Research into “Five Centers” on the Silk Road Economic Belt and the Current Development of Tertiary Industry in Xinjiang

Pan Jie^{1,a}, Kong Na^{2,b}, Bai Xiao^{3,c,*}

^{1,3}Faculty of Transportation and Management, Xinjiang Vocational and Technical College of Communications, Urumqi, Xinjiang, China

²Science and Technology Project Service Center, Xinjiang Uygur Autonomous Region, Urumqi, Xinjiang, China

Abstract. Industrial development is the pillar of regional economic development, and the development of tertiary industry is the focus of the entire industry. This paper conducted an in-depth analysis of the tertiary industry in Xinjiang from three aspects: output value, output value growth rate, and output value contribution rate. On this basis, this paper also analyzes the investment in fixed assets of Xinjiang's tertiary industry and uses the gray correlation model to measure the correlation between fixed assets and output value. The results of the study show that from 2014 to 2019, the tertiary industry in Xinjiang has developed better overall. Among them, culture, sports and entertainment industry, information transmission, software and information technology service industry, education, health and social industry and other industries are developing very well, which is in line with the vision goal of the construction of the “Five Centers” in Xinjiang on the Silk Road Economic Belt.

1 Introduction

The Silk Road Economic Belt initiative was put forward in 2013, and Xinjiang in China is at the core of the new Silk Road Economic Belt. With the continuous advancement of the Silk Road Economic Belt initiative and the “Five Centers”, Xinjiang has become an important node city connecting Central Asia and Europe. Xinjiang will be built into the “Five Centers” of The Silk Road Economic Belt, namely, an important transportation hub, a commercial and logistics center, a financial center, a cultural and technological center, and a medical service center. Moreover, Xinjiang will become the core area on the Silk Road Economic Belt. Existing studies include the contribution of manufacturing in the core area of the Silk Road Economic Belt to economic growth [1]. There is also a study on the Kashgar area on the southern route of the Silk Road Economic Belt [2–6]. However, after the Silk Road Economic Belt initiative was put forward, what is the state of development of Xinjiang's tertiary industry? Has there been a leap-forward development driven by this initiative? Relative research is relatively lacking. In view of this issue, this paper conducts an in-depth study on the development of various departments of Xinjiang's tertiary industry in recent years.

2 Current Development of Tertiary Industry in Xinjiang

According to the statistical results of the Xinjiang Statistical Yearbook, the industrial structure of Xinjiang in 1978 was a “two-one-three” model, then it was

^a 345763767@qq.com ^b 359168074@qq.com

^{c,*} 41468463@qq.com (*Corresponding author*)

transformed into a “one-two-three” model, and in 1995 it was transformed into a “three-two-one” model. Since 2004, the industrial development of Xinjiang has increased rapidly, and the industrial structure has changed into a “two-three-one” model. With the rapid development of the social economy and the Silk Road Economic Belt initiative, the proportion of tertiary industry development has increased since 2013, the industrial structure has become more reasonable, and it has successfully transformed into a “three two one” model. Moreover, the proportion of tertiary industry continues to rise, from 42.7% in 2013 to 51.6% in 2019. According to the structuralist scholars C.G. Clark, S.S. Kuznets and W.G. Hoffmann in the field of urban economic research, they have come to a conclusion through a large number of statistical analyses: In different stages of economic development, the structure of the tertiary industry has evolved, and economic growth is accompanied by changes in the industrial structure. When the economy develops to a high stage, the tertiary industry will dominate the economy. It can be seen from Figure 1 that since 2013, Xinjiang has gradually entered a stage of rapid economic development. The proportion of tertiary industry in Xinjiang's industrial structure has continued to rise. This is a process of continuous optimization of the regional industrial structure and an inevitable result of rapid social and economic development. At the same time, the development of Xinjiang tertiary industry is also the closest to the GDP development trend of Xinjiang. This further shows that the development of the tertiary industry has the highest correlation with the

development of regional GDP, and it is an important part of the regional economy.

