Does Industrial Agglomeration Affect the Accuracy of Analysts' Earnings Forecasts?

Xiaoyuan Liu

College of Management, Jinan University, Guangzhou, China
Email: Machaelialau@outlook.com

Abstract

In China, the unbalanced geographical distribution of economic activities is an important feature of modern economic growth. Accordingly, a large number of industrial clusters characterized by industrial clusters have emerged, making important contributions to regional economic development. This article uses 2003-2017 Chinese A-share listed companies as a sample to study the impact of industrial agglomeration on analysts' earnings forecast accuracy. This paper finds that industrial agglomeration can significantly improve the accuracy of analysts' earnings forecasts by reducing the inherent mechanism of information asymmetry, which is more obvious in state-owned enterprises. This paper expands the relevant research on industrial agglomeration and analyst forecasting, and proves that industrial agglomeration improves the information environment of the capital market and enables analysts to better play the role of information intermediaries.

Keywords

Industrial Agglomeration, Analysts Forecasts, Information Asymmetry

1. Introduction

Over the past three decades, China has undergone important industrialization and transformation of economic growth patterns, and the imbalance in the geographical distribution of economic activities constitutes an important feature of modern economic growth. Accordingly, industrial agglomeration, characterized by industrial clusters, has become an important way of China's economic growth. However, at a time when China's economy has entered a new normal, all industries are facing a two-way squeeze of "high-end return flow and low-end squeeze" and urgently need to be transformed and upgraded. The report of the 19th Na-

tional Congress of the Communist Party of China stated that "China's economy has shifted from a stage of high-speed growth to a stage of high-quality development. It is in the period of tackling the key to changing the development mode, optimizing the economic structure, and transforming the growth momentum. The side structural reform is the main line, promoting economic development quality reform, efficiency reform, power reform, and improving total factor productivity. It is necessary to "promote China's industry to the middle and high end of the global value chain, and cultivate several world-class advanced manufacturing clusters. On this basis, in recent years, the country has formulated more national development strategies to further strengthen regional cooperation, such as vigorously promoting the construction of the "Belt and Road" and accelerating the construction of the Yangtze River Economic Belt. At the same time, with the advent of the "high-speed rail era", new changes are taking place in industrial agglomeration, and regional development imbalances have become more apparent. Therefore, it is necessary to have a deeper discussion on the specific impact of industrial agglomeration.

In recent years, the continuous development and improvement of China's securities market have also led to the rapid development of securities institutions. As a market intermediary, securities institutions have begun to publish a large amount of forecast information about listed companies. As an information bridge between listed companies and investors, analysts can effectively reduce information asymmetry in capital markets by studying listed companies and issuing earnings forecast reports (Lin et al., 2014). Therefore, the research analyst's earnings forecast behavior and its influencing factors are of great significance for protecting the interests of small and medium investors and promoting the sustainable development of the capital market.

From the perspective of research status, on the one hand, the current research on industrial agglomeration in China mainly focuses on the regional economic level, and most of the discussions at the micro-level only focus on the impact of industrial agglomeration on enterprises. On the other hand, the influence of the external environment of enterprises on analysts' prediction behaviors has increasingly attracted the attention of scholars. Based on the above considerations, this paper discusses the impact of industrial agglomeration on analysts' forecast accuracy by combining empirical analysis with external economic theory, efficient market hypothesis, information asymmetry theory, and signal transmission theory.

We organize the rest of the paper as follows. Section 2 describes the research significance, including the theoretical significance and the practical significance. Section 3 presents the literature review about the industrial agglomeration and the accuracy of analysts' earnings forecasts. Section 4 discusses the main hypotheses. And section 5 describes the sample selection, variable definitions and model setting. Section 6 reports descriptive statistics and presents the main empirical results, and Section 7 concludes.

2. Research Significance

2.1. Theoretical Significance

Existing studies have not fully explored the relationship between industrial agglomeration and analysts' earnings prediction behavior. Most studies are conducted from the perspective of industry agglomeration, and the conclusions are not unified. From the point of view of domestic research, most of the attention is paid to the impact of the space-time distance between enterprises and analysts on analysts' predictive behavior, and there are few literatures that study the distance between enterprises and enterprises, especially the effect of spatial agglomeration on analysts' predictive behavior. From the perspective of information asymmetry, this paper explores the impact of industrial agglomeration on analysts' forecasting behavior and its internal mechanism, expands the literature research on industrial agglomeration and analysts' prediction, and proves that industrial agglomeration improves the information environment of capital markets. So that analysts can better play the role of information intermediary.

