

Research on the Impact of Data Asset Valuation on Corporate Financing Efficiency

Fang Bai¹

¹School of Economics and Management, Shanxi Open University, Taiyuan 030024, Shanxi, China

Corresponding author: Fang Bai (e-mail: sxbaifang@163.com)

ABSTRACT As a new type of production factor, data assets increasingly affect corporate financing capacity and capital acquisition efficiency. Based on information asymmetry theory and the resource-based view, this paper constructs a theoretical model of the impact of data asset valuation on financing efficiency. A mixed research method combining questionnaire surveys and in-depth interviews is adopted to investigate credit-approval personnel of financial institutions and financial directors of digital economy enterprises. The results show that the quality of data asset valuation significantly improves financing efficiency by reducing information asymmetry. The standardization level of valuation plays a mediating role, while the recognition of valuation results by financial institutions exerts a moderating effect. Further analysis indicates that the cost approach is suitable for basic data assets, the income approach is suitable for operational data assets, and the market approach is applicable to transactional data assets under specific market conditions. The combined use of these methods can quantify data-asset value more comprehensively, providing theoretical guidance and practical reference for optimizing corporate financing decisions in the digital economy.

INDEX TERMS data assets, asset valuation, financing efficiency, information asymmetry, valuation standardization

I. INTRODUCTION

IN the era of digital economy, data derived from manufacturing cycles and performance metrics has become a core enterprise asset, yet its intangible and dynamic nature prevents financial institutions from accurately assessing true corporate value, resulting in persistent financing bottlenecks. Traditional financial statements cannot fully reflect the economic value of data assets, and the information asymmetry between enterprises and financial institutions exacerbates financing difficulties. Establishing a scientific data asset valuation system can not only help enterprises clearly demonstrate their asset strength but also provide reliable risk assessment basis for financial institutions [1]. The application of emerging technologies such as blockchain and artificial intelligence provides technical support for data asset valuation, making the results more transparent and credible. Exploring the internal mechanism between data asset valuation and financing efficiency is of great theoretical and practical significance for resolving the financing predicament of digital economy enterprises and promoting the market-oriented allocation of data factors.

II. THEORETICAL FRAMEWORK OF DATA ASSET VALUATION

A. CONNOTATION DEFINITION AND VALUE ATTRIBUTES OF DATA ASSETS

Data assets encompass economically beneficial resources controlled by enterprises, integrating customer transactions and business operations with specialized manufacturing parameters and performance datasets. Such assets have significant intangible characteristics and are difficult to accurately measure through traditional accounting subjects. Meanwhile, they exhibit strong dynamics, and their value fluctuates with the passage of time, technological updates, and changes in market demand. The reusability of data assets distinguishes them from traditional physical assets; the same dataset can be repeatedly used in different business scenarios without generating losses, thus the potential to create value shows nonlinear growth. In addition, the value realization of data assets depends on enterprises' data processing capabilities and application scenarios; raw data can be transformed into actual productivity only after cleaning, annotation, and modeling. Financial institutions often ignore the potential value of data assets when evaluating corporate assets, leading to the predicament of low financing valuation for digital economy enterprises. Establishing a scientific data asset valuation system can quantify the true value of such intangible assets, enabling enterprises to present a complete

asset structure during financing.

