

The Internal Logic and Implementation Paths of Industrial Structure Sophistication Empowering Tax Source Quality Improvement in Heilongjiang Province under the “4567” Modern Industrial System

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Abstract: Taking into account the practical situation of advancing "4567" modern industrial system in Heilongjiang Province, based on industrial upgrading theory and optimal taxation theory, sorting out the internal mechanisms through which industrial structure sophistication powers tax source quality improvement from expanding the scale of tax sources, consolidating the foundation of tax sources and optimizing the tax structure. Using the panel data of prefecture-level cities in Heilongjiang Province (from 2014 to 2024) we find that both the industrial structure sophistication index and the comprehensive tax source quality index rise steadily with each other, indicating a significant positive correlation between these two indices. The pulling effect of industrial upgrading on tax source quality improvement is more evident in places with well-developed industrial supporting facilities such as Harbin and Daqing, while because of the lagging transformation of resource-based and border cities, there were obvious differences in tax source quality among different regions. Through industrial upgrading, enriching the tax base, balancing the distribution of tax sources, reducing the risk of cyclical fluctuation of fiscal revenue can be achieved. We propose some implementation paths, namely closely following the "4567" industrial layout to expand tax sources, extending industrial chains to increase the value added of tax sources, building an industry-tax coordinated fiscal and taxation adaptation mechanism, relying on smart taxation to strengthen tax source governance, which provide references for cultivating high-quality tax sources relying on the modern industrial system for the old industrial base in Northeast China, enhance its local fiscal sustainability.

Keywords: “4567” modern industrial system; tax source quality; industrial structure sophistication; fiscal sustainability

1. Introduction

Outline of the 15th Five-year Plan put forward the general requirements of "deepening the reform of the fiscal and taxation systems", "enhance the fiscal sustainability", "improve the local tax system". It became a key proposition that industrial structure sophistication empowers tax source quality improvement for the transformation and upgrading of old industrial bases. To undertake all kinds of tasks (such as food security, energy security, ecological protection and equipment manufacturing), Heilongjiang Province has always been an important province in the old industrial base of Northeast China, its local fiscal expenditure has strong rigidity. Because of the effect of factors such as population outflow, relatively large proportion of traditional industries, and fluctuation of resource-based industries, the growth rate of fiscal revenue in some areas has decreased; the tax source foundation is not solid enough; there are pressures on improving fiscal self-sufficiency^[1]. Since 2022, Heilongjiang Province took the "4567" modern industrial system as an important lever for promotion of revitalization and development, systematically arranged around four new engines of economic development, five strategic emerging industries, six traditional advantageous industries, and seven modern service industries. The direction of industrial development has become clear, and the tax source cultivation has also obtained a new foundation. Tax source quality represents the size of the tax base, the stability of growth, the tax structure, regional distribution and risk level^[2]; tax revenue growth depends on expansion of economic activities, and high-quality tax sources require industry with strong

profitability, high value-added, and relatively standardized business practice. Traditional old industrial bases rely more on energy, raw materials, and heavy chemical industries to form tax revenue sources, which have a substantial scale at certain times, however because of the change of industrial cycles, price fluctuations, and resource and environmental constraints, it will easily affect the stability of taxes. Promoting industrial structure upgrade expands tax sources, consolidates the tax source foundation, optimizes the tax structure by cultivating new industries, transforming old industries, and developing the service sector.

Many discussions exist regarding problems such as industrial structure sophistication, tax revenue growth, and fiscal sustainability in existing studies whose results provide a theoretical basis for discussing the effect of industrial structure sophistication on improving tax source quality. The "4567" modern industrial system of Heilongjiang Province has characteristics of local industrial policy that is typical significant to transform old industrial bases. It provides targeted references for local governments optimizing industrial layout, improving fiscal and taxation policies, and strengthening tax source governance through exploring how it upgrades empower tax source quality improvement.

2. The Internal Logic of Industrial Structure Sophistication Empowering Tax Source Quality Improvement

Industrial structure sophistication is a yardstick to measure industrial structure sophistication promoting the upgrading of traditional advantageous industries and high value-added industries. It's urgent to determine if it can be carried out resulting in steady improvement on local tax source quality. We need to deconstruct the internal logic of industrial structure sophistication empowering tax source quality improvement (shown by Figure 1).

