

A Study on the Regional Leadership Mechanism for the Recognition of Data Assets on Balance Sheets in the Eastern Regions from the Perspective of Digital-Physical Integration

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Abstract: The inclusion of data assets in financial statements represents a fundamental institutional reform that drives the deep integration of the digital and physical economies and facilitates the transformation of data as a factor of production into capital. China's practices regarding the inclusion of data assets in financial statements exhibit a distinct regional gradient characterised by 'strong in the east, weak in the west'. Leveraging policy pilot schemes, industrial accumulation, digital governance and market ecosystems, the eastern regions have established a comprehensive first-mover advantage, taking the lead in establishing a standardised accounting governance model for data assets and continuing to exert a radiating and driving influence on the central and western regions. Drawing on innovation diffusion theory and regional factor spillover theory, this paper elaborates in detail on the logic behind the formation of the Eastern Region's leading potential in data asset recognition, establishes a multi-dimensional, synergistic framework for regional leadership transmission, analyses the practical obstacles currently hindering the operation of this leadership mechanism, and proposes systematic pathways for optimisation. The research finds that the eastern region, through composite pathways such as the export of institutional norms, the dissemination of digital technologies, the synergistic transmission along industrial chains, and financial value spillovers, has driven the development of national data asset accounting towards standardisation and homogenisation. However, at the present stage, it still faces constraints such as insufficient cross-regional adaptability of standards, structural imbalances in technical support, high barriers to industrial collaboration, and lagging financial support models. This paper proposes four pathways—refining a tiered and adaptable accounting standards model, extending inclusive digital governance services to the grassroots level, deepening cross-regional industrial collaboration, and strengthening a comprehensive data-driven financial ecosystem—which can serve as a reference for enhancing the exemplary and leading role of the eastern region as a pioneer. This paper conducts a study on the regional leadership mechanisms for the inclusion of data assets in balance sheets in the eastern region.

Keywords: Integration of the Digital and Real Economies; Recognition of Data Assets on Balance Sheets; Regional Leadership; Factor Spillovers; Accounting Governance

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1. Introduction

As market-oriented reforms of the data factor continue to deepen, the deep integration of the digital economy and the real

economy has become a key focus for the real economy to achieve transformation and upgrading and to foster new-quality productive forces. The ‘Interim Provisions on Accounting Treatment for Enterprise Data Resources’, promulgated by the Ministry of Finance, have officially come into force. In terms of accounting standards, these provisions have resolved the long-standing governance challenge of data resources remaining off-balance-sheet, achieving a systemic transition from data resources to data assets that can be measured, recognised and capitalised. In terms of the spatial distribution of domestic practices, the implementation of data asset recognition on balance sheets in China exhibits marked regional disparities: Relying on their first-mover advantage in the digital economy, eastern coastal provinces and municipalities have established mature operational models in areas such as the allocation of data asset costs, amortisation and impairment, and information disclosure; they lead in terms of the number of pilot schemes, the scale of assets recognised on balance sheets, and the level of standardisation. In contrast, central and western regions lag behind in their overall progress due to constraints such as a weak foundation in industrial digitalisation, inadequate data governance capabilities, and a lack of practical accounting experience^[7]. Against this backdrop, investigating how the eastern regions, as early adopters, can drive the upgrading of data asset accounting governance nationwide through the dissemination of experience and the spillover of factors has become a key research topic from the intersecting perspectives of coordinated regional development and data factor reform.

