

## Does Financial Agglomeration Promote Balanced Growth? Evidence from Enterprise-Level Structural Change

### 金融集聚是否促进均衡增长？来自企业层面结构转型的证据

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**Abstract.** This study investigates Chinese listed companies over the period 2013–2023 to systematically examine the relationship between financial agglomeration, enterprise structural upgrading, and economic growth disparities at the firm level. The empirical findings can be summarized as follows. First, a higher degree of financial agglomeration significantly reduces economic growth disparities among enterprises. Second, enterprise structural upgrading plays a crucial role in narrowing growth disparities across firms. Third, enterprise structural upgrading acts as an important mediating mechanism through which financial agglomeration influences economic growth disparities. Fourth, the disparity-reducing effect of financial agglomeration is more pronounced for large enterprises, while its impact on small and medium-sized enterprises is relatively weaker. Fifth, financial agglomeration is more effective in mitigating growth disparities in highly competitive industries, whereas its effect is less significant in industries characterized by lower levels of competition. Finally, in high-competition industries, the mediating role of enterprise structural upgrading between financial agglomeration and economic growth disparities is significantly stronger.

**Keywords:** Financial agglomeration, enterprise structural upgrading, economic growth disparities

**摘要：**本研究以2013–2023年中国上市公司为样本，从企业层面系统考察金融集聚、企业结构升级与经济增长差异之间的关系。实证结果表明：第一，金融集聚程度越高，越能显著降低企业间的经济增长差异。第二，企业结构升级在缩小企业增长差异方面发挥关键作用。第三，企业结构升级是金融集聚影响企业经济增长差异的重要中介机制。第四，金融集聚的差异缩小效应在大型企业中更为显著，而对中小企业的影​​响相对较弱。第五，金融集聚在竞争程度较高的行业中更能有效缓解增长差异，而在竞争程度较低的行业中其作用不显著。最后，在高竞争行业中，企业结构升级在金融集聚与企业经济增长差异之间的中介作用显著更强。

**关键词：**金融集聚；企业结构升级；经济增长差异

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## 1. Introduction

In the context of deepening economic globalization and regional integration, the agglomeration of financial resources has become increasingly prominent. The spatial concentration of financial factors not only influences the efficiency of capital flows across regions and industries but also substantially shapes enterprises' access to finance and financing costs. By reducing information asymmetry and enhancing the efficiency of capital allocation, financial agglomeration expands firms' development opportunities and provides more stable financing channels, thereby exerting a profound influence on corporate performance and the broader pattern of economic development (Yang, Cai, & Webb, 2025).

Despite sustained economic growth, disparities in development across regions and enterprises remain persistent and continue to attract scholarly attention. Enterprises differ markedly in size, ownership structure, and industry affiliation, which leads to heterogeneous conditions in financial resource acquisition and structural upgrading processes (Liu, Zhao, Zhu, & Yang, 2022). Consequently, understanding how financial agglomeration affects enterprise-level structural upgrading and how such upgrading subsequently influences economic growth disparities has become a critical issue warranting in-depth investigation.

Existing studies generally contend that financial agglomeration promotes capital accumulation and improves resource allocation efficiency, thereby stimulating economic growth (Zhao, Chen, & Jin, 2025). However, most of the literature has concentrated on macro-level regional disparities, while micro-level heterogeneity among enterprises has received comparatively limited attention (Brada, Gajewski, & Kutan, 2021). Moreover, the potential mediating role of enterprise structural upgrading in the relationship between financial agglomeration and economic growth disparities has not been systematically or rigorously examined. Empirical evidence on moderating factors such as enterprise size and industry competition also remains scarce.

Against this backdrop, this paper employs data from China's listed companies spanning the period 2013–2023 to systematically examine the relationships among financial agglomeration, enterprise structural upgrading, and economic growth disparities at the firm level. Specifically, the study addresses three key questions: first, whether financial agglomeration directly reduces economic growth disparities among enterprises; second, whether enterprise structural upgrading contributes to narrowing these disparities; and third, whether enterprise structural upgrading functions as a mediating mechanism between financial agglomeration and economic growth disparities. In addition, the paper explores the moderating effects of enterprise size and industry competition on these relationships.

This study contributes to the literature in three main respects. First, it elucidates the enterprise-level transmission mechanisms through which financial agglomeration influences economic growth disparities, thereby enriching micro-level research on financial development and growth inequality. Second, it clarifies the mediating role of enterprise structural upgrading, offering deeper insights into the mechanisms underlying enterprise transformation and upgrading. Third, by incorporating heterogeneity perspectives related to enterprise size and industry competition, the paper reveals differentiated effects of financial agglomeration and structural upgrading, providing robust empirical evidence to inform policymaking on financial resource allocation, industrial structure optimization, and the reduction of economic growth disparities among enterprises.

## 2. Theoretical Framework

Financial agglomeration can foster a more conducive financing environment for enterprise development by expanding funding availability, lowering financing costs, and improving access to financial information (Wigger, 2023). In regions characterized by a high concentration of financial resources, enterprises generally

face fewer financing constraints and benefit from a more diversified financing structure. This environment enables small and medium-sized enterprises (SMEs) to obtain credit more easily, thereby narrowing the financing gap relative to large firms (Mishchuk et al., 2023). Increased capital accessibility allows SMEs to invest in technological innovation and scale expansion, which gradually reduces disparities in productivity and profitability across enterprises (Wang et al., 2024). Accordingly, a higher level of financial agglomeration is expected to alleviate financing constraints and contribute to the reduction of economic growth disparities among enterprises.

