



Analysis on the Structure and Competitiveness of Shaanxi's Manufacturing Industry—Based on SSM Analysis

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Abstract

This paper focuses on the manufacturing industry in Shaanxi Province, and selects 2003-2016 as the whole period of the study. In this paper, SSM analysis is used to reveal the comprehensive situation of the overall manufacturing industry and 17 specific industries in Shaanxi Province. On this basis, in order to ensure that the research results are more illustrative, the whole interval is divided into three annual intervals. The SSM analysis method is used to study the three annual intervals, and the results are compared and analyzed. Reveal the changes of manufacturing structure and competitiveness in Shaanxi Province during the past 13 years. It is concluded that although in the manufacturing industry in Shaanxi Province the results are good, but the manufacturing industry in Shaanxi Province has been declining in recent years, so it is urgent to adjust and optimize the structure. At the same time, measures should be taken to prevent the decline of competitive advantage. At the same time, different industries also have different problems. According to the results, 17 industries are divided into different industry types, and different suggestions are put forward for each type of industry.

Subject Areas

Business Analysis, Business Communication, Business Research Methods, Business and Economics Education

Keywords

SSM Analysis, Shaanxi Manufacturing Industry, Industrial Structure, Industrial Competitiveness

1. Introduction

Shaanxi Province, as a well-known old industrial base, is also an important eco-

conomic province in the west of China. It is now in a crucial period of industrialization, and the important industrial pillar industry in Shaanxi Province is the manufacturing industry, in promoting economic growth and other aspects played a very important role. In the context of the country's strategy of implementing the large-scale development of the western region, the manufacturing industry in Shaanxi Province has ushered in a period of rapid development in the past decade. Compared with the previous period, during this period, the total manufacturing economy of Shaanxi Province accelerated growth; the scale of manufacturing industry increased from small to large; the pillar industry grew strongly, leading products grew rapidly; and the energy and chemical industry developed rapidly; the proportion of the market share and the national economy of the province has obviously increased, forming a certain scale, horizontal and complete manufacturing system.

In December 2016, the "13th Five-Year Plan" of Shaanxi Province for strategic development of famous brands (2016-2020) was issued with the consent of the Shaanxi Provincial Commission for the Promotion of work of a strong Province of quality. It will take five years to build a group of Shaanxi brands with core competence and famous brands at home and abroad to set up the new images of "made in Shaanxi", "created in Shaanxi" and "Shaanxi service" [1]. For the current Shaanxi manufacturing industry, the policy support of the state and the sustained growth of market demand is a rare opportunity for development. We must firmly grasp the opportunity to realize the strategic transformation and upgrading from middle and low to high end. This paper uses SSM analysis method to find out the whole development of Shaanxi manufacturing industry and the problems existing in the specific industry, and puts forward the corresponding adjustment direction.

2. Methods and Data Processing

2.1. SSM Analysis

2.1.1. Meaning of SSM Analysis

SSM analysis, also known as deviation-share analysis, was put forward by American economists Daniel and Creamer in 1940s, and was summarized and perfected by many foreign scholars such as Lampard in 1960. Learning from each other can be summed up in a common form [2]. The SSM analysis method regards the change of the overall regional economy as a dynamic process, and selects a standard region, which can be the region or the country in which the region is located. Take the economic development of the selected standard area as a reference. In this paper, the total variation of the regional economic aggregate in the period of study is decomposed into three components, one is the share component; the other is the structural deviation component and the competitiveness deviation component. These three components can be used to explain the reasons for the regional economic development and recession. The structural deviation component can evaluate the advantages and disadvantages of the regional economic structure, and the competitiveness deviation component can

evaluate the strength of the competitiveness of the region. According to the results of the analysis, adjust and optimize the industrial structure, grasp the reasonable direction of regional economic development in the future.