2.2. Practical Significance

This article incorporates industry agglomeration, information asymmetry and analysts' earnings forecast accuracy into the same research framework to provide a new perspective for further improving the capital market information environment. On the one hand, the research results of this paper will provide analysts with favorable information. By improving the company's external information environment and reducing the asymmetry of capital market information, analysts can release more accurate earnings forecast information to guide investors in decision-making; industrial agglomeration is closely related to the deep reform of the institutional level. The construction of the development zone has formed unique industrial agglomeration phenomenon (Bai et al., 2019). To further promote and improve the information environment of industrial clusters, thereby improving the efficiency of capital market operations.

3. Literature Review

3.1. Industrial Agglomeration

1) *The impact of industrial agglomeration on corporate innovation*

Du and Li (2015) take the competition effect, scale effect and learning effect of industrial agglomeration as the starting point, pointing out that on the one hand, the gathering of a large number of companies will intensify the competition between companies to a certain extent and stimulate the innovation power of enterprises. On the other hand, industrial agglomeration strengthens business exchanges between enterprises, provides more information and channels for enterprise product innovation, and confirms that industrial agglomeration has a significant role in promoting enterprise innovation decisions and new product output.

Hu and Wan (2019) cut in from a dynamic perspective and studied the impact of specialized industrial agglomeration and diversified industrial agglomeration on enterprise innovation. Studies have shown that in a specialized industrial agglomeration environment, enterprises tend to conduct low end-enterprise innovation, and in a diversified industry cluster environment, companies tend to carry out high-end enterprise innovation, this effect will be enhanced by the dynamic entry of enterprises.

2) *The impact of industrial agglomeration on corporate finance*

Sheng and Wang (2013) based on World Bank survey data and Chinese industrial enterprise data, proved that industrial agglomeration reduced the financing cost of enterprises by improving the efficiency of credit resource allocation. They believe that because industrial agglomeration can reduce information asymmetry, considering the reputation effect, companies will consciously reduce their default risk, thereby reducing corporate financing costs.

Mao (2015) believes that industrial agglomeration strengthens the trust between enterprises and between enterprises and banks. The theoretical model shows that industrial agglomeration can reduce the financing constraints of enterprises by improving the transformation ability of fixed assets.

Hong (2018) believes that under the combined effect of specific asset transformation and industrial agglomeration, corporate financial constraints will be eased and traditional industries will be improved and upgraded.

Xiong et al. (2019) believe that industrial agglomeration has a regulatory effect on financing constraints and corporate R & D investment. Specifically, industrial agglomeration promotes the level of corporate R & D investment by easing the financing constraints faced by GEM listed companies.

3) *The impact of industrial agglomeration on the enterprise's total factor productivity*

Fan et al. (2014) found that industrial agglomeration can improve the enterprise's total factor productivity through the improvement of technical efficiency, but this positive impact is only manifested in the specialized economy.

Qu et al. (2018) explored the relationship between industrial agglomeration and green TFP. The results showed that: industrial agglomeration in most industries in China can promote the increase in green TFP, but the impact of some industries is not significant. It even shows a negative correlation.

Lu et al. (2018) believe that industrial agglomeration can promote the increase of total factor productivity in the early stage, but a crowding effect will form in the later stage, resulting in a decrease in total factor productivity.

3.2. Accuracy of Analysts' Earnings Forecasts

As an important information transmission medium between listed companies and investors, securities analysts play a "lubricant" role in improving market pricing efficiency and maintaining capital market stability. Analysts predict that the quality of reports directly affects the effective play of their information in-

termediation. In general, it can be roughly divided into three categories: internal corporate governance, external environment, and analysts' own behavior and characteristics.

1) *The impact of internal corporate governance on the accuracy of analysts' earnings forecasts*

First, the transparency of corporate information directly affects the cost and difficulty of analysts to obtain the information needed for forecasting. Fang (2007) found that the higher the transparency of information disclosure, the lower the analysts' dependence on accounting earnings data and the accuracy of the forecast. Bai (2009) found that the more transparent the information disclosure policy of listed companies, the more analysts who follow the forecast, and the less divergent the forecast, the higher the accuracy.

Secondly, the level of detail in the corporate financial report will also have an impact on the accuracy of analyst forecasts. Huang (2016) found that the disclosure of "management discussion and analysis (MD & A)" and other comprehensive income components can effectively improve the accuracy of analyst forecasts. Li and Zhang (2014) used social responsibility report as a proxy variable for non-financial information of listed companies, and found that non-financial information can also improve the accuracy of analysts' forecasts. Dhaliwal et al. (2012) also confirmed that the higher the quality of corporate social responsibility disclosure information, the more accurate the analyst's prediction.

