Impact of Industrial Agglomeration on China's Residents' Consumption

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Contributor: Suhua Zhang , Yasmin Bani ,

Residents' consumption is a good indicator of people's livelihoods and one of the motivations driving economic growth. Industrial agglomeration in the eastern region is relatively high and has a restraining effect on residents' consumption, while industrial agglomeration in the central and western regions is at an early stage and promotes residents' consumption. Therefore, different regions should adopt different industrial agglomeration policies.

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1. Industrial Agglomeration

At the end of the 19th century, Marshall [1] began to pay attention to the economic phenomenon of industrial agglomeration. He proposed two important concepts, namely, the "internal economy" and "external economy". Since Marshall, industrial agglomeration has attracted more and more attention from scholars. The concepts of an "industrial concentration zone" and "agglomeration economies" were first proposed and used by Weber [2]. Porter [3] was the first to use "industrial agglomeration" to analyze cluster phenomena. Krugman [4] put forward that geographic agglomeration and specialization produce economies of scale, which, in turn, attract more companies to agglomerate and form industrial agglomerations. He and Zhang [5] think that industrial agglomeration, as a special form of industrial spatial organization in the process of economic and social development, is an important carrier of regional production activities and environmental governance. Some scholars have summarized that industrial agglomeration can reduce transaction and transportation costs due to approaching suppliers and markets, promote knowledge and information spillover, and help enterprises to share infrastructure and skilled labor [6][7][8].

Other scientists think that industrial agglomeration may produce negative externalities, such as energy consumption, pollution agglomeration, and resource competition [9][10][11]. In addition, many scholars believe that there is a threshold for industrial agglomeration; when the threshold is exceeded, the negative externalities will exceed the positive, which will reduce the efficiency of resource utilization [12][13][14].

Different scholars have different explanations of the motivation for industrial agglomeration. Factors such as technological innovation, the externalities of industrial competition, and government policy arrangement all affect the motivation mechanism of industrial agglomeration. Marshall [1] explained that the economic growth of industrial agglomerations is mainly due to the effects of skilled labor, professional services, and technology spillover brought by the agglomeration, which is known as MAR externality. Marshall thinks that the effect of industrial

agglomerations on the local economy is manifested through externalities. Jacobs [15] believes that differentiation and diversification rather than specialization promote innovation. Jacobs' externality focuses on diversification. Porter [3] points out that market competition is more beneficial to industrial innovation than market monopoly. S. Wu and Li [16] and Zhu et al. [17] both conducted regression analyses in China to study the impact of MAR externality, Jacobs' externality, and Porter's externality on growth. Sullivan [18] showed that public government facilities can provide the impetus for industrial agglomeration and attract the inflow of labor and manufacturers, thereby promoting industrial agglomeration and economic growth.

Since the emergence of industrial agglomeration, many scholars have devoted themselves to studying its measurement [19][20][21][22], but there is no unified theory or method. Of the many measurement methods, there are different methods used for different classifications. This uses the location quotient (LQ) to calculate the degree of industrial agglomeration, which is also the method used by most scholars who study macroeconomics. The location quotient (LQ) is an analytical statistic that measures a region's industrial specialization relative to a larger geographic unit (usually the nation). The LQ is computed as an industry's share of a regional total for some economic statistics, such as earnings, GDP by metropolitan area or employment, etc. Peters [23] used the LQ as the measurement standard. Peters measured economic specialization for an industry in Missouri by calculating the LQ for output, employment, compensation, and foreign exports in 2000. Jiang and Xu [24] utilized the LQ to measure the level of forestry industry agglomeration in Heilongjiang in China from two perspectives: gross product and number of employees. Q. Zhang et al. [25] employed the LQ to measure the degree of industrial agglomeration, taking industrial industries in different regions of China as research objects.

2. The Link between Industrial Agglomeration and Residents' Consumption

Residents' consumption is a manifestation of people's livelihood and geographic spatial agglomeration in a country or region, which will be a focus of future research in spatial economics. So far, there have been relatively few studies on the influence of industrial agglomeration upon residents' consumption. Results from studies on the relationship between industrial agglomeration and residents' consumption are unclear, and the following major differences have emerged.

