



The Impact of Institutional Investors on the Transformation and Upgrading of Enterprises

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Abstract. Take 2010-2021 A-share manufacturing listed companies as a research sample, Institutional investors empirical test of the impact of the group on the transformation and upgrading of enterprises and its internal mechanism impress. It is found that institutional investors can significantly promote the transformation and upgrading of enterprises. Test results of the impact mechanism find that institutional investors promote the transformation and upgrading of enterprises by improving the efficiency of enterprise capital allocation, innovation ability and reducing the quality of enterprise information disclosure, and strengthening the protection of R&D transformation information. Institutional investors are heterogeneous. Concrete evidence: The study found that the concentration of institutional investors will not promote the transformation and upgrading of enterprises. Research fruit: It has deepened the relevant research on the impact of institutional investors on the transformation and upgrading of enterprises, and from the perspective of the concentration of group shareholdings of institutional investors, it provides a reference basis for further improving the transformation and upgrading of enterprises, continuously optimizing the innovation ability of enterprises, and improving the competitiveness of enterprises.

Keywords: Institutional investors; transformation and upgrading; capital allocation efficiency; innovation ability; information disclosure quality.

1 Introduction

The group of institutional investors has become an important way to achieve governance effectiveness, but the effect is complex: it can promote the development of enterprises and may also harm the interests of the company. Based on the A-share manufacturing data from 2010 to 2021, this study discusses the impact of grouping on the transformation and upgrading of enterprises. The main contributions of this study include: first, studying the impact of institutional investor grouping on the transformation and upgrading of enterprises from the perspective of network groups, filling the gap in existing research; second, finding that the concentration of institutional investor groups is not conducive to enterprise transformation, which is of great significance for understanding the impact of institutional investor behavior. This research provides a new

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perspective and optimization path for enterprise transformation and upgrading, which is of great practical significance for understanding the role of institutional investors in enterprise development.

2 Literature Review

2.1 Research on the Group of Institutional Investors

As an independent third party, institutional investors can maximize benefits and promote economic development through collective actions. Wu Xiaohui and others (2019)^[1], Zhai Shuping (2022)^[2] research shows that institutional investors play an active role in corporate governance, reducing capital occupation, and reducing information asymmetry. They can also restrain enterprises from avoiding tax behavior. However, the impact of institutional investors also has negative effects. For example, it may collude with management to the problem of high salaries of executives, reduce information transparency and increase the risk of stock price crash, and have a negative impact on voluntary information disclosure (Liu Xinmin, etc., 2021^[3], Wu Xiaohui, etc., 2019^[1], Niu Jianbo, etc. 2013^[4]).

Generally speaking, the influence of institutional investors on enterprises has both advantages and disadvantages, and it is difficult to generalize.

2.2 Research on the Influencing Factors of Enterprise Transformation and Upgrading

Research shows that the transformation and upgrading of enterprises is affected by the external institutional environment and internal factors. Externally, market-oriented policies and government inspectors promote the transformation and upgrading of manufacturing enterprises (Zhao Haifeng, etc., 2021^[5]), and measures such as tax refunds also promote the development of enterprises (Qin Hailin, etc., 2022^[6]). Internally, enterprises evaluate transformation decisions based on risk, cost and expected benefits (Zeng Gui, 2011^[7]). Improving resource allocation efficiency and total factor productivity is the key, and financial management helps transformation and upgrading through information provision and decision-making support. In short, external policies and internal management jointly affect the transformation and upgrading process of enterprises.

2.3 Literature Review

In recent years, the transformation and upgrading of enterprises has received widespread attention, but the existing research mainly focuses on the micro level of enterprises, ignoring the role of institutional investors, especially institutional investors. There has been a lot of research. Pay attention to the company's investment efficiency, stock price crash risk and executive compensation, but do not discuss in depth the impact of institutional investors on the company's transformation and upgrading. In

addition, few studies involve the heterogeneity of institutional investors. This article will discuss its impact on the transformation and upgrading of enterprises from the perspective of the concentration of institutional investors.

3 Impact Mechanism Analysis and Research Hypothesis

3.1 Institutional Investors will Promote the Transformation and Upgrading of Enterprises

The impact of institutional investors on the transformation and upgrading of enterprises is double-sided. On the one hand, it can ease financing constraints, reduce information asymmetry and business risks, restrain the private interests of major shareholders, and improve the company's management level, so as to promote transformation and upgrading. On the other hand, institutionsInvestors may hinder the long-term development of the enterprise in pursuit of short-term returns, or conspire with management to weaken internal control governance and even endanger the development of the company.

Based on this, the hypothesis of this article 1:

Assumption 1: The group of institutional investors promotes the transformation and upgrading of enterprises.