Third, the quality of corporate earnings directly affects the quality of information that analysts need to predict. Eames and Glover (2003) believe that the smaller the difficulty and complexity of the company's earnings forecast, the closer the analyst's earnings forecast results will be to actual values. Shi et al. (2007) found that the predictability of earnings is positively correlated with the accuracy of analysts' predictions, while the volatility of earnings is negatively correlated with it. Qu and Bi (2016) found that earnings management based on the impairment of goodwill in the company's annual report will reduce the accuracy of analysts' forecasts, and high-level external audits will effectively alleviate this phenomenon.

2) *The impact of the company's external environment on the analyst's earnings forecast accuracy*

In addition to the independent disclosure of information by listed companies, the external environment of the company also has a non-negligible impact on the quality of analysts' forecast reports. Bushman et al. (2004) found that the company's earnings quality and analysts' earnings forecast accuracy are higher. In addition, many scholars have noticed the influence of the media, an information dissemination intermediary, on the accuracy of analyst forecasts. For example, Zhou et al. (2014) found that the increase in media attention will significantly increase analyst attention, and further improve the accuracy of analysts' earnings forecasts through the intermediate channel of analyst attention; Hu et al. (2016) examines the impact of media reports on analysts' forecasting behavior

and finds that an increase in the number of media reports can reduce media disagreements, increase the quality of information disclosure, and improve analysts' forecasting quality. Yang et al. (2019) found that the opening of the high-speed railway improved the information environment of the capital market, enabling analysts to better play the role of information intermediaries. In addition, Hugon et al. (2015) believe that the uncertainty of economic policies has caused a serious negative impact on the quality of analysts' public and private information, resulting in frequent revisions of negative earnings forecasts.

3) *The impact of analysts' own behavior characteristics on the analysts' earnings forecast accuracy*

Analysts' work experience, academic qualifications, gender, professional standards, and other characteristics as well as their own behavior will also affect the quality of forecast reports. Liu and Gao (2014) found that the increase in analyst industry expertise can improve the quality of analyst forecasts. Shi et al. (2015) believe that the general experience of analysts and corporate experience are significantly positively correlated with forecast accuracy, and this positive effect is different between male and female analyst groups. Yi et al. (2015) also believe that female analysts should be more cautious than male analysts. Generally speaking, the larger the brokerage firm where the analyst is located, the stronger the research strength of the institute and the higher the accuracy of the analyst's prediction.

On the other hand, the analyst's behavior will also affect the analyst's forecast accuracy. Tao (2018) used field research as a proxy variable for analysts' private information, and found that the field research behavior before analysts' predictions can improve the timeliness of securities analysts' forecasts. Xu et al. (2015) conducted a sample of companies listed on the Shenzhen Stock Exchange from 2009 to 2012, and found that analysts are more inclined to go to analysts for higher attention, more transparent information, stronger profitability, closer distance, and scale Larger listed companies conduct research.

Although analysts may make predictions for improving reputation, optimizing receiver response to reports, and maximizing the value of their predictions to investors (Beyer et al., 2010), the accuracy of analyst predictions depends not only on the objective information environment and the objective capabilities of analysts also depend on their subjective motives. Beyer et al. (2010) believe that analysts will not reflect all of their information in the forecast, that is, analysts' prediction behavior will be distorted, and a large number of documents prove that analysts' predictions have optimistic bias (Bradshaw, 2011).

3.3. Industry Agglomeration and Analysts' Earnings Forecast Accuracy

In the existing research, there are few studies on industry agglomeration and analysts' earnings prediction behavior, mostly from the perspective of industry agglomeration. Most studies believe that industry clustering can help improve

analysts' prediction accuracy. Datta et al. (2011) research found that when the company's industry concentration is higher and the market power is greater, the analyst's earnings forecast is more accurate and the forecast deviation is smaller. The results of Haw et al. (2015) show that companies with higher industry concentration and stronger product pricing power have higher analyst earnings forecast accuracy, lower forecast bias, and more analyst followers. However, some studies have reached inconsistent conclusions. Some scholars believe that in order to maintain a competitive advantage, companies with a high degree of industry concentration will reduce information disclosure to avoid disclosure of business secrets, so the predictability of analysts' earnings will decrease and the number of analysts will also decrease.