Few scholars believe that industrial agglomeration leads to damage to residents' consumption. Behrens et al. [26] presented a model incorporating a rich market structure to empirically study the importance of endogenous freight rates to investigate the relationship between industry location, welfare, and transport costs. They revealed that firms and consumers are free to relocate due to an increasing number of carriers and falling costs of transportation, which can trigger a gradual agglomeration of industry. In the long run, this leads to consumer welfare losses, with more unequal resident consumption in different regions. In addition, industrial agglomeration will lead to the misallocation of resources [27] and environmental pollution [28], which will indirectly bring disadvantages to residents' consumption.

On the other hand, some scholars think that industrial agglomeration can improve residents' consumption or at least improve consumption in some areas. Fujita and Thisse [29] proposed a two-region model of endogenous growth, which is a natural combination of a core–periphery model with an R&D sector. The results show that industrial agglomeration indirectly leads to an increase in residents' consumption in the core area. Even the consumption of residents who stay in the periphery is better than that of those under dispersion because the growth effect triggered by the agglomeration is strong enough. Norman and Venables [30] found that the real income is higher in countries that have a cluster of activity than in countries that do not, so the higher the income of the former, the higher the consumption of residents. Due to inter-regional industrial agglomeration, transportation costs and energy consumption between industries are reduced, thereby saving on costs of enterprise production and achieving scale benefits [31]. Xiao and Hong [32] and Song et al. [33] adopted the dynamic panel model and the dynamic spatial panel model, respectively, concluding that industrial agglomeration can effectively promote residents' consumption. C. Wang [34] empirically concluded that the relationship between residents' consumption and industrial agglomeration is nonlinear. Industrial agglomeration can effectively promote residents' consumption and drive improvements in consumption capacity and the consumption level of residents in and around the region.

In addition to the above two views, some scholars insist that the impact of industrial agglomeration on residents' consumption cannot be arbitrarily divided into positive or negative. Y. Wu and Pu [35] empirically studied how moderate clustering in the region increases residents' income, while excessive clustering brings negative externalities and loss of regional income. X. Liu and Yin [36] conducted an empirical test on the relationships between regional employment density, market potential, and wage levels based on panel data from 282 prefecture-level administrative regions in China from 1999 to 2004. The results show that industrial agglomeration's effect upon wage levels is non-linear, and only when the degree of industrial agglomeration is higher than a certain level can it have a positive impact on wage levels. H. Wang and Chen [37] studied 36 industries in 30 provinces of China in 2004 and analyzed the impact of industrial spatial agglomeration on wage levels. They found that only intra-industry agglomeration can significantly increase wage levels, but the impact of inter-industry agglomeration on wages is not significant. J. Liu and Xu [38] and Y. Wu and Pan [39] used China's panel data to empirically show that there is a U-shaped relationship between industrial agglomeration and residents' consumption.

3. Other Influencing Factors and Residents' Consumption

Most of the existing studies on the influencing factors of residents' consumption mainly focus on the income level. Alimi [40] empirically summarized that the determinant of consumption is the current income level, and there is a direct relationship between disposable income and consumption. Shi and Nie [41] empirically proposed that the main reason for the increase in residents' consumption is still the increase in income, but the impact of urbanization on consumption is not significant. Deng et al. [42] empirically tested if increasing resident income would promote resident consumption and if resident consumption values between regions would either promote each other or compete with each other. Rakhmanov [43] investigates the effect of residents' income on the consumption of residents in Azerbaijan. Kozyreva et al. [44] believe that the effect that income has on consumption is undeniable.

Other important influencing factors include the degree of openness, the government's fiscal expenditure, urbanization, technological innovation, etc. Li et al. [45] conducted an empirical study on the spatial effects of local fiscal expenditures on residents' consumption. Wei et al. [22] empirically concluded that the impact of fiscal and social security expenditures on consumption upgrades is not significant. Cao and Xu [46] empirically verified that the increase in local government fiscal expenditure and the degree of openness can not only promote the upgrading of local residents' consumption structure, but can also produce obvious spatial spillover effects, which will promote the upgrading of residents' consumption structures in other surrounding areas. The improvement of the level of urbanization can significantly increase the level of the consumption upgrade of residents [47], and there is a "U-shaped" relationship between the urbanization rate and the residents' consumption [48]. Empirical studies show that technological innovation has a positive effect on the growth of residents' consumption [39][49].