Figure 1. GDP and the Structural Trends of the Tertiary Industry in Xinjiang, China
 Data Sources: 2020 China Xinjiang Statistical Yearbook

3 Current Development of Different Sectors of Xinjiang's Tertiary Industry

3.1 The Output Value Growth of Xinjiang's Tertiary Industry

Since the Silk Road Economic Belt initiative was put forward in 2013, Xinjiang's tertiary industry has grown rapidly. It can be seen from Table 1 that the culture, sports, and entertainment industries have developed the fastest, with an output value of 2.93 billion yuan in 2014,

and an output value of 306.704 billion yuan in 2019, an increase in output value by more than ten times; these industries were followed by the information transmission, software and information technology service industries, from 24.78 billion yuan in 2014 to 231.745 billion yuan in 2019, an increase of nearly ten times in five years; the growth of the leasing and business services industry has also grown very fast from 50.16 billion yuan in 2014 to 152.893 billion yuan in 2019, an increase of more than three times; while the growth of the output value of the accommodation and catering industry is relatively flat, and other industrial sectors have more obvious growth.

Table 1. The Output Value Growth of Xinjiang's Tertiary Industry in 2014-2019 Unit: 100 million yuan

Sector	2014	2015	2016	2017	2018	2019
Transportation, warehousing and post	397.90	419.67	412.77	503.74	727.42	573.24
Information transmission, software and information technology service industry	247.80	231.29	304.68	333.93	1706.05	2317.45
Wholesale and retail	552.20	484.03	543.23	668.49	710.36	750.48
Accommodation and meals	129.30	134.40	128.25	144.94	151.44	161.59
Finance	666.50	676.92	683.03	818.98	963.60	988.46
Real estate	366.20	350.02	365.69	407.93	438.18	469.04
Rental and business services	501.60	612.33	526.37	498.02	1211.19	1528.93
Scientific research, technical service	205.80	158.51	142.35	137.25	422.70	545.55
Water conservancy, environment and public facilities management	29.40	37.10	66.41	64.81	117.36	185.19
Resident services, repairs and other services	35.50	53.31	36.10	35.96	56.80	74.41
Education	7.40	24.61	22.16	19.92	48.64	61.17
Health and social work	13.20	28.07	34.02	33.44	56.29	78.12
Culture, sports and entertainment	29.30	37.02	53.73	72.42	2447.09	3067.04
Others	687.40	1051.39	1109.68	1882.75	352.32	250.45

Data Sources: Xinjiang Statistical Yearbook 2015~2020, calculated based on the deflated values using 2014 as the base period.

The growth rate of all industrial sectors fluctuates up and down. Among them, the culture, sports and entertainment industry, information transmission,

software and information technology service industry, scientific research and technical service industry, education, leasing and business service industry in 2018

have achieved more than twice the growth of the previous year. The increase is very large; the growth rates of the four industrial sectors, including transportation, storage and postal industry, water conservancy, environment and public facilities management, residential services, repair and other services, and sanitation and social industry, are also between 40% and 85%. In terms of the five-year average growth rate, the culture, sports and entertainment industries ranked first, with an average growth rate of 682.16%; followed by the information transmission, software and information technology service industries, with an average growth rate of 96.28%; the third is the education industry, with an average growth rate of 76.49%. In contrast, the average growth rate of transportation, storage and postal industry, wholesale and retail industry, accommodation and catering industry, financial industry, and real estate industry is low.

