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Data Asset Recognition on the Balance Sheet: Theoretical Framework, Practical Challenges, and Implementation Pathways

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Abstract

Data elements have become crucial production factors driving corporate economic growth and value creation. This paper reviews the policy framework and evolutionary process of data asset recognition on the balance sheet. Through a systematic analysis of the current status and typical models of data asset recognition among listed companies, it delves into the challenges encountered in current practices from four dimensions: ownership confirmation dilemmas, valuation methods, corporate capabilities and willingness, and information disclosure versus commercial secret protection. Building on this foundation, it proposes implementation pathways for data asset recognition on the balance sheet and corresponding recommendations, aiming to provide operable guidance for enterprises' data asset recognition and references for further standardization and refinement of accounting policies.

Keywords

data asset recognition on the balance sheet, information disclosure, data governance

1. Introduction

In the digital economy era, data elements have become the core engine driving economic growth, playing a crucial role in corporate operations and value creation. The Interim Provisions on Accounting Treatment Related to Enterprise Data Resources provides a clear institutional basis for the confirmation and measurement of enterprise data elements, stipulating that enterprises should confirm and measure data resources that meet the confirmation conditions as assets and incorporate them into the enterprise financial statements.

From both long-term and short-term perspectives, the recognition of data assets on the balance sheet holds profound significance for enterprises. Currently, China has preliminarily established a policy framework for data asset recognition on the balance sheet, but in practice, it still faces prominent challenges such as ambiguous ownership confirmation, valuation difficulties, and low corporate participation [1]. Therefore, this paper aims to systematically analyze the theoretical logic, practical dilemmas, and implementation pathways of data asset recognition on the balance sheet, providing operable guidance for enterprises' balance sheet recognition and promoting the implementation of the data assetization accounting system.

2. Theoretical Foundation and Policy Evolution of Data Asset Recognition on the Balance Sheet

2.1 Concept and Characteristics of Data Asset Recognition on the Balance Sheet

Regarding the definition of data assets, the academic community has conducted extensive research and discussions. Zhang Junrui et al. (2020) defined data assets as "identifiable non-monetary assets in a data form owned or controlled by enterprises" [2]. In 2021, the China Academy of Information and Communications Technology released the Data Asset Management Practice White Paper (Version 5.0), defining data assets as "data resources owned or controlled by enterprises that can bring economic benefits to the enterprises and are recorded in physical or electronic form." In 2024, the National Data Administration released the Explanations of Commonly Used Terms in the Data Field (First Batch), defining data assets as "data resources that are legally owned or controlled by specific entities, can be measured in monetary terms, and can bring economic benefits or social benefits."

2.2 Theoretical Foundation and Policy Evolution of Data Asset Recognition on the Balance Sheet

The development of data asset recognition on the balance sheet in China is closely related to the country's strategic positioning of data elements and institutional innovations. In December 2021, the State Council issued the 14th Five-Year Plan for Digital Economy Development, explicitly stating that "data elements are the core engine for the deepening development of the digital economy." In February 2023, the CPC Central Committee and the State Council issued the Overall Layout Plan for the Construction of Digital China, proposing the "2522" overall framework, which lists "strengthening the data resource system" as one of the two major foundations. It requires promoting the large circulation of data resources, advancing the aggregation and utilization of public data, and improving the data asset evaluation and pricing mechanism, directly driving the refinement of data asset measurement methods. In August 2023, the Ministry of Finance issued the Interim Provisions, marking the official implementation of China's data asset recognition policy on the balance sheet. In January 2024, the Ministry of Finance released the Guiding Opinions on Strengthening Data Asset Management, providing further standardization for data asset recognition on the balance sheet.

2.3 Accounting Treatment Principles for Data Asset Recognition on the Balance Sheet

In the accounting confirmation and measurement stages of data asset recognition on the balance sheet, it is necessary to classify accounts based on the nature of the assets and the intent of holding them, and to match appropriate valuation methods. According to the enterprise accounting standards, purchased data resources are confirmed as "intangible assets," self-developed data meeting capitalization conditions are recorded under "development expenditures," and data products intended for sale are classified as "inventory." However, in practice, data resources often have multiple attributes combining internal use and external transactions, leading enterprises to encounter difficulties in account classification and issues of misuse. At the measurement level, rules vary across different accounts: intangible assets are valued using the cost method, income method, or market method based on the acquisition method; expenditures not meeting capitalization conditions are recognized in current period profits and losses; and inventory costs are transferred upon sale.

