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Original Research Article

## FinTech innovation, data transparency, and corporate financing quality: An empirical research based on financial and economic data

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**Abstract:** This study takes A-share listed companies in China from 2013 to 2023 as a sample to systematically analyze the intrinsic relationships among data transparency, FinTech innovation, and corporate financing quality. The research finds that: data transparency can significantly improve corporate financing quality; FinTech innovation plays a significant moderating role in the relationship between data transparency and corporate financing quality, and this moderating effect varies among firms with different R&D investment levels; the promoting effect of data transparency on financing quality is influenced by the level of financing constraints, exhibiting a characteristic of being "high at both ends and low in the middle". This research not only enriches the theoretical evidence in the field of "information transparency-financing quality", but also provides empirical evidence and policy references for improving the quality of information disclosure in the capital market, deepening the development of financial technology, and optimizing the corporate financing environment.

**Keywords:** data transparency; FinTech innovation; corporate financing quality; R&D investment intensity; financing constraints

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### 1. Introduction

In recent years, driven by digitalization, intelligentization, and information transparency, global capital markets have undergone profound transformations. Particularly in China, with the rapid development of Financial Technology (FinTech) and the in-depth application of regulatory technology, corporate information disclosure and data transparency have continuously improved, profoundly affecting the corporate financing environment and capital allocation efficiency. According to the 2024 China FinTech Development Report released by the People's Bank of China, by the end of 2024, China's FinTech industry ranked second in the world in terms of scale. The digital penetration rates supporting credit, payment, and investment services reached 92%, 95%, and 68%, respectively. However, despite increased liquidity in the capital market, some enterprises still face problems such as high financing costs and limited financing channels, especially small and medium-sized enterprises and technology-intensive firms. This phenomenon indicates that there remains room for improvement in the resource allocation of the capital market regarding information transparency and market signal transmission mechanisms. It is urgent to explore how data transparency optimizes corporate financing quality under different financing constraints, taking the opportunity of the new round of FinTech innovation. Against this background, data transparency, as a key indicator measuring the adequacy of corporate information disclosure and the degree of information symmetry, has attracted extensive attention from academia and policymakers. Existing studies show that data transparency helps reduce investors' adverse selection risks and lowers corporate financing costs by improving the pricing efficiency of the capital market. Nevertheless, the relationship between information disclosure and financing quality may be significantly affected by the external technological environment. FinTech innovation can enhance the efficiency and accuracy of information collection and processing through big data analytics, AI credit evaluation, blockchain-based financing, and other approaches, thereby altering the marginal effect of data transparency in the capital market. Certain progress has been made in academic research on the relationship among FinTech, data transparency, and corporate financing quality. First, some studies focus on the single effect of information transparency, pointing out that transparency alleviates information asymmetry and reduces financing costs. Second, research on FinTech argues that FinTech reduces frictions in financial

intermediation by improving information processing capabilities. Third, studies adopting a comprehensive perspective that integrates data transparency and FinTech innovation into a unified framework to systematically examine their interactive effects on financing quality remain insufficient. In addition, existing literature generally ignores firm heterogeneity and nonlinear scenarios of financing constraints, lacking systematic tests on enterprises with different R&D investment intensities and threshold effects, which provides an important entry point for in-depth research.

## 2. Research hypotheses

Theoretically, there exists a structural information asymmetry between enterprises and capital suppliers. Specifically, disparities in information regarding technological value, innovation capability, operational risks, and other factors lead investors and creditors to demand higher risk premiums, thereby increasing financing costs and reducing financing quality. Improvements in data transparency essentially reduce external investors' uncertainty about corporate operations and asset quality by expanding the breadth and depth of information disclosure. When detailed, verifiable, and timely updated data on operations, finance, technology, governance, and other aspects are disclosed, enterprises can send positive signals of sound governance and stable operations to the outside world, reducing the likelihood of adverse selection and moral hazard, and thus lowering the risk compensation required by external capital<sup>[1]</sup>. Therefore, data transparency is expected to significantly promote the improvement of corporate financing quality.

