertical and horizontal dimensions. The vertical expansion in digital spaces can be illustrated by the data rights confirmation process, which involves organizing the relationships between data producers and data holders. This process is essentially a vertical extension of economic activities based on data elements, with each instance of data generation, processing, analysis, use, storage, and deletion serving as a taxation point, where the government can implement single or multiple taxation phases based on its revenue needs.

In contrast, from a horizontal perspective, the participants in taxation within the digital economy exhibit a virtual nature, and the interactions driven by digital technologies can be viewed as horizontal expansions of the tax base.

Moreover, the interconnectedness of the digital economy makes its intricate network structure particularly prominent, leading to a denser distribution of production factors and further intensifying trends of industrial clustering and integration. Nevertheless, the tax base expansion ideas organized by horizontal and vertical dimensions can still be upheld. To some extent, activities within the digital economy will continue to pursue the goal of optimizing efficiency. However, an excessive number of intersecting nodes may lead to an expanded scope of taxpayers and an increased frequency of taxation for digital taxable entities. To meet market demands, taxpayers in the digital economy, in the absence of physical circulation barriers, are increasingly motivated to achieve production optimization through computational and technological efficiency. They are also incentivized to actively enhance resource utilization efficiency in digital spaces to facilitate the efficient flow of factors, providing a competitive mechanism for the marketization process in a spatial economic context.

7 Policy Recommendations

To delineate and classify sources of income, it is essential to protect and diversify the tax base for digital operations. To further enhance supervision of the digital economy and related entities, as well as to clarify and protect the tax base and sources, it is crucial to accurately assess and address the actual operational conditions and income of enterprises. In 2001, the OECD Committee on Fiscal Affairs reported on the tax treaty issues concerning income from electronic commerce, clarifying the distinctions between actual business operations and the use of digital rights and data privileges within electronic commerce models. This report addressed relevant digital operations and cross-border payments. Although this framework may no longer align

with the pace and speed of digital economic development today, its fundamental ideas remain worthy of emulation and continuation. The core of this thinking is to strengthen the qualitative treatment of revenue and business operations of digital economy enterprises.

Digital income for enterprises should be introduced under existing controlled corporate rules while levying consumption tax on digital services is generally more cost-effective than imposing income tax.

Additionally, in the context of current big data analysis, relevant businesses must recognize data as a factor of production. Companies with substantial data storage and processing capabilities should have their resource tax treatment accordingly assessed. Without stifling innovation in digital technology firms, it is possible to offer certain tax credits for research and development in existing companies, provided that this business does not serve as a means for tax avoidance through inter-company transfers.

In the realm of the digital economy, tax base protection should be defined based on the independence of tax subjects and transactional operations. The identification and delineation of independent tax subjects, along with the independence in scope definition, can ensure that tax activities occur at the smallest possible units, facilitating tax authorities in determining taxpayers and the taxation of revenues generated from corresponding operations.

For instance, there is a need for a new round of definitions regarding data processing and storage equipment, especially for companies with large-scale data storage capabilities. The classification of such hardware should be updated, treating it not as fixed assets but rather as leased resources, leaning towards categorizing it as a tax object for the data services provided by the company. Moreover, through corporate audits and verifications, it is also possible to indirectly mitigate tax avoidance behaviors among funding companies related to digital enterprises, thereby reducing issues related to tax base erosion and profit shifting in the digital economy to a certain extent.

Establish permanent institutions to define and manage the tax base in response to the complex and changing taxation environment. Given the rapid development and high degree of virtualization of the digital economy, there is an urgent need for the tax system to establish a comprehensive digital taxation framework based on digital technology and networks for all taxable activities that are detached from physical interactions. Based on past experiences, the establishment and improvement of tax systems often involve a repetitive process when new phenomena emerge. According to international experience, deploying and increasing the number of permanent or auxiliary institutions to regulate taxable activities and potential transactions can help anticipate unexpected and unprepared potential business scenarios to some extent. At the same time, it is foreseeable that the attitude of digital enterprises toward cooperation may be affected by the addition of these institutions, potentially hindering their business operations and exposing core business risks, which necessitates the inclusion of appropriate safety clauses in the institutional framework.

Taking Google's search engine business as an example, Google generates revenue by setting advertising fees on its search engine. Whether providing information retrieval services or displaying ads based on page views, these activities can be accomplished without actual offline interactions. Consequently, for Google employees, the number of clients they need to engage with in person is extremely low, yet this generates substantial corporate revenue. This revenue is not derived from direct promotion or sales, and there is no traditional sales process involved. At that time, the UK tax authorities believed that Google's revenue generation method had already created sufficient profit and value for the company, even without observable physical transactions, and therefore deemed it necessary to tax Google's relevant business activities. This taxation premise is actually based on the confirmation of existing business activities through the observation of permanent institutions. Therefore, tax authorities need appropriate technological means and auxiliary judgment criteria for

observing and regulating digital economic activities.

