

Case Study on the Natural Systems Project

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Abstract: In line with the trend of the digital transformation of tax administrations, the State Taxation Administration (STA) of China creatively launched "the Natural Systems Project". Based on the life cycle of tax-related data from transaction, invoicing, tax-calculation to declaration and taking advantage of e-invoicing reform, this project, centered on serving taxpayers, successfully realized tax rules embedded into the enterprises' own systems and the direct connection of invoice data between tax administrations and enterprises. It provides a new practical example of innovation in tax service and supervision in accordance with the trend of integrating business, finance and taxation in the digital era.

Keywords: Natural Systems project, embedded tax rules, direct data connection, innovation in tax service and supervision models

I .Problem Statement

In China, invoices are under government supervision. In the past, taxpayers were obligated to use tax-control devices provided by tax authorities to issue paper invoices by logging into the invoicing software and manually filling in transaction information. Both tax-control devices and paper invoices were a financial burden on taxpayers. In some cases, taxpayers had to purchase a third-party service which added to their costs. In addition, due to the problems of easy separation between individuals, enterprises and invoices, as well as incomplete and even distorted information, the pressure to prevent and control tax risks such as fraudulent invoicing is on the increase with the development of economic globalization.

With the digitalization of the economy and society, the invoice retains its essence as the evidence of commercial transactions. Increasingly, more taxpayers hope to integrate the invoicing process with their own business operation and financial management processes, achieving automatic and free invoicing and delivery. How to meet the needs of taxpayers for automated invoicing as well as implement effective tax supervision has become a major challenge for China's tax authorities.

II . Case analysis

1.The concept and vision of seamless tax administration

In December 2020, the Organization for Economic Cooperation and Development (OECD) released *Tax Administration 3.0: The Digital Transformation of Tax Administration* (hereinafter referred to as Tax Administration 3.0) at the 13th Forum on Tax Administration (FTA), which innovatively proposed to embed tax rules (tax administration processes) into

taxpayers' natural systems as a new model of digital transformation of tax administration. Quoting from Tax Administration 3.0, "this will allow the automation and 'upstreaming' of many aspects of tax administration, making tax administration more seamless and frictionless over time and bringing potentially significant reductions in administrative burdens." In the landscape of global digitalization, tax authorities of some countries have made explorations in this area. As far as we understand, no country has yet established a seamless tax administration model that can fully meet the vision described in Tax Administration 3.0.

2.Challenges for China's Digital Transformation of Tax Administration

The reform of e-invoicing is a breakthrough in the digital transformation of China's tax administration, and seamless tax administration points out the way for the STA to solve the tax supervision problem of invoices. China is faced with three major challenges in implementing seamless tax administration: Firstly, the concept of "Seamless Tax Administration" is at early development stage, hence has not yet formed a consistent engineering standard and specification in terms of data and technology. Secondly, the majority of market entities in China are micro, small and medium-sized enterprises, which lack the funds and capacity to independently build and transform their own information systems for embedded tax rules. Thirdly, as digital China is still in progress, the infrastructure and supervision system compatible with the digital economy are not fully established, which may bring about challenges for seamless tax administration.

3. Proposal of the Natural Systems Project

In 2021, the Natural Systems Project was proposed by the STA as an innovation based on the e-invoicing reform and direct connection between tax authorities and enterprises. In line with the concept of embedding tax rules within taxpayers' natural systems and adopting a taxpayer-centric approach, the STA set up a pilot project to explore the practice and effects of seamless tax administration. Aiming at creating a tax-related data ecosystem platform, achieving tax rules embedded and direct data connection, as well as promoting the integration of business, finance, and taxation, it can provide taxpayers, external agencies, and third parties with one-step services of secured access and issuing e-invoices functions, which can help enhance tax administration effectiveness and efficiency as well as promote the development of the digital economy.

4.Development Process of Natural Systems Platform

The Natural Systems Platform can be divided into three development phases.

