Regional Financial Technology Advancement and Quality of Auditing: Evidence from Listed Manufacturing Firms in Guangdong Province

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Abstract. Financial technology (FinTech) reshapes the information environment and external governance ecology of enterprises, and audit quality, as a critical safeguard for the sound operation of the capital market, is highly concerned about its impact on regional FinTech development and scenario heterogeneity. This article takes listed manufacturing companies in Guangdong Province as research samples and uses Ordinary Least Squares (OLS) regression model to empirically investigate whether regional FinTech development exerts an impact on the quality of auditing. This study has found that greater regional FinTech development is linked to significantly higher corporate audit quality, suggesting that FinTech development can effectively suppress earnings management behavior of listed firms, and such an improvement effect persists over time. Further heterogeneity analysis demonstrates that such an effect is more pronounced among non-Big 4-audited and non-state-owned firms. This article fills the research gap on the audit effects of FinTech in specific regions and industries and expands the theoretical boundaries of factors affecting audit quality.

Keywords: FinTech, Audit Quality, Earnings Management, Manufacturing Companies, Regional Heterogeneity.

1 Introduction

FinTech is a financial innovation model that relies on the new generation of information technology to achieve deep integration of digital technology and traditional finance. After more than 20 years of development, having gone through the period of technological exploration, FinTech has now entered a phase of large-scale deployment and become an important part of the global financial system. Its core businesses cover online payments, intelligent investment advisory, blockchain applications, and other fields. FinTech advancement has the characteristics of spatial agglomeration and regional imbalance. Although China ranks among the top in theoretical research and practical application internationally, there are still significant gaps between different cities [7]. Extant literature indicates that FinTech can enhance data gathering as well as risk identification capabilities, alleviate information asymmetry in financial markets,

© The Author(s) 2026
L. C. Yoong (ed.), *Proceedings of the 2026 2nd International Conference on Financial Innovation and Marketing Management (FIMM 2026)*, Advances in Economics, Business and Management Research 408,
https://doi.org/10.2991/978-94-6239-801-6_25

expand financial service boundaries, and improve credit allocation efficiency.constitutes an important mechanism for alleviating financing constraints for SMEs, stimulating enterprise innovation, and fostering high-quality development of the real economy. It has a profound impact on micro enterprise operations and macroeconomic structural transformation [1, 11].

Quality of external auditing is a key governance instrument to guarantee the authenticity of financial statement information and maintain the effective operation of the capital market [6]. Audit, as an important external supervision tool, can reduce information asymmetry between management and external investors. High-quality audit can effectively suppress opportunistic behavior of management, enhance the credibility of financial information, and play an irreplaceable role in corporate governance and investor rights protection [8]. Audit quality is determined by multiple factors. The legal system and external regulatory environment [9], as well as the professional competence and experience of auditors, are significantly correlated with audit quality [2]. With the evolution of the financial environment and information technology, the information foundation and external constraints on which auditing relies continue to be restructured, driving continuous changes in audit models, processes, and quality control systems [5].

Existing literature confirms that FinTech can constrain corporate earnings management and improve corporate governance by optimizing the information environment and increasing information transparency Empirical research on Chinese A-share listed firms have similarly documented that the advancement of FinTech contributes to a significant enhancement in firms' audit quality [13]. However, existing research still has significant limitations. Although some literature focuses on the regional heterogeneity of FinTech, related studies mostly focus on macroeconomic effects and corporate financing perspectives, and rarely directly link regional differences with audit quality. In addition, research investigating FinTech within particular industries remains relatively scarce., which makes it difficult to fit the reality of China's industrial structure. Chinese manufacturing listed companies have long accounted for over 40% of A-shares, and their quality of their audits is significantly linked to the standardized operation of companies, the sound functioning of capital markets, as well as the stability of the real economy [4]. Moreover, due to the complex production processes and long inventory cycles, the financial accounting difficulty and audit risk of manufacturing enterprises are high, and the requirements for audit quality are even stricter [14]. However, existing studies mostly use industry wide samples and lack specialized testing for the manufacturing industry, failing to fully take into account the effect of industry characteristics on the governance effects of FinTech.