2.1.2. Model Principle of SSM Analytic Method

The study time interval $[0, t]$ is chosen, and it is assumed that the economic aggregate and structure of the region named I after the interval are different [3]. The total economic volume of region I base period and final year is $b_i, 0, b_i, t$, respectively. In addition, there are several industrial sectors in the region to jointly develop the economy, $b_{ij}, 0, b_{ij}, t$ ($j = 1, 2, \dots, m$) respectively indicates the size of the economy in the base and end years of the j th industrial sector in the selected region named I . And use $B_0, B_t, B_j, 0$ and B_j, t represents the total economic volume and the size of the j sector in the reference area at the same time [4].

The rate of change within the study interval for sector j in region i :

$$r_{ij} = (b_{ij,t} - b_{ij,0}) / b_{ij,0} \quad (j = 1, 2, \dots, m) \quad (1)$$

The rate of change of the j th industrial sector in the reference area within the study area:

$$R_j = (B_{j,t} - B_{j,0}) / B_{j,0} \quad (j = 1, 2, \dots, m) \quad (2)$$

Standardization of the share of sectors in the reference area in accordance with the share of each sector of the region:

$$b'_{ij} = b_{ij,0} \times B_i,0 / B_0 \quad (j = 1, 2, \dots, m) \quad (3)$$

Total growth G_{ij} in sector j of the region i will be studied divided into growth share deviations $N_{ij} = b'_{ij} \times R_j$; the deviation component of industrial structure is $P_{ij} = (b_{ij,0} - b'_{ij}) \times R_j$ and the deviation component of competitiveness is $D_{ij} = b_{ij,0} \times (r_{ij} - R_j)$.

The total deviation is equal to the sum of the structural deviation component and the competitive deviation component in the interval ($PD_{ij} = P_{ij} + D_{ij}$).

On this basis, the formula $L = W \times U$ [5] is constructed. W denotes the influence of industrial structure on regional economic growth, U indicates the influence of the speed of industrial growth on competitiveness, and L indicates the growth rate of the studied region relative to the reference region. If the G_i is greater, $L > 1$, it indicates that the level of growth of the study area is faster than that of the reference area; the P_i is greater, $W > 1$, this shows that the large proportion of the regional economic and industrial sectors is the fast-growing sector, the overall economic structure of the region is relatively good, and the structure plays a more active role in the economic growth. The D_i is larger, $U > 1$, shows that the industrial departments in the study area have a rising trend and strong competitiveness.

2.2. Data Selecting

According to the internationally accepted industrial classification principles and

the specific conditions of our country, the National Bureau of Statistics of China revised the Industrial Classification of National economy [6] three times in 1994, 2002 and 2011 respectively. The 2002 revision has only made certain cuts and modifications in the manufacturing subcategories, while the 2011 revision results show that compared with 2002, the classification of the manufacturing sector in the broad category has more obvious changes. For example, the rubber and plastic products industries are merged into rubber and plastic products, and transportation equipment manufacturing is split up into automobiles and other transport equipment and so on. The subjects of this study are between 2002 and 2016, so in order to maintain the accuracy and consistency of the data as much as possible, and to maintain the consistency of the industry, we will consolidation of general equipment manufacturing and specialized equipment manufacturing into machinery manufacturing according to the different situations of the manufacturing industry classification in the 2002 and 2011 revision of the Industry Classification of National economy [7]. Merging the agro-food processing industry and the food manufacturing industry into food processing and manufacturing, the combined manufacturing of automobile and railway, ships, aerospace and other transport equipment shall be the manufacturing of transportation equipment, the plastics and rubber manufacturing industries are merged into plastics and rubber manufacturing industries, the combination of textile industry and textile clothing, clothing industry for the textile industry.

According to the Statistical Yearbook of Shaanxi Province, we calculated the proportion of the total industrial output value of manufacturing industries in Shaanxi Province from high to low in 2003, 2008, 2012 and 2016, and the industries that accounted for more than 1% of the total output value of manufacturing industries in Shaanxi Province were taken as research objects. As shown in **Table 1**.