At present, there are few domestic studies on the impact of agglomeration on analysts' predictive behavior. Xie and Chen (2016) believe that industry concentration is significantly positively correlated with the accuracy of analysts' forecasts and the number of analysts tracking, and the effect of different types of equity is different. Xu and Zhu (2016) believe that the interaction between internal governance mechanisms and market competition can effectively reduce analysts' bias in predicting corporate profitability.

3.4. Summary

From the literature of the above two aspects, we found that the previous research focused more on the internal governance and information disclosure of the enterprise and the impact of the analyst's behavior characteristics on the accuracy of the analyst's prediction. In recent years, more and more scholars have begun to pay attention to the external the importance of the governance environment on analysts' predictive behavior is evident. At the same time, industrial agglomeration, which is a major driving force for regional economic development, also plays an important role in the development decision of enterprises. Industrial agglomeration has a significant impact on the external environment faced by companies. At the same time, these are also important factors that affect the accuracy of analysts' earnings forecasts. Existing researches on the impact of agglomeration on analysts' predictive behavior are still few, and more focus on industry agglomeration, and the conclusions are not uniform. So how does the spatial economics phenomenon of industrial agglomeration affect analysts' earnings forecast accuracy? The existing literature does not provide sufficient empirical evidence, and this is the subject of this study.

4. Hypotheses Proposed

4.1. Industry Agglomeration and Analysts' Earnings Forecast Accuracy

As a major driving force of China's economic development, industrial agglomeration may affect the accuracy of analysts' earnings forecasts from the following aspects:

1) *Spatial agglomeration and common fundamentals*. Industrial agglomeration can produce analysts' economies of scale from the following two aspects. On the one hand, the concentration of a large number of companies in a specific space reduces the geographical distance between companies, which helps companies in the analysts' cluster to conduct centralized inspections and researches and reduce the transportation and time costs predicted by analysts. On the other hand, companies in industrial clusters often have similar fundamentals (Engelberg et al., 2018). Therefore, the analyst can learn about other companies through the information of one company in the cluster, thereby reducing the marginal cost of the analyst's information collection.

2) *Information spillover*. Liang and Qian (2007) found that the agglomeration of industry in space promoted the dissemination of knowledge, especially tacit knowledge and sticky knowledge among enterprises, which is often difficult to obtain from enterprise financial reports, further reducing Degree of information asymmetry. Therefore, the information spillover effect brought about by industrial agglomeration has created a good information environment for analysts' earnings forecasts.

3) *Management communication*. Industrial agglomeration can affect communication between management and help to further convey information to analysts. Specifically, on the one hand, industrial gatherings have a learning effect. Industrial agglomeration has strengthened business exchanges between enterprises and enhanced information exchange between similar enterprises and upstream and downstream enterprises (Du and Li, 2015), creating objective conditions for communication between management. On the other hand, the economic behavior of industrial agglomeration is deeply rooted in the common language, background knowledge and trading rules in the circle, which helps to form a cooperative trust mechanism within the industrial agglomeration area (Sheng and Wang, 2013). Therefore, industrial agglomeration has promoted communication between enterprises and promoted the dissemination and intercommunication of information among enterprises.

In summary, industrial agglomeration can reduce the degree of information asymmetry between companies and analysts through its spatial agglomeration and common fundamental characteristics, information spillover effects, and enhanced communication between management and information transfer to analysts. So, it plays a significant role in improving the quantity and quality of information required by analysts for prediction.

Based on the above analysis, the first hypothesis of this article is proposed:

H1: Under other conditions unchanged, the higher the level of industrial agglomeration, the higher the accuracy of analysts' earnings forecasts.

In order to verify H1, we will use the empirical research method to construct the model for OLS regression and T-test, analyze the whole sample, and observe the coefficient symbols and sizes of key variables in the model. In order to verify H2, we will further divide the sample into two groups of state-owned enterprises

and non-state-owned enterprises, and compare the coefficient symbols and sizes of key variables.

4.2. Industrial Agglomeration, The Nature of Property Rights and the Accuracy of Analysts' Earnings Forecasts

The impact of the nature of property rights on the relationship between industrial agglomeration and analysts' earnings forecast accuracy may be reflected in the following two aspects:

1) Existing research shows that the willingness of state-owned enterprises to publish voluntary information is weaker and the motivation for self-protection is stronger. Therefore, it is more likely to disclose the forecast with lower accuracy, and the accuracy of the disclosed performance forecast will be lower. With the improvement of the level of industrial agglomeration, analysts can obtain more and more accurate private information about state-owned enterprises through common fundamentals, spatial agglomeration, information spillovers, and enhanced communication with management, thereby making up for the current situation of insufficient information.

