

# **Study on Development Relations of Xinjiang Industrialization and Urbanization**

## **- Under the Background of "The Belt and Road" Strategy**

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**ABSTRACT:** Economic and social development in Xinjiang is significantly lag behind mainland provinces, and advancing with the gradual implementation "the belt and road" strategy of industrialization and urbanization in Xinjiang ushered in unprecedented opportunities for development. Industrialization and urbanization development is the driving force for regional economic development, is an important way of Xinjiang's economic and social promotion. Firstly derived by factor analysis comprehensive calendar of urbanization and industrialization composite index score; reuse of co-integration score data for analysis. And discussed the development of relations between industrialization and urbanization, combined with "all the way along the" strategic configuration recommendations for Xinjiang industrialization and urbanization development.

### **Introduction**

In September 2013, during his visit to the Central Asian countries, President Xi Jinping proposed to build a "Silk Road Economic Belt"; October the same year, and also proposed the development of ASEAN, "Marine Silk Road", since the formation of strategic vision the belt and road. With "the belt and road" the full deployment of the implementation strategy, Xinjiang as an important window of "Silk Road economic belt" extending westward comprehensive, challenges and opportunities. [1] 2015 construction of Xinjiang Silk Road economic belt core area in full swing. For long-term peace and stability of the country, Xinjiang, accelerate economic and social development in Xinjiang become urgent. Xinjiang industrialization and urbanization development started late, poor foundation, slow development, restricting economic development. In the process of social economic development exists reinforce each other, mutual coupling and interrelated relationship between industrialization and urbanization, both in Xinjiang. [2] It is the basis for industrialization urbanization development, and industrialization and urbanization will vary at different stages of economic and social development and showing a different relationship. There are three views of their academic research: the coordinated development of type, type of urbanization and industrialization lag type [3]. Xinjiang is an important gateway to the northwest of the country, as "the belt and road" development of key areas, the implementation of new industrial development strategy is to accelerate the process of urbanization contribute to the stable development of Xinjiang. Paper chooses Silk Road economic belt in Xinjiang as the research object, the relationship between industrialization and urbanization in Xinjiang were studied.

## **Xinjiang Industrialization And Urbanization Development Status**

In recent years, Xinjiang has made great achievements in economic development, but compared with the national average, the level of industrialization still lags behind. 2013 gross regional product of 836.024 billion yuan in Xinjiang, the proportion of primary secondary and tertiary industries were 17.60%, 45.20%, 37.20%. In terms of employment structure, the proportion of primary industry employment was 46.17%, indicating that Xinjiang is still in the primary stage of industrialization; from the industrial structure, in 2013 the GDP of Xinjiang industrial added value accounted for 36.3%, the region's third industry accounts for 37.2% GDP, manufacturing industry accounts for 19.67% of the first and second industrial added value of the industry and the shows Xinjiang still pre-industrial levels stage; from the perspective of the development level of the city, in 2013 Xinjiang urbanization was 44.47%, the national average urbanization rate is 53.7%, the rate of urbanization in Xinjiang 9.23 percentage points lower than the national level, is still in the initial stage of industrialization.

Xinjiang special geographical environment is mostly distributed along the urban oasis. Density is greater than southern northern, southern general, the more developed northern town [4]. Xinjiang urbanization rate in 1990 was 31.90%, the national average of 26.41 percent, higher than the national average urbanization rate in Xinjiang nearly 5.5 percentage points; in 2000 the rate of urbanization in Xinjiang was 33.75%, the national average of 36.22 percent, Xinjiang overtake the national average urbanization rate. By 2000, Xinjiang set up a total of 19 municipal cities, 68 counties, 123 independent towns, 699 towns, the urbanization rate reached 33.75%. From 1990 to 2000, although the steady development of Urbanization in this period, but the growth rate was lower than the national average. Thanks to the support of the western development policy, 10 years transportation, communications, water, electricity, green, science and technology, education, health, social security and other towns in Xinjiang have made to improve and progress. The functions of the town has been gradually improved, due to improved communications and infrastructure, contacts and cooperation between towns to continue to strengthen the role of cities and towns in economic development has become increasingly prominent. By 2013, Xinjiang's urbanization rate has reached 44.47%.

## **Xinjiang industrialization and urbanization development problems**

Xinjiang mineral resources, energy and agricultural resources are rich. However, industrial production has long been based in the rough, resource comprehensive development capacity is relatively low. In 2013 the proportion of heavy industry in Xinjiang processing of industrial added value of 17.8%, the proportion of the added value of mining is 53.43%. Urban layout is not balanced, how much north south. Xinjiang agriculture than the major urban population concentration degree is low, radiation driven and service functions towns weaker. Some small towns due to environmental greening rate, geographical isolation, because of poor infrastructure, local rich migrate to other cities, the poor are trapped in rural, urban development stagnated. The number of small towns around the state, regional distribution, construction level, the level of development and the level of service there are regional imbalances.