3.2 The Impact Mechanism of Institutional Investors on the Transformation and Upgrading of Enterprises

The impact of institutional investors on the transformation and upgrading of enterprises can be analyzed from three key angles: 1.Capital allocation, Group behavior may improve the efficiency of the use of funds by enhancing the "exit threat", but there is also a risk of collusion with management to harm the interests of shareholders.2.Innovation ability, institutional investors Grouping is conducive to information sharing and strategic insight, and can also optimize corporate governance, which may promote enterprise innovation and thus promote the transformation and upgrading of enterprises.3.Information disclosure: The internal communication of group investors may reduce their dependence on public disclosure and allow enterprises to promote transformation while protecting key technologies.

Based on this, this study puts forward four assumptions:

Assumption 2: Institutional investors are working together to promote the transformation and upgrading of enterprises by improving the efficiency of capital allocation of enterprises.

Assumption 3: Institutional investors group to promote the transformation and upgrading of enterprises by improving their innovation ability.

Assumption 4: Institutional investors team up to promote the transformation and upgrading of enterprises by reducing the quality of information disclosure.

4 Research and Design

4.1 Sample Selection and Data Source

This study uses the data of listed companies in the A-share manufacturing industry from 2010 to 2021. After excluding ST, PT enterprises, enterprises with missing financial data and enterprises with no institutional investors, the final sample included 983 enterprises, with a total of 11,796 observations.

4.2 Variable Definition

1.Explained Variables: Enterprise Transformation and Upgrading.

Measured by total factor productivity (TFP) and calculated by the revised Cobb-Douglas production function: $\ln Y_{i,t} = \alpha \ln L_{i,t} + \beta \ln K_{i,t} + \gamma \ln M_{i,t} + \mu_{i,t}$.

Among them, Y is the operating income, L is the number of employees, K is the net fixed assets, and M is the intermediate input.

To the above Perform simple linear regression, Obtain Residual $\mu_{i,t}$ For Total factor productivity of enterprises (TFP).

2.Explanatory Variables: a Group of Institutional Investors

This text learn from Crane et al.(2017)^[8] methods: Extract various institutional investor groups from the institutional investor network. Use three indicators measure the group holdings of shares by institutional investors from three levels. $CliqueOwnership_{i,t}$, $CliqueOwnTop1_{i,t}$ These two indicators reflect the size of the institutional investor network in i enterprises from the perspective of the total shareholding ratio and the largest shareholder shareholding ratio. $CliqueHerfindahl_{i,t}$ It is an institutional investor group. The Hefendall Index (HHI), the larger the HHI, the more concentrated the equity of the enterprise is in a certain institutional group, and its information competition is relatively weak, and on the contrary, the stronger the competition.

Explained variable 1:

$$CliqueOwnership_{i,t} = \sum_{j=1}^N \lambda_{i,j,t} \cdot 1(Clique \ln stitution_{j,t}) \tag{1}$$

Explained variable 2:

$$CliqueHerfindahl = \sum_{n=1}^N \left(\frac{Clique_{i,t,n}}{Clique_{i,t}} \right)^2 \tag{2}$$

Explained variable 3:

$$CliqueOwnTop1_{i,t} = \left(\sum_{m=1}^M Clique \ln stitution_{i,t,m} \right)_{\max} \tag{3}$$

Among them, $\lambda_{i,j,t}$ Indicates in t Year's end The shares of the company i held by the institution j accounted for the shares of the company i in circulation, $\lambda_{i,j,t}$ Indicate the institution j Whether The virtual variable belonging to any member of a group belongs to 1, and the other is 0.

3. Intermediary Variables.

(1) Capital allocation efficiency and Financing Constraints. This article draws on Ma Lianfu (2020)^[9] practice, use Richardson the investment efficiency model measures the capital allocation efficiency of enterprises. The specific models are as follows:

$$invest_{i,t} = \partial_0 + \partial_1 Growth_{i,t-1} + \partial_2 Cash_{i,t-1} + \partial_3 Age_{i,t-1} + \partial_4 Size_{i,t-1} + \partial_5 Return_{i,t-1} + \partial_6 invest_{i,t-1} + \sum industry + \gamma_{i,t}$$

Use the residuals of the model $\gamma_{i,t}$ Estimate the investment efficiency of enterprises, as follows $INE_{i,t}$ Express.

(2) This study uses Weisbach. etc.^[10] human-improved KZ indicator to evaluate the financing of enterprises restrain degree. The corresponding regression coefficient is obtained through regression, and these coefficients are applied to all samples to calculate the financing constraint level of each enterprise.

$$KZ = \lambda_0 + \lambda_1 lev + \lambda_2 lia + \lambda_3 roe + \lambda_4 cash + \lambda_5 div$$

The greater the KZ value, the higher the level of financing constraints.