The differentiation of fiscal locational potential in the context of the digital economy can largely adjust the distribution system of the tax base and tax sources. For example, optimizing the existing income tax system with the registration location as the main distribution rule may not be suitable for digital service businesses that are detached from physical entities. Consequently, further indirect distribution can be adopted based on the place of production or the actual consumption location of the served parties, although this distribution method may still encounter challenges in clearly defining the tax sources. Additionally, there is still a phenomenon of resource competition for factors being siphoned from developed regions to underdeveloped regions, which necessitates further delineation of territorial income and self-owned income on this basis, testing the wisdom of top-level design and decentralized systems.

In fact, the phenomenon of horizontal fiscal imbalance has existed for a long time. If inter-regional fiscal resource redistribution is conducted solely through transfer payments, it may be difficult to achieve fairness in income sharing for underdeveloped regions based on initial distribution. The effects and efficiency of secondary and tertiary distribution of fiscal resources require further consideration and validation in practice. This phenomenon is also present in the international tax system regarding the sharing and distribution principles of tax benefits among different countries. For instance, the core issue that the BEPS initiative aims to address is the horizontal inequality among various economies in the international tax realm, which holds certain reference significance.

Actively integrating into the international tax system and expanding the tax segmentation in the global industrial and value chains as much as possible is essential. The Internet era has transformed the world into a global village, and the cross-temporal and spatial characteristics of the digital economy reinforce this fact. Therefore, expanding within the international industrial chain to shape the global value chain is crucial. The competition of the digital economy seems to have exhibited its unique cross-regional and cross-industry characteristics since its inception, involving the differences in national tax types. It is imperative to actively engage in a globalized atmosphere in digital tax operations and deepen understanding and knowledge of the tax systems of various countries. Thus, the OECD's BEPS initiative presents both opportunities and challenges for China. Specifically, Chinese enterprises need to actively utilize the concepts of technical intangible assets and marketing intangible assets for profit-making. From the perspective of tax collection and regulation, to maintain a stable tax base and continuous tax sources, it is even more necessary for the government to identify unconventional profit-driving factors. For example, by creating technical classifications for intangible assets and pricing marketing activities based on user behavior data, it is possible to quantify the value-creation process within user interactions. This allows for separate identification of the value derived from the user versus the platform enterprise or the digital services provided by the digital economy, making separate collection and regulation more feasible.

Furthermore, it is important to offer globally comparative advantageous tax pricing and attract various enterprises to actively engage in algorithm services to gain a competitive edge in international competition.

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and self-owned income on this basis, testing the wisdom of top-level design and decentralized systems.

The phenomenon of horizontal fiscal imbalance has existed for a long time. If inter-regional fiscal resource redistribution is conducted solely through transfer payments, it may be difficult to achieve fairness in income sharing for underdeveloped regions based on initial distribution. The effects and efficiency of secondary and tertiary distribution of fiscal resources require further consideration and validation in practice. This phenomenon is also present in the international tax system regarding the sharing and distribution principles of tax benefits among different countries. For instance, the core issue that the BEPS initiative aims to address is the horizontal inequality among various economies in the international tax realm, which holds certain reference significance.

Actively integrating into the international tax system and expanding the tax segmentation in the global industrial and value chains as much as possible is essential. The Internet era has transformed the world into a global village, and the cross-temporal and spatial characteristics of the digital economy reinforce this fact. Therefore, expanding within the international industrial chain to shape the global value chain is crucial. The competition of the digital economy seems to have exhibited its unique cross-regional and cross-industry characteristics since its inception, involving the differences in national tax types. It is imperative to actively engage in a globalized atmosphere in digital tax operations and deepen understanding and knowledge of the tax systems of various countries. Thus, the OECD's BEPS initiative presents both opportunities and challenges for China. Specifically, Chinese enterprises need to actively utilize the concepts of technical intangible assets and marketing intangible assets for profit-making. From the perspective of tax collection and regulation, to maintain a stable tax base and continuous tax sources, it is even more necessary for the government to identify unconventional profit-driving factors. For example, by creating technical classifications for intangible assets and pricing marketing activities based on user behavior data, it is possible to quantify the value-creation process within user interactions. This allows for separate identification of the value derived from the user versus the platform enterprise or the digital services provided by the digital economy, making separate collection and regulation more feasible.

Furthermore, it is important to offer globally comparative advantageous tax pricing and attract various enterprises to actively engage in algorithm services to gain a competitive edge in international competition.