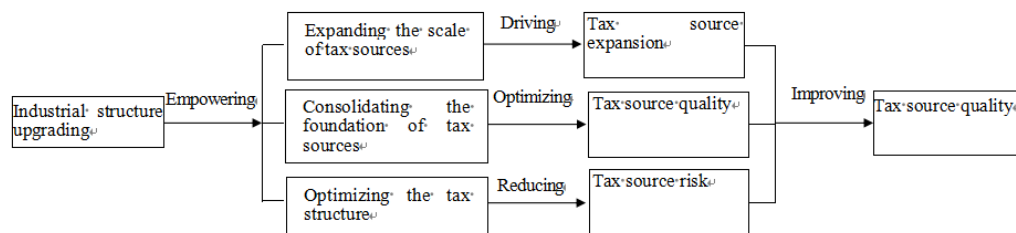


Figure 1 The Logical Mechanism of Industrial Structure Sophistication Empowering Tax Source Quality Improvement

2.1 Expanding the Scale of Tax Sources: Industrial Structure Sophistication Drives Tax Source Expansion

The upgrade of industrial structure generally goes along with improvements of industrial technological levels, improvement of resource allocation efficiency, increase of high value-added segments. With scaling up of economic activities, change occurs in corporate sales revenue, total profits, wage income and transaction frequency, laying foundation for growth of tax revenue. The traditional advantageous industries within "4567" modern industrial system improves contribution of existing tax sources with transformation and upgrading, emerging industries creates increment tax sources with rapid growth, modern service industries expands the boundary of the tax base through expansion of market activities together form a transmission chain for expanding the scale of tax sources. Focus on transforming traditional industry lies improving its quality and efficiency: products in areas like equipment manufacturing, petrochemicals, energy, and food becomes higher valued via digital production, green processes and deep processing; when corporate profit levels improve, so does the income tax base. Strategic emerging industries are at the growth stage that might need policy support during the early stage. When the industrial scale reaches a certain level, the number of enterprises, market transactions, and transformation of R&D achievements will all be new sources of tax payment. New engine industries such as the digital economy, creative design, and the ice and snow economy has clear service characteristics which can generate new types of businesses (such as the platform economy, cultural tourism consumption, design services, and data services), extend the scope of the tax base.

2.2 Consolidating the Foundation of Tax Sources: Industrial Structure Sophistication Optimizes Tax Source Quality

The quality of tax sources not only depends on the quantity but should have a balance between revenue sources, rationality of tax category structure, and stability of growth foundation. Tax source structure which used to be dominated by few resource-based industries has experienced fast revenue growth in economic boom periods while being vulnerable to big swings upon industry downturns. It changes tax sources from focusing on one industry to supported by multiple industries, from low value-added segments to high value-added segments, from extensive expansion to improving quality and efficiency^[5] "4567" modern industrial system covering traditional industries, emerging industries, and service industries promote the diversification of tax source structure development. Industries like high-tech manufacturing, advanced materials, and aerospace growing and expanding can elevate the tier of manufacturing tax sources; Fields like the digital economy and the bioeconomy growing can increase the proportion of knowledge-intensive tax sources; Industries like modern logistics, financial services, cultural tourism and health and wellness expanding can improve the support of tertiary industry tax sources. Direct tax base will expand together with increasing corporate profits, household income, and innovation returns. Foundation of tax sources will pay more attention to quality and efficiency and the stability of fiscal revenue will also be improved.

2.3 Optimizing the Tax Structure: Industrial Structure Sophistication Reduces Tax Source Risk

Industrial cyclical fluctuation, market price change, unstable business operations as well as lack of tax collection and administration information are the major factors causing tax source operation risks. If one industry has a relatively large proportion in a region, then fiscal revenue will be easily affected by the industry's prosperity; if tax sources are too scattered, it brings higher cost for tax collection and administration with greater risk of tax loss. The upgrading of industrial structure greatly reduces risks because of its multi-industry layout, industrial chain collaboration, industrial parks based development and digital governance. Optimization of tax structure allows mutual support among different revenue sources. Traditional industries have a certain scale basis providing stable tax sources; emerging industries grow quickly which can provide future increments; modern service industries are closely related to household consumption and production support, increasing the vitality of economic operations. Industrial cluster development concentrates tax sources enabling tax authorities to conduct classified management, professional services and risk identification. Enterprise data, transaction data, production data brought by digital transformation supports smart taxation, making tax source monitoring timely, risk early warning accurate and responding to fiscal revenue fluctuations easier in advance.