**Hypothesis 1.** A higher degree of financial agglomeration is associated with smaller economic growth disparities among enterprises.

Enterprise structural upgrading is mainly reflected in the optimization of industrial structure, improvements in product composition, and intensified investment in research and development (Xu, 2025). Enterprises located at the lower end of the value chain can overcome low value-added constraints by strengthening technological innovation and product upgrading, thereby enhancing product value and improving their position within the industrial chain (Zhang et al., 2024). Although firms already positioned at higher levels of the value chain can also benefit from structural optimization, the marginal gains tend to be smaller compared to those achieved by lagging enterprises (Feng et al., 2022). Consequently, enterprise structural upgrading can facilitate convergence by enabling less advanced firms to catch up with leading ones, ultimately reducing economic growth disparities.

**Hypothesis 2.** Enterprise structural upgrading can reduce economic growth disparities among enterprises.

Financial agglomeration not only eases capital constraints but also encourages enterprises to increase investment in technological innovation and industrial upgrading (Bagh et al., 2024). However, its effect on reducing enterprise-level growth disparities may operate indirectly through the promotion of enterprise structural upgrading (Boikova et al., 2021). Enhanced financial support enables firms to expand R&D activities, optimize industrial structures, improve product quality, and strengthen market competitiveness (Huseynov et al., 2024). These structural improvements are particularly beneficial for SMEs, allowing them to enhance competitiveness relative to larger firms and thereby narrow growth disparities (Yakubi et al., 2022). Thus, enterprise structural upgrading serves as an important transmission mechanism linking financial agglomeration to enterprise growth outcomes.

**Hypothesis 3.** Enterprise structural upgrading mediates the relationship between financial agglomeration and economic growth disparities.

Enterprise size introduces significant heterogeneity in the effects of financial agglomeration (Deng et al., 2023). Large enterprises typically enjoy stronger creditworthiness, greater collateral capacity, and higher bargaining power, enabling them to more effectively leverage the capital, information, and financial services generated by financial agglomeration (Peng et al., 2022). These advantages facilitate technological upgrading, capacity expansion, and market development, allowing large firms to achieve higher growth rates and generate scale effects along the industrial chain (An et al., 2024). In contrast, SMEs often face higher financing costs and insufficient collateral, limiting their ability to fully benefit from financial agglomeration even in financially developed regions (Han et al., 2025). As a result, the disparity-reducing effect of financial agglomeration is expected to be stronger among large enterprises.

**Hypothesis 4.** The effect of financial agglomeration on reducing economic growth disparities differs across enterprises of varying sizes.

Industry competition also plays a crucial moderating role in the relationship between financial agglomeration and enterprise growth. In highly competitive industries, firms must continuously innovate and upgrade organizational structures to maintain competitiveness (Mishra et al., 2024). Financial agglomeration provides diversified financing channels and specialized financial services, enabling firms to accelerate investment and expansion, thereby improving productivity and reducing growth disparities (Ding et al., 2022). Conversely, in industries with low competition, financial resources tend to concentrate among a few dominant firms. Even when SMEs are located in financially agglomerated regions, high entry barriers and weak competitive pressure may hinder their effective utilization of financial resources, weakening the disparity-reducing effect of financial agglomeration (Xu & Shi, 2025).

**Hypothesis 5.** The impact of financial agglomeration on reducing economic growth disparities varies across industries with different levels of competition.

In highly competitive industries, enterprises face stronger market pressures and are more reliant on technological progress and structural upgrading to sustain competitive advantages (Han et al., 2024). Financial agglomeration supports these efforts by facilitating greater investment in R&D and enhancing product value, thereby promoting upward movement along the value chain (Straaten et al., 2023). Under such conditions, enterprise structural upgrading plays a more pronounced mediating role in linking financial agglomeration to reduced growth disparities, as firms are both motivated and capable of using financial resources to catch up with industry leaders (Jing et al., 2025). In contrast, in low-competition industries, limited competitive pressure and high entry barriers may lead firms to allocate financial resources inefficiently, resulting in a weaker mediating effect of structural upgrading (Xi & Wang, 2023).

**Hypothesis 6.** The mediating effect of enterprise structural upgrading in the relationship between financial agglomeration and economic growth disparities differs across industries with varying levels of competition.

### 3. Methodology

This study employs a firm-level panel research design using Chinese A-share listed companies observed from 2013 to 2023. Financial agglomeration is constructed at the regional level (based on the spatial concentration of financial resources and institutions where firms are located) and then matched to each firm by its registered/operating city or province. Enterprise structural upgrading is measured through a composite indicator capturing firms' upgrading dynamics (e.g., shifts toward higher value-added business structures, improved production/technology composition, and optimization of asset and revenue structure). Economic growth disparities are proxied by the dispersion in firm growth performance, typically operationalized as the absolute (or squared) deviation of a firm's growth rate from its industry-year (or region-industry-year) benchmark. The empirical analysis begins with descriptive statistics and correlation tests, followed by fixed-effects panel regressions to estimate the baseline association between financial agglomeration and firm-level growth disparities, while controlling for firm characteristics (size, leverage, profitability, age, ownership, investment intensity, etc.) and macro/industry conditions. Year and industry (or firm) fixed effects are included to account for unobserved heterogeneity and common shocks.