Based on this, this article focuses on whether and how the advancement of regional FinTech affects the quality of audits conducted on corporations and further examines whether this impact exhibits significant heterogeneity in the specific regional and industrial context of listed firms in the manufacturing industry in Guangdong Province.

2 Theoretical Basis and Research Hypothesis

The quality of audit work is reflected in the probability of auditors discovering and disclosing misstatements in financial reports, and plays a fundamental supporting role in enhancing the transparency and credibility of market information disclosure [6]. Therefore, the quality of auditing is not only shaped by the independence and professional expertise of auditors, but also by the combined effects of the enterprise's information environment and external institutional control [9]. By utilizing cutting-edge technologies, FinTech can enhance the ability to collect, process, and identify risks, thereby changing the external environment of financial service models and corporate information disclosure [5].

Based on information asymmetry theory when external entities are able to obtain more comprehensive and verifiable information, the space for management to conduct earnings management will be compressed, and the cost of auditors obtaining audit evidence will also decrease accordingly [8]. The relevant research results show that the optimization of the information environment brought about by FinTech may also suppress earnings management behavior, reduce the level of controllable accruals for enterprises, and ultimately bring about a significant improvement in the quality of audits [12].

From the perspective of external governance and institutional environment, audit quality is influenced by legal supervision and regulatory environment. Aligning with international standards and strengthening law enforcement helps strengthen the effectiveness of audit constraints and audit quality [9]. Regional FinTech, as an essential component of the external technological as well as institutional environment, can exert an indirect governance effect on corporate information disclosure by optimizing financial resource allocation and improving external supervision.

Manufacturing enterprises have complex operations and longer business chains and rely more on external information and risk identification. Improving the regional information environment tends to elevate the quality of audit evidence more effectively [5]. Meanwhile, the differences in governance structure, market constraints, and internal controls among enterprises can result in divergent marginal effect of FinTech on the quality of external audits [6, 8]. When audit resources and information processing capabilities are insufficient, optimizing the external information environment can better reduce the difficulty of evidence collection and strengthen audit supervision [5]. Based on this, the following assumptions are proposed:

Assumption 1 (H1): An increase in regional FinTech development is associated with improved audit quality of listed firms.

Assumption 2 (H2): Compared with the Big 4-audited firms, the improvement effect of regional FinTech on the quality of auditing is more pronounced for non-Big 4-audited firms.

Assumption 3 (H3): Compared with state-owned firms, the enhancing effect of regional FinTech on audit quality is more pronounced for non-state-owned firms.

3 Method

3.1 Empirical Sample and Data Sources

The present research focuses on A-share listed manufacturing firms located in Guangdong Province over the period 2015-2023 as its original sample, and adopts a rigorous screening process to refine the data: Exclude ST/* ST listed companies, exclude abnormal observations with asset liability ratios less than 0 or greater than 1, eliminate firm-year observations with incomplete data for core indicators and deduplicate the combination of listed company codes and years to ensure sample uniqueness. To alleviate the interference of extreme values on empirical findings, this study conducted a 1% level bidirectional tail reduction on all continuous variables, resulting in 3,926 imbalanced panel data sample observations for benchmark regression. The enterprise data needed for this research are all obtained from the CSMAR database.

3.2 Variable Definition

The quality of auditing serves as the dependent variable. A modified Jones model was used to compute the absolute value of accrued earnings (abs_DA), and it was served as a proxy variable to captures quality of corporate audits. This value reflects the auditor's tolerance for aggressive accounting treatment by client companies [10], where a greater absolute value reflects poorer audit quality.

Referring to the research by Du and He (2025), the explanatory variable in this article is the level of regional FinTech development, reflecting the level of FinTech advancement in the region where listed companies are located.