3.2 Output Value Contribution Rate of Xinjiang's Tertiary Industry

There are 13 main industrial sectors in tertiary industry, and 13 industrial sectors cannot develop rapidly at the

same time, and industries with a faster development speed and a larger proportion have become the leading industries in the industry, which in turn promotes the development of other industries. It can be seen from Table 2 that the culture, sports and entertainment industries have developed the most rapidly. In 2014, they accounted for 0.76% of the tertiary industry, but rose rapidly to 26.1% in 2018, and reached 27.75% in 2019, becoming the industry with the highest contribution rate of median output; this is followed by information transmission, software and information technology services, which accounted for 6.4% of the tertiary industry in 2014, rapidly rose to 18.13% in 2018, and reached 20.97% in 2019. It is the second-largest industry in the tertiary industry's output value contribution rate. The third is the leasing and business services industry, which accounted for 12.96% of the tertiary industry in 2014 and rose to 13.84% in 2019. The share of the tertiary industry has basically not changed much in the past five years, remaining at 8%~15%; The share of water conservancy, environment and public facilities management, education, and education has also increased, while the share of other industries in the tertiary industry has decreased.

Table 2. Contribution Rate of Xinjiang's Tertiary Industry from 2014 to 2019 Unit: %

Sector	2014	2015	2016	2017	2018	2019
Transportation, warehousing and post	10.28	9.76	9.32	8.96	7.73	5.19
Information transmission, software and information technology service industry	6.40	5.38	6.88	5.94	18.13	20.97
Wholesale and retail	14.27	11.26	12.27	11.89	7.55	6.79
Accommodation and meals	3.34	3.13	2.90	2.58	1.61	1.46
Finance	17.22	15.75	15.42	14.57	10.24	8.94
Real estate	9.46	8.14	8.26	7.26	4.66	4.24
Rental and business services	12.96	14.24	11.89	8.86	12.87	13.84
Scientific research, technical service	5.32	3.69	3.21	2.44	4.49	4.94
Water conservancy, environment and public facilities management	0.76	0.86	1.50	1.15	1.25	1.68
Resident services, repairs and other services	0.92	1.24	0.82	0.64	0.60	0.67
Education	0.19	0.57	0.50	0.35	0.52	0.55
Health and social work	0.34	0.65	0.77	0.59	0.60	0.71
Culture, sports and entertainment	0.76	0.86	1.21	1.29	26.01	27.75
Others	17.76	24.46	25.06	33.49	3.74	2.27

Data Sources: Xinjiang Statistical Yearbook 2015~2020, calculated based on the deflated values based on 2014

The development of various sectors of Xinjiang's tertiary industry is in line with the vision of the country's The Silk Road Economic Belt initiative. Culture, sports and entertainment, information transmission, software and information technology services, scientific research and technical services, and education have the fastest growth rates in all sectors of the tertiary industry, and it is bound to drive other industries to develop rapidly. In 2016, under the guidance of the national "One Belt One Road" initiative and innovation-driven development strategy, Xinjiang, together with the Ministry of Science and Technology, the Chinese Academy of Sciences and Shenzhen, jointly launched the construction of "The Silk

Road Economic Belt Innovation-Driven Development Pilot Zone". To build the "Belt and Road" innovation highland-Xinjiang promotes the construction of the Silk Road Economic Belt innovation-driven development pilot zone. A number of leading innovation base projects such as the China-Central Asia Science and Technology Cooperation Center and the Western Agricultural Research Center of the Chinese Academy of Agricultural Sciences have been implemented test area. Offshore incubators led by 6 companies in Beijing, Shenzhen, Shanghai, Dalian, Guangzhou and other places have been listed for operation. Xinjiang's vision of becoming a science, education and cultural center on the Silk Road

Economic Belt is proceeding steadily and orderly, and the construction of the other four centers is also under continuous construction.

4 The Role of Fixed Asset Investment in Promoting the Development of Xinjiang's Tertiary Industry

According to Cobb-Douglas production function (Cobb-Douglas production function) theory, the two important factors that affect output are capital and labor, and their inputs are critical to output. The development of industry is also inseparable from investment in fixed assets. The higher the correlation between investment in fixed assets and output value, the higher the utilization rate of funds, the more obvious the promotion of economic growth.