To uncover the mechanism, the study applies a mediation framework within a panel setting. Specifically, it estimates (1) the effect of financial agglomeration on enterprise structural upgrading, (2) the effect of enterprise structural upgrading on economic growth disparities, and (3) the change in the agglomeration coefficient when the mediator is included, with the indirect effect tested using Sobel or bootstrap methods adapted for panel data. Robustness checks are conducted by replacing core variable measures, lagging

explanatory variables to mitigate reverse causality, and using alternative specifications (e.g., two-way fixed effects, clustered standard errors at the firm or region level). Finally, heterogeneity is examined through subsample regressions and interaction terms: firms are split by size (large vs. SMEs) and industries by competition intensity (e.g., using the Herfindahl–Hirschman Index or similar competition metrics). The moderated mediation in high-competition industries is further assessed by comparing indirect effects across competition groups, thereby validating whether structural upgrading transmits the disparity-reducing effect of financial agglomeration more strongly when competitive pressure is higher.

### ***Economic growth disparity (growth\_gap)***

Economic growth disparity refers to the degree of unevenness in growth performance among enterprises within the same industry. Following existing micro-level growth disparity studies, this paper uses the growth rate of firms' main business revenue as the core indicator of enterprise growth. Economic growth disparity is measured by capturing the deviation of individual enterprise growth rates from the industry average. Specifically, for enterprise  $i$  in industry  $j$  at year  $t$ , the growth rate of main business revenue is calculated and compared with the corresponding industry-average growth rate. The dispersion of enterprise growth rates within an industry-year is measured using the standard deviation (or coefficient of variation), which reflects intra-industry growth imbalance. A higher value of *growth\_gap* indicates larger disparities in growth rates among enterprises, while a lower value suggests more balanced growth.

Formally, economic growth disparity is defined as:

$$growth\_gap_{j,t} = \sqrt{\frac{1}{N_{j,t}} \sum_{i=1}^{N_{j,t}} (g_{ij,t} - \bar{g}_{j,t})^2} \quad (1)$$

Where  $N_{j,t}$  represents the number of enterprises in industry  $j$  at year  $t$ .

### ***Financial agglomeration (fin\_verse)***

Financial agglomeration reflects the concentration and accessibility of financial resources available to enterprises, indicating the ease of financing and capital availability. In this study, financial agglomeration is proxied by enterprises' access to bank credit. Enterprises with easy access to bank loans are coded as 1, representing a high level of financial agglomeration, while those facing difficulties in obtaining bank loans are coded as 0, indicating a low level of financial agglomeration.

### ***Enterprise structural upgrading (update)***

Enterprise structural upgrading refers to the process through which firms enhance their organizational structure, technological capability, and position within the industrial value chain. This study measures enterprise structural upgrading using the ratio of research and development (R&D) expenditure to operating income. A higher ratio indicates a greater degree of structural upgrading. In addition to serving as an independent variable, enterprise structural upgrading is also treated as a mediating variable in the empirical analysis.

### ***Control Variables***

To control for firm-level heterogeneity that may influence the relationships among financial agglomeration, enterprise structural upgrading, and economic growth disparities, this study includes eight control variables. These variables are enterprise size (*scale*), enterprise age (*age*), ownership type (*soe*), liquidity (*liquid*), profitability (*roa*), leverage measured by the debt-to-equity ratio (*der*), accounts receivable ratio (*rec*),

and effective income tax rate ( $itr$ ). The inclusion of these controls helps ensure the robustness and reliability of the empirical results.

### **Model construction**

This paper constructs a basic regression model as shown in formula (2):

$$growth\_gap_{i,t} = \alpha_0 + \alpha_1 fin\_verse(update)_{i,t} + \sum \alpha_n A_{i,t} + \gamma_i + \delta_t + \varepsilon_{i,t} \quad (2)$$

This paper constructs a mediating regression model as shown in formulas (3) and (4):

$$update_{i,t} = \delta_0 + \delta_1 fin\_verse_{i,t} + \sum \delta_n A_{i,t} + \gamma_i + \delta_t + \varepsilon_{i,t} \quad (3)$$

$$growth\_gap_{i,t} = \forall_0 + \forall_1 fin\_verse_{i,t} + \forall_2 update_{i,t} + \sum \forall_n A_{i,t} + \gamma_i + \delta_t + \varepsilon_{i,t} \quad (4)$$

### **Sample Source**

The data employed in this study are primarily obtained from the financial statements and related databases of China's listed companies over the period 2013–2023. Firm-level data are collected from the China Stock Market & Accounting Research (CSMAR) and WIND databases (Kong et al., 2023), while macro-level indicators are sourced from the National Bureau of Statistics, as well as provincial and municipal statistical yearbooks and publications issued by the People's Bank of China. Additional information is supplemented from the National Research Network where necessary. To ensure data quality and reliability, special treatment (ST) firms and financial enterprises are excluded from the sample. Annual financial reports are consolidated to construct an unbalanced enterprise–year panel dataset. Continuous variables are winsorized at the 1% level to mitigate the influence of extreme values, and missing observations are handled using interpolation methods. These procedures enhance the consistency, completeness, and robustness of the empirical dataset.