2) State-owned enterprises have a close relationship with the government and have more channels for obtaining information. Compared with non-state-owned enterprises, they can estimate the trend and impact of macroeconomic policies in a more timely and accurate manner. When communicating with the management of state-owned enterprises, more and more valuable information can be obtained to reduce the difficulty of earnings forecast.

To sum up, as the level of industrial agglomeration increases, analysts may have different performances in forecasting earnings of state-owned enterprises compared to non-state-owned enterprises.

Based on the above analysis, the second hypothesis of this article is proposed:

H2: Compared with non-state-owned enterprises, the effect of industrial agglomeration on the accuracy of analysts' earnings forecasts will be more pronounced among state-owned enterprises.

5. Research Design

5.1. Sample Selection and Variable Definitions

The industrial agglomeration data in this article comes from the WIND database and manual compilation, and the corporate financial data and analyst earnings forecast data come from the CSMAR database. This paper takes all A-share companies in Shanghai and Shenzhen as research samples from 2003 to 2017, and deletes the ST companies, financial insurance industry, and the missing data of key variables. In order to eliminate the influence of outliers on the estimation results, this paper performs a tail-ending treatment on the upper and lower 1% of all continuous variables. In addition, in order to ensure that the analyst's earnings forecast is based on sufficient information, this article only retains the analyst's last forecast value for each listed company's earnings per share for the

year. The final sample of this article is 17,895.

The specific definition of the variable is as Table 1.

5.2. Model Setting

In order to examine the impact of industrial agglomeration on the accuracy of analysts' earnings forecasts, Equation (1) is conducted:

$$FERR_{i,t} = \beta_0 + \beta_1 * S - Gini_{i,t} + \beta_2 * \text{Controls} + \sum \text{Firm} + \sum \text{Year} + + \varepsilon. \quad (1)$$

6. Empirical Research Results and Analysis

6.1. Descriptive Statistics of Main Variables

Table 2 is the descriptive statistics of the variables. 1) From the perspective of industrial agglomeration variables: the average value of the spatial Gini coefficient of the sample enterprises is 0.154, and the standard deviation is 0.298, indicating that from a national perspective, China's industrial agglomeration level is not high, and the fluctuations in various regions are obvious. This is consistent with the characteristics of the unbalanced development of China's regional economy;

Table 1. Variable definitions.

Variable symbol	Variable interpretation
S-Gini	S-Gini $= \sum_{j=1}^{N}(S_j - X_j)^2$, S_j represents the proportion of an industry in city j to the total size of the industry in the country, X_j epresents the proportion of all industries in city j to all industries in the country, and N is the total number of cities in the country.
FERR	At time t, the absolute value of the difference between the median value of all analysts' predicted EPS of listed companies ($\text{Med}(\text{FORECAST}_{i,t})$) and the true value of EPS ($\text{MEPS}_{i,t}$) divided by the initial stock price ($\text{PRICE}_{i,t}$).
Follow	Ln (1 + the Number of analysts).
Horizon	Ln (The number of days between the announcement date of the analyst's latest forecast of the current year's earnings forecast and the forecast end).
PB	Stock price per share divided by net assets per share.
MV	Annual market value of individual shares after conversion by natural logarithmic function.
VSALES	The company's operating income in the last three years divided by the standard deviation of the total asset quotient.
Lev	Total assets divided by total liabilities.
SOE	If the actual controller of the company is state-owned, it is equal to 1, otherwise it is 0.
Big4	If the company's audit agency in the current year belongs to the top four, it is equal to 1, otherwise it is 0.
ROE	Ratio of operating profit adjusted by industry median and lagging first order processing to average total equity.
Growth	The company's main business revenue growth rate.

Table 2. Descriptive statistics of main variables.

Variable	Sample size	mean	sd	median	min	max
S-Gini	17895	0.154	0.298	0.015	0	1
FERR	17895	0.014	0.022	0.007	0	0.137
Follow	17895	1.954	0.863	1.946	0.693	3.714
Horizon	17895	6.063	0.434	6.143	4.529	6.771
PB	17895	1.259	1.324	0.839	0.182	8.681
MV	17895	15.229	1.145	15.238	12.682	18.243
VSALES	17895	0.095	0.099	0.065	0.005	0.602
Lev	17895	0.446	0.203	0.448	0.052	0.872
SOE	17895	0.436	0.496	0	0	1
Big4	17895	0.078	0.268	0	0	1
ROE	17895	0.078	0.022	0.074	0.03	0.132
Growth	17895	0.238	0.471	0.150	-0.478	3.194

2) From the perspective of analysts' earnings forecast accuracy: the maximum value of analysts' earnings forecast deviation for sample companies reaches 0.137, this shows that analysts have different precisions in earnings forecasts of different listed companies, and the quality of forecasts varies.