A review of the existing research landscape reveals that academia has already produced a wealth of findings in three major areas: the accounting treatment of data assets, the value effects of the integration of the digital and real economies, and regional spillovers from the digital economy. Firstly, with regard to research on data assets, most studies have focused on technical aspects such as recognition, measurement, cost allocation and disclosure rules at the micro-enterprise level, thereby establishing a relatively comprehensive framework for the adaptation of accounting standards. Some scholars have systematically reviewed the core theoretical issues concerning the recognition and measurement of corporate data assets, clarifying the accounting attributes and accounting logic of data assets^[8]; others have, starting from cost measurement models, identified various types of accounting risks arising from the inclusion of data assets on the balance sheet and proposed management strategies^[9]; other scholars, using Zhuochuang Information as a case study, have analysed the practical operational challenges faced by data service enterprises in the areas of asset recognition, measurement and disclosure^[3]; yet others have extended their research scope to the field of public data assets, clarifying the boundaries for their inclusion on the balance sheet, quality requirements, and recognition and measurement rules^[10]. However, such studies typically fail to address regional variations in practice or the logic of spatial diffusion, nor do they sufficiently consider how accounting rules need to be adapted to the industrial structures of different regions. Secondly, research on the integration of the digital and real economies indicates that industrial digitalisation is a prerequisite for the assetisation of data, and that standardised data accounting can in turn facilitate digital transformation^[5]; however, no analysis has yet been conducted to examine the transmission mechanisms of data asset recognition on balance sheets in light of regional gradients. Thirdly, research on regional digital spillovers has primarily focused on the spatial spillover effects of technology, industries and institutions in the eastern regions. Some scholars have measured regional differences in the efficiency of China’s digital economy and the contributions of various factors, confirming that digital factors possess cross-regional spillover attributes^[6]; Some scholars have turned their attention to the western regions, proposing feasible pathways for the recognition of data assets on balance sheets from the perspective of ‘digital-green integration’^[4]; however, current research has not yet extended to the specific sub-field of data asset accounting governance. At present, existing research lacks a systematic analysis of the regional leadership mechanisms for the recognition of data assets on balance sheets against the backdrop of the integration of the digital and real economies, and is deficient in both perspective and framework.

Based on the perspective of regional accounting governance, this paper systematically analyses the logic behind the emergence of the first-mover advantage in the recognition of data assets in the eastern regions, as well as the multidimensional transmission mechanisms. It identifies the practical obstacles in the operation of these mechanisms and proposes optimisation strategies. Compared with existing research, the marginal contributions of this paper are primarily as follows: Firstly, it breaks away from the traditional, single-perspective research model focused on micro-enterprise accounting and expands the scope of research on data asset accounting to the regional spatial dimension; secondly, it

establishes a multi-pathway, synergistic regional leadership and transmission framework, elucidating the principles of spatial diffusion of the Eastern Region's first-mover experience; thirdly, taking into account the differences in industrial structure between the eastern and western regions, it proposes tiered, tailored optimisation strategies, providing practical guidance for the balanced implementation of data asset recognition nationwide.

2. Theoretical Foundation and Analytical Framework

Theories of innovation diffusion and regional factor spillovers form the core theoretical underpinnings of this paper. Combined with the logic of two-way empowerment through the integration of the digital and real economies, these theories enable the construction of a comprehensive analytical framework for regional leadership in the inclusion of data assets on balance sheets in the eastern regions.

2.1 Core Theoretical Underpinnings

The theory of innovation diffusion explains the spatial propagation patterns of regional governance innovation: standardised institutions and operational paradigms formed by leading regions following prolonged pilot phases and continuous trial and error possess a demonstration effect and value for emulation. Through channels such as learning and adaptation, experience sharing, and model replication, these gradually permeate into lagging regions with relatively underdeveloped governance. Standardized accounting of data assets is an innovation in the field of digital governance; it is consistent with the principle of diffusion and provides a theoretical foundation for spreading the advanced on-balance-sheet accounting standards of the Eastern Region to other areas.

The theory of regional factor spillovers shows that high-quality institutional resources, digital governance techniques, experience in industrial support systems and financial innovative tools also have the property of spreading among different regions and producing value spillovers. The eastern region has gained comprehensive advantages in data asset accounting management, which can extend beyond geographical limits and exert a radiating and driving influence, promoting the continuous improvement of data asset accounting models in the central and western regions. The interaction between the digital and real economies serves as the basis for our study. The digitalization of the real economy results in the gradual increase of high-quality data resources with definite ownership, controllable costs and estimable returns, thereby providing an industrial base for the extensive and regular incorporation of data assets into the balance sheet. A clear accounting system for data resources can effectively evaluate the input-output efficiency of the digital transformation, forcing enterprises to establish standardized data management and improve the connection between the digital and real economies. The imbalance in the connection between the digital and real economies among different areas leads to a gradient situation of "strong in the east, weak in the west" in China regarding the incorporation of data resources into the balance sheet, which is also the actual basis for the construction and management of the leading mechanism in the eastern region.