3. Practical Progress and Typical Models of Data Asset Recognition on the Balance Sheet

3.1 Analysis of Current Corporate Practices

Since the implementation of the Interim Provisions, national and local governments have successively introduced multiple policies to promote data asset recognition on the balance sheet from aspects such as ownership confirmation and valuation, as well as industry integration. However, significant challenges remain at the execution level.

As of the end of April 2025, only about 2% of A-share listed companies (a total of 100 companies) have disclosed data resource recognition on the balance sheet. Among the total recognized amount of 2.164 billion RMB, the three major telecommunications operators account for over 63%, presenting a pattern dominated by

state-owned enterprises with insufficient participation from small, medium, and micro enterprises. From the perspective of enterprise nature, private enterprises account for less than 42%, and they are mostly large internet companies. In terms of industry distribution, the companies engaging in recognition are highly concentrated in the information technology service industry and manufacturing sector, with weaker momentum in other industries.

Overall, although the current policy system is increasingly improved, corporate participation remains low, with few projects and low amounts. Data asset recognition on the balance sheet is still far from normalized and systematic development.

3.2 Typical Models of Data Asset Recognition on the Balance Sheet

3.2.1 Product Trading Model

The product trading model is a mature commercialization pathway that processes data into independent products for ownership confirmation, valuation, and trading, achieving the identifiability, measurability, and circulation of data assets.

3.2.2 Financing Credit Enhancement Model

The financing credit enhancement model for data asset recognition on the balance sheet refers to the approach where enterprises confirm data assets as accounting assets to enhance credit and obtain financing, primarily including forms such as data asset pledge financing, securitization, trusts, and financial leasing.

3.2.3 Authorized Operation of Public Data

The authorized operation model for public data is based on the "separation of three rights," where the government authorizes enterprises with partial data usage rights or product operation rights for development and commercial operation [3]. Due to its relatively clear ownership confirmation and ease of forming value-added cycles, this model is regarded as an important breakthrough in data assetization.

3.3 Regional Practices of Data Asset Recognition on the Balance Sheet

From a geographical distribution perspective, China's data asset recognition on the balance sheet exhibits a tiered pattern of "eastern region leading, central region following, and western region starting up" [4]. The eastern region, relying on its strong digital economy foundation, mature data trading ecosystem, and complete supporting services, holds a leading position in data asset recognition on the balance sheet. In contrast, the central and western regions are dominated by traditional industries, with insufficient supporting entities, resulting in relatively low data value mining and recognition efficiency.

4. Core Challenges and Dilemma Analysis of Data Asset Recognition on the Balance Sheet

4.1 Legal Ownership Confirmation Dilemma

The Interim Provisions stipulate that enterprises' legal ownership or control of data resources, along with the foreseeable inflow of economic benefits, serve as the core prerequisites for data assets. Clear delineation of ownership and benefit attribution is key to transforming data resources into assets, but in practice, ownership confirmation presents significant challenges. This includes issues of blurred ownership boundaries and unclear accounting account judgments that affect the authenticity of financial reports. At the ownership level, although the "Data Twenty Articles" provide a framework for the separation of three rights, there is a lack of specialized legislation to clarify rights attribution in specific scenarios. Enterprises' self-judgment standards vary, and the replicable and non-exclusive nature of data further exacerbates ownership ambiguity. Currently, ownership disclosures by enterprises engaging in recognition are insufficient, and related disputes have not yet emerged prominently. However, as the number of enterprises engaging in recognition increases in the future, the intertwined multi-party rights across the entire data asset chain will necessitate legal norms for rights delineation and dynamic management. At the accounting level, enterprises commonly misuse accounts such as intangible assets, inventory, and development expenditures. Accounting deviations not only underestimate costs and mislead investors but also, through improper capitalization, may lead to audit adjustments and legal

liabilities due to failed ownership confirmation, severely impacting the true and fair presentation of financial reports and harming the legitimate rights and interests of relevant parties.

4.2 Valuation Techniques and Measurement Difficulties

Current data asset valuation primarily employs the cost method, income method, and market method, each with its limitations:

The cost method, while relatively straightforward in operation and based on historical costs, faces practical issues such as difficulties in cost aggregation and unclear coverage scope and it often underestimates the true value of data assets.

The income method values assets by forecasting future income and discounting it, but it is influenced by factors such as data ownership risks, income uncertainty, strong subjectivity in discount rate selection, and the need for frequent updates, making practical implementation challenging.

The market method requires reference to similar transaction cases, but with low activity in domestic data asset transactions, significant price fluctuations, and a lack of comparable cases, its application is restricted.