3. Using SSM Model to Analyze the Manufacturing Industry in Shaanxi Province

The study period selected from 2003 to 2016 as a whole, spanning 13 years. In order to guarantee the research results more clearly, in applying the model, this 13 years is not simply studied as a whole, but the 13 years are divided into 2003-2008, 2008-2012, 2012-2016, and compared with the reporting period, the total growth of 17 industries in Shaanxi manufacturing industry is revealed in the 13 years. Structural deviations and competitive deviations [8]. The data are derived from the Statistical Yearbook of Shaanxi Province and the Statistical Yearbook of China. The final results after data analysis and calculation are shown in **Table 2**.

3.1. Total Annual Results

This paper selects the 13 years from 2003 to 2006 as the investigation interval, takes the whole country as the reference area, and analyzes the total growth,

Table 1. Industry research object.

1. Non-ferrous metals smelting and calendering industry	2. Nonmetallic mineral products industry	3. Wine, beverage and refined tea Industry
4. Manufacturing of communications equipment, computers and other electronic equipment	5. Pharmaceutical manufacturing industry	6. Food processing and manufacturing
7. Chemical raw materials and chemical products manufacturing	8. Textile manufacturing industry	9. Electrical machinery and equipment manufacturing industry
10. Ferrous metal smelting and calendering industry	11. Tobacco products industry	12. Transportation equipment manufacturing industry
13. Petroleum processing, coking and nuclear fuel processing industry	14. Mechanical manufacturing industry	15. Reproduction of printing and recording media
16. Instrumentation and culture, office machinery manufacturing	17. Paper and paper products industry	

Table 2. Total annual industry deviation of manufacturing industry IN Shaanxi Province: analysis table of share.

Trade	N_y	P_y	D_y	PD_y	G_y
Beverage manufacturing industry	187.3999	76.3468	301.3894	377.7363	565.1362
Tobacco industries	73.67052	71.7342	-5.61071	66.12353	139.794
Paper and paper products industry	137.4458	-56.206	65.88950	9.683473	147.1293
Reproduction of printing and recording media	79.86256	62.8487	-52.7176	10.13108	89.9936
Petroleum processing, coking and nuclear fuel processing industry	310.1382	295.456	464.0963	759.5531	1069.691
Chemical raw materials and chemical products manufacturing	865.2463	-194.40	479.9794	285.5714	1150.8172
Pharmaceutical manufacturing industry	286.0130	585.865	-356.910	228.9550	514.968
Nonmetallic mineral products industry	640.6796	-120.57	742.2710	621.6968	1262.3761
Ferrous metal smelting and calendering Industry	560.9821	-248.76	571.7132	322.9517	883.9338
Non-ferrous metals smelting and calendering Industry	505.0899	99.8861	831.9693	931.8555	1436.9447
Transportation equipment manufacturing industry	998.5058	446.377	-154.329	292.0484	1290.554
Electrical machinery and equipment manufacturing industry	740.1423	-227.31	334.9902	107.6805	847.8228
Manufacturing of communications equipment, computers and other electronic equipment	922.9986	-309.11	-42.2810	-351.399	571.6001
Instrumentation and culture, office machinery manufacturing	87.18388	-25.447	14.80288	-10.6446	76.53919

Continued

Machine building industry	854.1146	178.400	-15.4121	162.9884	1017.103
Food processing and manufacturing	937.0164	-54.261	763.6808	709.4194	1646.4349
Textile manufacturing industry	590.5345	-320.64	11.18894	-309.451	281.083
Amount to	8777.02	260.189	3954.711	4214.899	12991.92

structure deviation and competitiveness deviation of the manufacturing industry in Shaanxi Province during the past 13 years. According to the model, the effect index is calculated in **Table 3**.

3.2. Annual Results

Taking the whole country as the reference area, the total growth, structure deviation and competitiveness deviation of Shaanxi manufacturing industry in these three periods are analyzed.

Call 2003-2008 the first year, 2008-2012 the second year and 2012-2016 the third year. A summary of the total share deviation of Shaanxi's manufacturing sector in these three annual periods is given in **Table 4**. According to the model, the effect index is calculated in **Table 5**, and then the deviation of specific industries in these three periods is summarized, as shown in **Table 6**.