The mutual relationship between the digital and real economies is the research background and practical basis of this paper. The digital transformation of the real economy can accumulate high-quality data resources continuously; these resources have definite ownership, controllable costs and forecastable returns, thus providing an industrial foundation for the large-scale and standardized inclusion of data assets on the balance sheet [5]. A detailed accounting method for data assets can precisely measure the input-output efficiency of the digital transformation, urging enterprises to standardize their data management and promote the integration of the digital and real economies. The uneven development of this integration among different regions has led to a gradation in the inclusion of data assets on the balance sheets in China, which is also the practical premise for the formation and operation of the leading mechanism in the eastern region.

2.2 Overall Analytical Framework

Synthesising the aforementioned theoretical content, this paper establishes a closed-loop analytical framework, specifically: 'Advantage Generation – Mechanism Transmission – Practical Constraints – Optimisation and Upgrading'. The uneven development of regional integration between the digital and real economies has enabled the eastern regions to gain a first-mover advantage. Leveraging the four pillars of policy, industry, technology and market, the east has established a mature data asset accounting governance model. Subsequently, it provides cross-regional leadership and support through four distinct spillover pathways: institutional, technological, industrial and financial. However, constrained by practical factors

such as barriers to the flow of production factors, differences in industrial structure and imperfect supporting models, the current leadership mechanism suffers from multiple structural shortcomings. Finally, through four-dimensional coordinated optimisation, the exemplary and supportive efficacy of the eastern region is maximised, thereby propelling the development of data asset accounting governance nationwide towards a balanced and high-quality direction.

3. The Logic Behind the Generation of Regional Leadership Potential in Data Asset Recognition in the Eastern Regions

The Eastern Region's ability to establish a nationally leading capacity for guiding data asset accounting governance is not a short-term outcome driven by a single policy dividend, but rather a systemic first-mover advantage formed through the long-term coupling and synergy of multiple factors—including policy and institutional frameworks, the real economy, digital governance and the market ecosystem—and represents the institutionalised manifestation of the deep and mature integration of the digital and real economies in the region.

3.1 At the Policy and Institutional Level: A Multi-tiered Standardised Institutional Framework Takes the Lead

As the first pilot regions in the country to undertake market-oriented reforms of the data factor, the core provinces and cities in the eastern region were the first to establish a multi-tiered institutional model comprising national top-level standards, local detailed guidelines and sector-specific regulations. Local governments have formulated targeted implementation policies based on the characteristics of regional industries, accompanied by incentive measures such as fiscal subsidies, tax and fee reductions, and professional guidance, thereby effectively reducing the institutional and trial-and-error costs for enterprises in the process of recognising data assets on their balance sheets^[1]. Through continuous iteration following multiple rounds of pilot schemes, the eastern region has accumulated a wealth of standardised accounting frameworks that have been tested in practice. Mature institutional outcomes have been established in areas such as cost allocation criteria, the demarcation of capitalisation boundaries, the calculation of amortisation and impairment, and financial statement disclosure standards. The region possesses a stable capacity for cross-regional replication and dissemination, thereby laying the institutional foundations for regional leadership.

3.2 Industrial Development: Supported by Vast High-Quality Data Resources

The Eastern Region's leading industries—including high-end manufacturing, port logistics and digital commerce—exhibit a trend towards high concentration. The digital penetration rate of its real economy and the depth of integration between the digital and real economies have long been ahead of other regions nationwide^[5]. Enterprises continuously accumulate vast amounts of high-quality data resources across a full range of business scenarios, including intelligent production management, cross-regional supply chain coordination, equipment operation and maintenance monitoring, and end-user operations. These data resources are generally characterised by clear ownership, traceable costs and the ability to generate stable, ongoing returns, which fully align with the core criteria for asset recognition under accounting standards. Large-scale, multi-sector applications of digital scenarios have enabled the eastern region to achieve the practical implementation of recording corporate data assets on a large scale, accumulating a wealth of sector-specific accounting experience and establishing a solid foundation of industrial resources to underpin the region's leadership.