Phase I: the pilot verification phase of direct connection technology. STA distributed Software Development Kits (SDK) which enabled enterprises to install plugins or clients containing tax rules into their natural systems, successfully achieving a direct connection between the systems of the enterprises and the tax authorities. However, this approach is unsustainable due to the large amount of support work required from STA and the SDK developer.

Phase II: verification phase of the openness of issuing e-invoices functions. To replace the SDK approach, we innovatively developed the "Digital Business Function Document",

Добавлено примечание (IFM1): Not clear what is meant here.
My guess: client specific tax rules

integrating tax rules, data standards, technical specifications, data service interfaces and automatic testing sandboxes, and shared this with taxpayers for free. In this approach, taxpayers can upgrade their natural systems by themselves and obtain adequate functions to issue e-invoices. Therefore, a digital capability and function openness platform is established. **Phase III:** the phase of promotion, which is currently being implemented. The main objective of this phase is to innovate embedded risk prevention and control mechanisms which can achieve closed-loop management of the entire process by enriching and improving capabilities, regulating enterprises' access, enhancing platform performance, strengthening the security of direct connection and enhancing capacity building on tax supervision and rules.

5.Strategy of implementing the Natural Systems Project

(1) Openness of the tax rules. According to the life cycle of tax-related data, the general sequence for opening tax rules embedded into natural systems is: invoicing rules→tax calculation rules→tax declaration rules. Currently, the opening of invoicing rules has been successfully completed, while efforts are being made to promote the opening of tax calculation and tax declaration rules.

(2) Categorized modes of access. There are three types of modes: self-use, joint-use and third-party use. The self-use mode allows taxpayers to issue invoices according to their own operational needs, which is the only applicable mode at present. The joint-use mode supports taxpayers (e.g. digital economy platforms) to issue invoices for other related enterprises as well as for their own operational needs. The third-party use mode enables traditional third-party platform enterprises without self-operated businesses to provide invoice issuing services to external parties. The joint-use and third-party use modes will be available during the promotion phase.

(3) Free choices for taxpayers. Enterprises that are capable to develop their own information systems (business systems, financial systems, etc), can choose the appropriate mode to get access to the Natural Systems. The SMEs without the ability to build their own information systems can issue invoices through the e-invoice service platform, provided free of charge by the STA. In the future, they will be able to issue invoices through joint-use or third-party platforms introduced by other enterprises.

(4) Targeted supervision. The STA has adopted a new supervision mechanism of “institutional supervision first, embedded supervision as the mainstay, and post-event supervision as the supplement”. Institutional supervision is focused on controlling taxpayers adopting the self-use mode for access, while embedded supervision is focused on taxpayers adopting joint-use and third-party modes for access, as well as the taxpayers served by them. Post-event supervision is based on the integrated risk prevention and control mechanism of the "The Golden Tax System Phase IV" to systematically prevent tax risks.

6.Key innovations

Building on the innovative application of API¹ in the field of tax administration, the Natural Systems Project truly returns the "fulfillment" of tax obligations to taxpayers, driving the digital transformation of enterprises, the tax administration, public service and even the economy and society.

Firstly, the openness of tax rules can enhance the transparency of tax policy implementation. With Natural Systems, the STA has changed from providing invoicing software and tax-control devices to taxpayers to opening up the digital standardized invoicing business rules to be embedded by taxpayers into their own systems. It has completed the transformation of outputting and regulating rules instead of products, making the tax rules on invoicing more transparent for taxpayers, and significantly reducing the disputes between taxpayers and the STA due to different understanding of the rules.

Secondly, the embedded rules can realize the automation of enterprise invoicing. Enterprises embed the invoicing rules into the links of their business systems e.g. order generation, merchandise warehousing and capital settlement, promoting the integration of economic transactions, invoicing, accounting and tax reporting systems on the enterprise side, realizing automated invoicing and partially automated tax calculation, significantly reducing the systemic transaction costs and tax compliance risks of enterprises, and accelerating the digital transformation of enterprises.