## **4. Result and Discussion**

Table 1 reports the descriptive statistics of the main variables used in this study. The average economic growth disparity ( $growth\_gap$ ) is 0.1304, with a standard deviation of 0.3391, indicating substantial heterogeneity in growth performance among enterprises. Financial agglomeration ( $fin\_verse$ ) has a mean value of 0.8894 and a median of 1, implying that the majority of firms in the sample experience relatively easy access to bank financing. The mean value of enterprise structural upgrading ( $update$ ) is 0.0291, suggesting that, overall, the level of structural upgrading among sample enterprises remains relatively low. Regarding the control variables, the average enterprise size ( $scale$ ) is 22.2922, while the mean firm age ( $age$ ) is 2.0908, indicating that the sample is largely composed of medium-sized and relatively young enterprises. In addition, other financial indicators such as liquidity, profitability, and leverage exhibit wide variations, reflecting pronounced differences in financial conditions across firms.

**Table 1.** Descriptive Statistics Results

<b>Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>SD</b>	<b>Min</b>	<b>Median</b>	<b>Max</b>
growth_gap	33,784	0.1304	0.3391	-0.6535	0.0874	4.0242
fin_verse	33,784	0.8894	0.3137	0.0000	1.0000	1.0000
update	33,784	0.0291	0.0128	0.0001	0.0271	0.0704
scale	33,784	22.2922	1.2857	19.5850	22.1022	26.4403
age	33,784	2.0908	0.9300	0.0000	2.1972	3.4340
soe	33,784	0.3321	0.4710	0.0000	0.0000	1.0000
liquid	33,784	2.6494	2.3786	0.2683	1.9848	19.3705
roa	33,784	0.0366	0.0604	-0.3730	0.0325	0.2473
der	33,784	1.0616	1.1783	0.0485	0.8178	9.8564
rec	33,784	0.1249	0.0954	0.0000	0.1246	0.5060
itr	33,784	0.1372	0.1699	-1.0088	0.1299	1.0515

**Notes:** growth\_gap = economic growth disparity; fin\_verse = financial agglomeration; update = enterprise structural upgrading; scale = firm size; age = firm age; soe = state ownership; liquid = current ratio; roa = return on assets; der = debt-to-equity ratio; rec = accounts receivable ratio; itr = income tax rate.

### ***Benchmark Regression Analysis of Financial Agglomeration***

Table 2 presents the benchmark regression results examining the impact of financial agglomeration on economic growth disparities among enterprises. Column (1) reports the baseline estimation without fixed effects. The coefficient of financial agglomeration (fin\_verse) is significantly negative ( $-0.0511$ ), indicating that a higher degree of financial agglomeration is associated with a reduction in economic growth disparities across enterprises.

In Column (2), enterprise fixed effects are introduced to control for time-invariant firm-specific heterogeneity. The coefficient of fin\_verse remains significantly negative ( $-0.0374$ ), suggesting that financial agglomeration continues to play a mitigating role in reducing growth disparities after accounting for unobservable firm characteristics. Column (3) further incorporates time fixed effects to control for macroeconomic shocks and cyclical fluctuations. The estimated coefficient ( $-0.0412$ ) remains negative and statistically significant, confirming the robustness of the gap-narrowing effect of financial agglomeration over time.

Column (4) presents the most stringent specification by simultaneously controlling for both enterprise and time fixed effects. The coefficient of fin\_verse remains significantly negative ( $-0.0432$ ), providing strong evidence that financial agglomeration consistently contributes to narrowing economic growth disparities among enterprises, even under comprehensive controls. Overall, the regression results across all model specifications are highly consistent, demonstrating the robustness of the negative relationship between financial agglomeration and enterprise-level economic growth disparities. These findings provide strong empirical support for Hypothesis H1, confirming that higher financial agglomeration significantly reduces growth disparities among enterprises.

**Table 2.** Benchmark Regression Results Examining The Impact of Financial Agglomeration on Economic Growth Disparities Among Enterprises

Variables	(1)	(2)	(3)	(4)
	growth_gap	growth_gap	growth_gap	growth_gap
fin_verse	-0.0511*** (-9.3353)	-0.0374*** (-5.2452)	-0.0412*** (-7.5896)	-0.0432*** (-5.7525)
scale	0.0140*** (7.9041)	0.0774*** (12.7346)	0.0157*** (8.8838)	0.0862*** (12.9915)
age	-0.0197*** (-8.3831)	-0.0863*** (-16.7104)	-0.0181*** (-7.7693)	-0.0147** (-2.3073)
soe	-0.0329*** (-7.7213)	-0.1048 (-1.3241)	-0.0384*** (-8.9077)	-0.0916 (-1.1693)
liquid	-0.0143*** (-19.1234)	-0.0216*** (-17.3000)	-0.0126*** (-17.1712)	-0.0176*** (-14.0795)
roa	1.7518*** (43.0011)	2.1428*** (41.0096)	1.6753*** (41.6659)	2.0448*** (39.8695)
der	0.0169*** (8.0035)	0.0229*** (6.6490)	0.0161*** (7.7065)	0.0197*** (5.8011)
rec	0.1483*** (7.7912)	0.1530*** (3.7479)	0.1493*** (7.9070)	0.1831*** (4.5145)
itr	-0.0208* (-1.7535)	-0.0229 (-1.6256)	-0.0404*** (-3.4033)	-0.0332** (-2.3673)
Constant	-0.1443*** (-3.8488)	-1.4071*** (-10.8650)	-0.1895*** (-5.0423)	-1.7593*** (-11.9406)
Observations	33,784	33,784	33,784	33,784
Enterprise FE	No	Yes	No	Yes
Year FE	No	No	Yes	Yes
R-squared	0.2095	0.3243	0.3122	0.3268