(3) Innovation ability

The number of enterprise patent applications used in this article (including invention patents, utility model patents and appearance patents) to represent the innovation ability of the enterprise.

(4) Quality of information disclosure

This article takes the research of Kim and Verrecchia (2001)^[11], Lin Changquan (2016)^[12] as a reference, and uses the KV index to characterize the information disclosure quality of listed companies. The calculation method is:

$$\ln || \Delta Pt / Pt - 1 || = \alpha + \beta (Volt - Volo) + \mu_i$$

$$KV = \beta * 1000000$$

The smaller the calculated β value, the fuller the information disclosure of the listed company.

4. Control Variables.

Select the enterprise size, asset-liability ratio and other control variables, see the table for Table 1.

Table 1. Definition of control variables.

Variable Classification	Variable Classification	Variable Classification	Variable Classification
Control Variables	Firm Size	Size	ln(1+total assets)
	Gearing ratio	Lev	Total Liabilities/Total Assets
	Operating Income Growth Rate	Growth	(current year's operating income - previous year's operating income)/total assets
	Operating Cash Flow	Cfo	Net cash flow from operating activities/total assets
	Shareholding Concentration	Toptenrate	Top Ten Shareholders
	Current Ratio	Flower	Current Assets/Current Liabilities

4.3 Model Setting

The construction of this article (11)ComeTest the hypothesisH1,ApproachAre institutional investors in a group? BoostFinishEnterprise transformation and upgrading:

$$TFP_{i,t} = \beta_0 + \beta_1CliqueOwn_{i,t} + X_{i,t} + \Sigma year + \varepsilon_{i,t}$$

Among them, $TFP_{i,t}$ Separately from the t year of the stock. Total factor productivity; $CliqueOwn_{i,t}$ Indicates that the institutional investor group holds shares. Indicators, Include(1),(2),(3), $X_{i,t}$ For a set of control variables.

5 Empirical Results and Analysis

5.1 Descriptive Statistics

As shown in Table 2, the statistical results show that the shareholding ratio of institutional investors in the manufacturing industry varies significantly (0.0006 to 1). The Heffendall Index (0 to 1) reflects that the concentration of group shareholding varies from full competition to monopoly competition. The average of total factor productivity (TFP) is 15.51418 (range 9.165584 to 19.77889), which is at a reasonable level. These data reflect the overall characteristics and differences between the group behavior of institutional investors and the production efficiency of enterprises in the sample.

Table 2. Descriptive statistics of main variables.

Variable	Variable	Variable	Variable	Variable	Variable
CliqueOwnership	11796	0.4730	0.2087	0.0006	1
CliqueHerfindahl	11796	0.6350492	0.2637869	0.000	1.000
CliqueOwnTop1	11796	0.4318	0.2005	0.0008	1
TFP	11796	15.51418	1.012834	9.165584	19.77889
Size	11796	22.31383	1.279558	17.6413	27.54699
Lev	11796	0.4523819	0.3794127	0.0070801	18.94434

Variable	Variable	Variable	Variable	Variable	Variable
Growth	11796	-0.8408278	22.2004	-2173.535	5.353555
Cfo	11796	0.0467685	0.077324	-1.686121	2.221503
Toptenrate	11796	54.80681	14.98999	10.37	100
Flowr	11796	2.386655	4.363693	0.0023819	204.7544

5.2 Return Results

1. Benchmark Regression Results.

As shown in Table 3, the return results show that the share ownership ratio of institutional investor groups is positively related to the total factor productivity of enterprises, confirming that it promotes the transformation and upgrading of enterprises. However, the concentration of holdings is negatively related to productivity, which may be unfavorable to the development of enterprises due to the highly concentrated equity structure. Combining Zhao Ruijie and Wu Chaoyang^[13] research by 2017 and BaoRi Wuhan (2022)^[14] shows that high equity concentration increases the tendency of cash dividends, which may harm the interests of the company. Overly concentrated institutional investor share holding may lead to co-merates with executives to pursue short-term benefits, which is not conducive to corporate transformation. This reflects the complexity of the grouping of institutional investors on the transformation and upgrading of enterprises.

Table 3. Benchmarking regression results.

	(1)	(2)	(3)
	TFP	TFP	TFP
CliqueOwnership	0.0055*** (0.0007)		
CliqueHerfindahl		-0.0170 (0.0178)	
CliqueOwnTop1			0.0019*** (0.0006)
Control variables	control	control	control
_cons	15.6170*** (0.0305)	15.63*** (0.0328)	15.6153*** (0.0306)
N	11796	11796	11796
adj.R2	-0.0388	0.043	-0.0437

2. Endositivity Test and Robustness Test.

After controlling endogeneity through the tool variable method and using the total factor productivity calculated by the GMM method to replace the total factor productivity previously calculated using the LP method, the results remain stable.