References

1. Marshall, A. Principles of Economics: Unabridged, 8th ed.; Cosimo. Inc: New York, NY, USA, 1980.

2. Weber, A. Theory of the Location of Industries; The University of Chicago Press: Chicago, IL, USA, 1929.

3. Porter, M.E. The competitive advantage of nations. Compet. Intell. Rev. 1990, 1, 14.

4. Krugman, P. Increasing returns and economic geography. J. Polit. Econ. 1991, 99, 483–499.

5. He, Q.; Zhang, Z. Exploration on the Distribution of Economic Activity: Technology Spillover. Environmental Pollution and Trade Liberalization. Sci. Geogr. Sin. 2015, 35, 161–167.

6. Hu, S.; Song, W.; Li, C.; Zhang, C.H. The evolution of industrial agglomerations and specialization in the Yangtze River Delta from 1990–2018: An analysis based on firm-level big data. Sustainability 2019, 11, 5811.

7. Lu, Y.; Cao, K. Spatial analysis of big data industrial agglomeration and development in China. Sustainability 2019, 11, 1783.

8. Zhang, L.; Rong, P.; Qin, Y.; Ji, Y. Does industrial agglomeration mitigate fossil CO_2 emissions? An empirical study with spatial panel regression model. Energy Procedia 2018, 152, 731–737.

9. Feng, D.; Li, J.; Li, X.; Zhang, Z. The effects of urban sprawl and industrial agglomeration on environmental efficiency: Evidence from the Beijing–Tianjin–Hebei Urban Agglomeration. Sustainability 2019, 11, 3042.

10. Lei, Y.; Zheng, M.; Sun, J. The impact of industrial agglomeration on haze pollution of key urban agglomerations in China. Soft Sci. 2020, 34, 64–69.

11. Zhang, G.; Chen, C. Research on dynamic relationship between industrial agglomeration and urban eco-efficiency. Sci. Technol. Prog. Countermeas. 2019, 36, 48–57.

12. Guo, Y.; Tong, L.; Mei, L. The effect of industrial agglomeration on green development efficiency in Northeast China since the revitalization. J. Clean. Prod. 2020, 258, 120584.

13. Wang, Y.; Wang, J. Does industrial agglomeration facilitate environmental performance: New evidence from urban China? J. Environ. Manag. 2019, 248, 109244.

14. Zhao, H.; Cao, X.; Ma, T. A spatial econometric empirical research on the impact of industrial agglomeration on haze pollution in China. Air Quality. Air Qual. Atmos. Health 2020, 13, 1–8.

15. Jacobs, J. The Economy of Cities; Vintage: New York, NY, USA, 1961.

16. Wu, S.; Li, S. The relationship between specialization, diversification and industrial growth: An empirical study based on China's provincial manufacturing panel data. Dr. Diss. 2011, 8, 21–34.

17. Zhu, H.; Dai, Z.; Jiang, Z. Industrial agglomeration externalities, city size, and regional economic development: Empirical research based on dynamic panel data of 283 cities and GMM method. Chin. Geogr. Sci. 2017, 27, 456–470.

18. Sullivan, A.O. Urban Economics; McGraw-Hill Education: New York, NY, USA, 2007.

19. Chen, J.; Chen, H. A review of agglomeration measurement methods: Research based on frontier literature. J. Southwest Univ. Natl. 2017, 4, 134–142.

20. Fang, Z. The spatial agglomeration characteristics and influencing factors of Guangzhou convention and exhibition enterprises. Acta Geogr. Sin. 2013, 68, 464–476.

21. Liao, X.; Qiu, D.; Lin, Y. Research on the Spatial Agglomeration Measurement Theory and Countermeasures of China's Science and Technology Service Industry Based on Location Entropy. Res. Sci. Technol. Manag. 2018, 2, 171–178.

22. Wei, P.; Yang, Z.; Li, J.; Fang, L. Research on the measurement of manufacturing agglomeration in domestic channels of the second eurasian continental bridge. Sci. Technol. Prog. Countermeas. 2017, 8, 58–65.

23. Peters, D.J. Revisiting industry cluster theory and method for use in public policy: An example of identifying supplier-based clusters in Missouri. J. Reg. Anal. Policy 2004, 34, 107–133.

24. Jiang, Y.; Xu, X. Analysis of the agglomeration level and efficiency measurement of forestry industry in Heilongjiang Province. For. Econ. 2016, 38, 55–58.

25. Zhang, Q.; Guo, S.; Huang, Z. Research on the measurement of the impact of industrial agglomeration on the efficiency of industrial technology innovation. Sci. Manag. Res. 2016, 3, 60–63.