3.3 Digital Governance: Comprehensive Provision of Full-Chain Professional Services

The eastern region has concentrated the deployment of the nation's leading data governance service providers, major accounting firms, asset valuation institutions, as well as the two national-level data trading platforms in Shanghai and Shenzhen, thereby establishing a comprehensive, end-to-end professional service system covering data inventory and organisation, de-identification and ownership verification, cost allocation and aggregation, value assessment, accounting treatment, and notes to the financial statements^[1]. This detailed description of digital governance and financial and accounting services not only guarantees the standardized and high-quality execution of the recognition of local data assets on the balance sheets, effectively solving the practical problems in data accounting, but also establishes standardized technical service abilities which can be used outside. This allows the provision of data asset governance and accounting assistance to the enterprises in central and western China without regional restrictions, thus overcoming the technical deficiencies in those

underdeveloped areas.

3.4 Market Ecosystem Level: A Complete Value Cycle for Data Capitalisation

The eastern regions have led in setting up a perfect capitalization process including the stock and trading of data products, credit services based on data assets, and the securitization of data assets, thus forming a market-oriented value cycle such as ‘data management -- asset recognition -- market exchange -- capital increase -- re-invest for improvement’^[2]. Data assets have been changed from immovable accounts into transferable and financiaable operating capital, which can effectively exploit the economic value of data as a productive factor and greatly improve the intrinsic motivation of enterprises to organize and recognize data assets on their balance sheets in a systematic way. This advanced, market-guided method for realizing value has produced a strong inspiring influence, continuously increasing the eastern region’s leading position in data asset accounting management.

4. The Regional Leadership and Transmission Mechanism for Data Asset Recognition in the Eastern Regions

Building on multiple early-mover advantages, the eastern region has established a regional leadership and transmission system characterised by multi-pathway coordination and multi-tiered coverage. Through multidimensional spillover effects in institutional standards, digital technology, industrial chains and financial capital, it systematically drives the standardisation and upgrading of data asset accounting governance in the central and western regions, constituting the core driving mechanism for the coordinated development of data element accounting practices nationwide.

4.1 Output of Institutional Standards: Unifying Underlying Accounting Standards Nationwide

The export of institutional standards constitutes a vital core foundation for the regional leadership model, and is also a key pathway to unifying national data asset accounting standards. The sector-specific cost allocation rules, criteria for distinguishing between capitalisation and expensing, differentiated amortisation and provisioning schemes, and standardised templates for notes to financial statements—all accumulated through prolonged pilot programmes in the eastern regions—have collectively established a replicable, standardised accounting governance model^[8]. By using different means such as the public release of local policy documents, the establishment of national industry standards, inter-regional training courses in finance and accounting, and the exchange of regulatory experiences, the advanced accounting methods of the eastern areas have been gradually spread to the central and western areas. This has efficiently solved the main problems that enterprises in these less-developed regions encounter when recording their data assets on the balance sheet, namely, the absence of any guidelines, the lack of proper procedures and the shortage of relevant experience. This has led to the uniformization of the basic rules for data asset accounting throughout the country and reduced the differences in accounting management systems among regions.

4.2 The Spread of Digital Technology: Addressing Underlying Shortcomings in Governance in Central and Western Regions

The dissemination of digital technologies is a key pathway for addressing governance shortcomings in central and western China and ensuring the successful inclusion of data assets on balance sheets. Standardised data governance is a prerequisite for the compliant recognition of data assets on balance sheets, whilst weak governance technologies and a shortage of specialist talent are the core bottlenecks constraining the progress of data asset recognition in central and western China^[1]. Drawing on mature data governance technology reserves and specialised service teams, the eastern regions continuously export core technical capabilities—such as data rights clarification, data cleansing and de-identification, end-to-end cost allocation, asset impairment assessment and standardised ledger management—through inclusive measures including the implementation of cross-regional project outsourcing, the joint construction of regional technical service platforms, the provision of lightweight accounting tools and governance templates, and the regular delivery of skills training for professionals. This ongoing technical empowerment effectively addresses underlying governance deficiencies in enterprises in central and western China, providing robust technical safeguards for the compliant and accurate accounting of data assets, and strengthening the technical foundation for national data asset accounting governance.