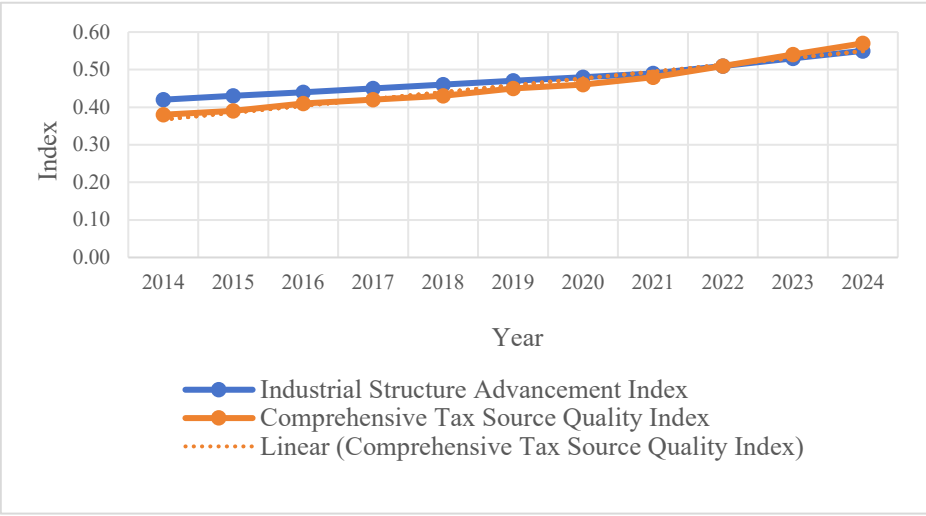
3. Current Situation of Industrial Structure Sophistication and Tax Source Quality in Heilongjiang Province

3.1 Temporal Evolution Characteristics of Industrial Structure Sophistication

Heilongjiang Province's industrial structure changed continuously between 2014 and 2024, the proportion of the tertiary industry increased steadily, the transformation of traditional industries progressed gradually, and strategic emerging industries appeared with new growth points. From 2014 to 2021, the pace of upgrading the industrial structure is relatively moderate, the proportion of traditional industries is relatively high, and the development of the service sector mainly relies on the promotion of sectors such as commerce and trade, transportation and public services. The comprehensive advancement of "4567" modern industrial system in 2022 put forward fields such as the digital economy, bioeconomy, ice and snow economy and creative design, which are better supported by policy resources, leading an obvious acceleration in the pace of industrial structure upgrade.

The variation in industrial structure sophistication is different among prefecture-level cities. Taking advantage of being a provincial capital, Harbin develops rapid modern service industries and high-tech industries with a leading position in industrial structure sophistication within the province because of its scientific research resources, talent concentration and service industry foundation; taking advantage of its petrochemical industry foundation, Daqing extends industrial chain and transforms towards new materials, new energy, and fine chemicals direction, it has relatively strong practical basis for industrial structure adjustment; Qiqihar, Mudanjiang, Jiamusi and others have a certain degree of industrial foundation and regional central functions, maintaining advance momentum of industrial upgrade;

owing to various reasons such as industrial path dependence, population size, and market space, there are some resource-based cities transforming slowly, their industrial structures need further optimization. The change trend of industrial structure sophistication index and the comprehensive tax source quality index from 2014 to 2024 (Figure 2).

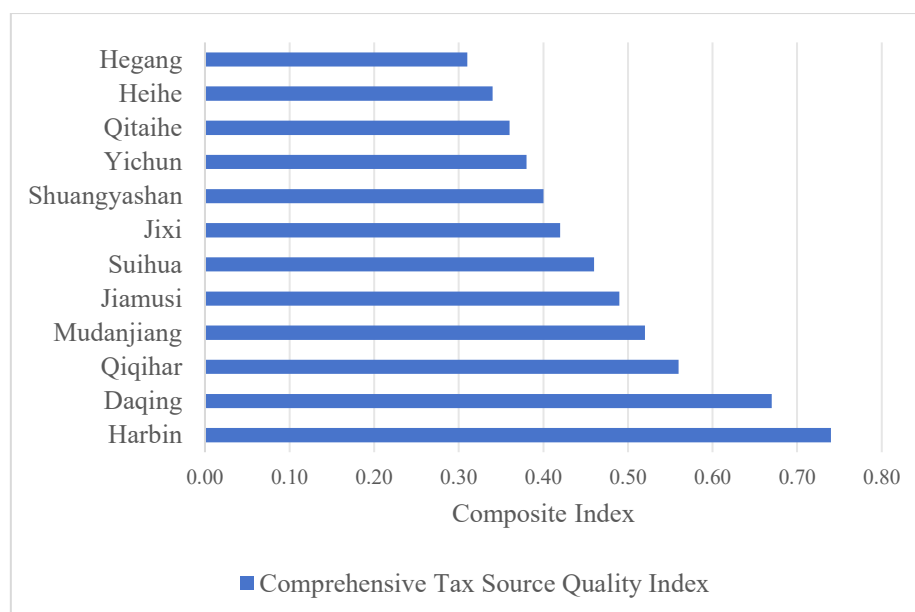


Source of Data: Heilongjiang Statistical Yearbook, Heilongjiang Provincial Financial Final Report, and the annual tax statistical bulletins of the Provincial Tax Service, 2014–2024.