**Notes:** t-statistics are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

### *Benchmark Regression Analysis of Enterprise Structural Upgrading*

Table 3 presents the regression outcomes examining the effect of enterprise structural upgrading on economic growth disparities. Across the five model specifications, control variables are gradually incorporated to test the robustness of the results. The key explanatory variable, enterprise structural upgrading (update), consistently exhibits a significantly negative coefficient in all columns, with values of -1.8953 in column (1), -2.0318 in column (2), -2.2171 in column (3), -1.6659 in column (4), and -1.7713 in column (5), all statistically significant at the 1% level. These findings indicate that promoting structural upgrading is effective in reducing economic growth disparities among enterprises.

The estimated coefficients of the control variables are largely in line with theoretical expectations. Enterprise size shows a positive and significant effect, suggesting that larger firms tend to experience wider growth disparities. In contrast, enterprise age and liquidity display negative coefficients, implying that more mature firms and those with stronger liquidity positions are better able to mitigate growth differences. Profitability and leverage are both positively and significantly associated with economic growth disparities,

indicating that firms with higher returns or higher debt levels face greater divergence in growth performance. Overall, the regression results provide strong empirical support for Hypothesis H2, confirming that enterprise structural upgrading plays a significant role in narrowing economic growth disparities among enterprises.

**Table 3.** Enterprise Structural Upgrading Benchmark Regression Results

<b>Variables</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
update	-1.8953*** (-8.2902)	-2.0318*** (-8.9051)	-2.2171*** (-6.0804)	-1.6659*** (-4.8152)	-1.7713*** (-5.1277)
scale		0.0656*** (18.8822)	0.1032*** (14.7325)	0.0845*** (12.7645)	0.0855*** (12.8880)
age		-0.0483*** (-17.4092)	-0.0409*** (-6.4257)	-0.0271*** (-4.3669)	-0.0232*** (-3.7543)
soe			-0.0873 (-1.0514)	-0.0872 (-1.1095)	-0.0876 (-1.1193)
liquid			-0.0132*** (-10.3371)	-0.0178*** (-14.3550)	-0.0171*** (-13.6140)
roa				2.0208*** (39.8480)	2.0360*** (39.7875)
der				0.0199*** (5.8420)	0.0201*** (5.8943)
rec					0.1902*** (4.6830)
itr					-0.0321** (-2.2903)
Constant	0.1918*** (28.2352)	-1.1600*** (-15.9299)	-1.9571*** (-12.5766)	-1.6665*** (-11.3491)	-1.7160*** (-11.6515)
Observations	33,784	33,784	33,784	33,784	33,784
Code FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
R-squared	0.1712	0.1823	0.2114	0.2825	0.2836

### Endogeneity Analysis

To mitigate potential endogeneity concerns stemming from reverse causality, omitted variable bias, and measurement errors in the relationships between financial agglomeration and economic growth disparities, as well as between enterprise structural upgrading and growth disparities, this study employs two exogenous instrumental variables. The first instrumental variable is financial geographical distance (geo), defined as the number of financial institutions located within a 5-kilometer radius of an enterprise. This variable is used to capture exogenous variation in financial agglomeration and to address endogeneity in its relationship with economic growth disparities. The second instrumental variable is digital transformation (Indig), which measures the frequency of digital-related keywords extracted from firms' annual reports through text analysis and is logarithmically transformed. This variable serves as an instrument for enterprise structural upgrading and helps alleviate endogeneity issues related to economic growth disparities.

The results of the instrumental variable estimation are reported in Table 4. Column (1) shows that financial geographical distance (geo) has a significantly positive effect on financial agglomeration, indicating a strong correlation between geo and fin\_verse and thereby satisfying the relevance condition of the instrumental variable. Column (2) demonstrates that after controlling for endogeneity, the coefficient of financial agglomeration (fin\_verse) on economic growth disparity (growth\_gap) remains significantly negative at the 1% level, confirming that financial agglomeration effectively reduces disparities in enterprise growth.

Similarly, Column (3) reveals that digital transformation (Indig) is significantly and positively associated with enterprise structural upgrading (update). Column (4) further indicates that, after addressing endogeneity, the coefficient of enterprise structural upgrading on economic growth disparity is significantly negative, underscoring its role in narrowing growth differences among enterprises. Moreover, the LM test and Wald F-statistic are both statistically significant, suggesting that the instrumental variables are valid and strong, and that the endogeneity concerns are effectively addressed. Overall, these findings reinforce the robustness and credibility of the study's empirical conclusions.