This article controls for variables related to corporate governance, equity structure, and auditors to eliminate model interference. With regard to corporate governance, the natural logarithm of year-end total assets is employed to gauge firm size (ln_asset), and the asset-liability ratio (lev) and profitability (roa) are controlled; In terms of equity structure, controlling the shareholding ratio of the largest shareholder (top 1) and auditor type (big4).

3.3 Empirical Model Specification

For the purpose of examining how the development of FinTech affects the audit quality of manufacturing enterprises.in Guangdong Province, this paper constructs a benchmark OLS regression model as follows:

$$abs_{DA_{i,t}} = \alpha_0 + \alpha_1 FinTech_{i,t} + \sum \alpha_k Controls_{i,t}^{k} + \sum Year_t + \varepsilon_{i,t} \quad (1)$$

To reveal the association between FinTech and the quality of auditing and ensure the reliability of the main regression, this article incorporates year fixed effects in the main regression, uses robust standard error and 1% bidirectional tail to handle continuous variables, and conducts three types of regression through standardized values of core

explanatory variables, lagged values of one and two periods to alleviate dimensional and endogeneity issues.

4 Results of Empirical

4.1 Descriptive Statistics

Table 1 demonstrates that the sample firms exhibit a moderate overall level of earnings management and FinTech, and there are some differences between individuals. The overall FinTech advancement in Guangdong Province is sound while showing considerable regional disparities. In terms of controlling variables, no abnormal extreme values were found in the distribution of indicators.

Table 1. Tests of key variables

Variables	Symble	Obervations	Mean	SD	Min	Max
Absolute value of accrued earnings	abs_DA	3,926	0.0747	0.145	0	3.593
Development level of FinTech	FinTech	3,926	365.8	99.05	68.66	449.0
Firm size	ln_asset	3,926	21.99	1.189	17.64	27.25
Asset-liability ratio	lev	3,926	0.384	0.185	0.00708	1.957
Return on asset	roa	3,926	0.0430	0.0749	-0.894	0.478
Firm age	age	3,926	7.784	6.829	0	31
The shareholding percentage of the largest shareholder	top1	3,926	32.13	14.43	2.120	84.85
Big 4 audit	big4	3,926	0.0436	0.204	0	1

4.2 Benchmark Regression

Column (1) of Table 2 reports results using the standardized FinTech index (FinTech_std) with year fixed effects included. Its coefficient is significantly negative. The coefficient of FinTech_std is -0.012, suggesting that a one-standard-deviation increase in the regional FinTech development level, the absolute value of accrued

earning of enterprises decreases by an average of 0.012; Based on the mean abs_DA of 0.0747, the relative decrease is 16.06%, indicating a significant economic effect. This result indicates that regions with a higher level of FinTech are associated with lower absolute values of accrued earning for firms, the higher the audit quality, which verifies hypothesis H1.

On this basis, columns (2) and (3) also control for fixed year effects, replacing the core explanatory variables with the first lag term (L_FinTech) and the second lag term (L2_finTech) of the level of FinTech development, respectively. The coefficients of L_FinTech, L2_FinTech show a significant negative relationship. This result, to some extent, alleviates the potential reverse causality problem, indicating that regional FinTech development has a stable and sustained improvement effect on the quality of corporate audits.

Table 2. Benchmark regression of regional fintech development and audit quality.

Variables	(1) abs_DA	(2) abs_DA	(3) abs_DA
FinTech_std	-0.012***		
	(0.003)		
L_FinTech		-0.002***	
		(0.000)	
L2_FinTech			-0.001***
			(0.000)
Controls	Yes	Yes	Yes
Year	Yes	Yes	Yes
_cons	0.232***	0.886***	0.369***
	(0.035)	(0.068)	(0.066)
N	3242	2658	2147
R2	0.155	0.179	0.092

4.3 Heterogeneity Analysis

This article distinguishes between Big 4-audited firms and non-Big 4-audited firms in the sample by auditor type. In Table 3, within the non-Big 4 audit group (big4=0), the coefficient associated with FinTech is significant negative. In the Big 4-audited groups (big4=1), the coefficient of FinTech lacked statistical significance. The above results confirm the validity of false H2.

