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# *Regarding the Dual-Track Design Conception for Data Asset Recognition on Financial Statements*

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***Abstract.*** This paper focuses on the core dilemma of data asset recognition on financial statements—the conflict between lagging legal rights confirmation and advanced accounting standards. The current legal system exhibits "affirmation in principle but lack of specific rules" regarding data ownership ,e.g., Civil Code, resulting in ambiguous ownership reliant on case-by-case remedies ,e.g., "Sina Weibo v. MoMo case". Concurrently, International Financial Reporting Standards (IFRS) require assets to meet "identifiability" and "control" criteria. However, data's non-excludability, replicability, and uncertainty of future benefits ,e.g., medical data make traditional standards difficult to apply, creating "recognition implies violation" risks.To resolve this paradox, this paper proposes a framework for "Reconstructing the Legal-Accounting Collaborative Governance Mechanism," establishing a "dual-track" approach:Legal Confirmation Track: Adopts "layered rights determination by lifecycle + contextual ownership allocation." Based on the data lifecycle : raw/derivative/product data, it grants layered rights to users, enterprises, and society, with differential regulation via a "type-scenario" matrix.Accounting Confirmation Track: Introduces the "Dynamic Abacus" model. It dynamically assesses value from three dimensions: data quality, application scenario, and risk deduction, distinguishing "public welfare data assets" (cost method) from "operational data assets" (income method), utilizing blockchain verification to ensure authenticity and legitimate ownership.Cases like "MoMo case," "Luckin Coffee incident," and "diagnostic data cases" validate the dual-track's feasibility. The core contribution lies in deconstructing institutional tensions and constructing a collaborative framework, providing theoretical justification and a practical pathway for compliant data asset recognition on financial statements.

***Keywords:*** data asset recognition on financial statements, legal confirmation, data assets, data security, accounting ownership confirmation

## 1. Introduction

With the rapid development of the digital economy, the value of data as a new factor of production has become increasingly prominent. The issue of data property rights has emerged as one of the most contentious and research-worthy topics today. Data assets face an institutional conflict between lagging legal rights confirmation and advanced accounting standards during the accounting recognition process. This paradox not only traps enterprises in the compliance dilemma of

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"recognition on the statement implies violation" but also hinders the standardized development of the data factor market. This paper attempts to deconstruct the institutional tension between law and accounting and construct a "Reconstruction of the Legal and Accounting Collaborative Governance Mechanism," providing theoretical justification and a compliance pathway for the recognition of data assets on financial statements.

### 1.1. The fragmentation dilemma of legal rights confirmation

The current legal system exhibits a characteristic of "affirmation in principle but lack of specific rules" regarding the definition of data ownership. For example:

Article 127 of the Civil Code: "Where laws provide for the protection of data and online virtual assets, such provisions shall govern." This merely declares that "data is protected by law" but fails to clarify the scope of the rights' subjects and objects.

Article 7 of the Data Security Law: "The State protects the rights and interests of individuals and organizations related to data, encourages lawful, reasonable, and effective use of data, ensures lawful, orderly, and free flow of data, and promotes the development of the digital economy with data as a key factor." This emphasizes "obligations of data processors" but leaves the issue of data ownership unaddressed.

Article 44 of the Personal Information Protection Law: "Individuals have the right to know and decide on the processing of their personal information, and have the right to restrict or refuse the processing of their personal information by others; except as otherwise provided by laws and administrative regulations." This grants personal information self-determination rights, but the rights and interests of enterprises in derivative data formed through lawful collection still lack legislative confirmation.In judicial practice, courts often adjudicate data disputes based on contractual agreements or the principle of anti-unfair competition. For instance, in the "Sina Weibo v. MoMo case", the court ruled that MoMo's scraping of Weibo user data through technical means constituted unfair competition. However, the judgment avoided the issue of data ownership, relying solely on the "substantial substitution" effect as the basis for the ruling. This "case-by-case remedy" model exposes the ambiguity of legal rights confirmation standards, making it difficult to support the stable ownership judgments required for accounting recognition.