B. THREE MAJOR METHOD SYSTEMS FOR DATA ASSET VALUATION

Data asset valuation has formed three core method systems: cost approach, income approach, and market approach, each applicable to different types of data asset scenarios. The cost approach determines asset value by calculating the historical costs incurred in data collection, storage, processing, and maintenance. However, this method has significant limitations when applied to customer data and strategic datasets where acquisition costs are minimal, but market value is substantial. For instance, customer behavioral data collected through routine business operations may incur negligible direct costs yet possess considerable strategic value due to network effects and predictive capabilities. Therefore, the cost approach should be restricted to infrastructure-level data assets where replacement cost meaningfully reflects value, such as proprietary sensor networks in manufacturing or specialized testing databases requiring substantial capital investment. For customer relationship data and transaction records, the cost approach should serve only as a valuation floor, with the income or market approach providing more accurate value estimates [2]. The market approach conducts comparative pricing based on the transaction prices of similar data assets in the open market, mainly applied to the valuation of transactional data assets [3]. However, the current absence of mature, liquid data exchange markets in most jurisdictions severely limits the practical applicability of this method. Unlike financial assets or real estate where active markets provide continuous price discovery, data asset transactions typically occur through bilateral negotiations with limited price transparency. Consequently, while the market approach represents the theoretical ideal for transactional data assets—directly reflecting what informed buyers would pay—it currently functions more as an aspirational framework than an operationally viable method for most enterprises. In practice, valuation institutions must rely on limited comparable transactions, often requiring substantial adjustments for differences in data quality, scope, and usage rights, which reintroduces significant subjectivity. Until data exchanges achieve sufficient transaction volume and standardization, the market approach should be applied cautiously with explicit disclosure of comparability limitations, while the income approach often provides a more feasible alternative for valuing transactional data assets based on projected licensing revenues (see Table 1).

III. MECHANISM OF DATA ASSET VALUATION ON FINANCING EFFICIENCY

A. THEORETICAL BASIS AND INFLUENCING FACTORS OF FINANCING EFFICIENCY

Financing efficiency measures an enterprise's ability to obtain the required funds at the lowest cost and fastest speed, and this concept is based on the capital market efficiency theory and information asymmetry theory. Corporate

financing efficiency is constrained by both internal factors and external environments. Internal factors include enterprise asset quality, financial transparency, profitability, and collateral value, which directly affect the credit decisions of financial institutions. External factors cover the development level of financial markets, regulatory policy environment, industry competition situation, and macroeconomic cycle, which jointly shape the financing environment of enterprises [3,4]. Information asymmetry is the core obstacle restricting financing efficiency: enterprises have complete information about their own operating conditions, while financial institutions can only understand the true situation of enterprises through limited channels such as financial statements and audit reports, thus resulting in adverse selection and moral hazard problems. The asset structure of digital economy enterprises is dominated by intangible assets such as data and technology, and traditional financial indicators cannot fully reflect their value creation capacity, leading to a significant deviation between the financing evaluation system and the actual situation of enterprises.

B. TRANSMISSION PATH OF DATA ASSET VALUATION ALLEVIATING INFORMATION ASYMMETRY

Data asset valuation reduces the degree of information asymmetry between enterprises and financial institutions through an information disclosure mechanism, thereby improving financing efficiency. The valuation process requires enterprises to systematically sort out the type, scale, application scenarios, and income contribution of data assets. This process itself promotes enterprises to establish a data asset management system, transforming the originally implicit data value into quantifiable asset indicators. After obtaining the valuation report, financial institutions can more accurately judge the true asset scale and profit potential of enterprises, thus reducing information collection costs and risk premiums. The valuation results convert the future income capacity of data assets into currently identifiable value data, enabling financial institutions to comprehensively consider the value of enterprises' intangible assets in credit approval instead of relying solely on fixed asset mortgages [5]. This transmission mechanism operates through a three-level process: valuation activities promote systematic information production, valuation reports facilitate structured information transmission, and quantified valuation results provide objective foundations for credit judgment. The rigor and methodological soundness of this process directly determine the credibility of outcomes and their acceptance by financial institutions. The application of blockchain technology can ensure the authenticity and immutability of valuation data by creating verifiable audit trails of data lineage, ownership transfers, and historical valuations, thereby reducing manipulation risks. However, while artificial intelligence algorithms can improve the prediction accuracy of valuation models through pattern recognition in comparable transactions and automated sensitivity testing, they cannot eliminate the inherently subjective