4.1 Investment in Fixed Assets by Various Sectors in Xinjiang's Tertiary Industry

It can be seen from Table 3 that from 2014 to 2019, the fixed asset investment in the accommodation and catering industry in the Xinjiang tertiary industry has increased year by year, which has greatly promoted the development of Xinjiang's tourism industry. The fixed asset investment in the three industrial sectors of science and technology and services, education, health, and social work has increased overall, which is consistent with the construction of the science, education and cultural center; the fixed asset investment in other industrial sectors is basically in a state of declining year by year.

Table 3 Investment in Fixed Assets by Various Sectors in Xinjiang's Tertiary Industry in 2014-2019 Unit: 100 million yuan

Sector	2014	2015	2016	2017	2018	2019
Transportation, warehousing and post	753.53	1034.95	851.45	1946.60	770.62	692.02
Information transmission, software and information technology service industry	100.56	127.78	138.73	151.68	83.28	75.89
Wholesale and retail	152.26	186.87	164.25	178.08	44.04	47.55
Accommodation and meals	51.64	85.84	51.48	95.87	89.62	165.54
Finance	2.03	12.15	9.40	26.21	15.87	1.94
Real estate	2129.39	2188.96	2203.04	1864.83	1300.96	1316.00
Rental and business services	31.74	106.54	151.05	178.17	80.07	83.80
Scientific research, technical service	12.97	30.61	59.92	67.18	34.84	20.34
Water conservancy, environment and public facilities management	894.53	1086.71	1568.02	2186.85	1065.51	1085.89
Resident services, repairs and other services	9.69	23.00	27.04	45.77	23.44	13.62
Education	129.87	164.00	206.11	407.22	246.51	269.19
Health and social work	54.29	89.00	94.33	161.85	88.87	111.34
Culture, sports and entertainment	69.92	81.72	106.30	161.44	81.19	110.48
Others	146.45	202.94	331.92	608.28	362.61	103.62

Data Sources: Xinjiang Statistical Yearbook 2015~2020, calculated based on the deflated values using 2014 as the base period.

From 2014 to 2019, the growth rate of fixed asset investment in Xinjiang can be seen: The financial industry, leasing and business service industry, accommodation and catering industry, scientific research and technical service industry sectors saw rapid growth in fixed asset investment. The average growth rate of fixed asset investment in the three industrial sectors of wholesale and retail, information transmission, software and information technology services, and real estate showed a negative value. It shows that the growth of fixed asset investment in these industries has slowed down.

4.2 Grey Correlation Analysis of Fixed Assets and Output Value of Various Sectors of Tertiary Industry

Can the investment of fixed assets in various industrial sectors promote the growth of the output value of various industrial sectors? Can the maximum utility of

funds be brought into play? This paper uses the gray correlation model[7] to measure the correlation between fixed asset investment and the output value of various industrial sectors. The higher the correlation degree, the more obvious the role of fixed assets in promoting industrial development, the lower the correlation degree, the less the role of fixed asset investment in promoting industrial development, and then the influence of fixed investment on the development of various industrial sectors.

According to the output value (Table 1) and fixed asset investment (Table 3) of each sector of the tertiary industry in Xinjiang from 2014 to 2019, the results of the calculation using the gray correlation model are as follows (Table 4).

It can be seen from Table 4 that the gray correlation degree between wholesale and retail is the highest, indicating that fixed asset investment is very obvious in promoting wholesale and retail. It is followed by information transmission, software and information

technology service industry, water conservancy, environment and public facility management, culture, sports and entertainment industry, health and social industry are also relatively highly correlated, indicating that fixed asset investment has contributed to the development of these industries. It also has a great promotion effect. The correlation of other industrial sectors is between 0.6 and 0.7, and the role of fixed asset investment in promoting industrial development is relatively weak. But on the whole, the gray correlation degree between fixed asset investment and output value of various sectors of the tertiary industry is above 0.6, which shows that overall fixed asset investment still has a great role in promoting industrial development.