### 1.2. Practical conflicts in accounting standards

International Financial Reporting Standards (IFRS) require asset recognition to satisfy the criteria of "identifiability" and "control" (IAS 38). According to the IFRS Conceptual Framework's definition of an asset, data assets require both excludability and usefulness. The controversy over the excludability of data rights is precisely a prerequisite issue for constructing a data hierarchy system. Data possesses open and shareable characteristics, leading to its inheren non-excludability. Consequently, control boundaries become blurred. The replicability of data makes it difficult for enterprises to achieve physical exclusivity. For example, although an e-commerce platform may stipulate data usage rights through user agreements, competitors can still scrape similar information through public channels.Furthermore, if a company has excludability over data but lacks usefulness, or if its right to profits is uncertain – such as diagnostic data collected by medical research institutions with patients' informed consent – it may possess potential commercial value but, due to requirements for public interest sharing, its profit rights cannot be claimed exclusively. Therefore, the usage rights and ownership of data property rights should be integrated. Simultaneously,

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combining breakthroughs in asset recognition conditions can clearly reflect the status of data rights confirmation.

## 2. Mutual restructuring of data asset recognition systems

The "lag in legal rights confirmation" and "advancement in accounting standards" for data assets constitute a prominent contradiction in the current development of the digital economy, reflecting the asynchronicity between legal systems and accounting rules in data asset governance.

### 2.1. Stagnation in data property rights legislation

The law has yet to establish clear and unified provisions regarding the rights to data assets (ownership, usage rights, benefit rights, etc.), resulting in ambiguous ownership attribution for data assets and a lack of legal basis for related disputes [1]. For example, unclear ownership: There is no clear legal definition for who generates data or how benefits should be allocated. Furthermore, there is a lack of supporting regulations in scenarios such as data transactions, sharing, and cross-border flows, leading to compliance risks in practice – this constitutes a regulatory gap. Secondly, resolving disputes is difficult: Problems like data theft, abuse, and infringement occur frequently, but in judicial practice, ambiguous ownership makes effective adjudication difficult. These issues stem from data's non-excludability and dynamic nature, making traditional property law difficult to apply directly. Simultaneously, technological development far outpaces the legislative process, and policy formulation needs to balance the interests of multiple stakeholders. Currently, China's legal system and academia have not formed a unified, clear concept of data rights. For instance, Professor Wang Liming views data rights as a type of civil right [2]; Scholar Wu Handong proposed that "data rights should distinguish between personal information and data products" [3]. It can thus be deduced that data rights are a bundle of relationships derived from information; without establishing a unified definition, a unified normative system cannot be achieved.

### 2.2. Critique of interdisciplinary research paradigms

#### 2.2.1. Legal scholarship's "black box" treatment of accounting rules

The "black box" treatment of accounting rules in legal scholarship stems from the technical chasm between law and accounting due to disciplinary barriers: Law focuses on the external validity and compliance of rules, while accounting rules embed complex measurement logic and space for subjective judgment. This leads legal scholars to often simplify them into an "input-output" framework, focusing only on legal consequences while ignoring technical details. While this simplification enhances practical efficiency, it can lead to one-sided legal judgments ,e.g., underestimating the impact of management discretion on financial manipulation , blind spots in rule coordination e.g., profit conflicts between tax law and accounting standards, and internationalization risks ,e.g., legal interpretation deviations due to differences between IFRS and GAAP. Taking the Enron case as an example, the legal community initially focused on holding executives accountable but did not penetrate the loopholes in accounting rules. It was only after the Sarbanes-Oxley Act promoted joint reform of accounting and legal supervision that the necessity of "opening the box" became evident. Resolving this dilemma requires interdisciplinary collaboration, such as cross-research in law and finance, and the legal translation of technical concepts (e.g., defining the judicial review boundaries of "control"). It also necessitates strengthening judicial professionalism, introducing accounting expert assistance, and dynamically tracking rule evolution. This approach