TABLE 1. Comparison of Data Asset Valuation Methods

Valuation Method	Core Principle	Calculation Basis	Applicable Asset Types	Main Advantages	Limitations
Cost Approach	Accumulation of historical costs	Collection, storage, and processing costs	Basic data assets	Strong operability, easy access to cost data	Ignores future benefits, difficult to reflect market value, significantly under-values strategic data with minimal acquisition costs
Income Approach	Discounting of future benefits	Expected income streams and discount rate	Operational data assets	Reflects profitability, conforms to investment logic	High uncertainty in forecasting, subjective parameter selection, requires AI-assisted sensitivity analysis
Market Approach	Comparison of market transactions	Transaction prices of similar assets	Transactional data assets	Reflects real market value	Currently impractical in most markets due to insufficient transaction volume and price transparency, relies on active markets, lack of comparable cases

nature of certain Income Approach parameters. Discount rate selection, growth rate projections, and terminal value assumptions remain judgment-based decisions requiring human expertise and market context. AI’s contribution lies in providing data-driven ranges and probabilistic distributions for these parameters rather than definitive values, enabling valuation institutions to demonstrate the statistical basis for their selections and conduct robust sensitivity analyses. The effectiveness of the transmission path depends on the combination of technological verification (ensuring data integrity) and professional judgment (determining appropriate parameters); high-quality valuation work integrating both elements can significantly shorten the financing cycle and reduce financing costs, as show in Figure 1.

C. DUAL MECHANISMS OF VALUATION
STANDARDIZATION AND FINANCIAL INSTITUTION
RECOGNITION

The standardization level of valuation and the recognition of financial institutions constitute the dual mechanisms affecting financing efficiency, and their interaction jointly determines the actual utility of data asset valuation results[6]. Valuation standardization is reflected in the formation of unified norms in valuation method selection, parameter setting, and report format. The improvement of standardization level makes the valuation results of different enterprises comparable, and financial institutions can establish risk pricing models based on the value of data assets. The lack of unified standards leads to huge differences in valuation results, making it difficult for financial institutions to incorporate them into the conventional credit approval process, thus the financing promotion effect of valuation work is greatly reduced. The recognition of financial institutions depends on the qualification and credibility of valuation institutions, the scientificity of valuation methods, and the verification mechanism of valuation results. Highly recognized valuation results can directly affect the credit

line and interest rate pricing [7]. In practice, there are cases where the standardization level of valuation is high but the recognition of financial institutions is insufficient, which is due to financial institutions’ limited understanding of the risk characteristics of data assets and the lack of corresponding risk management tools. The table below analyzes the operational characteristics and synergistic effects of the two mechanisms, revealing that improving financing efficiency requires simultaneously advancing standardization construction and institutional cognitive training (see Table 2).

IV. SURVEY ANALYSIS ON THE IMPACT OF DATA
ASSET VALUATION ON FINANCING EFFICIENCY
A. SURVEY DESIGN AND DATA COLLECTION
METHODS

The research adopts a mixed research method, collecting data through a combination of questionnaire surveys and in-depth interviews to ensure the reliability and validity of the research conclusions. The questionnaire survey is conducted among two groups of subjects: 328 credit approval personnel from commercial banks, policy banks, and financial technology companies, and 256 financial directors from digital economy fields such as Internet platforms, data service providers, and artificial intelligence enterprises. The survey period spans from June to October 2024. This study was approved by the Ethics Committee of Shanxi Open University, and was performed in accordance with the principles of the Declaration of Helsinki. All eligible participants signed an informed consent form. The questionnaire design constructs measurement scales based on existing literature; financing efficiency is measured through three dimensions: financing cycle, financing cost, and credit line. Valuation quality is evaluated through objective technical criteria independent of financing outcomes: methodological rigor (adherence to established valuation frameworks and parameter justification), data integrity (completeness, accuracy, and verifiability of underlying datasets), and procedural transparency

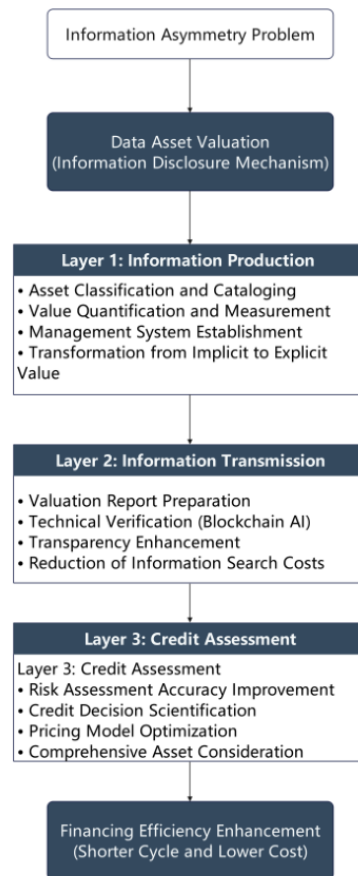


FIGURE 1. Transmission Path of Data Asset Valuation Alleviating Information Asymmetry