H1. Data transparency can significantly improve corporate financing quality. Traditional financial institutions tend to favor large and well-qualified enterprises due to high information collection costs and weak capabilities in identifying non-standardized "soft information", resulting in insufficient coverage of small, medium-sized, and innovative enterprises<sup>[2]</sup>. FinTech innovation can significantly reduce the costs of information collection and processing and enhance the measurability and credibility of soft information through technologies such as big data, artificial intelligence, and blockchain. When data transparency releases positive signals of corporate technological value and governance efficiency to the market, a high-level FinTech infrastructure enables financial institutions to better capture, process, and quantify these signals, converting them more effectively into credit scores and risk pricing parameters. Such technological empowerment implies that in regions with higher levels of FinTech development, the positive effect of data transparency can be amplified, thereby significantly improving corporate financing conditions and quality<sup>[3]</sup>.

H2. FinTech innovation plays a moderating role in the relationship between data transparency and corporate financing quality.

## 3. Model specification, data sources and characteristics

### 3.1. Model selection and variable definition

Baseline Regression Model This study specifies Model (1) to analyze the impact of data transparency on corporate financing quality.

$$FQ_{it} = \varphi + \varphi_1 Trans_{it} + \varphi_2 X_{it} + Enterprise + Year + \tau_{it}$$

In Model (1), the relevant variables are defined as follows:

(1) Dependent Variable. Corporate financing quality (FQ) is primarily reflected through its financing cost. Following mainstream practices, this paper uses the cost of debt financing to measure corporate financing quality. The specific calculation formula is: (Interest expense + "Handling charges and commission expenses" from financial statements + Other financing-related expenses) / Total liabilities at period-end. This indicator comprehensively measures both the explicit and partial implicit costs paid by a company to obtain debt capital, more accurately reflecting the firm's bargaining power and recognition in the capital market. For clarity of empirical results, this ratio is multiplied by 100. It should be noted that a higher value of this indicator represents a higher financing cost, implying lower financing quality.

(2) Independent Variable. Data transparency (Trans) is a comprehensive concept that is difficult to capture fully with a single indicator. Adopting approaches from relevant research, this paper employs principal component analysis to synthesize five dimensional indicators—Earnings quality, information disclosure

evaluation metrics, number of analysts following, analysts' earnings forecasts, and auditor opinions—to construct a comprehensive data transparency index (Trans). A higher index value indicates a higher comprehensive level of corporate data transparency.

(3) Instrumental Variable. To verify the robustness of the regression results, this paper introduces the regional internet development level as a variable (Internet). To mitigate potential endogeneity issues related to data transparency, this study selects the "per capita broadband access ports in each province (or municipality)" and takes its natural logarithm as an instrumental variable for data transparency. The internet is the core infrastructure for data transparency. The popularity and infrastructure level of the internet in a region directly determine data dissemination, implying a high positive correlation between regional internet development level and data transparency. Regional internet infrastructure construction is a quasi-public good influenced by national macro policies and historical technological paths and does not directly affect the financing decisions of individual micro-enterprises. Therefore, this instrumental variable meets the exogeneity requirement.

(4) Control Variables. Model (1) includes a set of control variables, denoted as X, to control for other potential influencing factors. At the regional level, control variables include Regional Financial Development Level (RFDL), Regional Innovation Level (RegInn), and Macroeconomic Environment (GDPG). At the firm level, control variables include R&D Investment Intensity (RDI), Leverage Ratio (Leverage), Corporate Profitability (Profit), Management Shareholding Ratio (Mshare), and Cash Flow Status (CF).

