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A Study on the Risks Associated with On-Balance Sheet Recognition of Data Resources

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Abstract: This study focuses on the risks associated with the on-balance sheet recognition of data resources. At the legal level, disputes over ownership often arise due to unclear data property rights, while privacy protection, cybersecurity, and cross-border data flows create additional compliance challenges. In terms of recognition, the subjectivity of traditional valuation methods, the lack of active markets, and the rapid depreciation of data value caused by technological iteration hinder reliable measurement. With respect to disclosure, organizations face a dilemma between transparency and confidentiality. Collectively, these issues exacerbate audit risks. It is therefore imperative to establish an appropriate legal, accounting, and auditing framework to mitigate such risks and remove barriers to the proper recognition of data assets on balance sheets.

Keywords: Data resources; On-balance sheet recognition; Valuation uncertainty; Information disclosure; Risk

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1. Introduction

With the deepening development of the digital economy, data has been widely regarded as the "fifth factor of production." The volume of data in China has exhibited explosive growth, making the country one of the leaders in the rapid expansion of the digital economy. Under this background, the Chinese government has proposed incorporating data into the national strategic resource system. To promote the deep integration of the digital economy with the real economy, the Ministry of Finance of China issued the Interim Provisions on Accounting Treatment of Enterprise Data Resources (hereinafter referred to as the "Interim Provisions") in 2023, allowing companies to recognize data resources as assets in their balance sheets, provided that recognition and measurement criteria are met [1].

This policy represents the first formal accounting standard worldwide that explicitly permits enterprises to recognize data resources on the balance sheet, marking a milestone in accounting regulation. As of April 30, 2025, among more than 5,000 A-share listed companies in China, 100 had recognized data assets on their balance sheets,

with a total reported amount of 2.164 billion yuan. With the continuous advancement of the digital economy and further implementation of this policy, the number of listed companies recognizing data resources as assets is expected to increase. This institutional innovation not only responds to the practical demands of the digital economy but also raises profound theoretical and practical issues, particularly in the domain of risk identification, which merits in-depth exploration.

Currently, some scholars have attempted to establish theoretical foundations for the identification and measurement of data assets [2–5]. However, comprehensive risk analyses concerning "on-balance sheet recognition" remain insufficient, especially regarding the systematic review of risks across multiple dimensions, including measurement, legal compliance, information disclosure, and auditing. From the perspectives of accounting and auditing, this paper seeks to systematically identify and analyze potential risks in the recognition of data assets on balance sheets, with the aim of providing theoretical support and policy recommendations for improving relevant accounting standards, enhancing corporate information disclosure, and reducing auditors' risk exposure.

2. Literature review

2.1. Institutional basis for the on-balance sheet recognition of data resources

At present, major global accounting standard-setting bodies, including the International Accounting Standards Board (IASB), the Financial Accounting Standards Board (FASB), and the Australian Accounting Standards Board (AASB), have not yet issued explicit provisions regarding the recognition of data resources on balance sheets. However, the IASB, in its Conceptual Framework for Financial Reporting (2018), redefined the concept of an asset as "a present economic resource controlled by the entity as a result of past events, where an economic resource is a right that has the potential to produce economic benefits" [6]. This definition marks a significant departure from previous conceptualizations. First, the new definition explicitly states that an asset is the economic resource itself, rather than the future economic benefits it may generate; second, it no longer emphasizes the expectation of an inflow of economic benefits. Thus, the IASB's new definition has relaxed the criteria for recognizing assets in terms of rights, control, and economic resources, effectively removing a fundamental obstacle to recognizing data resources as accounting assets [7].

China's Basic Standard for Enterprise Accounting Standards defines assets as "resources formed as a result of past transactions or events, owned or controlled by an enterprise, and expected to bring future economic benefits to the enterprise" [8]. This standard does not redefine the concept of assets but continues to follow the IASB's 2010 definition. Under the current framework, only when data resources are acquired or transferred in the course of an enterprise's operations, are actually controlled by the enterprise or its departments, and are expected to generate value, do they meet the criteria for recognition as assets under accounting standards [9]. Evidently, many data resources fail to meet this definition.