TABLE 2. Analysis of Dual Mechanisms of Valuation Standardization and Financial Institution Recognition

Mechanism Dimension	Core Connotation	Action Path	Impact Effect	Restrictive Factors
Valuation Standardization	Unification of methods, parameters, and processes	Improve result comparability → support risk pricing models	Shorten approval cycle, reduce communication costs	Insufficient industry consensus, lack of technical standards
Institutional Recognition	Financial institutions' trust in results	Enhance result usability → directly affect credit decisions	Increase credit line, optimize interest rate pricing	Limited risk cognition, lack of management tools
Synergistic Effect	Standardization supports the improvement of recognition	Standardization provides technical basis for recognition	Substantive application of valuation results in financing	Need for institutional construction and capacity building

(documentation of assumptions, calculations, and sensitivity analyses). This measurement approach ensures that valuation quality assessment precedes and remains separate from financing performance evaluation, thereby avoiding circular reasoning. Institutional recognition is treated as a separate moderating variable rather than a component of quality, measured through financial institutions' stated willingness to incorporate valuation results into credit decisions. In-depth interviews select risk management department heads from 15 financial institutions and senior executives from 12 digital economy enterprises for semi-structured interviews, with each interview lasting 60 to 90 minutes, focusing on the pain points and needs in data asset valuation practices [8]. Data

collection combines online questionnaire platforms with offline interview recordings; the online questionnaire recovery rate reaches 76.3%, and 584 valid samples are obtained after excluding invalid questionnaires. The survey sample exhibits potential selection bias, as enterprises that have successfully completed data asset valuation and obtained financing are more likely to participate than those whose valuation efforts failed or who never attempted valuation. To address this limitation, we actively recruited enterprises through industry associations and government SME support programs, specifically targeting firms that had attempted but not completed valuation processes (18% of enterprise sample) and those considering but not yet pursuing valuation

(12% of enterprise sample). We also weighted the regression analysis to account for potential overrepresentation of successful cases, applying inverse probability weighting based on enterprise size and industry distribution in the broader digital economy population. These methodological adjustments help mitigate, though cannot completely eliminate, the positive bias in reported financing improvements (see Table 3).

B. ANALYSIS OF RECOGNITION OF VALUATION RESULTS FROM THE PERSPECTIVE OF FINANCIAL INSTITUTIONS

The recognition of data asset valuation results by financial institutions is affected by multiple factors such as the reliability of valuation methods, the qualification of valuation institutions, and the completeness of valuation reports. Survey data shows that only 42.7% of credit approval personnel stated that they would take data asset valuation results as an important basis for credit decisions, a proportion far lower than the recognition of traditional asset valuation results (78.3%). In-depth interviews reveal three core reasons for the low recognition: the lack of unified industry standards for valuation methods leads to poor comparability of results; the subjective selection of valuation parameters causes large fluctuations in results; and the uneven professional capabilities of valuation institutions affect the credibility of results. There are significant differences in recognition among different types of financial institutions: the recognition rate of financial technology companies for valuation results reaches 68.5%, while that of state-owned commercial banks is only 31.4%, which stems from the fact that financial technology companies have accumulated more experience in data asset valuation during their digital transformation [9]. The level of recognition directly affects the practical application of valuation results in financing decisions; high recognition enables valuation results to be converted into an increase in credit line or optimization of interest rates, while low recognition leads to valuation work being a mere formality [10].