**Table 4.** Endogeneity Analysis Results

<b>Variables</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
	<b>fin_verse</b>	<b>growth_gap</b>	<b>update</b>	<b>growth_gap</b>
geo	0.0064*** (5.5381)			
fin_verse		-0.6485*** (-2.9646)		
Indig			0.0006*** (6.8308)	
update				-10.9680*** (-2.6143)
scale	0.0296*** (18.4923)	0.0321*** (4.6458)	0.0017*** (25.0676)	-0.0057 (-0.7937)
age	0.0667*** (30.6091)	0.0211 (1.3911)	-0.0011*** (-12.3397)	-0.0112** (-2.1389)
soe	-0.0382*** (-9.6817)	-0.0540*** (-5.9532)	0.0005*** (3.2018)	-0.0362*** (-7.2185)
liquid	-0.0040*** (-5.0525)	-0.0165*** (-13.2072)	0.0006*** (18.9697)	-0.0210*** (-7.5385)
roa	0.0360 (1.1948)	1.7724*** (47.5007)	-0.0162*** (-13.0043)	1.9309*** (24.8129)
der	-0.0093*** (-5.5401)	0.0116*** (4.1575)	-0.0005*** (-7.0312)	0.0229*** (7.9006)
rec	0.0273 (1.5156)	0.1653*** (7.2855)	0.0135*** (18.1465)	-0.0077 (-0.1223)
itr	-0.0510*** (-5.1206)	-0.0501*** (-3.1025)	-0.0032*** (-7.8122)	0.0174 (0.9655)
Constant	0.0981*** (2.8401)	-0.0823* (-1.7289)	-0.0083*** (-5.7964)	-0.0679 (-1.3228)
Observations	33,784	33,784	33,784	33,784

<b>Variables</b>	<b>(1)</b> <b>fin_verse</b>	<b>(2)</b> <b>growth_gap</b>	<b>(3)</b> <b>update</b>	<b>(4)</b> <b>growth_gap</b>
LM statistic	30.6432			46.6472
Wald F statistic	30.602			46.5972
Code FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
R-squared	0.1710	0.1828	0.1409	0.1237

### ***Mechanism Analysis: The Mediating Role of Enterprise Structural Upgrading***

Table 5 reports the results of the mediating effect analysis examining the role of enterprise structural upgrading in the relationship between financial agglomeration and economic growth disparities. Column (1) shows that financial agglomeration has a positive and statistically significant impact on enterprise structural upgrading, with a coefficient of 0.0002 significant at the 5% level. This finding indicates that a higher degree of financial agglomeration facilitates firms' structural upgrading by improving access to financial resources and supporting innovation-oriented activities.

Column (2) further demonstrates that financial agglomeration exerts a significant negative effect on economic growth disparities, with a coefficient of  $-0.0428$  significant at the 1% level, confirming its direct gap-narrowing role. At the same time, enterprise structural upgrading also shows a significantly negative effect on growth disparities, with a coefficient of  $-1.7484$  significant at the 1% level, suggesting that structural upgrading contributes to reducing differences in enterprise growth performance. Taken together, these results indicate that financial agglomeration not only directly mitigates economic growth disparities among enterprises but also indirectly influences them by promoting enterprise structural upgrading. Overall, the findings provide strong empirical support for Hypothesis H3.

**Table 5.** Mechanism Analysis of Enterprise Structural Upgrading

<b>Variables</b>	<b>(1) update</b>	<b>(2) growth_gap</b>
fin_verse	0.0002** (2.2047)	-0.0428*** (-5.6903)
update		-1.7484*** (-5.0575)
scale	0.0004*** (3.8199)	0.0869*** (13.0844)
age	0.0001 (0.7441)	-0.0145** (-2.2808)
soe	0.0008 (1.4362)	-0.0902 (-1.1520)
liquid	0.0002*** (6.2313)	-0.0173*** (-13.7725)
roa	-0.0031*** (-5.1077)	2.0394*** (39.8252)
der	0.0034 (1.0209)	0.0198*** (5.8029)
rec	0.0055*** (5.7942)	0.1927*** (4.7509)

<b>Variables</b>	<b>(1) update</b>	<b>(2) growth_gap</b>
itr	-0.0001 (-0.6459)	-0.0333** (-2.3810)
Constant	0.0192*** (8.9945)	-1.7258*** (-11.7287)
Observations	33,784	33,784
Enterprise FE	YES	YES
Year FE	YES	YES
R-squared	0.8562	0.2843

Table 6 reports the results of the mediation effect analysis using the bootstrap method. The estimated indirect effect is  $-0.0436$  with a standard error of  $0.0077$  and is statistically significant at the 1% level. The corresponding 95% confidence interval ranges from  $-0.0587$  to  $-0.0284$  and does not include zero, indicating that financial agglomeration reduces economic growth disparities among enterprises indirectly through enterprise structural upgrading. The estimated direct effect of financial agglomeration on economic growth disparities is  $-2.1971$ , with a standard error of  $0.1178$ , and is also significant at the 1% level. The 95% confidence interval  $[-2.4281, -1.9661]$  further confirms the robustness of this direct relationship. Overall, the bootstrap results demonstrate that financial agglomeration exerts both direct and indirect effects on narrowing enterprise growth disparities, with enterprise structural upgrading serving as a significant mediating mechanism. These findings provide strong empirical support for Hypothesis H3.