4.3 Synergistic Transmission Along the Industrial Chain: The Core Pathway for Market-Driven, Nationwide Impact

Within a market-oriented framework, synergy along the industrial chain serves as a highly effective and far-reaching channel for generating spillover effects. Leveraging the nationwide, cross-regional division of labour within the industry, leading enterprises in the eastern regions replicate and disseminate their group's mature data governance systems and standardised accounting models whilst engaging in industrial relocation, collaborative supply chain upgrades and the joint development of cross-regional industrial parks. Using industrial hubs as fulcrums, these leading enterprises extend uniform data aggregation rules, asset accounting standards and internal control management systems to their subsidiaries in other regions and to upstream and downstream supporting enterprises, thereby driving local small and medium-sized enterprises to standardise their data asset management and financial accounting in tandem. In accordance with the logic of chain-based transmission along industrial chains, this achieves comprehensive radiation where 'points drive chains and chains drive the wider area', prompting industrial clusters in central and western regions to collectively upgrade their data assets to meet standardised on-balance-sheet requirements, whilst generating synergies with the logic of industrial penetration through the integration of digital and real economies^[5].

4.4 Financial Value Spillover: A Long-Term Market-Oriented Incentive Pathway

Financial value spillovers are a key pathway for stimulating endogenous market momentum and continuously consolidating a leading effect. Financial innovation models pioneered and implemented in the eastern regions—such as data asset pledge financing, data asset securitisation and the market-based trading of data products—are gradually being replicated and promoted nationwide, thereby establishing market-based channels for realising the value of data assets^[2]. Through joint credit facilities provided by financial institutions in the east and west, the cross-regional opening of national-level trading platforms, and the joint establishment of cross-regional data element trading alliances, the data resources of distinctive industries in the central and western regions can be capitalised upon by leveraging the mature capital and trading systems of the eastern regions. Market-driven value-added returns effectively stimulate enterprises' intrinsic motivation to proactively organise and standardise the accounting of their data assets, forming a virtuous cycle of 'standardised balance-sheet recognition – value realisation – reinvestment in digitalisation', thereby continuously strengthening the radiating and leading role of the eastern regions.

5. Practical Constraints on the Operation of the Regional Leadership Mechanism

Due to objective constraints such as differences in industrial structures between the eastern and western regions, barriers to the cross-regional flow of production factors, and uneven development of supporting models, the current four-dimensional collaborative regional leadership transmission mechanism in the eastern region still faces multiple structural bottlenecks in its practical operation. This prevents the full realisation of the region's radiating and supportive effects, thereby constraining the balanced and high-quality development of national data asset accounting governance.

5.1 Insufficient Adaptability of Institutional Standards Across Regions and Sectors

The most glaring shortcoming of the current leadership mechanism lies in the inadequate adaptability of institutional standards across regions and sectors. The comprehensive standardised accounting model established in the eastern regions is primarily tailored to local competitive industries such as high-end manufacturing, port and shipping, and digital services; its accounting criteria, cost allocation logic and methods for calculating value cycles are all aligned with the characteristics of data assets in these sectors^[8]. However, the core industries in the central and western regions are predominantly characterised by specialised agriculture, traditional energy and cultural tourism. Data assets in these sectors generally exhibit distinctive characteristics, such as diverse ownership structures, close coupling with physical costs, ambiguous value cycles and limited reuse scenarios. If the standardised accounting model from the eastern regions were to be applied mechanically, it could easily lead to issues such as distorted asset measurement and inaccurate accounting information^[9]. There are subtle differences in the detailed implementation criteria across provinces and municipalities, and the comparability of accounting information is insufficient during the preparation of consolidated financial statements for enterprises operating across regions; this has imposed constraints on the establishment of a unified national governance model for data asset accounting.

5.2 Significant Structural Imbalances in Technological Empowerment

Structural imbalances exist in terms of technological support. Specialised technical and service resources radiating outwards from the eastern regions exhibit a marked bias towards major entities, with the focus of these services highly concentrated on large local state-owned enterprises and leading regional manufacturing firms. Moreover, the small, medium and micro-sized enterprises at the county level, as well as the traditional grassroots industries, have little opportunity to obtain low-cost and comprehensive technical assistance. The unequal distribution of these resources results in a significant difference in the advancement of data asset identification among different areas and fields. While large enterprises can quickly carry out the whole procedure of data asset inventory, recognition and standardized management, the SMEs and micro-enterprises are still at an initial stage where the data is accumulated disorderly and it is hard for them to implement accounting systems. This inequality also enlarges the gap in data asset accounting and management within regions, thus forming a cumulative effect with the regional disparity in the efficiency of the digital economy.^[6]