C. RELATIONSHIP BETWEEN VALUATION QUALITY AND FINANCING PERFORMANCE FROM THE PERSPECTIVE OF ENTERPRISES

There is a significant positive correlation between the quality level of enterprises' data asset valuation and their financing performance. Survey data indicates that enterprises implementing high-quality valuation show obvious advantages in three dimensions: financing cycle, financing cost, and credit line. Specifically, the average financing cycle of enterprises with high-level valuation quality is 45 days, 38.2% shorter than that of enterprises without valuation; the financing cost is reduced by 1.2 percentage points, and the increase in credit line reaches 27.6%. The measurement standards of valuation quality include the adaptability of valuation methods, the reliability of data sources, and the standardization level of valuation reports [11]; these three

elements jointly determine the actual effect of valuation work. In-depth interviews find that enterprises using the income approach to evaluate operational data assets obtain significantly better financing conditions than those solely using the cost approach, because the income approach can demonstrate the profitability and growth potential of data assets to financial institutions [12]. The impact of valuation quality on financing performance varies by industry: Internet platform enterprises benefit significantly due to their high proportion of data assets, while the improvement effect on traditional manufacturing enterprises is relatively limited. The table below quantitatively shows the financing performance indicators corresponding to different valuation quality levels, revealing the actual value brought by the improvement of valuation quality (see Table 4).

V. STRATEGIC SUGGESTIONS FOR IMPROVING DATA ASSET VALUATION QUALITY

A. CONSTRUCT A CLASSIFIED AND GRADED DATA ASSET VALUATION STANDARD

Establishing a classified and graded data asset valuation standard system is the basic project for improving valuation quality and promoting financing applications. Data assets should be managed by classification according to their source characteristics, application scenarios, and value realization methods. Basic data assets include original data accumulated internally by enterprises such as customer information and transaction records; operational data assets cover data products used for business decision-making after cleaning and processing; transactional data assets refer to data commodities that can be circulated and traded in the market [13]. Different types of data assets should adopt differentiated valuation methods and parameter systems: basic data assets focus on the cost approach because their value is mainly reflected in historical investment; operational data assets are suitable for the income approach because they can continuously generate cash flows; transactional data assets prioritize the market approach to reflect actual transaction prices [14]. The hierarchical management system should set quality grade standards for data assets, including quantitative indicators in dimensions such as data completeness, accuracy, timeliness, and compliance, enabling valuation institutions to objectively grade data assets. Timeliness thresholds must be differentiated by data type due to varying decay rates: transactional data from real-time market activities may become obsolete within days, requiring monthly refresh cycles for Grade A classification; customer demographic data remains stable over quarters, permitting a three-month threshold; while fundamental fiber performance characteristics from standardized testing maintain relevance for years, allowing annual updates for top-tier grading. A universal temporal standard fails to account for these inherent differences in data volatility and would inappropriately penalize stable datasets or inadequately scrutinize rapidly depreciating information. Regulatory authorities and industry associations need to jointly formulate unified valua-

TABLE 3. Distribution of Basic Characteristics of Survey Samples

Sample Category	Subtype	Number of Samples	Proportion (%)	Main Characteristics
Financial Institutions (328 people)	State-owned commercial banks	89	27.1	Large credit scale, sound risk control system
	Joint-stock banks	126	38.4	Strong innovation awareness, high digitalization level
	Policy banks	54	16.5	Executive institutions of supportive policies
	Financial technology companies	59	18.0	Technology-driven, innovative valuation methods
Digital Economy Enterprises (256 people)	Internet platforms	98	38.3	Large-scale data assets, rich application scenarios
	Data service providers	76	29.7	Active data transactions, urgent valuation needs
	Artificial intelligence enterprises	82	32.0	Technology-intensive, strong financing demand

TABLE 4. Analysis of the Relationship between Valuation Quality and Corporate Financing Performance

Valuation Quality Level	Number of Enterprises	Average Financing Cycle (days)	Average Financing Cost (%)	Increase in Credit Line (%)	Recognition Rate by Financial Institutions (%)
High-quality Valuation	68	45	5.8	27.6	71.2
Medium-quality Valuation	112	58	6.4	16.3	52.8
Low-quality Valuation	76	69	7.1	8.7	28.4
No Valuation	—	73	7.0	Benchmark	0
Improvement Effect	—	-38.2%	-1.2 percentage points	+27.6%	—

tion norms that incorporate asset-specific timeliness criteria, clarify the parameter value ranges, discount rate selection basis, and report disclosure requirements for various data assets, thus forming an operable standard system. The figure below proposes the framework design of the classified and graded valuation standard (see Figure 2).