In early 2022, the Ministry of Finance of China initiated research on the on-balance-sheet recognition of data resources. A draft of the Interim Provisions was released for public consultation in December 2022, and the final version was officially issued on August 21, 2023. This policy addresses key issues related to the accounting recognition, measurement, and reporting of data resources on balance sheets. Since the current accounting standards have not expanded the scope of asset recognition within financial statements, the Interim Provisions deliberately adopted the term "data resources" rather than "data assets," thereby circumventing the definitional constraints imposed by existing Chinese enterprise accounting standards on the concept of assets.

Consequently, a formal institutional basis has been established for recognizing data resources as accounting assets.

2.2. Recognition and measurement of data assets

The Interim Provisions apply to two categories of data resource accounting treatments. The first category includes data resources that can be recognized as intangible assets or inventories under existing accounting standards. The second category comprises data resources that meet the definition of an asset but do not satisfy the recognition criteria for assets. The accounting treatment of data resources involves the application of standards such as Accounting Standard for Business Enterprises No. 1–Inventories, No. 6–Intangible Assets, and No. 14–Revenue, along with their respective implementation guidelines. In applying these standards, the commercial purpose of holding data resources, their formation process, and the associated business models must be considered to determine their recognition, initial measurement, and subsequent measurement.

The China Academy of Information and Communications Technology (CAICT) proposed three principles for data asset recognition in its report Data Assetization: Research on Data Asset Recognition and Accounting Measurement (2020): realizability, controllability, and quantifiability [10]. Therefore, the recognition of data assets first requires identifying data resources that possess economic value for the relevant economic entity. Unlike other assets, the value of data resources depends on the entity that controls them. A dataset recognized as an asset under one entity's control may lose its economic value if transferred to another entity, or even under the same entity, its value may vary depending on business operations. Thus, recognition should carefully consider the controlling entity, the value creation model, and the measurement approach.

Currently, the main valuation methods for data resources include the cost approach, the income approach, and the market approach. In addition, non-arbitrage pricing, Shapley pricing, and Ramsey pricing methods have been proposed [11]. Regarding accounting measurement, two major perspectives prevail: one advocates a single measurement attribute, allowing data assets to be measured at historical cost, fair value, or present value [12,13]; the other supports a mixed measurement attribute. For data assets used internally or sold externally with ownership transferred, both initial and subsequent measurements adopt historical cost. For those sold externally with only usage rights transferred, initial measurement uses historical cost, while subsequent measurement applies fair value [14].

Although both academic and practice have explored various valuation methods for data resources, significant challenges remain, including the subjectivity of traditional valuation approaches and the lack of active markets. Furthermore, consensus has yet to be reached on the selection of appropriate accounting measurement attributes for data resources. Consequently, recognizing data assets on balance sheets under the current conditions entails inherent risks.

3. Risks in on-balance sheet recognition of data assets

3.1. Legal and compliance risks

According to both China's Enterprise Accounting Standards and the International Accounting Standards Board (IASB) definition of assets, one of the core criteria is that the enterprise must "own or control" the resource. This ownership and control essentially reflect the property rights of data resources. In practice, however, the ownership of data is often difficult to clearly define. During multi-party participation in data processing, the rights and boundaries among enterprises, users, and other stakeholders involved in the generation, collection, processing, storage, and utilization of data are frequently ambiguous, creating a high risk of disputes over ownership or control [15].

Moreover, the realization of data resource value depends on continuous processing, analysis, utilization, and sharing. If the data recognized on the balance sheet contain personal information collected without sufficient user authorization, used beyond its originally intended purpose, or lack necessary security protection measures, the entire data processing activity may be deemed unlawful. This not only could render the data asset valueless but may also trigger severe administrative penalties, civil compensation claims, or even criminal liability. Furthermore, in the event of a data breach or other security incident, companies face reputational damage, user attrition, and related derivative risks.