Figure 2 Trends in the Industrial Structure Sophistication Index and the Comprehensive Tax Source Quality Index from 2014 to 2024

3.2 Spatial Differentiation Pattern of the Comprehensive Level of Tax Source Quality

In terms of tax source quality, there are clearly varying degrees within prefecture-level cities in Heilongjiang Province: Harbin's economy aggregate, enterprise quantity, and the foundation of modern service industries are relatively large, the overall performance of total tax revenue, tax source structure, and risk resistance capacity is relatively strong, which is a region with relatively high tax source quality in the province. In terms of its energy and chemical industry, Daqing has a relatively strong tax contribution, relatively high tax capacity per unit of output, and a relatively good level of fiscal self-sufficiency; under the influence of resource prices and industrial cycles, its tax growth rate still fluctuate to a certain extent. The regional central cities like Qiqihar and Mudanjiang have a tax source quality at a medium level, relatively complete industrial categories, and a certain basis for tax source stability but need to improve the proportion of high value-added tax sources. Some resource-exhausted cities, border cities, or areas that have a relatively large population outflow, their tax revenue scale is relatively small, new market entity addition is insufficient, and the contrast between fiscal revenue and expenditure is relatively prominent. A comparative analysis of the comprehensive tax source quality index of prefecture-level cities in Heilongjiang Province in 2024 (without Daxing'anling Prefecture), see Figure 3.



Source of Data: Heilongjiang Statistical Yearbook, Heilongjiang Provincial Financial Final Report, and the annual tax statistical bulletin of the Provincial Tax Service, 2014.

Figure 3 Comparison of the Comprehensive Tax Source Quality Index of Prefecture-level Cities in Heilongjiang Province in 2024

Generally speaking, there is a trend that tax source quality evolves from scale orientation towards quality orientation; tax base expansion continues to play an important role but the significance of structural optimization, risk control and growth stability grows too.

3.3 Current State of Synergy Between Industrial Structure Sophistication and Tax Source Quality Improvement

The comparison of the degree of industrial structure sophistication and the performance of tax source quality among prefecture-level cities shows that the faster the industrial structure upgrades, the better the tax source quality. After industrial structure sophistication, corporate profits increase, the proportion of the service sector grows, there are more new enterprises, and tax sources become richer. The impact of industrial structure sophistication on tax source quality has a certain lag time because some emerging industry enterprises have large R&D investment, low profit accumulation in an early cultivation period, their tax contribution cannot be reflected at once, and its tax source contribution will be gradually released after expanding into the market, maturing technologically, and improving its industrial chain. Some regions which have a relatively high proportion of traditional industries rely on existing enterprise's support for short term tax sources, and its revenue performance can stay stable; in the long run, they still need to upgrade tax source quality through industrial structure sophistication. By regression analysis based on prefecture-level city panel data, we find that industrial structure sophistication positively affects tax source quality improvement, and the result is stable if changing core variables or adjusting the sample interval. In heterogeneous analysis, we found that the driving effect of industrial structure sophistication on improving tax source quality is more obvious in regions with a better economic foundation, relatively complete industrial supporting facilities, and higher activity of market entities, indicating that industrial system construction needs to be carried out at the same time with infrastructure, talent supply, financial support, and business environment improvement.

4. Implementation Paths for Industrial Structure Sophistication Empowering Tax Source Quality Improvement in Heilongjiang Province

4.1 Broadening Tax Sources Around the “4567” Industrial Layout

Four new engines for economic development with high growth potential should focus on introducing projects, opening up application scenarios, and fostering enterprises in fields such as the digital economy, the bioeconomy, the ice and snow economy, and creative design to help new

industries form tax sources as soon as possible; establish a complete cycle service mechanism for those in the growth stage offering standardized services on project implementation, invoice use, enjoying preferential policies, and risk warnings, helping enterprises reduce institutional costs, forming continuous stable tax contributions^[6].