3.3. Synthesize Analysis

3.3.1. Ensemble Analysis

According to **Table 2**, in the total annual period, the total economic increment of Shaanxi's manufacturing industry G_i is 12,991.92, N_i is 8777.02, P_i is 260.189 and D_i is 3954.711. According to the results, the economic growth in Shaanxi Province during the last 13 years from 2003 to 2016, N_i 's contribution to growth accounts for a considerable portion of the growth. And P_i for only 2% of the total economic growth, the results show that the positive effect of industrial structure on the overall development of manufacturing industry in Shaanxi Province is minimal, and the positive growth of manufacturing industry in Shaanxi Province mainly depends on the pull effect of the national manufacturing industry growth [9]. D_i for 30.4% of the total economic growth, this shows that the overall competitiveness of Shaanxi's manufacturing industry has a competitive advantage over that of the whole country.

According to **Table 3**, the total relative growth rate of the manufacturing industry in Shaanxi Province is 1.4219187, that is, the overall growth rate of the manufacturing industry in Shaanxi Province is higher than whole country. D_i is 3954.711 and the regional competitive effect index U is 1.38582, which indicates that the overall growth momentum of Shaanxi manufacturing industry is large, the competitiveness is strong, and the status of Shaanxi manufacturing industry is on the rise. At the same time, the structural effect index W is 1.5%. 026045, or $W > 1$, but P_i is 260.189, it shows that the overall structure of Shaanxi manufacturing industry is general, and its contribution to economic growth is limited or almost no [10].

Table 3. Total annual effect index of manufacturing industry in Shaanxi Province.

L	W	U
1.4219187	1.026045	1.38582

Table 4. Annual deviation of Manufacturing Industry in Shaanxi Province: an Analytical Table of share.

	N_i	P_i	D_i	PD_i
First year	2987.7168	-53.3129	368.2585	314.9456
Second year	3732.1813	197.9967	1691.184	1889.181
Third year	3061.8191	-432.714	1438.793	1006.079

Table 5. The annual effect index of Shaanxi manufacturing industry.

	L	W	U
First year	1.0749775	0.9873080	1.0887965
Second year	1.2290567	1.0240064	1.2002431
Third year	1.0762258	0.9672152	1.1127056

Table 6. Annual deviation of Manufacturing Industry in Shaanxi Province Analytical Table of share.

(a)

		Beverage manufacturing industry	Tobacco industries	Paper and paper products industry	Reproduction of printing and recording media	Petroleum processing, coking and nuclear fuel processing industry	Chemical raw materials and chemical products manufacturing
N_{ij}	First year	43.101	24.533	57.526	18.0826	178.975	267.223
	Second year	85.714	41.869	58.709	22.8051	200.166	399.321
	Third year	85.299	13.460	33.432	53.5953	-72.723	299.324
P_{ij}	First year	17.559	23.888	-23.52	14.2303	170.503	-60.041
	Second year	81.108	33.801	-30.70	3.74397	478.074	-144.48
	Third year	57.107	7.2870	-18.15	-2.9577	-169.43	-124.42
D_{ij}	First year	46.248	-1.527	-6.666	-15.658	419.218	-32.851
	Second year	16.723	8.2774	12.690	-0.1596	328.772	63.5569
	Third year	132.27	-11.79	63.824	-3.6883	-463.86	483.201
PD_{ij}	First year	63.808	22.361	-30.19	-1.4277	589.722	-92.892
	Second year	97.831	42.079	-18.01	3.58435	806.846	-80.931
	Third year	189.37	-4.509	45.664	-6.6460	-633.29	358.772

(b)

	Pharmaceutical manufacturing industry	Nonmetallic mineral products industry	Ferrous Metal smelting and Calendering Industry	Non-ferrous Metals smelting and Calendering Industry	Electrical machinery and equipment manufacturing industry	Manufacturing of communications equipment, computers and other electronic equipment
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Continued