B. PROMOTE THE APPLICATION OF VALUATION RESULTS IN THE FINANCING FIELD

The transformation of valuation results into financing practices requires the establishment of a multi-party collaborative application promotion mechanism. Financial institutions should incorporate data asset valuation results into the credit approval process, develop special data asset pledge financing products, and provide credit line increments or interest rate preferential policies for high-quality valuation results. Regulatory authorities can share the innovation risks of financial institutions by setting up a data asset financing risk compensation fund, encourage them to expand the scale of data asset mortgage loans, and establish a data asset disposal market to address financial institutions' concerns about the liquidity of collateral [15]. Valuation institutions need to strengthen information sharing with financial institutions and establish a real-time update mechanism for valuation results, enabling financial institutions to dynamically track changes in data asset value, thus improving the accuracy of risk management. The application of technical means can significantly enhance the credibility of valuation results: blockchain technology can be used to record the ownership information and value change trajectory of data assets, and artificial intelligence algorithms can realize intelligent calibration of valuation parameters and risk early warning. Enterprises should take the initiative to disclose data asset management information, establish a data asset account

system, regularly update valuation reports, and provide detailed value support materials to financiers. The table below designs the supporting mechanisms and implementation paths for the application of valuation results.

VI. CONCLUSION

The valuation of data assets derived from manufacturing processes and performance metrics constitutes a vital breakthrough for resolving the financing difficulties of digital economy enterprises. Through theoretical analysis and survey verification, this paper clarifies the improvement effect of valuation quality on financing efficiency and its internal mechanism. The study reveals that scientific valuation of manufacturing parameters and fiber performance data effectively reduces the information asymmetry between enterprises and financial institutions, making standardized and transparent valuation results the key to gaining institutional recognition. In the future, efforts should be continued in three aspects: establishing a unified and standardized data asset valuation standard system, clarifying the valuation methods and parameter settings for different types of data assets; promoting the substantive application of valuation results in financing links such as credit approval and risk pricing, and developing innovative financing products such as data asset mortgage and pledge; strengthening the cognitive training of financial institutions on data assets, and improving their valuation capabilities and risk management levels.

Data Asset Classification and Hierarchical Valuation Framework				
Asset Category	Primary Method	Auxiliary Method	Key Parameters	Quality Criteria
Basic Data Assets • Raw accumulated data • Undeveloped potential • Foundation for analysis • Customer and transaction	Cost Approach (Historical Cost)	Market Approach	• Collection Cost • Storage Cost • Processing Cost • Maintenance Cost	Completeness ≥90% = Grade A
Operational Data Assets • Continuous utilization • Stable value output • Business decision support • Processed and refined	Income Approach (Future Cash Flow)	Cost Approach	• Expected Revenue • Discount Rate • Growth Rate • Useful Life	Accuracy ≥95% = Grade A
Trading Data Assets • Market circulation • Transparent pricing • Active transactions • Standardized products	Market Approach (Comparable Transactions)	Income Approach	• Transaction Price • Liquidity • Market Volume • Price Volatility	Timeliness ≤3 months = Grade A
Strategic Data Assets • Core competitiveness • Irreplaceable • Competitive advantage • Long-term value	Income + Market (Combined Approach)	Cost Approach	• Competitive Edge • Replacement Cost • Strategic Value • Barrier to Entry	Compliance 100% = Grade A

FIGURE 2. Data Asset Classification and Hierarchical Valuation Framework

AUTHOR CONTRIBUTIONS

Bai Fang designed, collected and analyzed the data, and drafted the manuscript. Bai Fang conducted the study, critically revised the manuscript for important intellectual content, and gave final approval of the version to be published. Bai Fang participated fully in the work, take public responsibility for appropriate portions of the content, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICTS OF INTEREST

The author declares no conflict of interest.

HUMAN RESEARCH SUBJECTS

The survey period spans from June to October 2024. This study was approved by the Ethics Committee of Shanxi Open University, and was performed in accordance with the principles of the Declaration of Helsinki. All eligible participants signed an informed consent form.