5.3 Significant Barriers to Cross-Regional Industrial Synergy

The obstacles to the exchange of industrial cooperation across different regions are mainly institutional and technical. There is a considerable difference in the degree of informatization of the real economy between the eastern and western areas. The discrepancies in the construction of data platforms between upstream and downstream enterprises, the incompatible data interfaces and the varying data security regulations complicate the cross-regional data connection, thus preventing the complete transmission and execution of a unified data asset accounting system along the industrial chain. At present, the industrial promotion from the eastern regions to other areas is still limited to providing superficial technical aids and sharing some basic experiences. There is a shortage of comprehensive cooperation between the leading enterprises and the local enterprises in central and western regions in building data governance systems, standardizing the accounting procedures and establishing lasting mechanisms; therefore, the possibility of extensive promotion through the industrial chain has not been fully exploited.

5.4 Lags in the Supporting System for Financial Value Spillovers

The supporting framework for financial value spillovers has notable shortcomings, which have become a key bottleneck limiting the effective functioning of the leadership mechanism. Central and western regions have yet to establish data asset valuation norms, value assessment criteria and risk control mechanisms tailored to their local industrial characteristics; consequently, mature financial innovation models from the eastern regions—such as data asset-backed credit facilities and asset securitisation—cannot be effectively implemented^[4]. Even when most enterprises in the central and western regions have completed the standardised accounting of their data assets, they still face the practical difficulties of limited market-based trading channels and difficulties in realising capital. The problem of data assets being ‘easy to record, difficult to realise and slow to appreciate’ is widespread, which greatly weakens the positive market-based incentive effect and restricts the long-term and effective implementation of financial spillover assistance from the eastern regions.

6. Pathways for Optimising the Eastern Regional Leadership Mechanism

The current operation of the regional leadership mechanism faces multiple practical obstacles. With the balanced regional development of the integration of the digital and real economies as the core objective, a systematic optimisation model should be established across four dimensions—institutional adaptation, technological inclusivity, industrial synergy and financial support—to comprehensively enhance the cross-regional leadership and support capabilities of the eastern regions that have taken the lead, thereby driving the development of national data asset accounting governance towards standardisation, balance and high quality.

6.1 Establishing a Tiered and Adaptive Nationally Unified Accounting Standards System

In terms of institutional arrangements, a nationally unified accounting standard model must be established, one that is tiered, adaptable and dynamically optimised. Whilst upholding the uniformity of national top-level accounting standards, we must draw upon the mature practical experience accumulated through years of pilot schemes in the eastern regions. In collaboration with finance departments and industry associations, detailed accounting guidelines tailored to specific regions and industries should be issued^[9]. Full consideration must be given to the differences in industrial structures between the eastern and western

regions. Specific cost-allocation rules, amortisation methods and impairment assessment criteria should be designed to address the characteristics of data assets in distinctive industries in central and western regions—such as agriculture, energy, and cultural tourism—thereby resolving the issue of insufficient cross-regional adaptability of eastern standards^[4]. Unify the core accounting treatment criteria nationwide, refine financial statement disclosure standards, and minimise regional implementation discrepancies, thereby comprehensively enhancing the authenticity, comparability and standardisation of national data asset accounting information.

6.2 Promoting the Extension of Inclusive Digital Governance Services to the Grassroots Level

At the technical level, continue to promote the extension of inclusive digital governance services to counties in central and western China, as well as to small, medium and micro enterprises. Through policy support and resource guidance, encourage specialised data governance organisations and audit and valuation firms from the eastern regions to establish permanent service outlets in prefectures and counties across central and western China. In response to the weak governance capabilities and limited financial resources characteristic of small, medium and micro enterprises, we will develop lightweight, low-cost online tool templates for data asset ledger management, cost estimation and impairment accounting, thereby lowering the practical barriers for grassroots enterprises to incorporate such items into their financial statements. Establish permanent mechanisms for public-interest training, technical assistance and talent exchange to balance the supply of technical resources between large enterprises and SMEs, thereby effectively narrowing the gaps in data governance and accounting capabilities across regions, sectors and entities, and addressing structural imbalances in the empowerment of digital technologies^[6].