Xinjiang urbanization and industrialization is a single source of development financing. Many cities is new, not too much financial resources, slow construction, development, lack of motivation. Xinjiang unbalanced industrial structure, cannot meet their own development needs, while the lack of favorable conditions for attracting foreign investment, severely restricts the development of Xinjiang urbanization and industrialization. 2013 state-owned enterprises in Xinjiang investment in

urban fixed asset investment amounted to 318.31 billion yuan, local investment in fixed assets 604.012 billion yuan, the central investment in fixed assets 174.73 billion yuan, foreign investment amounted to only 379 million yuan, sources of funds are investment policy local financial loans and grants. Due to lack of funding small business investment in R & D, companies uncompetitive. 2013 R & D spending in Xinjiang accounted for 0.54% GDP, while the national average of 2%. Overall investment in the region increased, but some SMEs to obtain investment is a stage and random, not stable. All these factors have restricted the further development and improving the quality of urbanization and industrialization.

## Empirical Analysis of Xinjiang Urbanization and Industrialization

Select the following indicators based on the principles of simplicity and industrial real comparability.

Table 1 Industrialized Index Select

Target layer	Layer Guidelines	index	unit
work industry Of water level Measure degree	Economic Indicators	Per capita GDP	Yuan
		Industrial added value proportion of GDP	%
		The proportion of tertiary industry in GDP	%
		Industrial employment in the total population	%
		R & D expenditure as a percentage of GDP RSD	%
	Technology index	Scientific and technical personnel accounting for the proportion of industrial employees	%
		The number of patents per million people	piece
		Television coverage	%
		Tele density	%
		unemployment rate	%
	Human resource indicators	The number of college students per million	personnel
		Labor productivity	Yuan/personnel
		Every ten thousand yuan GDP energy consumption	Tons of standard coal / million
		Industrial wastewater discharge compliance rate	%
		Industrial solid waste utilization	%

Data Indicators Source: Xinjiang Statistical Yearbook 1990-2013

According to scientific data, and easy to collect, the principle of non-equilibrium comprehensiveness selected the following indicators of urbanization.

Table 2 Urbanization Index

Target layer	Layer Guidelines	index	unit
Urbanization Level Measurement	Economic Indicators	Per capita GDP	Yuan
		Non-agricultural value added to GDP ratio	%
		The proportion of non-agricultural population	%
	Demographic indicators	The proportion of urban population	%
		Water penetration rate of urban population	%
	Infrastructure Index	Per million vehicles owned by public	piece
		The per capita green area	Square Meters
	The standard of living index	Every people has the number of health technology services	personnel
		Total per capita postal and telecommunications services	Ten thousand yuan
		Per capita total retail sales of social consumer goods	Yuan
		Engel coefficient	

Data Indicators Source: Xinjiang Statistical Yearbook 1990-2013

Since many indicators selected to evaluate despite a series of screening, but more or less between the Index and Index beings certain correlation in the reaction above information may overlap. Factor analysis with a reduced element of thinking, an integrated component of the main indicators to replace the original evaluation, the vast majority of the information has retained the original variables comprehensive index [5], and integrated indicators unrelated, can make complex things simple explanation is structured relationship between the observed variables or covariance between. Thus, factor analysis can be used Xinjiang industrialization and urbanization level of analysis.

Let the year is n, index is p, the initial samples:  $X^* = (x_{ij})_{n \times p}$ ;  $i=1, 2, \dots, n$ ;  $j=1, 2, \dots, p$ ;

(I) First, the data standardization process to obtain standardized evaluation matrix  $X^* = (x_{ij})_{n \times p}$

$$x_{ij} = \frac{x_{ij}^* - \bar{x}_{ij}^*}{s_j^*}$$

In the formula,  $\bar{x}_{ij}^*$  and  $s_j^*$  they are indicators of the j-th sample mean and sample standard deviation.

(II) between the index calculated correlation coefficient matrix and eigenvalues  $\lambda_1 \geq \lambda_2 \geq \dots \geq \lambda_p \geq 0$  and regularization eigenvectors  $e_j$ .

(III) thus obtained main ingredient:  $Y_j = X e_j$

(IV) When the contribution rate of variance the main component  $\alpha_j = \lambda_j / p$  cumulative variance contribution rate  $\alpha = \sum_{j=1}^q \alpha_j$  reaches a certain value (usually not less than 80%), take the first q principal components  $Y_1, Y_2, \dots, Y_q, \dots$ , that is considered a component described p q information indicators.