FUNDING

This research received no external funding.

ACKNOWLEDGEMENTS

Not applicable.

REFERENCES

[1] W. Fan, “Value evaluation of high-tech enterprises based on Black-Scholes model – a case study of Hikvision,” IOP Conference Series: Materials Science and Engineering, vol. 768, no. 5, 052097, 2020, doi: 10.1088/1757-899X/768/5/052097.

[2] J. Li, “Venture financing risk assessment and risk control algorithm for small and medium-sized enterprises in the era of big data,” Journal of Intelligent Systems, vol. 31, no. 1, pp. 611-622, 2022, doi: 10.1515/JISYS-2022-0047.

[3] B. Hu, I. C. Onwachukwu, M. K. I. Yan, W. Zhang, and S. Shang, “Assessing the Impact of Financing on SMEs’ Innovation in China,” Review of Development Economics, vol. 29, no. 3, pp. 1546-1568, 2025, doi: 10.1111/RODE.13172.

[4] H. Ding and Y. Xu, “Rating of Financing Ability of Listed Companies Based on ESG Performance,” Sustainability, vol. 17, no. 18, pp. 8512, 2025, doi: 10.3390/SU17188512.

[5] L. Yang, S. Qiu, N. Zhu, and Z. Yu, “Valuation of Enterprise Big Data Assets in the Digital Economy: A Case Study of Shunfeng Holdings,” Platforms, vol. 3, no. 3, pp. 13, 2025, doi: 10.3390/PLATFORMS3030013.

[6] Y. Dai and S. Cheng, “The impact of strong financial supervision on corporate data asset holdings,” Finance Research Letters, vol. 87, 108756, 2026, doi: 10.1016/J.FRL.2025.108756.

[7] S. Wang and L. Hou, “Data assetization and corporate capital pricing efficiency,” Finance Research Letters, vol. 86, 108548, 2025, doi: 10.1016/J.FRL.2025.108548.

[8] D. Chen and Y. Ma, “How Do Financial Asset Holdings Affect Firm Value? Evidence from China,” Emerging Markets Finance and Trade, vol. 61, no. 11, pp. 3572-3594, 2025, doi: 10.1080/1540496X.2025.2487236.

[9] Y. Ni, “Data assets and corporate ESG performance: Evidence from Chinese listed companies,” Finance Research Letters, vol. 86, 108776, 2025, doi: 10.1016/J.FRL.2025.108776.

[10] J. Zhang, K. Cai, and Q. Zhao, “Warehouse receipt pledge financing using blockchain data asset,” International Review of Financial Analysis, vol. 102, 104104, 2025, doi: 10.1016/J.IRFA.2025.104104.

[11] R. Fu and L. Wedge, “Firms’ financing and debt maturity choices: An empirical analysis from the perspective of asset value dynamics,” Journal of Corporate Accounting & Finance, vol. 36, no. 1, pp. 93-104, 2024, doi: 10.1002/JCAF.22742.

- [12] G. Gospodarchuk and E. Zeleneva, "Assessment of Financial Development of Countries Based on the Matrix of Financial Assets," *Economies*, vol. 10, no. 5, pp. 122, 2022, doi: 10.3390/ECONOMIES10050122.
- [13] A. Andri, F. H. T. Harumy, and S. Efendi, "Evaluating the impact of weight initialization on recurrent and transformer-based models in financial asset price prediction," *Eastern-European Journal of Enterprise Technologies*, vol. 4(4(136)), pp. 19-31, 2025, doi: 10.15587/1729-4061.2025.326913.
- [14] H. Zhao, "Asset Value Assessment in Biological Mortgage Loans for Biological Asset-Valuation Methods in Biological Asset Changes," *Journal of Information & Knowledge Management*, pp. 24(05), 2025, doi: 10.1142/S0219649225500492.
- [15] L. Tang and Y. Zhang, "A Study on Value Assessment of E-Commerce Enterprises Based on the Model of Real Options," *Academic Journal of Business & Management*, pp. 5(10), 2023, doi: 10.25236/AJBM.2023.051019.