Table 4. The Gray Correlation Degree of Fixed Asset Investment and Output Value of Various Sectors of Xinjiang's Tertiary Industry

Sector	Correlation value
Transportation, warehousing and post	0.6486
Information transmission, software and information technology service industry	0.7676
Wholesale and retail	0.8235
Accommodation and meals	0.6907
Finance	0.6479
Real estate	0.6666
Rental and business services	0.6737
Scientific research, technical service	0.6236
Water conservancy, environment and public facilities management	0.7605
Resident services, repairs and other services	0.6579
Education	0.6673
Health and social work	0.7066
Culture, sports and entertainment	0.7851
Others	0.6595

5 Conclusion

Since the Silk Road Economic Belt initiative was put forward, as the core area of the Silk Road Economic Belt, the economic development of Xinjiang has attracted much attention. With the development of social economy, the proportion of tertiary industry continues to rise, and the development of various sectors of the tertiary industry plays a strong leading role in the development of the regional economy. In this paper, through an in-depth analysis of the Xinjiang tertiary industry, it is found that the overall development of the Xinjiang tertiary industry is relatively good. Among them, several industries such as culture, sports and entertainment, information transmission, software and information technology services, education, health and social industries are developing very fast. This is consistent with the vision for the construction of the five major centers. These industries can be regarded as the leading industries of the tertiary industry and drive the joint development of other industrial sectors.

It is necessary to enhance economic innovation and develop a characteristic economy based on Xinjiang's regional characteristics. On the one hand, it is necessary to combine Xinjiang's tourism resources to build characteristic towns to attract foreign tourists, which can promote the development of transportation, accommodation and catering, wholesale and retail, leasing and entertainment industries; on the other hand, with a vast land and abundant resources in Xinjiang, the distance between cities in Xinjiang is relatively long, and there are many types of local specialty products in Xinjiang, so we can develop the information industry and warehousing industry, which can help promote the development of Xinjiang's e-commerce industry. We can also plan logistics and warehousing sites across Xinjiang and vigorously develop the transportation industry. Third, it is necessary to increase sustainable research and technological research and development, promote the development of Xinjiang's medical industry, and speed up the efforts to make Xinjiang become a "medical center of five major centers", which can help to realize the vision of supporting key industries to promote the common development of other industries.

References:

1. Feng Y., Guo H.(2017), "Research on the Contribution of Manufacturing Industry to Economic Growth in The Silk Road Economic Belt Core Area". *Karamay Academic Journal*, 2017, 7(03):55-65
2. Bai X., Lu W. and Zhang R.(2020), "Measurement and Analysis of Industrial Structure Order in Kashgar City Circle Based on Order Model of Industrial Structure". *Proceedings of the 2020 the 3rd International Conference on Computers in Management and Business*, pp. 253-260.
3. Bai X., Pan J. and Li L.Y.(2020), "Measurement and Analysis of Industrial Isomorphism of Kashgar Urban Agglomeration Based on Degree of Grey Incidence Model". *Proceedings of the 2020 the 3rd International Conference on Computers in Management and Business*, pp.228-232.
4. Bai X., Kong N. and Chen H.(2019), "Research on Fixed Assets Investment and Industrial Development in Kashgar Region under the Background of Silk Road Economic Belt". *Global Market*, No.5, pp.1-2+6.
5. Bai X., Kong N. and Chen H.(2020), "Research on Countermeasures for Industrial Transformation and Development of 'Kashgar Urban Agglomeration' Based on Silk Road Economic Belt Background". *Consumption Guide*. No.1, pp.110-113.
6. Pan J., Bai X.(2021), "A Study on 'Kashgar City Circle' Industry Development in the Contest of the Silk Road Economic Belt". *E3S Web of Conferences* 235, 02023
7. Liu Sifeng, Yang Yingjie, Wu Lifeng, et al(2015). *Grey System Theory and Application (7th Edition)*. Beijing: Science Press.