Thirdly, invoicing and tax calculation rules are simplified and integrated. With Natural Systems, the rules of invoicing (especially for withdrawn transactions) are further streamlined and integrated with the rules of tax calculation (mainly for VAT), realizing simultaneous completion of transactions, tax calculation and invoicing, which can lay a solid foundation for a fully digitalized tax declaration.

III. Evaluation and Results

Adopting the step-by-step approach at the pilot stage, the STA has synergized the Natural Systems Project with the fully digitalized electronic invoices to enhance the effect of the reform. As of August 2023, 354 enterprises out of 72 groups have issued a total amount of 54.19 million invoices through the Natural Systems, with a cumulative amount of 250.7 billion yuan. Additionally, 10 enterprises have used the Natural Systems to deduct 33,054 special VAT invoices and 158 special customs bills of VAT payment on imported goods. The initial results of Natural Systems Project are as follows:

Firstly, some enterprises have achieved customized e-invoicing design and development, which can testify to the business rationality and technical feasibility of the Natural Systems. Taking the e-commerce platform Vipshop for example, it procures goods from over 30,000 suppliers and sells products to consumers nationwide, generating as many as 1 billion

¹ An API, or application programming interface, is a set of defined rules that enable different applications to communicate with each other. It acts as an intermediary layer that processes data transfers between systems, letting companies open their application data and functionality to external third-party developers, business partners, and internal departments within their companies.

invoices annually. The Natural Systems application successfully established the information flow connection between the company's financial system and the Golden Tax Phase VI system. In this approach, the invoice information can be directly sent to the financial system of the invoice recipient and be automatically delivered for a tax deduction, even without paper invoices. It is estimated that Vipshop will save over 8 million yuan in direct costs annually, reducing the compliance burden on taxpayers and achieving convenient financial management.

Secondly, the quality of tax data in the tax administration system has been improved. Using the Natural Systems, the complete electronic data borne on an invoice is accessible to taxpayers (buyers and sellers) and tax authorities with less manual intervention, which improves the accuracy of classified invoice elements. Taking advantage of sophisticated invoice elements, we can further advance operations of tax-related matters and support the construction of a new intelligent and efficient digital tax administration system.

Thirdly, the in-depth integration of "business, finance and taxation" among taxpayers can support the feasibility of the "embedded compliance" tax governance mode. By using the Natural Systems integrated with their own Enterprise Resource Planning (ERP) system, taxpayers can automatically convert their business data into e-invoice data according to the embedded tax rules, thereby achieving the objective of simultaneous completion of transactions, tax calculation and invoicing. In addition, the comprehensive and intelligent data collection and pooling of information borne on e-invoices can facilitate the statistical analysis and management by both tax authorities and enterprises, promoting proactive tax compliance of market entities.

IV. Limitations and Recommendations

The concept of digitalization to be further promoted. As a new digital management method, seamless tax administration requires tax authorities to design and open up digital business rules, involving a comprehensive transformation of tax administration methods. However, this concept is not solidly rooted, and tax supervision still has a strong path dependence on traditional approaches. More publicity and promotion efforts and innovative practices can help build new concepts into tax services and tax administration.

The application function to be further enriched. At present, Natural Systems has only conducted pilot projects in the field of e-invoicing, which is the starting point of tax supervision. To reach comprehensive digitalization and automation of tax declaration, we will gradually promote the digital transformation of tax calculation rules and declaration processes, achieving automatic data extraction, tax calculation, and pre-filing in the system.

The pilot scope to be further expanded. Due to the constraints of resources, the number of taxpayers joining the pilot project is currently limited. In the next stage, we will continue to improve system performance and support the promotion of Natural Systems nationwide.

Reference

OECD (2020), Tax Administration 3.0: The Digital Transformation of Tax Administration, OECD, Paris. <http://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/tax-administration-3-0-the-digital-transformation-of-tax-administration.htm>