For enterprises engaged in cross-border operations or reliant on global cloud computing services, their data resources are often subject to cross-border storage or processing. Cross-border data transfer is strictly regulated under statutory procedures. Data transferred abroad in violation of these procedures cannot be legally "controlled" or "utilized," and recognizing such data as assets entails significant legal risks. For example, before transmitting data resources overseas, enterprises must undergo a security assessment organized by national cybersecurity authorities, sign standard contracts prescribed by those authorities, or obtain personal information protection certification. If any of these legal procedures are bypassed, enterprises may face orders to suspend transmission, mandatory data repatriation, substantial fines, or even revocation of related business licenses. Such penalties not only nullify the value of the affected data assets but may also disrupt the company's entire international business chain.

3.2. Uncertainty risks of data resources valuation

3.2.1. Subjectivity and limitations of valuation methods

As a unique non-physical asset, the value realization of data resources is heavily dependent on specific scenarios, technological conditions, and market environments. Currently, the assessment of data assets generally adopts the three traditional methods used for intangible assets: the cost approach, the income approach, and the market approach. However, each of these methods exhibits significant limitations.

The cost approach determines the value of data assets by summing up the expenses incurred in acquiring or creating them. However, the value of data often diverges greatly from its historical cost. Enterprises may invest substantial resources in data collection, cleansing, and storage system development, only to find that the resulting dataset has little or no commercial value due to poor quality or lack of application scenarios. Conversely, user behavior data obtained at low cost during service provision may hold substantial commercial value. Thus, the cost approach fails to reflect the true relationship between value and investment, potentially leading to overvaluation or undervaluation. Moreover, the cost structure of data assets is complex, with many joint costs being difficult to allocate accurately, undermining the reliability of this method.

The income approach estimates the current value by discounting the expected future economic benefits generated by the data asset. While this method aligns closely with the essence of asset definition under accounting standards, it poses significant practical challenges. The inflow of future economic benefits from data assets is highly uncertain, making the selection of parameters inherently subjective and increasing the risk of misvaluation. The IASB has also repeatedly discussed the challenges of recognizing and measuring intangible assets due to the difficulty in proving a stable and identifiable stream of future economic benefits.

The market approach estimates value by identifying transaction prices of identical or similar data assets in an active market. However, this method requires the existence of a public, active, and transparent market with comparable transactions. Currently, most data markets suffer from insufficient trading activity, difficulties in

ownership confirmation, and pricing uncertainty, hindering effective price discovery mechanisms.

Consequently, under the current asset valuation framework, data assets bear substantial valuation uncertainty risks. It is debatable whether the data assets recognized on balance sheets using these methods can truly represent an enterprise's actual financial position.

3.2.2. Rapid value depreciation due to technological advancements and business iteration

The value of data assets is highly dependent on the technologies that process them and the associated business models. Due to rapid technological advancements and frequent business iterations, data assets exhibit high time sensitivity. Data value is not static; it tends to decline over time, often at a rate faster than technological obsolescence itself. The value lifecycle of enterprise data assets is thus shortening, making it essential to establish dynamic and continuous mechanisms for valuation and revaluation [16]. Clearly, there is a misalignment between the current accounting measurement and disclosure framework and the characteristics of data resources, resulting in disclosed data information failing to reflect their true value.

3.3. Information disclosure risks

Information disclosure is essential for reducing information asymmetry. However, the complexity, incompleteness, and valuation uncertainty of data resources create a dilemma for data asset disclosure. These characteristics lead to a decline in the quality of disclosures. The diversity of data resource types, coupled with inconsistent formats, increases the difficulty of integration and processing. During data collection, processing, and storage, limitations of data resources, technical malfunctions, or human errors may prevent the data from fully and accurately reflecting the underlying reality.

As a result, investors and regulators require detailed knowledge of valuation assumptions and measurement models; otherwise, a single figure on the financial statements may mislead investors. This necessitates the disclosure of non-financial information related to data resource valuation. However, excessive disclosure may inadvertently reveal trade secrets or even compromise data security.

Existing research suggests that the market often reacts positively to the disclosure of data assets, interpreting it as a signal of innovation capacity and future profitability [17,18]. Nevertheless, there is currently no unified framework for data resource disclosure, granting companies significant discretion in determining what to disclose. This may result in selective or strategic disclosure, which neither accurately reflects value nor contributes to market stability, and may even distort market expectations.