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aims to safeguard legal functions while activating the systemic value of accounting rules interacting with the economy and society, thereby building a fairer and more transparent market order. Simultaneously, the confirmation of data asset ownership often involves a contradiction in the object relationship between law and accounting: Accounting recognition merely categorizes data assets within the scope of intangible assets, while legal confirmation considers their source, legality, and ownership issues arising from non-excludability. Specifically, the accounting recognition of data assets is divided into three categories: "profit-making," "operational," and "public welfare" [4]. The criterion for this categorization is whether the digital asset can generate economic benefits. In accounting, an excessively broad scope for asset rights confirmation will overlook data quality; legally, the traditional "ownership paradigm" overemphasizes the decisive role of the data source, neglecting the liquidity value of data.

### 2.2.2. Accounting academia's misjudgment of the "externality" of legal risks

Corporate legal risk refers to the possibility of adverse legal consequences contrary to the enterprise's desired goals occurring during the implementation of law due to non-standard specific legal acts by actors [5]. Traditional accounting theory, when assessing legal risks, commonly exhibits a tendency to misjudge "externalities." Specifically, it simplifies legal risk into a measurement issue of contingent liabilities at the individual enterprise level, neglecting its systemic impact on overall societal interests, market efficiency, and stakeholders. From the perspective of risk society theory, legal risk has evolved from a traditional individual solvency obligation into a source of systemic risk with significant negative externalities [6]. However, the current accounting theoretical framework's understanding of legal risk remains entrenched in an individualist paradigm. This cognitive bias, under the risk transmission effects of the digital economy era, is causing increasingly severe measurement failures. As accounting academia primarily considers the harm of legal risks to the enterprise itself while ignoring harm to the entire industry and society, the externality of legal risks is divided into a three-dimensional transmission mechanism:

Horizontal Industry Transmission: The non-compliant behavior of an individual enterprise triggers market risk reassessment of homogeneous entities through signal transmission. The Luckin Coffee financial fraud incident caused the short-selling ratio of Chinese concept stocks to surge from 7.3% to 22.4%, and the median price-to-earnings ratio of NASDAQ China Index constituents fell by 38%. For the Chinese market, it exposed the risks of the "burning money for growth" model in some enterprises, prompting domestic strengthening of regulations on VIE structures and data authenticity, such as the 2021 Data Security Law clarifying corporate data compliance obligations. It simultaneously exposed the governance shortcomings and regulatory arbitrage risks of Chinese concept stocks but also proved that through business restructuring and compliance rectification, enterprises can achieve value recovery.

Vertical Regulatory Transmission: Legal risk events trigger an escalation in regulatory intensity, generating compliance cost transfers across the entire industry. The enactment of the EU's General Data Protection Regulation (GDPR) was directly precipitated by the Facebook data breach incident. After GDPR implementation, the annual compliance expenditure of technology companies increased by $2.8 billion, far exceeding the €5 billion fine paid by Meta, the protagonist of the incident. Although this regulation increased costs for industry enterprises in the short term, it promoted an upgrade in data governance capabilities in the long run.

Intertemporal Transmission: The negative externality of legal risks exhibits significant time stickiness. Although Johnson & Johnson booked a $7.2 billion provision for its talcum powder litigation in 2018, the "carcinogen panic" it triggered forced the entire cosmetics industry to tilt

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R&D investment towards ingredient safety verification from 2019-2023 (Kline Group data), extending the new product launch cycle by 16 months. This intertemporal cost transfer essentially constitutes an erosion of market innovation efficiency.