6.2. Results of Regression Analysis

Table 3 shows the results of the regression analysis. The results in columns (1) shows that when FERR is used to measure the analyst's earnings forecast bias, the regression coefficient of S-Gini is −0.006 and is significantly negative at the 1% level (t value −2.789), which shows that the level of industrial agglomeration is significantly negatively correlated with the analyst's earnings forecast deviation. That is, the increase in the level of industrial agglomeration contributes to the improvement of the analyst's earnings forecast accuracy. From the point of view of the coefficient and significance of the control variables: the deviation between analyst tracking and analyst prediction is significantly negative at the level of 1%, indicating that the more analysts track the number of analysts, the smaller the analyst prediction deviation is, which is consistent with the conclusions of Zheng and Cai (2008) and Yang et al. (2019).

It can be seen from columns (3) and (4) that in the state-owned enterprise group, the regression coefficient of S-Gini is −0.009, and it is significantly negative at the level of 1% (t value is −2.624). Neither state-owned enterprise group is significant. This shows that the influence of industrial agglomeration on the accuracy of analysts' earnings forecasts is more pronounced in state-owned enterprises, and it also confirms that industrial agglomeration can optimize the information environment in which analysts make earnings forecasts for state-owned enterprises. Wei (2014) also found a similar conclusion. She found that

Table 3. Results of regression analysis.

	FERR	FERR	
	(1)	(2) State-owned	(3) Non-state-owned
S-Gini	−0.006***	−0.009***	−0.002
	(−2.789)	(−2.624)	(−0.723)
Follow	−0.002***	−0.001*	−0.001**
	(−5.653)	(−1.850)	(−2.440)
Horizon	0.004***	0.004***	0.003***
	(8.664)	(5.209)	(6.274)
PB	−0.000	−0.000	−0.001***
	(−1.621)	(−0.142)	(−2.806)
MV	−0.002***	−0.003***	−0.001*
	(−5.830)	(−5.119)	(−1.889)
VSALES	0.016***	0.020***	0.011***
	(7.772)	(6.054)	(4.471)
Lev	0.032***	0.039***	0.021***
	(20.536)	(14.570)	(12.198)
SOE	0.001	−0.000	−0.001
	(1.110)	(−0.054)	(−0.767)
Big4	−0.000	−0.105***	−0.046**
	(−0.021)	(−3.675)	(−2.167)
ROE	−0.085***	−0.002***	−0.004***
	(−4.781)	(−3.557)	(−9.686)
Growth	−0.004***	−0.001*	−0.001**
	(−10.709)	(−1.850)	(−2.440)
Constant	0.013**	0.028***	−0.003
	(2.287)	(2.867)	(−0.554)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
N	17895	7800	10095
Adj. R^2	0.238	0.294	0.286

the quality of corporate social responsibility information disclosure helps to reduce analysts' earnings forecast errors.

7. Conclusion

Industrial agglomeration characterized by industrial clusters has become an important feature in China's economic growth. Industrial agglomeration allows companies with similar fundamentals to agglomerate in space, and promotes

information spillover with its externality, creating a convenient channel for communication and communication between companies, making the amount and quality of earnings forecast information required by analysts The improvement and reduction in the difficulty of forecasting its earnings have an important impact on optimizing the information environment of the capital market. This study finds that the increase in the level of industrial agglomeration can significantly reduce analysts' earnings forecast bias, and the positive impact of industrial agglomeration on analysts' earnings forecast accuracy is more significant in state-owned enterprises., So that analysts can obtain more private information about state-owned enterprises, thereby making up for the lack of publicly disclosed information in state-owned enterprises.

There are also some shortcomings in this paper: First, although the spatial Gini coefficient controls the overall agglomeration of economic activities, making the calculation results of different industries comparable, there is still the problem of the new area unit (MAUP). Second, considering the availability of analysts' earnings forecast data, the research sample in this article is only listed companies in the Chinese A-share market, but industrial agglomeration is not limited to this. Many unlisted companies will also be important for the formation of industrial agglomeration. In fact, compared with non-listed companies, the information disclosure of listed companies is more comprehensive. Therefore, the research in this paper still has certain significance.