4.3 Insufficient Corporate Willingness and Capabilities

In the current process of data asset recognition on the balance sheet, enterprises primarily face constraints in both willingness and capabilities. From the perspective of willingness, enterprises have major concerns regarding compliance and value uncertainty. Data recognition on the balance sheet may subject related processes to stricter scrutiny and accountability, but under existing policies, the short-term benefits are not evident. It does not directly generate cash inflows or financing advantages and may instead increase management costs, while rapid asset impairment could impact profits. Therefore, most enterprises adopt a cautious wait-and-see attitude. From the perspective of capabilities, enterprises generally suffer from weak professional foundations and deficiencies in governance systems. Financial personnel often lack specialized knowledge in identifying and measuring data assets, and internal data is scattered with isolated systems, making it difficult to form standardized assets that meet recognition requirements. As a result, even with willingness, effective implementation remains challenging.

4.4 Conflict between Information Disclosure and Commercial Secret Protection

Currently, enterprises are generally conservative in disclosing data assets, typically providing only basic qualitative information, with insufficient disclosure of key details such as valuation methods and amortization policies. Voluntary disclosures on data application scenarios and original data types are even more lacking. Moreover, excessive disclosure of sensitive information like valuation methods and quality indicators could allow competitors to infer the enterprise's operational logic and strategic layout, thereby weakening its data advantages and profitability.

However, the core value of financial reports lies in providing sufficient and reliable decision-making information to investors and other stakeholders. The current situation of inadequate and non-standardized disclosures not only affects external reasonable assessments of enterprise data asset values but also creates operational space for financial embellishment or fraud by enterprises.

5. Implementation Pathways and Policy Recommendations for Data Asset Recognition on the Balance Sheet

From the preceding analysis, it is evident that the dilemmas facing data asset recognition on the balance sheet in China stem from systemic constraints across multiple dimensions, including legal, technical, capability, and regulatory aspects. To advance data asset recognition from policy pilots toward scalable and standardized practices, it is urgent to establish a comprehensive, differentiated implementation pathway that spans "institutional safeguards-technical support-entity empowerment-disclosure balance." This section, targeting the core challenges revealed in the last section, proposes systematic policy recommendations and implementation guidelines from the following four aspects.

5.1 Improving the Institutional Foundation: Building a Clear Legal Ownership Confirmation and Accounting Standardization System

To resolve the issues of ambiguous data asset ownership and misuse of accounting accounts, it is necessary to collaboratively advance the construction of legal ownership confirmation and accounting standardization systems. In terms of ownership confirmation, building on the "separation of three rights" framework from the "Data Twenty Articles," efforts should accelerate the issuance of the Administrative Measures for Data Property Rights Registration, clarifying the boundaries and circulation rules for data resource ownership rights, processing and usage rights, and product operation rights. Relying on the National Data Administration or a national-level data exchange, a unified national registration and disclosure platform should be established, adopting a "enterprise declaration-third-party verification-dynamic registration" model to enhance the credibility and verifiability of rights status, thereby laying a solid property rights foundation for accounting confirmation. In terms of accounting standardization, the Ministry of Finance, in collaboration with the National Data Administration, should formulate the Guidelines for Accounting Treatment and Application of Data Assets, providing clear standards for account classification of different types of data assets to reduce subjectivity and arbitrariness. External supervision should be strengthened by requiring auditing firms to conduct special audits on data asset recognition on the balance sheet, focusing on verifying the compliance of ownership, valuation, account selection, and the appropriateness of subsequent measurements. Strict rectification and accountability should be enforced to build a standardized and transparent system for data asset accounting calculation and reporting.

5.2 Innovating Valuation Methods: Building a Standardized and Auditable Technical Support System

To enhance the operability and comparability of data asset valuation, it is essential to optimize the three major valuation methods and cultivate a professional service ecosystem. For the cost method, unified guidelines for cost aggregation and accounting should be formulated, with clear capitalization standards, to promote the integration of business and finance systems for automated cost data tracing. For the income method, the National Data Administration and industry associations should jointly build industry-specific reference databases for key parameters, incorporating adjustment factors such as compliance risks and technological iterations into valuation models to improve the prudence and reliability of income forecasting. For the market method, unified product classification and information disclosure standards should be promoted through data exchanges, and an industry-shared anonymous transaction case library should be established to foster a transparent trading ecosystem. At the same time, a "lightweight valuation toolkit" integrating standardized templates, industry parameters, and basic models should be developed and promoted to lower the valuation threshold for small, medium, and micro enterprises. Systematically, a professional evaluation ecosystem should be nurtured by supporting the development of third-party evaluation institutions, promoting the establishment of relevant courses in universities, and exploring the creation of a "data asset appraiser" professional certification. This will build a sustainable talent supply system, synergistically driving the popularization and standardization of data asset valuation through tool empowerment and ecosystem construction.