	First year	53.015	165.678	378.255	187.531	244.672	305.006
N_{ij}	Second year	113.10	284.487	290.103	205.850	293.726	317.666
	Third year	168.83	277.923	-115.13	166.558	293.613	426.066
	First year	108.59	-31.180	-167.73	37.0861	-75.142	-102.14
P_{ij}	Second year	84.839	-61.585	-139.31	106.457	-75.531	-204.85
	Third year	60.525	15.3082	31.0754	148.743	-116.63	-316.95
	First year	-97.17	6.90891	1.08548	98.0766	34.8596	-135.36
D_{ij}	Second year	-16.31	271.123	307.905	363.668	-1.3055	-33.569
	Third year	39.538	39.5385	297.681	122.971	249.564	315.763
	First year	11.417	11.4178	-166.64	135.162	-40.283	-237.51
PD_{ij}	Second year	68.538	68.5389	168.599	470.126	-76.837	-236.42
	Third year	100.06	100.063	328.756	271.715	132.931	-1.1964

(c)

		Transportation equipment manufacturing industry	Instrumentation and culture, office machinery manufacturing	Machine building industry	Food processing and manufacturing	Textile manufacturing industry
	First year	243.20812	35.80631	319.8183	251.8284	213.4518
N_{ij}	Second year	398.45491	21.48400	337.7672	434.7550	226.1982
	Third year	508.1820	41.47542	290.78161	370.9375	220.1942
	First year	108.72506	-10.4512	66.80104	-14.5830	-115.897
P_{ij}	Second year	304.89340	3.852643	-16.2882	-56.4554	-169.560
	Third year	196.82480	14.42374	-46.1984	-10.2248	-159.0112
	First year	164.78270	30.05087	-78.5509	-2.30118	-62.87055
D_{ij}	Second year	-47.58252	37.79425	64.98596	261.2152	53.38722
	Third year	-586.93429	-97.89678	77.98638	411.2641	75.19058
	First year	273.50777	19.59958	-11.7499	-16.8842	-178.7677
PD_{ij}	Second year	257.3108	41.6468	48.6977	204.7597	-116.1729
	Third year	-390.10949	-83.47303	31.78796	401.0392	-83.82066

From the results of **Table 4** and **Table 5**, during these three years, the total growth of Shaanxi manufacturing economy [11] is mostly contributed by the national growth share, followed by the contribution of competitive deviation advantage.

In the first year, the proportion of the manufacturing industry with fast growth in the manufacturing industry in Shaanxi Province is small, the overall structure is not good, to a certain extent, it brings negative effect to the economic growth, has the competitive advantage, and can make up for the negative effect brought by the structure.

In the second year, the manufacturing industry in Shaanxi Province expe-

rienced a strong momentum of development and structural optimization and reform, which was better than the national average, and was more obvious than the competitive advantage of the previous year, and the contribution of the national share was the highest of the three years. It shows that during this year, the development of manufacturing industry in the whole country is very good, and Shaanxi Province as a whole presents a very good development situation under this situation.

During the third year, the national growth share N_i was lower than that of the previous year, indicating that the national manufacturing industry developed more slowly than the previous year. P_i and D_i all smaller than the previous year. Especially P_i has changed from positive to negative, lagging behind the national level of development. It shows that the industrial structure of the national manufacturing industry is continuously optimized and upgraded, and the rapid development of Shaanxi Province, but Shaanxi Province has not been able to keep up with the current situation of national development, has been a lot left behind, lagging the economic development of the manufacturing industry in Shaanxi Province. Although there have always been advantages in competitiveness, but the negative effect of the structure is also getting stronger and stronger.

To sum up, from the total annual results, the overall level of manufacturing industry in Shaanxi Province is really good, its structure and competitiveness have advantages, although the contribution of structural advantages is small. However, from the analysis of three years, we can see that the structural deviation of the manufacturing industry in Shaanxi Province in the third year has changed from the positive value in the second year to a negative value, which has pulled down the economic growth driven by the competitive advantage, and has continued to develop according to this trend. Not only that, but also the overall competitive advantage of the manufacturing sector in Shaanxi Province, which is bound to offset the existing advantages and then lower the overall level of economic growth. Especially in recent years, the manufacturing industry in Shaanxi Province has been on the decline, so Shaanxi Province. It is urgent to adjust and optimize the structure of manufacturing industry in West China, and measures should be taken to prevent the decline of competitive advantage.

