

The Empirical Analysis of Agglomeration Level Measurement of Industrial Cluster of Shaanxi Province

Yu Feng, Haoxian Wang, Shuai Zhang

School of Management, Xi'an University of Architecture and Technology, Xi'an 710055, China.

Abstract: Based on the analysis of related domestic and foreign research methods of industrial clusters, the paper adopted location entropy LQ method to measure and analyze cluster level of part of Shaanxi province industry from 2005 to 2014. The results showed that it is obvious to have a high agglomeration level and location advantage for agriculture, forestry, animal husbandry and fishery, residents service and other services, accommodation and catering industry and the wholesale and retail industry in Shaanxi Province industry; The agglomeration level for other industries is lower, but they also appear rising trend. The research results of industrial clusters level measurement of Shaanxi province provide a reference to evaluate and development industrial clusters for the government.

Keywords: Industrial Clusters; Location Entropy Method; Level Measurement; Policy Proposal

Introduction

As a geographical phenomenon, industrial clusters appear in the process of industrial evolution. They are the inevitable product of the economic development of various countries and play a decisive role in promoting regional economic progress^[1]. In the research process of industrial clusters, the level measurement of industrial clusters is the key to the economic development strategy and policy-making of clusters, and provides decision-making reference for the evaluation and development of industrial clusters.

In recent years, industrial clusters in Shaanxi Province have developed rapidly, and the ability of industrial agglomeration has gradually increased. Measuring the level of industrial clusters in Shaanxi Province is an important basic work and a quantitative process to clarify the advantages of clusters. It is not only an important premise for evaluating the development of clusters, but also an important way for Shaanxi Province to develop economy and enhance regional competitiveness. At the same time, in the existing research literature at home and abroad, there is relatively little research on the measurement method of industrial cluster level, therefore, This paper will use the location entropy method (LQ) to measure the industrial clusters in Shaanxi Province from 2005 to 2014, This will have certain significance for Shaanxi Province to clarify its comparative advantages and core competitiveness of industrial cluster development, as well as for government decision-making and effective coordinated governance.

1. Measurement and result analysis of industrial cluster level in Shaanxi Province

1.1 Measure method

The measurement methods of industrial clusters mainly include spatial concentration index, industrial concentration, eg index, spatial Gini coefficient and location entropy. Stejskal (2010) The advantages and disadvantages of common measurement methods are introduced^[2]. The industry concentration method vividly reflects the concentration level of the industrial market, but this index has the problem that the concentration level is different due to the different number of major enterprises; Although the eg index can reflect the specific regions where the industry is geographically concentrated, it only shows one aspect of the regional scale distribution and cannot reflect the individual situations of the largest regions^[3]; Therefore, through the comparison of various measurement methods, most of the current research is based on the location entropy method. The statistical data of this method is easy to obtain, and through the comparison between the regional GDP and the national GDP, it can fully reflect the status of the

regional production concentration in the country.

Therefore, this paper selects the location entropy (LQ value) as the identification index to easily measure the industrial concentration and professional development level of various industries in a specific region, which is an effective method to evaluate and judge the current trend of regional advantageous industries^[4]. The calculation formula of location entropy is:

$$E_{ij} = \frac{q_j}{\sum_{i=1}^n q_i} / \frac{Q_j}{\sum_{i=1}^n Q_i} \quad (1)$$

Where (1) in the formula, LQ_{ij} Reoted as regional entropy or specialization rate; q_i It is the output value of the industry in a province; $\sum_{i=1}^n q_i$ For the total industrial output value of a certain province; Q_i For high-level areas j Industrial output value; $\sum_{i=1}^n Q_i$ Total industrial output value of high-level regions. Output value can usually be expressed by output, production capacity, employment and other indicators; LQ_{ij} From the meso level, study the value of the share of the industry in a given region compared with the share of the industry in the whole economy, through which we can determine the regional leading industry and the degree of industrial specialization^[5].

1.2 Data source and measure results

The data of this paper are from the 2005-2014 China Statistical Yearbook and Shaanxi Provincial statistical yearbook. According to the classification and code of national economic industries (gb/t4754-94) used by the statistical department, the cluster level of 19 sub industries in Shaanxi Province from 2005 to 2014 is measured and analyzed by using the location entropy method.