(V) with a variance contribution ratio of each main component as weights, weighted linear summation of the total evaluation function

$$z_i = \sum_{m=1}^q \alpha_m y_{im} \quad m=1 \dots 2 \dots q$$

Through factor analysis calculated industrialization and urbanization of the total score, the results in the table below:

Table 3 normalized industrialization, urbanization composite score

1990--2013 and urbanization of the industrial composite score		
Year	Industrialization composite score	Urbanization composite score
1990	0.115	0.000
1991	0.000	0.056
1992	0.054	0.066
1993	0.163	0.112
1994	0.093	0.256

1995	0.090	0.331
1996	0.170	0.312
1997	0.123	0.397
1998	0.108	0.408
1999	0.122	0.445
2000	0.163	0.276
2001	0.212	0.311
2002	0.242	0.169
2003	0.232	0.257
2004	0.307	0.332
2005	0.411	0.346
2006	0.437	0.435
2007	0.475	0.571
2008	0.577	0.518
2009	0.599	0.664
2010	0.765	0.732
2011	0.862	0.792
2012	0.885	0.856
2013	1.000	1.000

Through factor analysis calculated industrialization and urbanization overall score, industrialization and urbanization, the overall strength of quantization. As can be seen from Table 3, 1990 to 2013, ranking substantially from low to high, from the side reflects Xinjiang industrialization and urbanization continues to improve.

Before co-integration model, ADF test is usually necessary to determine the data is a single whole. If there is no unit root sequence, compared with stationary series. Therefore, it is necessary to industrialization composite index score (X) and sequence of Urbanization Composite Index scores (Y) sequence ADF test.

Table 4 unit root test results

variable	Inspection form					
	ADF test	(c, t, k)	Threshold (5%)	Result	Threshold (10%)	Result
X	4.726206	c,t,1	-3.012363	Not smooth	-2.646119	Not smooth
$\Delta X$	-0.865704	c,t,1	-3.020686	Not smooth	-2.650413	Not smooth
$\Delta^2 X$	-4.385298	c,t,1	-3.02997	smooth	-2.655194	smooth
Y	0.14318	c,t,1	-3.012363	Not smooth	-2.646119	Not smooth
$\Delta Y$	-1.558914	c,t,1	-3.020686	Not smooth	-2.650413	Not smooth
$\Delta^2 Y$	-3.784726	c,t,1	-3.02997	smooth	-2.655194	smooth

Looking at the results from the ADF test, at 5% and 10% significance level, second-order differential unit root test two sets of data are single whole, for a smooth sequence, can be co-integration test.

In reality, the collected time series are generally not smooth, although we can use the difference to make it smooth, but doing so the total amount of long-term data will be lost, but the long-term amount of information is necessary, so using co-integration to resolve this issue.

Table 5 residuals unit root test

Null Hypothesis: D(E,2) has a unit root

Exogenous: None

Lag Length: 0 (Automatic based on SIC, MAXLAG=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.040617	0.004
Test critical values:	1% level	-2.669359	
	5% level	-1.956406	
	10% level	-1.608495	

As shown in Table 5, at 1%, 5% and 10% significance level three, the threshold unit root is -2.669359, -1.956406 and -1.608495. The value of the test statistic T is -3.040617, less than the critical value, reject H0, explains the absence of unit root residual sequence, sequence X and Y co-integration relationship.

Granger causality test is to examine whether the method sequence x y sequence generated using reason, the null hypothesis is rejected, is the Granger reason, on the contrary, is not. Here is the Granger test to Xinjiang urbanization and industrialization result if there is a causal relationship.

Table 6 Granger test results

Lag	Null Hypothesis:	Obs	F-Statistic	Prob.	Result
1	Y does not Granger Cause X	23	2.5855	0.1235	Refuse
	X does not Granger Cause Y	23	11.1708	0.0032	Refuse
2	Y does not Granger Cause X	22	0.45623	0.6412	accept
	X does not Granger Cause Y	22	5.27484	0.0165	Refuse
3	Y does not Granger Cause X	21	2.03784	0.1548	Refuse
	X does not Granger Cause Y	21	5.87621	0.0082	Refuse
4	Y does not Granger Cause X	20	1.16151	0.3792	Refuse
	X does not Granger Cause Y	20	4.9278	0.016	Refuse

As it can be seen from Table 7 at the 10% significance level, from the first-order lag situation, the industrialization and urbanization of the total score X and Y is the reason the results of the total score. Instructions, industrialization and urbanization has a strong causality; in the case of the second order lag, urbanization, industrialization is the reason described in the industrialization lag of two situations will affect the construction of urbanization. In the lag order of 3 and 4, when industrialization and urbanization there is a long-term relationship, but the impact of the case, as the case of industrial construction and urban construction may be completed.