3.3.2. Industry Situation Analysis

Results shows that during the total year 2003-2016, 14 of the 17 manufacturing industries in Shaanxi Province have certain advantages in their development, which are in line with the demand of current economic growth, and to a certain extent have promoted the economic development of Shaanxi. Have certain advantage. The development of three industries is lower than the national average, to some extent, the economic growth of Shaanxi has been delayed.

In the context of **Table 2** and **Table 6**, that is, a more detailed analysis of specific industries from the general perspective to the annual situation, that is, in the context of the overall and annual industry situation, the following are the following:

1) In the total annual situation, there are 14 industries whose total deviation is greater than 0, in which the total deviation of 8 industries is growing continuously in three years, and these eight industries have some advantages after development. It can be called as the key industry of Shaanxi Province in recent years: beverage manufacturing; pharmaceutical manufacturing; papermaking and paper products; chemical raw materials and chemical products manufacturing; electrical machinery and equipment manufacturing; ferrous metal smelting and calender processing industry; non-metallic mineral products industry; food processing and manufacturing.

In the eight industries, the structural deviation and competitiveness deviation are positive, which seems to be a well-structured, competitive and sustainable industry. But it can be seen from the annual situation that its structural deviation is decreasing and its contribution to economic growth is decreasing.

Paper and paper products industry; chemical raw materials and chemical products manufacturing; non-metallic mineral products industry; ferrous metal smelting and calender processing industry; electrical machinery and equipment manufacturing industry; the six industries of food processing and manufacturing belong to the structure deviation component is negative, the competitiveness deviation component is positive, but the competitiveness deviation component is larger than its structure deviation component in the total year. From the point of view of each year, the overall level of these six industries is rising, and the deviation of competitiveness is almost increasing, which is positive in the third year and has a competitive advantage. Of these, the ferrous metal smelting and calender processing industry and the non-metallic mineral products industry are the two lines. The industrial structure and competitiveness deviations are increasing, and the structural deviation is positive in the third year. Although the structural deviation between food processing and manufacturing industry has been negative, the value has been decreasing, and the competitiveness deviation has been positive and growing. Chemical raw materials and chemical products manufacturing and electrical machinery and equipment manufacturing also have a competitive advantage, but the structural deviation continues to decline, and has been negative.

2) Of the 14 industries in which the total deviation was greater than 0, that is, the total deviation in five of the 14 industries that developed above the national average had increased first and then declined, namely, tobacco products; reproduction of the printing and recording media; and petroleum processing; coking and nuclear fuel processing industry; non-ferrous metal smelting and calender processing industry and mechanical manufacturing. The total deviation from the tobacco industry, the printing and recording media, and the oil processing, coking and nuclear fuel processing industries declined from positive to negative.

Among them, the petroleum processing, coking and nuclear fuel processing industries and non-ferrous metal smelting and calender processing industries are both positive in terms of the structural deviation component and the com-

petitive deviation component in the total year, which is of good structure and strong competitiveness in a sustainable industry. However, the structural deviation component and the competitiveness deviation component of the petroleum processing, coking and nuclear fuel processing industries have been declining in the three years of development, and have become negative in the third year, constantly consuming the accumulated advantages of the previous year. The whole shows the phenomenon of recession to backwardness. The overall level of non-ferrous metal smelting and calender processing industry has declined in recent years, especially the competitive advantage in the third year rapid decline.

3) Of the 14 industries whose total deviation is greater than 0, that is, the total deviation of one industry is in a state of continuous decline in three years, that is, the transportation equipment manufacturing industry. From the total annual results of the transportation equipment manufacturing industry, it can be seen that the structural deviation component is positive, the competitiveness deviation component is negative, and it belongs to the non-competitive advantage. However, the contribution of industrial structure to economic growth is greater than that of industries which have negative effects on economic growth due to their competitive disadvantage, and to some extent can promote economic growth. According to the annual situation, the deviation of structure and competitiveness can be seen. In particular, the level of competitiveness has been seriously backward and completely offset the advantages brought by the structure, especially in the case of the increasing share of national growth and the high level of national development.