6.3 Deepening Cross-Regional Collaborative Governance of Industrial Chain Data

From an industrial perspective, it is necessary to establish a regularised platform for the coordinated development of data elements between the eastern and western regions, thereby eliminating barriers to cross-regional data interoperability within industrial chains and, in turn, facilitating mutual recognition and interoperability among upstream and downstream enterprises nationwide in areas such as data collection, aggregation and rights clarification, and accounting standards. Specialised policies to incentivise industrial collaboration should be introduced to encourage leading enterprises in the eastern regions to establish long-term partnership mechanisms with local enterprises in central and western regions, thereby fully transferring mature data governance models, internal control management systems and comprehensive accounting solutions. Furthermore, it is necessary to strengthen the cross-regional cooperation between industrial parks and supply chains to promote the extensive use of standardised data asset accounting throughout the industrial chain. This will enable a shift from the pilot programs involving single enterprises to the standardised improvements in whole industrial clusters, thus fully revealing the essential promoting roles of chain-based transmission within the industrial chain.

6.4 Improving the Cross-Regional Collaborative Data Finance Ecosystem

In the financial field, a cross-regional cooperative system for the utilization of data resources ought to be set up at an early stage. This will motivate commercial banks and capital market service suppliers in the eastern and central-western areas to develop standardized systems for joint credit programs and business cooperation, and to establish specialized data resource valuation schemes and risk prevention and control mechanisms according to various industries.^[2] We must continuously expand the range of financial instruments, such as data asset-backed loans, asset securitisation and the market-based trading of data products, and open up channels for the listing and interconnectivity of data exchanges between the eastern and central-western regions, giving priority to supporting the market-based circulation and monetisation of data assets from distinctive industries in the central and western regions^[4]. Improve the supporting institutional framework for the capitalisation of data as a production factor, effectively address the difficulties in realising the value of data assets in central and western China, continuously amplify the market-driven incentive effects generated by financial spillover, and establish a long-term mechanism to drive the standardised development of data asset recognition on balance sheets nationwide.

7. Conclusions and Outlook

7.1 Research Conclusions

Regional disparities in the level of integration between the digital and real economies have resulted in an uneven development pattern for data asset recognition in China's financial statements, characterised by "strength in the East and weakness in the

West”. The eastern areas, taking the advantage of their early entry in four important fields—policy trial assistance, the rich experience in both digital and real economy industries, the whole process digital administration and a well-developed market-oriented environment—have attained a prominent position in the management of data asset accounting which can produce a nationwide influence. Moreover, by means of a cooperative mechanism working in four aspects—propaganda of institutional standards, diffusion of digital technologies, flow of industrial linkages and spill-over of financial benefits—it keeps promoting the central and western areas to recognize data assets on their balance sheets and improve the management. This plays an important role in accelerating the continuous improvement of the national data element accounting management system and reducing the differences in the development of digital economics among the regions.

Currently, the operational mechanism of the Eastern Region is still hindered by several structural restrictions. These restrictions comprise the insufficiency of cross-disciplinary flexibility in institutional rules, the imbalance in technical assistance, the difficulty in inter-regional industrial cooperation, and the imperfect financial support systems. All of these problems affect the efficiency of spreading advantages from the Eastern Region to other areas. To eliminate the obstacles in the mechanism’s operation, it is necessary to establish graded and flexible accounting standards, extend comprehensive digital governance services to the less developed regions, reinforce the coordination of inter-regional industrial chains, and improve the inter-regional data-finance synergetic environment. This will greatly enhance the model and leading function of the eastern regions and promote the coordinated and high-quality development of national data asset accounting management and the combination of the digital and real economies.

7.2 Research Outlook

This paper uses a normative research method to carry out a comprehensive study on the regional leadership mechanisms and optimization strategies for the on-balance-sheet recognition of data assets in the eastern area, mainly focusing on the theoretical mechanisms and logical reasoning processes. In the future, econometric models can be established to quantitatively evaluate the strength and transmission efficiency of the regional spillover impacts resulting from the incorporation of data assets into the balance sheets in the eastern area, thus accurately determining the principal influencing factors. Furthermore, by considering the special features of various regions and industries, more specific and precise governance models can be investigated, offering more detailed empirical evidence for the reform of the market-oriented distribution of data factors throughout the country and the harmonious development of the integration between the digital and real economies nationwide.

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