### 3.2. Data sources and characteristics

The data used in this study primarily originate from the Wind database, focusing on Chinese A-share listed companies from 2013 to 2023. The year 2013 is chosen as the starting point mainly because the Digital Financial Inclusion Index began publication in 2011, and 2013 is widely regarded as the "first year of China's FinTech development." Data from this period onward are more abundant and stable. To ensure the accuracy and robustness of the empirical results, this paper performed the following screening and processing on the initial sample: First, listed companies in the financial and real estate industries were excluded, as their financial structures and financing models are unique and not highly comparable with other industries. Second, companies marked as ST, \*ST, PT, or those delisted during the study period were removed to avoid interference from abnormal financial statuses on the research conclusions. Third, samples with missing values for key variables (such as financing cost and data transparency indicators) were excluded. To mitigate potential bias from extreme outliers on the regression results, all continuous variables were winsorized at the 1% level.

## 4. Baseline regression analysis and robustness tests

To examine the impact of data transparency (Trans) on corporate financing quality (FQ), this paper first conducted a baseline regression analysis, with the results presented in **Table 1**. Columns (1) through (3) show that the regression coefficients for Trans are all significantly negative at the 1% level. Given that FQ is an inverse indicator (a higher financing cost implies lower financing quality), this means that an increase in data transparency significantly reduces corporate financing costs, thereby enhancing financing quality, thus verifying Hypothesis H1. In terms of robustness, Column (4) incorporates regional fixed effects into the model, and the coefficient for Trans remains significantly negative at -0.0073, consistent with the results from the fixed-effects model, indicating that regional differences do not alter the positive economic effect of data transparency. Column (5) presents regressions based on a 5% winsorized sample to eliminate the interference of extreme values; the Trans coefficient is significantly negative at -0.0043, still supporting a robust conclusion.

**Table 1**

| Variable | (1)        | (2)        | (3)        | (4)                                | (5)            |
|----------|------------|------------|------------|------------------------------------|----------------|
|          | FQ         | FQ         | FQ         | Incorporate regional fixed effects | Tailing off 5% |
| Trans    | -0.0065*   | -0.0046*   | -0.0056*   | -0.0073**                          | -0.0043**      |
|          | (-16.6781) | (-11.8458) | (-13.3083) | (-19.4212)                         | (-11.0347)     |
| RFDL     |            | 0.0126***  | 0.0386***  | 0.0073***                          | 0.0253***      |
|          |            | (-3.4032)  | (4.3715)   | (3.4911)                           | (3.1815)       |

Continuation Table 1

| Variable        | (1)       | (2)        | (3)        | (4)                                | (5)            |
|-----------------|-----------|------------|------------|------------------------------------|----------------|
|                 | FQ        | FQ         | FQ         | Incorporate regional fixed effects | Tailing off 5% |
| RegInn          |           | -0.0016*** | 0.0005*    | -0.0012***                         | 0.0005**       |
|                 |           | (-16.5411) | (1.7487)   | (-20.0323)                         | (2.0138)       |
| GDPG            |           | 0.0101***  | -0.0006    | -0.0032                            | -0.0012        |
|                 |           | (6.8917)   | (-0.2002)  | (-0.8753)                          | (-0.4385)      |
| RDI             |           | -0.0136*** | -0.0019    | -0.0234***                         | -0.0057*       |
|                 |           | (-6.5761)  | (-0.7540)  | (-14.6144)                         | (-1.9233)      |
| Leverage        |           | 0.0177***  | 0.0176***  | 0.0191***                          | 0.0174***      |
|                 |           | (37.9372)  | (33.2203)  | (49.5824)                          | (34.7954)      |
| Profit          |           | -0.0064*** | -0.0059*** | -0.0090***                         | -0.0130***     |
|                 |           | (-17.5220) | (-15.9842) | (-20.8422)                         | (-21.1198)     |
| Mshare          |           | -0.0036*** | -0.0070*** | -0.0044***                         | -0.0055***     |
|                 |           | (-6.8572)  | (-9.3743)  | (-11.9633)                         | (-7.8646)      |
| CF              |           | 0.0116***  | 0.0139***  | 0.0094***                          | 0.0157***      |
|                 |           | (12.5259)  | (14.7511)  | (8.6540)                           | (15.8566)      |
| Const.          | 0.0181*** | 0.0285***  | 0.0081***  | 0.0260***                          | 0.0082***      |
|                 | (86.5246) | (31.2344)  | (2.7351)   | (41.5595)                          | (3.1382)       |
| Enterprise Year | NO        | NO         | YES        | YES                                | YES            |
| Year            | NO        | NO         | YES        | YES                                | YES            |
| Regional        | NO        | NO         | NO         | NO                                 | NO             |
| N               | 34186     | 34186      | 34186      | 34186                              | 34186          |
| R <sup>2</sup>  | 0.0089    | 0.1679     | 0.2029     | 0.3069                             | 0.2137         |