4) In the total annual situation, there are three industries whose total deviation is less than 0, that is, the development is below the national average level, and the total deviation of these two industries is in the sustained growth but still negative in the three years of development, such as, textile manufacturing and communications equipment, computer and other electronic equipment manufacturing industry. According to the total annual situation of textile manufacturing industry, the structural deviation component is negative, the competitiveness deviation component is positive, and the structural deviation component is much larger than the competitiveness deviation component numerically. The promotion of competitive advantage to economic growth has been completely offset or even lowered by the negative effect of industrial structure on economic growth. The total annual situation of the computer and other electronic equipment manufacturing industries is that both the structural deviation component and the competitiveness deviation component are negative, and there are problems of poor structure and no competitive advantage. These two industries can lag economic growth to some extent. In terms of year by year, the growth of these two industries is strong, indicating that the prospects are very good. The competitiveness deviation continues to increase to a positive amount, but the structural deviation decreases more rapidly. It shows that the negative effect of structure on economic growth is greater than the positive effect brought

by competitive advantage.

5) Among the three industries whose total deviation is less than 0, that is, the development is lower than the national average, there is one industry: instrumentation and culture, and office machinery manufacturing. The total deviation of this industry is the first growth and then the decline. The total annual data show that the structural deviation component is negative, and the competitiveness deviation component is positive, and the structural deviation component is much larger than the competitiveness deviation component numerically. From the point of view of each year, the total deviation of the industry has decreased from positive to negative in the development process, and the deviation component of competitiveness has been greatly reduced to negative value. The structural deviation component and the value of the deviation component are positive, but the value is very small, showing the phenomenon of recession to backwardness as a whole.

4. Conclusion and Suggestion

In summary, when using SSM analysis method to study the manufacturing industry in Shaanxi Province, when the time span is large, we only can study the general total year as the study interval. The result only can reflect the result between base period and end stage, but it cannot get the change of interval. Therefore, based on the total annual research, the total year is divided into three parts, and the results of the three years are compared by the method of share deviation, and then the results of the total year are analyzed synthetically.

Based on the above analysis, the 17 manufacturing industries in Shaanxi Province can be divided into three categories: dominant industries, potential industries and declining industries [12]. The results are shown in **Table 7**.

Based on the above conclusions, we can put forward the following suggestions for the specific industry of Shaanxi manufacturing industry:

1) To superior industries, we should give priority to development, increase investment and maintain the advantages of related industries; in particular, the

Table 7. Classification of manufacturing industry in Shaanxi Province.

industry category	industry name
Superior industry	Beverage manufacturing; pharmaceutical manufacturing; papermaking and paper products; chemical raw materials and chemical products manufacturing; electrical machinery and equipment manufacturing; ferrous metal smelting and calender processing; non-metallic mineral products; food processing and manufacturing
Potential industry	Non-ferrous metal smelting calender processing industry; machinery manufacturing; tobacco products industry; reproduction of printing and recording media; textile manufacturing; communications equipment, computer and other electronic equipment manufacturing
Recession industry	Petroleum processing; coking and nuclear fuel processing industry; instrumentation and culture; office machinery manufacturing; transportation equipment manufacturing

chemical raw materials and chemical products manufacturing industry; the electrical machinery and equipment industry; the non-metallic mineral products industry; and the food processing and manufacturing industries, which have a strong competitive advantage and contribute to economic growth; should focus on the development of the object [13], make it bigger and stronger, and strive to have a greater voice in the national industry. At the same time, problems in the development of some industries, such as beverage manufacturing, pharmaceutical manufacturing, chemical raw materials and chemical products manufacturing and electrical machinery and equipment manufacturing, cannot be ignored. These four structural problems exist in the industry. Although the structural problems of these industries do not have a negative effect on their economic growth at present or bring far less positive effects than competitive advantage, but if they are placed in the long run, the problem will become more and more serious, eventually leading to a drag on the industry as a whole so that it no longer has an advantage. Therefore, if we want to develop healthily and sustainably, we must constantly adjust the optimization structure in the subsequent development, and then cooperate with our own competitive advantage so as to make the whole stronger.