With the deepening of the transformation of the development zone, the city's development level, functional convenience, openness and governance capabilities will be further improved. We expect that industrial agglomeration will make more contributions to enhancing market effectiveness during the transformation and upgrading process.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

Bai, D. B., Wang, J., & Tang, Q. Q. (2019). Industrial Agglomeration and Export Decision-Making of Chinese Enterprises-Based on the Perspective of Institutional Quality. *Industrial Economics Research, No. 2,* 50-63.

Bai, X. Y. (2009). Research on the Multiple Impacts of Information Disclosure Policies of Listed Companies on Analysts' Forecasts. *Financial Research, No. 4,* 92-112.

Beyer, A., Cohen, D. A., Lys, T. Z. et al. (2010). The Financial Reporting Environment: Review of the Recent Literature. *Journal of Accounting and Economics, 50,* 296-343. https://doi.org/10.1016/j.jacceco.2010.10.003

Bradshaw, M. T. (2011). *Analysts' Forecasts: What Do We Know after Decades of Work*? Working Paper. https://doi.org/10.2139/ssrn.1880339

Bushman, R., Chen, Q., Engel, E. et al. (2004). Financial Accounting Information, Organizational Complexity and Corporate Governance Systems. *Journal of Accounting and*

Economics, 37, 167-201. https://doi.org/10.1016/j.jacceco.2003.09.005

Datta, S., Iskandar-Datta, M., & Sharma,V. (2011). Product Market Pricing Power, Industry Concentration and Analysts' Earnings Forecasts. *Journal of Banking & Finance, 35,* 1352-1366. https://doi.org/10.1016/j.jbankfin.2010.10.016

Dhaliwal, D. S., Radhakrishnan, S., Tsang, A. et al. (2012). Nonfinancial Disclosure and Analyst Forecast Accuracy: International Evidence on Corporate Social Responsibility Disclosure. *The Accounting Review, 87,* 723-759. https://doi.org/10.2308/accr-10218

Du, W. J., & Li, M. J. (2015). Will Industry Gatherings Promote Enterprise Product Innovation? An Empirical Study Based on the Database of Chinese Industrial Enterprises. *Industrial Economic Research, No. 4,* 1-9.

Eames, M. J., & Glover, S. M. (2003). Earnings Predictability and the Direction of Analysts' Earnings Forecast Errors. *The Accounting Review, 78,* 707-724. https://doi.org/10.2308/accr.2003.78.3.707

Engelberg, J., Ozoguz, A., & Wang, S. (2018). Know thy Neighbor: Industry Clusters, Information Spillovers, and Efficiency. *Journal of Financial and Quantitative Analysis, 53,* 1937-1961. https://doi.org/10.1017/S0022109018000261

Fan, J. Y., Feng, M., & Li, F. W. (2014). Industrial Agglomeration and Enterprise Total Factor Productivity. *The Journal of World Economy, 37,* 51-73.

Fang, J. X. (2007). Transparency of Information Disclosure of Listed Companies in China and Forecast of Securities Analysts. *Financial Research, No. 6,* 136-148.

Haw, I. M., Hu, B., & Lee, J. J. (2015). Product Market Competition and Analyst Forecasting Activity: International Evidence. *Journal of Banking & Finance, 56,* 48-60. https://doi.org/10.1016/j.jbankfin.2015.02.010

Hong, J. P. (2018). Specific Asset Transformation, Industrial Agglomeration and Corporate Financing Constraints—Based on the Transformation and Agglomeration of Printing and Dyeing Industry in Shaoxing City. *Productivity Research, No. 5,* 70-78.

Hu, B., & Wan, D. X. (2019). "Upgrading" or "Downgrading" of Clustering Environment: A New Explanation of "Innovative Inertia" of Enterprises. *Finance Research, 45,* 16-29.

Hu, J., Wang, Z., Tao, Y., & Zou, J. Q. (2016). Weibo, Information Disclosure and Analyst Earnings Forecast. *Journal of Finance and Economics, 42,* 66-76.

Huang, Z. X. (2016). Other Comprehensive Income, Analyst Forecast and Decision Value. *The Theory and Practice of Finance and Economics, 37,* 63-69.

Hugon, A., Kumar, A., & Lin, A. P. (2015). Analysts, Macroeconomic News, and the Benefit of Active In-House Economists. *The Accounting Review, 91,* 513-534. https://doi.org/10.2308/accr-51151

Li, W. J., & Zhang, L. (2014). Non-Financial Information Disclosure and Analyst Forecasting: An Empirical Test Based on the Corporate Social Responsibility Report of Listed Companies in Shenzhen Stock Market. *The Theory and Practice of Finance and Economics, 35,* 69-74.