## 3. Analytical framework construction:the dual-track of legal confirmation and accounting recognition

Clear property rights over data resources are a prerequisite for data asset recognition on financial statements, with the core lying in data rights confirmation. A review of current literature reveals issues such as ambiguous conceptual ownership of data, unclear institutional frameworks, and difficulties in measuring and assessing the value of data assets. Based on this, this paper proposes the "dual-track" approach to data rights confirmation, aiming to address the new challenges in data asset recognition on statements

### 3.1. Deconstruction of the tension in the dual-track

Fundamental differences exist between law and accounting in the governance of data assets. The Legal Confirmation Track centers on the allocation of rights and obligations, emphasizing the legality, stability, and social fairness of ownership boundaries. Its institutional logic is tightly bound, placing significant emphasis on the multi-party game involving the rights and obligations among data sources (users), processors (enterprises), and the public interest. It must ensure that the rights of all three parties are not infringed. In contrast, the Accounting Recognition Track centers on the control of economic resources, focusing on the measurability of asset value, the certainty of benefit attribution, and the assessability of risk-bearing. Its institutional logic must satisfy the fair value reflection in enterprise financial statements and the decision-making needs of investors, placing extreme emphasis on gains, losses, and their destinations [7].

Furthermore, there exists a conflict in the nature of the object: Law emphasizes the "relational" aspect of data as an object of rights, such as the privacy of personal information, and the non-excludability of public data versus the excludability of enterprise data. Accounting, however, emphasizes its "functional" aspect as an economic resource. It satisfies the excludability criterion of an asset—the subject can restrict others from using the resource without permission—whereas data resources under the legal track lack this function, requiring only compliance with policies and regulations. It satisfies the convertibility of future economic benefits—economic benefits can be realized through use, exchange, or leasing. However, once rights and obligations are confirmed under the Legal Confirmation Track, they are non-convertible. Legal confirmation only protects past and present economic gains and losses, providing no definitive protection for future economic benefits.

Based on the time dimension, legal rights confirmation requires long-term institutional trial and error. For example, property law has undergone a century-long evolution, transitioning from absolute dominion to social collaboration. Accounting recognition, conversely, requires the immediate reflection of market value fluctuations and the fair value assessment of data assets.

Disagreements in value judgment prevent consensus between the two tracks. Law pursues "distributive justice," prioritizing, for instance, the right to informational self-determination for personal data. Accounting pursues "commutative justice," such as maximizing the return on data assets. Law advocates a rights-based approach, upholding rights protection and fair distribution. Accounting advocates an efficiency-based approach, upholding efficiency measurement and benefit maximization. Resolving these conflicts should not involve negating either side, but rather

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prioritizing one over the other depending on the specific context, with the other playing a supplementary role.

### 3.2. Design principles of the "dual-track" collaborative mechanism

Abandoning reliance on the traditional property rights paradigm, the mechanism shifts from the singular attribution of data asset ownership towards a property rights structure adapted to the laws of data value creation and realization, establishing the confirmation of usufruct rights and holder rights from different perspectives. The "Dual-Track" collaborative mechanism promotes the governance of data rights from institutional conflict to functional complementarity by constructing a two-way adaptation interface between legal and accounting systems. Under specific governance capacity mechanisms, data rights are fluid [8].

At the factorization stage, the emphasis should be on leveraging the non-excludability and disseminability of data assets based on the concept of sharing. At the productization stage, the emphasis shifts to ownership attribution from the perspectives of data processing and configuration.

On the Legal Confirmation Track, adopt the dual path of "Layered Rights Determination Based on Lifecycle + Contextual Ownership Allocation":

On one hand, establish a three-tiered rights structure based on the data lifecycle: Safeguard users' right to know and right to withdraw regarding raw data based on the Personal Information Protection Law; grant enterprises restricted disposal rights over derivative data through the Data Security Law; and establish exclusive rights to benefits for data products via the Anti-Unfair Competition Law.

On the other hand, implement differentiated regulation by constructing a "Data Type - Application Scenario" matrix. For example, prohibit the trading of personal biometric data in commercial scenarios while mandating its sharing in public epidemic prevention scenarios; for enterprise behavioral data, implement a dual-track management system involving limited licensed use and desensitized reporting.

On the Accounting Recognition Track, adopt the "Dynamic Abacus" approach, the purpose of which is to resolve the singular usage constraint of ownership. First, evaluate data value across three dimensions:

Dimension 1: Quality

Dimension 2: Usage Scenario

Dimension 3: Risk Deduction.