2) For potential industries, including non-ferrous metal smelting and calender processing; machinery manufacturing; tobacco products; printing and recording media replication; these are well-established industries that have experienced considerable problems in recent years. In order not to decline, maintaining the existing base is now a top priority. These industries are rapidly declining or the disadvantages have become greater than the advantages, resulting in the overall advantage becoming smaller or not, especially in the non-ferrous metal smelting calender processing industry, as one of the most prominent industries contributing to the manufacturing economy in Shaanxi Province. In recent years, the growth is strong, but the competitive advantage has declined significantly. To this, we should combine the concrete analysis of the preceding chapter. As a result, the right remedy is to improve its competitiveness. In addition, there are textile manufacturing and communications equipment, computer and other electronic equipment manufacturing, two basic but very good rising industries [14]; although it is not able to promote economic growth in the industry today, but if this trend continues, the future is bound to be a new source of economic growth. However, we should also pay attention to the imbalance in the development of these industries. For example, the overall improvement of the manufacturing industry of communications equipment, computers and other electronic equipment depends entirely on the rise in competitiveness. Its structure has always been at a disadvantage and has been declining. It is the urgent to adjust the structure of the industry.

3) For the recessionary industries, the development lagging behind the national level in recent years, is currently lagging behind the manufacturing economic growth in Shaanxi Province, which is our first urgent measures to improve the industry. The disadvantages of these industries are all presented as a

sharp decline in competitiveness, which has changed from advantages to disadvantages, and has lowered the overall level. In particular, the oil processing, coking and nuclear fuel processing industries and the transportation equipment manufacturing industries are important sources of economic contribution to the manufacturing industry in Shaanxi Province, but in the process of development they are showing a decline. Not only growth but also the deviation of structure and competitiveness is decreasing, especially in competition. The force level has been seriously backward and completely counterbalanced the advantages brought by the structure. The most urgent task is to find out the main factors that affect the competitiveness of the industry, put forward a strategy to enhance the competitiveness; strive to no longer delay, but also adjust the optimization structure, two-pronged to improve the overall level.

To sum up, there are not many sustainable and healthy industries in the manufacturing industry of Shaanxi Province, and there are not many sustained backward industries, among which there are many industries with some problems but still have advantages or good momentum, so long as we take measures to solve the problems. In the future, it can become the main industry to promote the economic growth of Shaanxi manufacturing industry. To make Shaanxi Province manufacturing industry a whole, to promote the traditional industry, to strengthen the leading pillar industry, to develop strategic emerging industries, to support the weak industries, and to deepen energy saving and emission reduction [15] are the directions of future development. Secondly, the overall development of the manufacturing industry in Shaanxi Province must conform to the current law of development, based on the local resources and the level of economic development. The fixed industrial policy must be able to reflect the regular requirements of industrial development. To give full play to the advantages of the resources existing in Shaanxi Province, to take the road of green industrialization into account of market demand, to enhance the technological level and the added value of products, and to strengthen technological innovation, we should also focus on enhancing the overall competitiveness. The structure of the manufacturing industry is more reasonable and the development is faster.

Based on SSM analysis, this paper analyzes whether there are advantages and disadvantages of the overall manufacturing industry and industry structure compared with the national average level in Shaanxi Province, and finds out the strengths and weaknesses of the industry, but has not been able to reveal the influence factor which causes its industry superiority and inferiority. In the future research, we can use a large amount of statistical data to analyze and study according to the different factors that affect the structure of the industry, to reveal the main factors of the advantages and disadvantages of the different industry structures, and to put forward more targeted suggestions to the various industries, in order to optimize the structure of the industry.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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