3. Test Results of the Intermediary Effect.

The method of Wen Zhonglin et al. (2004)^[15] tests the intermediate variables. On the basis of the above benchmark regression, the following regression is further done:

$$M = a\text{Clique} - \text{Own}_{i,t} + e_1$$

$$TFP = c'\text{Clique} - \text{Own}_{i,t} + bM + e_2$$

Table 4. Results of the mediation effect test of institutional investors' holding percentage of shares.

	(1) INE	(2) Tfp	(3) Apply	(4) Tfp	(5) KV	(6) Tfp
Clique- Owner- ship	0.0017*** (0.0002)	0.0046*** (0.0007)	1.0517*** (0.3417)	0.0144*** (0.0005)	0.003*** (8.516)	0.006*** (8.364)
INE		0.2466*** (0.0256)				
Apply				0.0006*** (0.0000)		
KV						0.501*** (21.643)
Control variables	control	control	control	control	control	control
_cons	-0.9731*** (0.0672)	15.6160*** (0.0317)	316.3427*** (85.8069)	14.6682*** (0.0343)	0.540*** (31.811)	15.012*** (379.826)
N	11439	11439	11796	11796	10035	10035
adj.R2	-0.0597	-0.0386	-0.0887	0.2130	0.016	0.103

Table 5. Mediation effect test results of institutional investors' holdings of headline holdings.

	(1) INE	(2) Tfp	(3) Apply	(4) Tfp	(5) KV	(6) Tfp
Clique- Own- Top1	0.0009*** (0.0002)	0.0025*** (0.0006)	1.3232*** (0.2847)	0.0112*** (0.0005)	0.0005* (0.0003)	0.0031*** (0.0006)
INE		0.2325*** (0.0246)				
Apply				0.0006*** (0.0000)		
KV						0.5136*** (0.0230)
Control variables	control	control	control	control	control	control
_cons	-0.0440*** (0.0086)	15.5901*** (0.0314)	266.7410*** (83.1807)	14.6606*** (0.0342)	0.5389*** (0.0167)	15.0036*** (0.0390)
N	11708	11708	12084	12084	10270	10270
adj.R2	-0.0847	-0.0432	-0.0877	0.1959	-0.0943	0.0020

The results of the study in Table 4 and Table 5 reveal the impact mechanism of institutional investors on the transformation and upgrading of enterprises.

Efficiency of capital allocation: The shareholding ratio of institutional investors is significantly positively related to the capital allocation efficiency of enterprises (INE), and the efficiency of capital allocation is positively related to the total factor productivity of enterprises, indicating that institutional investors have promoted the transformation and upgrading of enterprises by improving the efficiency of capital allocation.

Ability to innovate: The shareholding ratio of institutional investors is significantly related to the number of patents applied for by enterprises, and the number of patents is directly related to total factor productivity, indicating that institutional investors have promoted transformation and upgrading by improving the innovation ability of enterprises.

Quality of information disclosure: The shareholding ratio of institutional investors is significantly positively related to the KV index (the smaller the index, the higher the quality of information disclosure), and the KV index is also positively related to total factor productivity, which shows that institutional investors have promoted the transformation and improvement of enterprises by reducing the quality of information disclosure, especially protecting relevant information about R&D transformation. Level. Only The test results of the intermediary effect of financing constraints are not significant. These findings verify the research hypothesis II, III and IV, and reveal the mechanism of institutional investors to promote the transformation and upgrading of enterprises by optimizing capital allocation, enhancing innovation capabilities and strategic management information disclosure.

6 Conclusions

This article discusses the impact of this kind of institutional investor grouping behavior on the transformation and upgrading of the company and explores its principle by studying the three intermediary variables of capital allocation efficiency, innovation ability and information disclosure quality. The study found that the group behavior of institutional investors can help promote the transformation and upgrading of enterprises. Institutional investors will promote the transformation and upgrading of enterprises by improving the efficiency of capital allocation, improving the innovation ability of enterprises, reducing the quality of information disclosure of enterprises, and strengthening the protection of R&D and transformation information. When studying the heterogeneity analysis of the concentration of shareholding among institutional investor groups, it is found that the concentration of shares in institutional investor groups may lead to the collusion of institutions with executives and actual controllers, which is not conducive to the improvement of the capital allocation efficiency and innovation ability of enterprises. There is no need to protect transformation information. On the contrary, by increasing the content of information disclosure, the stock price is increased, and realizing short-term practical benefits, which is not conducive to the transformation and upgrading of enterprises.

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