8 Conclusion

This paper explores the impact of rapid digital economic development, particularly how industrial transformations and changes in economic behavior driven by digital technologies have led to the general presence of taxable activities among participants in the digital economy. The lack of effective tax administration and the increased difficulty of regulation means that relying solely on a single type of digital services tax with a relatively simple measurement method is inadequate to match the actual development stage of the digital economy. This has resulted in the erosion of the fiscal tax base and highlights the need to secure potential rich tax sources.

Based on the analysis of these issues, this paper examines the specific phenomena of how the digital economy erodes the fiscal tax base, summarizing the basic characteristics of the virtuality, scalability, and interconnectedness of digital economic activities. It concludes that the current fiscal tax system has a low adaptability to the digital economy era. Furthermore, when identifying tax elements, challenges such as unclear taxpayer subjects, ambiguous taxable objects, and difficulties in defining tax rates emerge, leading to multifaceted erosion of the tax base. The paper also illustrates how globalization exacerbates the contradictions of tax base erosion in the context of cross-border activities.

Thus, the direct motives and conditions for corporate tax avoidance may lead to the manipulation of actual tax payments and rates, potentially harming fiscal revenue

sources through means such as income concealment or inflated expenses. The diverse nature of digital economic industries and products complicates qualitative assessments, making established tax systems inadequate for comprehensive and effective regulation of digital economic activities, resulting in significant fiscal losses. Additionally, the digital economy can exacerbate fiscal imbalances across regions. Both developed and underdeveloped areas may have incentives to obscure their actual fiscal capabilities, causing subjective and objective disparities in horizontal equalization. From the perspective of the digital economy, the gap between advantageous and disadvantaged fiscal locations is likely to widen further.

Finally, this paper suggests defining and delineating income sources to protect and expand the tax base for digital businesses. By using the independence of taxpayers and transactions as a basis for definition, it identifies independent taxpayers and advocates for the establishment of permanent institutions to clarify tax base definitions. It also proposes adjusting the distribution system of tax bases and sources to coordinate the differentiation of fiscal location potential, actively integrating into the international tax system, and expanding tax segments within global industry and value chains as policy recommendations.

References

Feng Shoudong, Wang Aiqing. A Review of Domestic Literature on International Tax Reform in the Digital Economy [J]. International Taxation, 2023(01): 31-38. DOI: 10.19376/j.cnki.cn10-1142/f.2023.01.003.

Zhu Qing, Bai Xueyuan. Latest Progress of the OECD "Two-Pillar" International Tax Reform Plan [J]. International Taxation, 2023(01): 26-30. DOI: 10.19376/j.cnki.cn10-1142/f.2023.01.002.

Liu Shangxi. Theoretical Reflections on Spatial Finance [J]. Financial Science, 2022(12): 5-9. DOI: 10.19477/j.cnki.10-1368/f.2022.12.001.

Liu Hongsong, Cheng Haiye. Analysis of the Game of Digital Services Tax Rules between the U.S. and Europe [J]. European Studies, 2022, 40(03): 78-101 + 7.

Guo Changsheng. International Practices and China's Approach to Addressing Direct Tax Challenges in the Digital Economy [J]. Legal Science (Journal of Northwest University of Political Science and Law), 2022, 40(04): 51-67. DOI: 10.16290/j.cnki.1674-5205.2022.04.012.

Kong Hanxiao. Comparative Study of International Solutions to Tax Challenges in the Digital Economy [J]. Financial Science, 2022(05): 134-145. DOI: 10.19477/j.cnki.10-1368/f.2022.05.010.

Li Hongxia, Zhang Yang. The Impact of the Digital Economy on Tax Reform and Policy Recommendations [J]. Tax Research, 2022(05): 68-72. DOI: 10.19376/j.cnki.cn11-1011/f.2022.05.011.

Cao Mingxing. International Tax Reform in the Digital Economy: Theoretical Exploration, Plan Evaluation, and China's Choice [J]. Journal of Finance and Trade Economics, 2022, 43(01): 44-58. DOI: 10.19795/j.cnki.cn11-1166/f.20220113.005.

Wang Yongjun, Wang Ranran. Tax Governance in the Digital Economy: Jurisdiction Rules, Fiscal Independence, and Equalization Perspectives [J]. Tax Research, 2022(01): 49-58. DOI: 10.19376/j.cnki.cn11-1011/f.2022.01.012.

Huo Jun. Digitalization of Cross-Border Economy and Changes in International Tax Rules [J]. Tax Research, 2021(08): 77-83. DOI: 10.19376/j.cnki.cn11-1011/f.2021.08.013.

Cao Mingxing. Commentary on the OECD Digital Tax Reform Plan: Theoretical Explanation, Equity Balance, and Rule Construction [J]. Tax Research, 2021(06): 77-84. DOI: 10.19376/j.cnki.cn11-1011/f.2021.06.012.