By Xinjiang industrialization and urbanization co-integration analysis, the following results:

From the co-integration relations, co-integration relationship between industrialization and urbanization of Xinjiang is more significant that there is a long-term stable equilibrium relationship between industrialization and urbanization. Xinjiang industrialization and urbanization of interaction, can rely on the development of urbanization industrialization drive. Growing industrialization, industry has brought economic growth continued to strengthen, so that industry gathering, gathering talent, technology aggregation, help to improve the urban scale, so that the town expanding, people's living standards continue to improve. At the same time, the development of urbanization accumulated social wealth for the development of the construction industry to provide sufficient financial and material resources and basic conditions. Perfection, upgrade electricity and other modern energy systems transportation equipment have accelerated the process of industrialization.

Description Xinjiang role in promoting the industrialization and urbanization of the relatively small, probably Xinjiang urbanization lags behind economic development arising. But industrialization and urbanization in Xinjiang long-term relationship exists, industrialization lagged two periods in the case of urbanization construction will have an impact, as well as by the impact of industrial construction, urban construction and other aspects of the policy.

## Countermeasures and Suggestions

Overall the level of urbanization and industrialization in Xinjiang is low. Economic development should be coordinated with the development of society, therefore, should learn from the development experience of Xinjiang, eastern and central regions of the country, the implementation of new industrialization, new urbanization development strategy, enhance the comprehensive economic strength of Xinjiang.

Xinjiang to increase investment, to encourage public investment, encourage enterprises and research institutions and universities signed an agreement to jointly develop high-tech, but also to the introduction of high-tech and advanced technical personnel to enhance their own research capacity building. At the same time, expand the scale of Xinjiang students to deepen exchanges and cooperation between neighboring countries personnel. Strengthen scientific and technological cooperation between international, promote scientific and technological personnel exchanges, padded short board, Xinjiang talent, cultivate export-oriented talents with international vision. Xinjiang enterprises can also cooperate with other well-known domestic and foreign enterprises and the introduction of their advanced technology and management mode. Jointly by the government and eventually participate in the coordinated development plan to improve the technical personnel benefits, retain Xinjiang capital, technology, talent, but also to take advantage of the economic belt of the Silk Road's interesting to other domestic and foreign capital, technology and talent to the *common* construction in Xinjiang.

In carrying out urbanization, to take advantage of the conditions, such as the Silk Road, the main line of development of cities, urban point axis to form economic zone. Rational use of regional advantages and promotes the development of urbanization highway and rail line nearby. Northern city relatively dense network formula for expansion based development model. Should strengthen the effect of urban aggregation, the implementation of regional economic integration, such as the integration of Urumqi and Changji, Kui Wu alone integration, integration and so on stone Sharma; southern city scarce, underdevelopment, needs to drive one of the few big cities the region's economic development. The city as the center, connected with the small towns along traffic routes, and economic development along the route. Pakistan economic corridor construction segment in China try to take care of small towns along the route, in order to promote urban development in Kashi Prefecture. The southern border of the city center, such as: Kashi City, the city of Korla, Aksu City. Significant economic impact in the region, should be the top priority. Corps mission field region should play a central radiation function, mission planning and construction of the first section and then promote the development of each region's Farms. Corps and local coordination and cooperation, and promote the development of small towns in the mission field.

Industrialization and urbanization in Xinjiang is the mutual influence and promote each other, there is a long-term relationship between them, industrialization in certain circumstances can be regarded as the level of development of urbanization, and vice versa. From the empirical analysis, every 1 percentage point increases industrialization, urbanization will have a corresponding increase, although not immediately industrialized building can promote the development of urbanization, but it will have a significant impact in a year or two later, long-term and stable relationships between them. Therefore, the adjustment of industrial structure, strengthening of industrial infrastructure and encourage private enterprises to strengthen the development of leading-led enterprises. Through the construction of industrial parks, in order to point, the formation of regional industrial system, accelerate industrial agglomeration. And make full use of regional advantages and policy, through the construction of the Silk Road economic belt core area, and actively guide enterprises to go out.

We should ultimately to promote export-oriented industrialization and urbanization Social Development.

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### **Reference**

- [1] Han Yonghui, Luo Xiaofei. Competition and Complementarity Between China and West Asia Trade Cooperation - To "All The Way Along The" Strategic Background World Economy Research 2015-03-25.
- [2] Li Guangshun. Thoughts of Xinjiang Urbanization Development Issues [J]. Xinjiang University, 2008, (3): 18-22.
- [3] Li Gang. China's Industrialization and Urbanization Research Coordination [J]. Economic Issues. 2013-05-01.
- [4] Wang Kenian. Thinking Small Towns of Xinjiang [J]. Realistically, 2007, (4): 33-34.
- [5] Fan Wen. WHO Urbanization and Industrialization Relationship Analysis and Judgment of [J]. Research In The World, 2006 (7): 45-47.

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