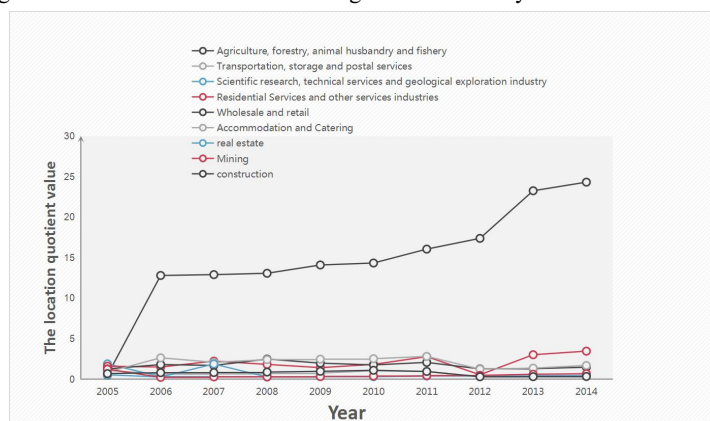
Table 1 location entropy of various industries in Shaanxi Province from 2005 to 2014

time vocation	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Agriculture, forestry, animal husbandry and fishery	0.496	12.79 7	12.90 1	13.06 6	14.09 2	14.33 3	16.05 0	17.37 6	23.25 1	24.31 1
Mining	1.235	0.226	0.285	0.287	0.328	0.386	0.447	0.471	0.606	0.670
manufacturing	0.928	0.362	0.371	0.383	0.449	0.507	0.516	0.288	0.272	0.279
Electricity, gas and production and supply industry	1.066	0.196	0.210	0.200	0.207	0.242	0.220	0.225	0.285	0.302
construction	0.689	0.801	0.819	0.879	0.970	1.100	0.952	0.300	0.310	0.334
Transportation, storage and postal services	1.097	0.629	0.651	0.701	0.752	1.036	0.939	0.301	0.316	0.363
Information transmission, computer services and software industry	0.880	0.447	0.498	0.436	0.558	0.627	0.689	0.385	0.355	0.415
Wholesale and retail	1.262	1.807	1.697	2.481	1.983	1.758	2.071	1.277	1.297	1.479
Accommodation and Catering	0.885	2.638	2.083	2.410	2.468	2.529	2.810	1.241	1.364	1.690
finance	0.867	0.160	0.153	0.151	0.174	0.192	0.198	0.209	0.255	0.258
real estate	0.539	0.272	1.872	0.266	0.320	0.307	0.390	0.389	0.389	0.429
Leasing and business services	0.448	0.305	0.434	0.184	0.195	0.204	0.314	0.354	0.294	0.323

Scientific research, technical services and geological exploration industry	1.892	0.312	0.300	0.289	0.333	0.337	0.415	0.398	0.445	0.459
Water conservancy, environment and public facilities management	0.992	0.168	0.177	0.185	0.222	0.241	0.275	0.291	0.326	0.348
Residential Services and other services industries	1.600	1.502	2.227	1.825	1.425	1.826	2.780	0.548	3.018	3.459
educate	1.178	0.198	0.201	0.222	0.236	0.256	0.280	0.364	0.324	0.325
Health, social security and social welfare	0.149	0.165	0.168	0.188	0.208	0.245	0.247	0.254	0.290	0.311
The Culture, Sports, and Entertainment Industries	1.077	0.290	0.311	0.337	0.285	0.341	0.377	0.365	0.533	0.541
Public administration and social organizations	0.192	0.196	0.197	0.215	0.250	0.266	0.291	0.303	0.317	0.319

At the same time, according to the calculation results of location entropy, the level trend chart of nine typical industrial clusters with high location entropy in Shaanxi Province from 2005 to 2014 is drawn.

Figure 1 horizontal evolution trend diagram of 9 industry clusters in Shaanxi Province



1.3 interpretation of result

1. In the LQ value of the location entropy of various industries in Shaanxi Province, it is mainly divided into three gradients, and four types of industries are higher than 1, that is, advantageous industrial clusters; Category 2 industries are between 0.5 and 1; Other industries are lower than 0.5, so we need to constantly expand the scale of development and increase investment. Among them, the location entropy of agriculture, forestry, animal husbandry and fishery is the highest. In the statistical 10-year research time limit, it has become the "leading goose" of many industrial clusters, with a high degree of industrial concentration. The second is residential services and other services, accommodation and catering, wholesale and retail. The degree of industrial agglomeration is high, and the level of specialization and regional advantages are obvious.