5.3 Stimulating Entity Vitality: Implementing Differentiated Empowerment and Incentive Guidance Strategies

To break the deadlock of "domination by large enterprises and wait-and-see by small enterprises" in data asset recognition on the balance sheet, differentiated empowerment and guidance strategies must be implemented. For large enterprises and state-owned enterprises, their "leading goose effect" should be reinforced, such as by incorporating indicators like "data assetization rate" into performance assessments, encouraging them to produce Best Practice White Papers and share experiences with small, medium, and micro enterprises in their ecosystems. For small, medium, and micro enterprises, the focus should be on "lowering thresholds, reducing burdens, and strengthening services," such as through special subsidies or "data element service vouchers" to offset the costs of purchasing third-party services, while providing Simplified Operation Manuals and online guidance to address their capability deficiencies and apprehensions.

At the same time, the foundation of enterprise data governance must be consolidated. On one hand, a data governance capability diagnosis and enhancement program should be promoted, offering free maturity assessments for small, medium, and micro enterprises and guiding them to use low-code tools for data inventory and classification, thereby breaking down data silos. On the other hand, the cultivation of compound talents should be strengthened through cross-departmental training in "finance + data," promoting knowledge integration and developing core personnel who bridge business, technology, and finance to provide key capability support for data asset recognition on the balance sheet. Through parallel implementation of differentiated incentives and internal capability building, the overall participation level of enterprises can be systematically elevated, advancing data asset recognition from point breakthroughs to comprehensive deepening.

5.4 Balancing Information Disclosure: Building a Tiered and Classified Disclosure and Commercial Secret Protection Mechanism

To balance the contradiction between "transparency" and "commercial secret protection" in data asset information disclosure, a synergistic mechanism of tiered disclosure and security protection must be established. On one hand, a differentiated disclosure framework should be built: mandating basic information disclosure while categorizing voluntary disclosure content into "public level," "restricted level," and exemptible "confidential level," along with issuing the Guidelines for Desensitization of Data Asset Disclosure Information. Through technical means such as generalization and suppression, sensitive information can be processed to achieve a combination of "institutional tiering" and "technical desensitization," ensuring information usability without leaks. On the other hand, security and accountability mechanisms should be improved: externally, reinforcing statutory confidentiality obligations for regulatory authorities, auditing institutions, and other entities, with legal accountability for breaches; internally, promoting enterprises to establish disclosure risk assessment processes and introducing social supervision and complaint channels to form a dual safeguard of "external constraints + self-management." In this way, both information transparency requirements can be met, and enterprises' core rights and interests protected, promoting the standardized and secure conduct of data asset disclosure.

6. Research Conclusions and Outlook

6.1 Research Conclusions

This paper conducts a systematic analysis of the theoretical framework, practical dilemmas, and implementation pathways for enterprise data asset recognition on the balance sheet in the digital economy era. Although China has established a policy support system spanning from strategy to management, practical implementation still faces core bottlenecks such as ambiguous legal ownership confirmation, immature valuation techniques, insufficient corporate willingness and capabilities, and dilemmas in information disclosure, exhibiting a pattern of "domination by leading enterprises and uneven distribution." To address these dilemmas, institutionally, legislation should be accelerated and accounting guidelines refined; technically, valuation methods should be reformed and standardized; at the enterprise level, differentiated empowerment strategies should be implemented; and for disclosure, a tiered and classified framework should be established to balance transparency and commercial secret protection while promoting data assetization.

6.2 Research Limitations and Outlook

Although this study strives for comprehensiveness, it still has certain limitations: First, the research content is influenced by the rapid iteration of policies and practices, potentially presenting timeliness limitations; second, case selections are mostly concentrated on typical enterprises that have disclosed information, with insufficient coverage of the actual dilemmas faced by a large number of small, medium, and micro enterprises, resulting in limited sample representativeness; third, methodologically, it emphasizes literature and case studies, lacking large-sample empirical verification, and the argumentation of the economic consequences of data asset recognition on the balance sheet remains at the theoretical level. Future research can delve into the specific mechanisms of the impact of recognition on enterprise valuation, financing, and other micro-level effects through empirical models.

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Conflicts of Interest

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