3.4. Audit risks

In the current context, where data asset trading and circulation mechanisms are still in their infancy, legal and regulatory systems are under development, and valuation practices face significant limitations, the accounting treatment of data assets is prone to substantial audit risks. These risks primarily arise from challenges in confirming existence, rights and obligations, valuation and allocation, and the occurrence of data asset transactions [19]. The unique nature and time sensitivity of data assets, which often require specific application scenarios to generate value, make it difficult to determine their existence for audit purposes. To meet the definition of an asset, enterprises must demonstrate lawful, secure, and effective ownership or control over the data resources, as well as their potential to generate future economic benefits. However, the complexity of the interests involved makes this determination challenging.

Moreover, reliable measurement is a prerequisite for recognition, but data asset values are highly dependent on application contexts, and the use of different valuation models may lead to substantial discrepancies. This inevitably complicates valuation and allocation judgments during audits. Additionally, there is significant market demand for data asset transactions, particularly those involving sensitive or core data, which face compliance challenges. Improper handling may lead to privacy breaches or data security incidents, creating further difficulties for auditors in confirming the impact of such transactions on financial statements [20]. These factors collectively increase the audit risks associated with data asset recognition.

4. Risk prevention recommendations for on-balance sheet recognition of data resources

4.1. Establishing robust data ownership and compliance mechanisms

The key to incorporating data resources into balance sheets lies in clarifying their ownership and determining their value. First, it is essential to promote the legislation of data property rights and establish a data asset management system that defines the fundamental rights and legal responsibilities of various stakeholders involved in data production. This would provide a legal basis for distinguishing data ownership, operational rights, and usage rights. In addition, a strengthened data security and privacy protection framework should be established, with classified rights protection for different types of data resources and improved rules for determining infringement, thereby ensuring the adequate protection of all stakeholders' interests.

4.2. Improving valuation and information disclosure systems

To address valuation uncertainty, dedicated guidelines for the valuation of data resources should be developed. The Ministry of Finance, in collaboration with industry associations and valuation institutions, should clarify the conditions of application, parameter selection principles, and prioritization of the three main valuation methods, encourage the use of multiple approaches for cross-validation, and require the disclosure of key assumptions and sensitivity analyses.

Regarding information disclosure, a combined framework of mandatory and voluntary disclosure should be established: mandatory disclosure should include the scale of data assets, valuation methods, key assumptions, economic life, and major risks; while voluntary disclosure should encourage the inclusion of non-financial information in management discussions and analyses, such as data quality, application scenarios, and strategic value. Additionally, enterprises should establish a dynamic monitoring mechanism for the value of data assets to regularly assess impairment risks.

4.3. Strengthening audit supervision and risk control

Audit standard-setting bodies should revise relevant auditing standards in a timely manner to provide guidance for the audit of data assets, focusing on auditing procedures related to existence, rights and obligations, valuation, and allocation. Audit institutions should enhance the professional capacity of their auditors by developing professionals who are proficient not only in accounting and auditing but also in data science, information security, and law, or by employing cross-disciplinary expert teams for joint audits [21].

Enterprises should cooperate actively with auditors by providing sufficient and appropriate evidence, including documentation of data ownership, compliance statements, and valuation models, to jointly mitigate audit risks.

5. Conclusion

This study demonstrates that the recognition of data resources on the balance sheet is subject to legal compliance risks, information disclosure risks arising from value uncertainty, and audit risks. First, disputes over ownership and compliance deficiencies may fundamentally undermine the legitimacy of asset recognition. Second, traditional valuation methods face limitations, including weak correlation between data value and cost, high subjectivity in revenue forecasting, and the absence of active markets. Coupled with accelerated value depreciation due to technological iterations, these factors make it difficult to reliably measure fair value, resulting in information disclosures that may not accurately reflect the enterprise's actual asset position. Finally, the unique characteristics of data assets pose challenges to traditional audit procedures regarding existence, rights, and valuation. These risks indicate that the recognition of data resources on the balance sheet requires a framework that goes beyond traditional accounting standards. It is necessary to further improve relevant laws and regulations, develop specialized guidelines for data resource valuation, revise existing audit standards, and enhance auditor training to mitigate audit risks.

Disclosure statement

The author declares no conflict of interest.

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