If the data meets all three dimensions, it can be disposed of through sale.,This constitutes the "public welfare disposal" of data. After scoring the data's value and appraising it, it is released into society for sale and use, increasing the usufruct rights and introducing new producers. Because data benefits from circulation, this can enhance its value [9]. When the data trading market value consistently falls below the book value, re-evaluation is required. Repeated use of data leads to depreciation, but the data owner profits from each use, which to some extent safeguards the owner's rights.

This dual-track approach reflects both the strength of legal protection and the actual market value, solving the traditional accounting dilemma of handling multiple data uses and ambiguous ownership. It also provides a certain degree of legal protection for the cooperation between data sources and data producers.

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## 4. Case analysis

The article selects three cases for analysis and discussion concerning the Legal Confirmation Track and the Accounting Recognition Track respectively, to substantiate the feasibility of the "Dual-Track Theory".

### 4.1. Illegal data scraping: introducing "restricted disposal rights" and "dynamic assessment"

In the Sina Weibo v. MoMo case, the court ruled that MoMo's scraping of Weibo user data constituted infringement based on the principle of "anti-unfair competition." However, the judgment did not clarify the ownership of the data, relying solely on the "substantial substitution" effect as the basis for the decision. This case exposed the ambiguity in legal confirmation of data rights: although the Civil Code declares that data is protected, it lacks specific ownership rules. Consequently, when enterprises seek to recognize user data as assets on their financial statements, the "control" requirement necessary for accounting recognition is difficult to satisfy. For example, while Weibo claims the right to use data through user agreements, competitors can still scrape similar information via technical means, creating conflicts in the exclusivity boundaries of data assets at both legal and accounting levels. The practical pathway of the Dual-Track collaborative mechanism lies in the law clearly defining "restricted disposal rights" for derivative data (e.g., exclusive use rights for processed data by enterprises), while accounting needs to introduce a dynamic assessment model (e.g., adjusting asset value based on data breach risks). This approach provides stability through legal rights confirmation and reflects market fluctuations through accounting measurement, jointly resolving the compliance dilemma of recognizing data assets on financial statements [10].

### 4.2. Luckin coffee financial fraud: embedding legal compliance requirements into the accounting recognition process

The Luckin Coffee financial fraud incident revealed the systemic risk arising from the disconnect between legal and accounting rules. Luckin fabricated transaction data to inflate revenue, triggering a crisis of confidence in US-listed Chinese stocks and invoking the mandatory supervision of data authenticity under the Data Security Law. However, accounting standards did not require third-party verification of data source reliability, allowing the fraudulent behavior to remain concealed for an extended period. The solution direction under the Dual-Track synergy is: the law deters misconduct by strengthening legal liabilities for data fraud (e.g., criminal prosecution and high fines), while accounting needs to revise its standards to require blockchain-based evidence storage or verification by auditing bodies before data asset recognition on financial statements, thereby embedding legal compliance requirements into the accounting recognition process. For instance, following the Luckin incident, some e-commerce platforms began using blockchain technology to record transaction data flows. This simultaneously satisfies legal requirements for data authenticity [11] and provides a traceable evidence chain for accounting recognition, demonstrating the deep coupling of legal enforceability and accounting technicality.

### 4.3. Analysis of medical diagnosis and treatment data: the flow of interests between law and accounting

The controversy over medical diagnosis and treatment data in medical research institutions highlights the conflict scenario between public welfare and commercial interests. Diagnosis and treatment data collected by medical institutions with patient informed consent possesses potential

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commercial value. However, the law restricts exclusive profit rights due to public interest concerns, leading to obstacles in accounting recognition due to the "uncertainty of future economic benefits". A provincial hospital attempted a "contextualized rights confirmation" solution: At the legal level, it stipulated that compensation must be paid to patients when data is used for drug research and development. At the accounting level, it recognizes revenue only when actual commercial benefits are generated and lists unrealized data as "contingent assets" for disclosure. This model, by setting profit distribution rules through law and adopting the principle of prudence in accounting recognition, both safeguards patient rights and incentivizes data value extraction. It provides a viable pathway for recognizing public welfare data assets on financial statements.