2. Among the location entropy LQ values of various industries in Shaanxi Province, the location entropy LQ value of agriculture, forestry, animal husbandry and fishery is greater than 2, reaching the highest to 24.311 in 2014, indicating that the degree of specialization and competitiveness of this industry in Shaanxi is far higher than the national average level, and the regional competitive advantage of the industry is obvious. Shaanxi Province is a major agricultural province, forming an industrial pattern dominated by Guanzhong and supplemented by the two wings of southern and Northern Shaanxi. Up to now, Shaanxi Shiyang group, which focuses on agriculture and animal husbandry and oil processing, has become the "leader" of agricultural enterprises in Shaanxi Province. Shaanxi Yinqiao group, which focuses on dairy processing, and Shaanxi Haisheng fruit industry development company, which focuses on concentrated fruit juice processing, have formed an industrial cluster.

3. The location entropy of residential services and other services, accommodation and catering industries, and the wholesale and retail industries were all greater than 1 between 2006 and 2014, It is the advantageous industrial cluster in Shaanxi Province, with scale effect. As an integral part of the tertiary industry, resident services and other service industries reflect the level of

national or regional economic and social development, as well as people's living convenience and quality of life. In 2014, the location entropy value of the service industry exceeded 3, and the degree of industrial cluster was relatively high. In recent years, the government has vigorously promoted the development of the service industry. In reality, the agglomeration of the service industry can make the service industry give full play to its own advantages, and then optimize the industrial structure of the region^[6].

4verdict

This paper uses the LQ value to calculate the industrial clusters of various industries in Shaanxi Province from 2005 to 2014. Based on the above conclusions, the government needs to make efforts in the following two aspects:

1. The government should strengthen the cultivation of advantageous industrial clusters in Shaanxi Province, promote chain, scale and modern accommodation and catering industry, focus on diversification and characteristic operation, effectively promote the healthy growth of resident services and other services, promote enterprises to "go out", implement project drive, constantly improve talent working mechanism, promote efficient development of service industry; shape multi-level wholesale and retail logistics system, logistics and e-commerce, and form their own marketing characteristics.

2. Combined with shaanxi industry location entropy and shaanxi industry correlation, strategic adjustment to shaanxi industrial structure, in the development of advantage industry cluster in shaanxi province, the development potential and industrial association drive strong manufacturing, mining, electric gas, cultural entertainment industry as shaanxi subsequent leading industry key cultivation, using advantage industrial cluster drive the development of other industries, vigorously promote shaanxi industrial structure optimization and seek new growth power, promote rapid economic growth in shaanxi province.

References

- [1] Wang ZL, Tan QM, Xu XD. The Empirical Analysis of Agglomeration Level Measurement of Industrial cluster[J]. Journal of China Soft Science, 2006, 03: 109-116.
- [2] Stejskal J. Comparison of often applied methods for industrial cluster identification[J].Development, Energy, Environment, Economics, pp. 282-286, 2010
- [3] Sun H, Li XS, Li Y. Comprehensive use of industrial cluster identification method and its empirical analysis[J]. Journal of Science & Technology Progress and Policy, 2011, 21: 60-63.
- [4] Zhang SX, Dai F. Study Based on Location Entropy of the Modern Service Industries Concentrated Area in Xi'an[J]. Journal of Science and Technology Management Research, 2011, 10: 61-64.
- [5] Luxembourg. Innovative Hot Spots in Europe: policies to promote transborder clusters of creative activity [J]. Trend Chart Policy Workshop, Background Paper on Methods for Cluster Analysis, May 5-6, 2003.
- [6] Yan YJ, Xia CY. The development of service industry in shaanxi province[J]. Journal of Economic Management, 2003,13:95-96.
- [7] Zhu K. Studies on the Relationship between Service Industry Centralization and Industrial Structure Optimization[J]. Journal of Economic research guide, 2008, 08: 175-178+196.

About authors:

Yu Feng (1992.3.16) woman, Han nationality, Xi'an, Shaanxi, Secretary of the Youth League Committee of the Academy Postgraduate Xi'an University of Technology Research on College Students' Ideological and political education and cultural industry cluster.

Wang Haoxian (1991.11/20), man, Han nationality, Xi'an, Shaanxi, Counselor / Teaching Assistant, Postgraduate, Xi'an University of Technology, Ideological and Political Education.

Shuai Zhang (1997-4), woman, Han nationality, Weinan, Shaanxi, Master of law, instructor, Xi'an University of Technology, Research on Ideological and Political Education.