**Table 6.** Bootstrap Test Results

<b>Effect Stage</b>	<b>Effect Value</b>	<b>Standard Error</b>	<b>P &gt;  z </b>	<b>95% Confidence Interval (Lower)</b>	<b>95% Confidence Interval (Upper)</b>
Indirect effect	-0.0436	0.0077	0.0000	-0.0587	-0.0284
Direct effect	-2.1971	0.1178	0.0000	-2.4281	-1.9661

### ***Enterprise Size Heterogeneity***

Table 7 reports the heterogeneous effects of financial agglomeration on economic growth disparities across enterprises of different sizes. Enterprises are classified based on the median firm size of listed companies, where column (1) corresponds to large enterprises and column (2) represents small and medium-sized enterprises. The regression results reveal that financial agglomeration has a significantly negative effect on growth disparities among large enterprises, with a coefficient of  $-0.0365$  that is significant at the 5% level. This indicates that financial agglomeration effectively contributes to narrowing economic growth differences within the group of large firms.

In contrast, the coefficient of financial agglomeration for small and medium-sized enterprises is  $-0.0443$ . Although the sign is negative, the effect is statistically insignificant, suggesting that the disparity-reducing impact of financial agglomeration is not robust for this group. The estimated coefficients of the control variables are generally consistent with theoretical expectations. Firm size and profitability exhibit significantly positive effects in both subsamples, implying that larger and more profitable enterprises tend to experience greater growth disparities. Meanwhile, liquidity displays a significantly negative coefficient, indicating that enterprises with stronger liquidity positions tend to exhibit smaller growth differences.

Overall, the findings suggest that the role of financial agglomeration in mitigating economic growth disparities is more pronounced among large enterprises, while its impact on small and medium-sized enterprises remains limited. These results provide empirical support for Hypothesis H4.

**Table 7.** Results of heterogeneity by enterprise size

Variables	(1)	(2)
	Large-scale enterprises	Small and medium-sized enterprises
	<i>growth_gap</i>	<i>growth_gap</i>
fin_verse	-0.0365** (-2.2069)	-0.0443 (-0.9649)
scale	0.0778*** (5.5807)	0.1216*** (9.1440)
age	-0.0723*** (-4.5823)	-0.0313*** (-3.4023)
soe	0.0185 (0.0694)	-0.1016 (-1.2576)
liquid	-0.0273*** (-6.3816)	-0.0149*** (-10.6861)
roa	2.5526*** (26.7387)	1.7136*** (27.4150)
der	0.0233*** (4.8325)	0.0169*** (2.8057)
rec	0.1441** (2.3094)	0.2603*** (4.1899)
itr	-0.0587*** (-2.7695)	-0.0168 (-0.8361)
Constant	-1.5541*** (-4.6272)	-2.4276*** (-8.7527)
Observations	15,072	18,712
Enterprise FE	YES	YES
Year FE	YES	YES
R-squared	0.3123	0.3304

### *Heterogeneity by competition level*

Table 8 reports the heterogeneous effects of financial agglomeration on economic growth disparities across industries with different levels of competition. Industries are divided based on the median level of competition, with Column (1) representing high-competition industries and Column (2) representing low-competition industries. The results indicate that in highly competitive industries, the coefficient of financial agglomeration is  $-0.0305$  and statistically significant at the 5% level, suggesting that financial agglomeration effectively narrows economic growth disparities among enterprises operating in competitive market environments. In contrast, for industries characterized by low competition, the coefficient of financial agglomeration is  $-0.0566$  but fails to reach statistical significance, implying that the disparity-reducing effect of financial agglomeration is relatively weak and unstable when competitive pressure is insufficient. Regarding the control variables, enterprise size and profitability remain significantly positive, while liquidity

is significantly negative in both subsamples, indicating consistent patterns across different competitive environments. Overall, the results suggest that financial agglomeration plays a more pronounced role in reducing growth disparities in high-competition industries than in low-competition industries, thereby supporting Hypothesis H5.

**Table 8.** Benchmark regression results by high and low competition

Variables	(1) High-competition industries	(2) Low-competition industries
fin_verse	-0.0305** (-2.2358)	-0.0566 (-0.5168)
scale	0.0722*** (5.4814)	0.1058*** (10.0337)
age	-0.0486*** (-3.9585)	-0.0015 (-0.1612)
soe	0.1309 (0.7170)	-0.1419 (-1.5191)
liquid	-0.0128*** (-5.9404)	-0.0241*** (-11.2580)
roa	1.9706*** (23.3280)	2.0258*** (28.0416)
der	0.0196*** (3.0826)	0.0196*** (3.8762)
rec	0.2698*** (4.1968)	0.1483* (1.8287)
itr	-0.0529** (-2.0583)	-0.0242 (-1.2833)
Constant	-1.5193*** (-5.0523)	-2.1538*** (-9.2967)
Observations	15,385	18,489
Enterprise fixed effects	YES	YES
Year fixed effects	YES	YES
R-squared	0.3302	0.3203

DV: growth\_gap

Table 9 further examines the heterogeneity of the mediating role of enterprise structural upgrading in the relationship between financial agglomeration and economic growth disparities under different levels of industry competition. Columns (1) and (2) present the results for high-competition industries, while Columns (3) and (4) correspond to low-competition industries. The findings show that in highly competitive industries, financial agglomeration exerts a significantly positive effect on enterprise structural upgrading, with a coefficient of 0.0004, while structural upgrading has a significantly negative effect on economic growth disparities, with a coefficient of  $-1.5220$  at the 1% significance level. These results indicate a clear and robust mediating effect, whereby financial agglomeration reduces growth disparities by facilitating enterprise structural upgrading. Conversely, in low-competition industries, the relationship between financial agglomeration and structural upgrading is not statistically significant, and the effect of structural upgrading on growth disparities ( $-0.6303$ ) also lacks significance, suggesting that the mediating mechanism

is weak or absent. Overall, the mediating role of enterprise structural upgrading is evident primarily in high-competition industries, confirming Hypothesis H6 that industry competition strengthens the mediating effect of structural upgrading between financial agglomeration and economic growth disparities.