### 5. Analysis of the moderating effect of FinTech

To investigate whether FinTech moderates the relationship between data transparency and corporate financing quality, this paper constructs a moderation effect model that includes the interaction term of FinTech and data transparency. **Table 2.** reports the test results. The findings show that the coefficient of the interaction term (Trans×FinTech) is -0.0105, which is significantly negative at the 1% level. This indicates that FinTech can amplify the enhancing effect of data transparency on financing quality. In other words, a higher level of FinTech enables the advantages of data transparency in translating information into financing cost reductions to more effectively improve financing quality, thus verifying Hypothesis H2.

Table 2

| VARIABLES     | (1)        | (2)        |
|---------------|------------|------------|
|               | FQ         | FQ         |
| Trans         | -0.0055**  | -0.0642*** |
|               | (-13.0248) | (-9.6239)  |
| finTech       | -0.0106*** | -0.0138*** |
|               | (-28.3303) | (-26.4276) |
| Trans*FinTech |            | -0.0105*** |
|               |            | (-8.8243)  |
| Const.        | -36.624    | -28.604    |
| Enterprise    | YES        | YES        |
| Year          | YES        | YES        |
| N             | 34,186     | 34,186     |

## 6. Research conclusions and implications

This study empirically examines the relationships among data transparency, FinTech innovation, and corporate financing quality. The findings reveal that: (1) Data transparency significantly promotes the improvement of corporate financing quality, and this conclusion remains robust after incorporating regional fixed effects, winsorization treatment, and instrumental variable methods; (2) FinTech innovation plays a significantly positive moderating role in the relationship between data transparency and financing quality, and this moderating effect is more pronounced in firms with high R&D intensity.

To enhance corporate financing quality, this paper proposes the following recommendations: First, further improve corporate information disclosure systems to ensure data is transparent, fair, and verifiable. Regulatory authorities should promote the standardization of annual reports, quarterly reports, and ESG disclosures, while guiding companies to enhance information credibility through blockchain verification or third-party certification. Second, encourage FinTech to empower the information processing capacity of capital markets, for example by establishing enterprise credit big data platforms and utilizing AI to optimize risk pricing models, thereby amplifying the market value of transparency.

### About the author

Meilin Pan (2001-), female, from Wuhu City, Anhui Province, is a graduate student engaged in research in the field of green finance.

### References

- [1] Xiao Dong, Mingzhe Yu, Does FinTech development facilitate firms' innovation? Evidence from China, *International Review of Financial Analysis*, Volume 89, 2023, 102805, ISSN 1057-5219.
- [2] Xiao Dong, Mingzhe Yu, Does FinTech development facilitate firms' innovation? Evidence from China, *International Review of Financial Analysis*, Volume 89, 2023, 102805, ISSN 1057-5219.
- [3] Boyu He, Zimeng Li, Gongyu Ke, Yuhan Zhang, Financial Technology Innovation, Data Transparency, and the Quality of Corporate Financing: An Empirical Inquiry Based on Financial Economic Data, *Finance Research Letters*, 2026, 109542, ISSN 1544-6123.