26. Behrens, K.; Gaigné, C.; Thisse, J.-F. Industry location and welfare when transport costs are endogenous. J. Urban Econ. 2008, 65, 195–208.

27. Ji, S.; Zhu, Y.; Zhang, X. Research on the improvement effect of industrial agglomeration on resource mismatch. China Ind. Econ. 2016, 6, 73–90.

28. Yuan, H.; Liu, Y.; Hu, S.; Feng, Y. Does industrial agglomeration exacerbate environmental pollution?—Based on the perspective of foreign direct investment. Resour. Environ. Yangtze River Basin 2019, 28, 794–804.

29. Fujita, M.; Thisse, J.-F. Does geographical agglomeration foster economic growth? And who gains and loses from it? Jpn. Econ. Rev. 2003, 54, 121–145.

30. Norman, V.D.; Venables, A.J. Industrial agglomerations: Equilibrium, welfare and policy. Economica 2004, 71, 543–558.

31. Rosenthal, S.S. Chapter 49 Evidence on the nature and sources of agglomeration economies. Handb. Reg. Urban Econ. 2004, 4, 2119–2171.

32. Xiao, L.; Hong, Y. Financial agglomeration, regional heterogeneity and resident consumption: An empirical analysis based on dynamic panel model. Soft Sci. 2017, 31, 29–37.

33. Song, F.; Sun, Y.; Song, B. Research on the impact of industrial agglomeration on urban and rural residents' consumption—Based on the dynamic spatial panel model. Mod. Financ. J. Tianjin Univ. Financ. Econ. 2020, 5, 74–84.

34. Wang, C. Research on the impact mechanism of the coordinated development of industrial agglomeration on consumption upgrading. Bus. Times 2020, 5, 189–192.

35. Wu, Y.; Pu, Y. Welfare effect and policy research of regional excessive agglomeration negative externality: Simulation Analysis Based on Spatial Economics. J. Financ. Econ. 2008, 34, 106–115.

36. Liu, X.; Yin, X. Spatial externalities and regional wage differences: A dynamic panel data study. China Econ. Q. 2008, 8, 77–98.

37. Wang, H.; Chen, Y. Research on the industrial agglomeration effect and regional wage disparity. Econ. Rev. 2010, 5, 72–81.

38. Liu, J.; Xu, K. Does industrial agglomeration affect the welfare of regional residents? Explor. Econ. 2016, 6, 72–79.

39. Wu, Y.; Pan, H. Research on the spatial spillover effect of total factor productivity on resident consumption. Theory Pract. Financ. Econ. 2020, 41, 126–131.

40. Alimi, R.S. Keynes' Absolute Income Hypothesis and Kuznets Paradox; Munich Personal RePEc Archive: Munich, Germany, 2013.

41. Kai, S.; Li, N. The impact of urbanization on the consumption of urban and rural residents. Urban Issues 2014, 6, 87–93.

42. Deng, G.; Li, X.; Zhang, Z. Research on the Impact of Government Expenditure on Resident Consumption—Based on the Analysis of the Spatial Dynamic Panel Model. Collect. Essays Financ. Econ. 2016, 208, 19–28.

43. Rakhmanov, F. Issues of improving social policy in the republic of Azerbaijan. Sci. News Azerbaijan State Econ. Univ. 2017, 5, 32–41.

44. Kozyreva, P.M.; Di, Z.; Nizamova, A.E.; Smirnov, A.I. Justice and inequality in the household consumption in Russia and China: A comparative analysis. Bulletin of the Peoples' Friendship University of Russia. Ser. Sociol. 2021, 21, 50–66.

45. Xiaojia, L.; Cheng, J.; Laoer, W. Research on the spatial effect of local fiscal expenditure on household consumption. World Econ. Collect. 2016, 1, 108–120.

46. Cao, J.; Xu, P. Government fiscal expenditure, opening to the outside world and changes in household consumption structure: Empirical evidence from China's experience. Bus. Econ. Res. 2019, 23, 166–168.

47. Longpeng, T. Analysis of housing prices, residents' income level and consumption upgrade based on panel quantile regression analysis. Consum. Econ. 2019, 35, 61–69.

48. Zhongjie, Z.; Xue, L. An empirical study on the impact of China's urbanization on resident consumption. Stat. Decis. Mak. 2019, 8, 126–130.

49. Caihong, H.; Xiaoqing, Z. Driven by innovation, space spillover and consumer demand. Explor. Econ. Issues 2020, 2, 11–20.