Liang, Q., & Qian, X. F. (2007). Externality and Agglomeration: A Literature Review. *The Journal of World Economy, No. 2,* 84-96.

Lin, M. C., Wu, C. H., & Chiang, M. T. (2014). Investor Attention and Information Diffusion from Analyst Coverage. *International Review of Financial Analysis, 34,* 235-246. https://doi.org/10.1016/j.irfa.2014.03.006

Liu, Y. Z., & Gao, S. (2014). Quality of Information Disclosure, Analyst Industry Expertise and Forecast Accuracy-Empirical Evidence from A-Shares in Shenzhen Stock Market. *Accounting Research, No. 12,* 60-65.

Lu, F., Liu, M. G., & Sun,Y. Y. (2018). Agglomeration, Total Factor Productivity and Industrial Growth. *Studies in Science of Science, 36,* 1575-1584.

Mao, R. (2015). Industrial Agglomeration and Corporate Financing Constraints. *Management World, No. 2,* 58-71.

Qu, X. E., Hu, Y. X., & Zhao, Y. J. (2018). The Impact of Industrial Agglomeration on Manufacturing Green Total Factor Productivity—An Empirical Analysis Based on the Perspective of Long- and Short-Term Industry Heterogeneity. *Journal of Beijing Institute of Technology (Social Science Edition), 21,* 27-36.

Qu, X. H., & Bi, C. (2016). Accounting Information and Analysts' Information Interpretation Behavior. *Accounting Research, No. 4,* 19-26.

Sheng, D., & Wang, Y. J. (2013). Industrial Agglomeration, Credit Resource Allocation Efficiency and Corporate Financing Costs: Evidence from World Bank Survey Data and Chinese Industrial Enterprise Data. *Management World, No. 6,* 85-98.

Shi, G. F., Su, L. Y., & Qi, W. S. (2007). Empirical Analysis of Determinants of Financial Analyst's Earnings Forecast Accuracy. *Journal of Finance and Economics, No. 5,* 62-71.

Shi, X. W., Li, Z. G., & Liu, Z. (2015). Analyst Forecast and Research on Audit Fees of Listed Companies-Based on the Perspective of Information Asymmetry Theory. *Journal of Audit & Economics, 30,* 39-48.

Tao, R. (2018). Private Information, Analysts' Timeliness and Accuracy of Prediction. *Shanghai Finance, No. 7,* 19-26.

Wei, H. L. (2014). The Nature of Property Rights, Internal Control and the Economic Consequences of Corporate Social Responsibility Information Disclosure—Research from the Perspective of Analyst Prediction. *Journal of Anhui University of Technology, 31,* 7-9.

Xie, J., & Chen, H. H. (2016). Product Market Power, Industry Concentration and Analyst Forecasting Activities: Empirical Evidence from Listed Companies in China. *Economic Review, No. 5,* 38-51.

Xiong, G. Q., Zhou, W. F., & Li, H. P. (2019). Research on the Impact of Financing Constraints on Corporate R & D Investment from the Perspective of Industrial Agglomeration-Taking Listed Companies on China Growth Enterprise Market as an Example. *Macroeconomic, No. 9,* 88-101.

Xu, Y. Y., Hong, J. Q., & Cao, X. W. (2015). Characteristics of China's Listed Companies and Field Investigation of Securities Analysts. *Investment Research, 34,* 121-136.

Xu, X., & Zhu, W. J. (2016). Product Market Competition, Corporate Governance and Analysts' Earnings Forecast Quality. *Journal of Shanxi University of Finance and Economics, 38,* 56-67.

Yang, Q., Ji, Y., & Wang, Y. A. (2019). Can the High-Speed Rail Improve the Accuracy of Analysts' Earnings Forecasts? Evidence from Listed Companies. *Financial Research, No. 3,* 168-188.

Yi, Z. H., Yang, S. Z., & Chen, Q. Y. (2015). Can Analysts Reduce the Synchronization of Stock Prices: An Empirical Study Based on Text Analysis of Research Reports. *China Industrial Economy, No. 1,* 156-173.

Zheng, Y. L., & Cai, X. (2008). What Influences the Accuracy of the Earnings Forecast of Securities Analysts? Empirical Evidence from Chinese Listed Companies. *Zhongda Management Research, 3,* 19-37.

Zhou, K. G., Ying, Q. W., & Chen, X. X. (2014). Media Attention, Analyst Attention and Earnings Forecast Accuracy. *Financial Research, No. 2,* 139-152.