The five strategic emerging industries need to rely on its resource condition and industrial foundation to build different clusters; cultivate leading enterprises in industrial chains, attracting supporting enterprises to gather, stabilizing cooperation between upstream and downstream of industrial chains. The six traditional advantageous industries should take technological transformation, green transformation, deep processing, brand enhancement as the main direction, increasing product value added, solidifying the tax source foundation of existing enterprises. The seven modern service industries should expand size around fields like producer services, consumer services, cultural tourism and health and wellness, modern logistics, broadening tax sources in the service sector. Prefecture-level cities should choose key directions based on their own industrial foundation, avoiding homogeneous investment attraction, avoiding low-level repetitive construction.

4.2 Promoting High-End Extension of Industrial Chains to Consolidate the Tax Source Foundation

Consolidate tax source foundation according to the trend of industrial structure upgrade and increase the proportion of high value-added industry, modern service industries and growth stage enterprise in tax sources. Set up a classified management ledger for high-tech enterprises, specialized, refined, distinctive, and innovative enterprises and key enterprises in industrial chains tracking their change of operating revenue, profit level, R&D investment, and tax contribution so that we can grasp the growth of tax sources in time^[7]. Refine tax source management for resource-based industries and traditional heavy and chemical industries; Pay attention to the impact of price fluctuation, capacity change, environmental protection investment, and technological transformation on taxation; Keep stability of existing tax source foundation.

Improving the efficiency of tax collection and administration needs to establish smart taxation connecting industrial operation data with market entity data, project construction data, and tax collection and administration data. We can build tax source monitoring models according to the "4567", dynamically analyzing key industries, key enterprises, and key industrial parks and quickly finding problems such as fluctuations in revenue, abnormal declaration, and irregular use of preferential policies. For emerging industries, adopting a service method of standardized guidance and inclusive and prudent regulation helps enterprises correctly understanding policies; for mature industries, strengthening risk management, invoice supervision, and tax arrears clearance improves the quality of tax collection and administration. Taking differentiated measures consolidates the tax source foundation and enhances the level of tax governance.

4.3 Improving the Industry-Tax Coordination Mechanism and Optimizing the Tax Structure

Improving the precision of supporting industrial structure upgrade through fiscal policy: Fiscal expenditure focuses on scientific and technological innovation, platform construction, industrial park infrastructure, talent cultivation, and transformation of research achievements while reducing fragmented and ineffective investments^[8]; Using tools such as industrial funds, loan interest subsidies, guarantee and credit enhancement, and R&D subsidies to guide social capital in key industrial fields and improve the leverage effect of fiscal funds. Fully implement preferential tax policies focusing on directions such as high-tech enterprises, small and micro enterprises, R&D investment, equipment renewal, and green transformation, optimize the corporate tax structure.

The local government promoting industrial projects should pay attention both to its amount as well as indicators such as investment size, employment absorption, technology level, tax contribution, and fiscal expenditure performance: fiscal and tax departments, industrial departments, and park management institutions should establish an information sharing mechanism, monitor changes in tax sources from key industries regularly, and adjust their support policies according to this change. Reforming the fiscal system below the provincial level requires rational regulation of the relationship between fiscal powers and expenditure responsibilities, strengthening the transfer payment system, and stimulating the enthusiasm of grassroots levels in cultivating tax sources. Only when there are improvements in the degree of policy adaptation can the process of structural upgrading of industry be better converted into improving fiscal capacity.

5. Conclusion

Promoting the "4567" modern industrial system in Heilongjiang Province will provide an important basis for cultivating high-quality tax sources from the old industrial base. Through the development of the four new engines of economic development to create incrementary space, five strategic emerging industries to form growth support, transform the six traditional advantageous industries to stabilize the existing foundation, and seven modern service industries to broaden tax source types, we can ensure a more solid industrial foundation for local fiscal revenue. Expanding the scale of tax sources by upgrading industrial structures, consolidating the foundation of tax sources, and optimizing the tax structure are the main logic of industrial structure sophistication empowerment tax source quality improvement. From the current situation, there is progress in industrial structure sophistication in Heilongjiang Province and tax source quality has shown a tendency of improvement, but there are still relatively obvious differences among prefecture-level cities. Such places like Harbin, Daqing etc. have a relatively good industrial foundation, and its tax source quality was improved rapidly; some resource-based cities, border areas, and areas with relatively large population outflow need to accelerate industrial structure sophistication and cultivate new growth points. We should follow up on this work focusing on the "4567" industrial layout, accurately cultivate high value-added tax sources, continuously optimize the tax source structure, improve the level of smart tax collection and administration, and perfect the fiscal and taxation policy adaptation mechanism.

Fund Projects

2026 Daqing City Philosophy and Social Sciences Planning Project, "Research on the Evaluation and Improvement Strategies of Tax Source Quality in Daqing City Driven by the '1357' Modern Industrial System" (DSGB2026002).

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