## 5. Conclusion and academic dialogue

Data asset recognition on financial statements, as an institutional innovation in the digital economy era, is both a critical link in enterprise digital transformation and a key lever for the national reform of market-oriented allocation of data factors. By deconstructing the institutional tension between law and accounting in data asset governance, this paper proposes the theoretical framework of "Reconstruction of the Legal-Accounting Collaborative Governance Mechanism." Combining case analysis and practical pathways, it provides a systematic solution to resolve the compliance dilemma of data asset recognition.

### 5.1. Challenges to traditional theories

The core innovation of this paper lies in breaking through the "all-or-nothing" recognition model of traditional property rights theory and proposing a "Dual-Track Collaborative Mechanism." This mechanism achieves dynamic balance of data rights and interests through bidirectional adaptation of legal confirmation and accounting rights recognition.

Subverting the Static Paradigm of Legal Rights Confirmation:Traditional property law emphasizes the absoluteness and exclusivity of ownership [12]. However, data's non-rivalry and replicability make this difficult to apply. This paper proposes "Layered Rights Determination by Lifecycle" and "Contextual Ownership Allocation." For example, in medical data scenarios, patients retain the right to know regarding raw data, medical institutions enjoy restricted disposal rights over derivative data, and commercialized benefits must be shared with patients. This layered rights determination safeguards public interests while incentivizing data value extraction.

Reconstructing the Logical Boundaries of Accounting Recognition:Addressing the dynamic value characteristics of data assets, this paper proposes the "Dynamic Abacus" model. This model incorporates data quality, application scenarios, and risk deduction into the valuation system. For instance, transaction data of e-commerce platforms requires periodic adjustment of book value based on market fluctuations. Blockchain-based verification ensures synchronization between accounting measurement and legal compliance, avoiding the systemic risks triggered by data fraud as seen in the Luckin Coffee incident.

### 5.2. Policy iteration recommendations

Based on the "dual-track" theory, this paper proposes the following policy optimization pathways:

First, at the legislative level:

Enact the "Data Property Rights Law" to clarify the "separation of three rights" framework for data resource holding rights, data product operation rights, and data benefit distribution rights. It

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should refine the rules for ownership allocation in different scenarios (e.g., mandatory sharing for public data, limited licensing for commercial data).

Promote the revision of the "Anti-Unfair Competition Law" to incorporate new types of infringements such as data scraping and algorithmic discrimination into its regulatory scope. Introduce the concept of "dynamic compliance", requiring enterprises to regularly disclose their legal risk exposure concerning data assets.

Second, at the accounting standards level:

Secondly, at the level of accounting standards, it is recommended to establish a primary account titled "Data Resources," distinguishing between "Public Welfare Data Assets" and "Operational Data Assets," and specify differential measurement and disclosure rules. For example, public welfare data may be measured using the cost method, while operational data needs to assess present value using the income method.

Mandate that data assets undergo third-party blockchain-based record keeping or audit verification prior to recognition on financial statements. This ensures the authenticity of the data source and the legitimacy of ownership, preventing financial fraud and compliance risks.

Finally, at the market cultivation level:

Support the specialized development of regional data exchanges. Explore the "data trust" model, where trustee institutions manage the usage and benefit distribution of sensitive data.

Establish industry standards for data asset valuation. Collaborate with accounting firms, law firms, and data technology companies to develop adaptable assessment toolkits for multiple scenarios (e.g., medical data valuation models, industrial data risk deduction coefficient tables).

## 6. Conclusion

The recognition of data assets on financial statements is by no means a mere technical accounting issue; it is an institutional microcosm of the restructuring of production relations in the digital age. Only through deep synergy between law and accounting can we resolve the "institutional paradox" and realize the value leap of data as a factor—"from resource to asset, and from asset to capital". The "dual-track" theory proposed in this paper is merely a starting point. The future requires continuous efforts to promote interdisciplinary dialogue, policy iteration, and practical innovation, thereby contributing Chinese wisdom to global data governance.

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