The findings indicate that the restraining influence of regional FinTech advancement on firms' earnings management is mainly reflected in non-Big 4-audited firms, while no considerable impact is shown in the Big 4-audited firms. This heterogeneity can be explained by the fact that the Big 4-audited firms themselves have strong information processing capabilities and standardized audit processes, and their audit quality is already at a high level. Therefore, the marginal improvement space of regional FinTech on their audit quality is relatively limited; On the contrary, non-Big 4 accounting firms have a higher dependence on the external information environment. Regional FinTech

development can significantly enhance their audit supervision and constraint effectiveness by optimizing the information environment, reducing audit evidence costs, and improving auditors' risk identification abilities, thereby more effectively suppressing corporate earnings management behavior and improving audit quality.

Table 3. Heterogeneity analysis results based on auditor types.

Variables	(1) abs_DA (big4=0)	(2) abs_DA (big4=1)
FinTech	-0.0000861***	0.0000003
	(0.0000243)	(0.0000835)
Controls	Yes	Yes
_cons	0.016	0.418***
	(0.153)	(0.055)
N	171	3755

This article partitions the sample into state-owned group and non-state-owned group, and conduct subgroup regression analysis accordingly. According to the results reported in Table 4, among state-owned enterprises, the regression coefficient associated with FinTech development is negative yet statistically insignificant. The governance structure of state-owned enterprises is relatively complete, and they are subject to stricter government supervision. The motivation for earnings management is weak, and the marginal effect of external governance of financial technology is limited; Meanwhile, the standardization of information disclosure in state-owned enterprises is relatively high, and the information optimization role of FinTech is not prominent; For the non-state-owned enterprise subsample, FinTech exhibits a significantly negative coefficient, demonstrating non-state-owned enterprises experience a significant reduction in earnings management as regional FinTech develops, and property rights have a significant moderating effect on them.

Table 4. Heterogeneity analysis results based on the property rights of enterprises.

Variables	(1) abs_DA (State-owned group)	(2) abs_DA (Non-state-owned group)
FinTech	-0.0000287	-0.0000995***
	(0.0000498)	(0.0000330)
Controls	Yes	Yes
_cons	0.294***	0.393***
	(0.106)	(0.0765)
N	617	3309
	(0.000272)	(0.000201)

5 Conclusions

Drawing on a sample of A-share listed manufacturing firms located in Guangdong Province spanning 2015 to 2023, this paper empirically investigates how regional FinTech development affects firm audit quality, as well as the associated heterogeneous effects. A notable positive link between regional FinTech development and the quality of auditing is revealed by the empirical findings. Higher levels of FinTech development improve enterprises' external quality of auditing, and this improvement effect is sustainable. Heterogeneity testing shows that FinTech exerts a more pronounced improvement effect on audit quality in non-Big 4 audit engagements and non-state-owned enterprises. On a theoretical level, this article expands the research boundaries in the field of FinTech and quality of auditing, enriching empirical support for specific regions and industry scenarios. In practical terms, the findings offer implications for improving audit supervision, allocating FinTech resources, and promoting high-quality development of the manufacturing industry.

This research nevertheless has several inherent limitations, the sample only selected listed manufacturing firms in Guangdong Province. The generalizability of the conclusions needs to be further verified in more regions and industries; At the same time, there has been no more detailed identification and testing of intermediary mechanisms such as information transparency and corporate governance efficiency. Subsequent studies may adopt a larger sample and implement cross regional and cross industry comparative analyses.; Further clarify the intermediary transmission path of the impact of FinTech on the quality of auditing and provide more targeted theoretical basis and practical guidance for improving audit quality in the era of digital reform.

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