**Table 9.** Mediating effect results of high- and low-competition heterogeneity

<b>Variables</b>	<b>(1) High-competition</b>	<b>(2) High-competition</b>	<b>(3) Low-competition</b>	<b>(4) Low-competition</b>
	update	growth_gap	update	growth_gap
fin_verse	0.0004*** (3.2211)	-0.0299** (-2.1907)	0.0021 (0.1274)	-0.0565 (-0.5070)
update		-1.5220*** (-3.1387)		-0.6303 (-0.2306)
scale	0.0004 (1.6298)	0.0729*** (5.5351)	0.0003*** (4.4006)	0.1070*** (10.1254)
age	-0.0007* (-1.8709)	-0.0496*** (-4.0472)	0.0004*** (6.3955)	0.0005 (0.0583)
soe	0.0003 (0.1622)	0.1314 (0.7196)	0.0004 (0.5022)	-0.1401 (-1.4984)
liquid	0.0004*** (6.5848)	-0.0121*** (-5.5767)	0.0000 (-1.2083)	-0.0241*** (-11.2764)
roa	-0.0058*** (-3.6217)	1.9618*** (23.3043)	-0.0008** (-2.0684)	2.0222*** (28.0257)
der	0.0002 (1.1975)	0.0198*** (3.1209)	-0.0000 (-0.1234)	0.0196*** (3.8672)
rec	0.0095*** (4.2413)	0.2843*** (4.4428)	0.0014*** (3.1625)	0.1549* (1.9064)
itr	-0.0001 (-0.3114)	-0.0531** (-2.0661)	-0.0000 (-0.0795)	-0.0284 (-1.2848)
Constant	0.0263*** (4.6941)	-1.4792*** (-4.9398)	0.0168*** (12.6106)	-2.0762*** (-8.9621)
Observations	15,385	15,385	18,489	18,489
Enterprise fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
R-squared	0.8383	0.3314	0.9615	0.3216

From the efficiency scores obtained for each Industrial Estate firm using the two SDEA models, we were able to derive, for each of the three years under review, largely consistent rankings of decision-making units (DMUs). On the basis of these scores, every DMU was then assigned to a specific efficiency cluster. For each year, Tables 2 and 3 report, respectively, the composition of the clusters and the average values of the variables used to describe the profile of the DMUs in each efficiency group. Industrial Estate firms were classified annually into three distinct clusters according to their efficiency levels. In Table 2, Cluster 1 gathers the least efficient DMUs, Cluster 2 includes firms with intermediate efficiency, and Cluster 3

comprises the most efficient Industrial Estates. To ensure that this classification was appropriate, the skewness of the annual distributions of efficiency values was examined for each year.

## 5. Conclusion

Using panel data from China's listed companies over the period 2013–2023, this study empirically investigates the interplay between financial agglomeration, enterprise structural upgrading, and disparities in economic growth at the firm level. The empirical results show that financial agglomeration significantly mitigates growth disparities among enterprises, highlighting the beneficial role of concentrated financial resources in easing financing constraints and improving the efficiency of capital allocation. Likewise, enterprise structural upgrading is found to effectively reduce growth gaps, emphasizing the importance of increased technological investment and advancement along the industrial value chain in promoting more balanced firm development. Further mechanism analysis demonstrates that enterprise structural upgrading acts as a mediating channel through which financial agglomeration influences economic growth disparities, suggesting that financial concentration facilitates convergence by stimulating research and development activities as well as organizational optimization.

Heterogeneity analysis reveals that the disparity-reducing effect of financial agglomeration is more pronounced among large enterprises, while its impact on small and medium-sized firms remains relatively limited. In addition, the effects of financial agglomeration are stronger in industries characterized by high levels of competition and weaker in less competitive industries. Consistently, the mediating role of enterprise structural upgrading is significant in high-competition sectors but less evident in low-competition environments. Overall, the findings confirm the crucial roles of financial agglomeration and enterprise structural upgrading in narrowing enterprise-level growth disparities and illustrate how firm size and industry competition shape these effects.

Based on these conclusions, several policy implications emerge. First, policymakers should further promote the rational concentration of financial resources across regions and industries. By optimizing the spatial allocation and service models of financial institutions, financing accessibility particularly for small and medium-sized enterprises can be enhanced, thereby helping to reduce developmental imbalances among firms. Second, greater support should be directed toward corporate research and development as well as technological innovation. Encouraging enterprises to pursue structural upgrading and strengthen their core competitiveness can accelerate the upward movement of industrial chains toward higher value-added segments. Third, financial support policies should be differentiated by enterprise size. While large firms are generally better positioned to leverage financial advantages for innovation investment, small and medium-sized enterprises require stronger policy-based financial instruments to alleviate financing constraints. Finally, reinforcing market competition mechanisms is essential for lowering entry barriers and fostering a fairer competitive environment. Such efforts can enhance the synergy between financial agglomeration and enterprise structural upgrading in highly competitive sectors, while targeted policy interventions may stimulate competitive dynamics in low-competition industries, ultimately contributing to more balanced economic growth among enterprises.

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