Research on the Policy Support Mechanism for Constructing Russia Border Free Trade Zone

Hong-Xia RONG
Harbin Finance University, Harbin, Heilongjiang, China, 150030
64280034@qq.com

Keywords: Free Trade Zone, Policy Support, AHP.

Abstract. Cooperation between China and Russia in border area is crucial. The two governments should establish a border free trade zone at an early date. Relevant policies must be adjusted for build the Russia border free trade zone, and the support of fiscal and taxation policies is particularly important. Considering the realistic feasibility factors, the feasibility and obstacles of the construction of the Russia border free trade zone all exist, but the feasibility is more than the obstacles. This article is based on this; explore the dynamic mechanism for building policy support for the Russia border free trade zone. The internal power and the external power promote each other and influence each other to promote the development of Russia border trade, and use the analytic hierarchy process to test the factors affecting the construction of the Russia border free trade zone policy support mechanism.

The Construction of the China-Russia Border Free Trade Zone Policy Support Dynamic Mechanism

External Dynamic Mechanism
The external driving force for its development is mainly composed of external powers such as policy support, bilateral trade demand between China and Russia, and resource endowment factors.

Policy Support
The support for the establishment of the Russia border free trade zone policy is inseparable from the government direction, and the cooperation of relevant departments, it also involves the behavior of both the government and the enterprise, which requires mutual participation and cooperation.

Bilateral Trade Demand
Demand effectively drives supply. Market demand is a key external factor driving the development of Russia bilateral industries and enterprises. Without demand, the development of Russia border trade will be slow or even stagnant.

Resource Endowment Elements
Resource endowment, also known as factor endowment, refers to a country's various factors of production, including labor, capital, land and other aspects. Labor and land resources are key factors in promoting economic and industrial development. The Chinese side has abundant labor resources, and Russia has vast land resources, and the two sides complement each other.

Intrinsic Dynamic Mechanism
The internal driving force for the development of Russia border trade mainly comes from the internal development of the industry. With the support of the policy, the forces formed by the internal spontaneous development promote its development. The internal driving force of Russia border trade development mainly includes enterprise factors and economic interests.
**Enterprise Factor**

Enterprises are the specific units of activities in the construction of the Russia border free trade zone and have an important status and role. The willingness of enterprises to participate, the leading role of leading enterprises and the strength of enterprises may affect the policy support of the Russia border free trade zone.

**Economic Interest Factors**

The Russia border free trade zone involves different economic entities, involving relationships such as government, enterprises, and markets. The pursuit of the themselves greatest interests by different economic entities contributes to the occurrence of economic activities and promotes the formation and development of market relations.

**The Impact Analysis of the Dynamic Mechanism based on Policy Support**

By analyzing the dynamic mechanism of policy support, use the analytic hierarchy process to determine the weight of the influencing factors, and the index factors affecting the construction of the Russia border free trade zone policy support dynamic mechanism are empirically analyzed.

**Research Methods**

The Analytic Hierarchy Process (AHP) is a hierarchical weighted decision analysis method proposed by Thomas L. Saaty, a US operations researcher and professor at the University of Pittsburgh (Thomas L. Saaty, 1980). The steps to determine the weight of the indicator using the AHP method are as follows:

**Construct a Recursive Hierarchical Model**

Firstly, the factors affecting the final evaluation problem are divided into different levels. The indicators at the same level are independent of each other. They are dominated by the upper level indicators and dominate the next level indicators to form a recursive hierarchical structure model, as shown in Table 1.

| μ1   | μ2   | μ3   | …   | μm |
|------|------|------|-----|-----|
| μ11  | μ12  | μ13  | …   | μ1m |
| μ21  | μ22  | μ23  | …   | μ2m |
| …    |      |      |      |     |
| μn1  | μn2  | μn3  | …   | μnm |

**Constructing a Judgment Matrix**

The judgment matrix is the importance comparison between the indicators, using the "1-9" scale table. If the recursive hierarchy model is determined, the affiliation between the indicators is also determined. For the n indicators of the same level, by analysis the importance of two-two indicators, a comparison judgment matrix A={aij} satisfying the following conditions is obtained, as shown in Table 2.
### Table 2, Scale of the judgment matrix

| Scale | Meaning |
|-------|---------|
| 1     | means that two factors are of equal importance |
| 3     | means one factor is slightly more important than another factor |
| 5     | means one factor is more important than another factor |
| 7     | means one factor is obviously more important than another factor |
| 9     | means that one factor is absolutely much more important than another factor |
| 2, 4, 6, 8 | the median of the above adjacent scales |
| reciprocal | importance comparison after two reciprocal corresponding factors exchange order |

### Calculate the Weights of Indicators at All Levels

According to the judgment matrix, the steps for calculating the weights of the indicators at each level are as follows:

1. Calculate the product of each row element of the judgment matrix $M_i$:

\[
M_i \cdot b_i = \prod_{j=1}^{n} a_{ij}, i = 1, 2, 3, \ldots, n
\]  

2. Calculation $M_i$ Nth root square:

\[
\bar{W}_i = \sqrt[n]{M_i}, i = 1, 2, 3, \ldots, n.
\]

3. Pair vector

\[
\bar{W} = \left(\frac{1}{\bar{W}_1}, \frac{1}{\bar{W}_2}, \ldots, \frac{1}{\bar{W}_n}\right)
\]

4. Normalize and calculate as follows:

\[
\bar{W}_i \text{ is the weight of each indicator sought}
\]

### Calculate the Maximum Eigenvalue of the Judgment Matrix

\[
\lambda_{\text{max}} = \sum_{i=1}^{n} \left(\bar{A} \cdot \bar{W} \right)_i
\]

in the formula:

\[
\bar{A} \cdot \bar{W} = \begin{bmatrix}
    a_{11} & a_{12} & \cdots & a_{1n} \\
    a_{21} & a_{22} & \cdots & a_{2n} \\
    \vdots & \vdots & \ddots & \vdots \\
    a_{n1} & a_{n2} & \cdots & a_{nn}
\end{bmatrix}
\]

\[
(A \cdot W) = a_{11} \cdot W_1 + a_{12} \cdot W_2 + \cdots + a_{1n} \cdot W_n
\]

### Consistency Test

Consistency is an important indicator to evaluate whether the score is reasonable. The purpose of consistency check on the evaluation result of the judgment matrix is to measure the validity of the hierarchical order. Because the judgment matrix is quantified by relevant scholars and experts based on subjective experience, it is impossible to be completely Consistency. T. L. Saaty is proposed by determining the value of $C\cdot R$, the random consistency ratio (Thomas L. Saaty, 1980). $C\cdot R$ is calculated as: $C\cdot R = C\cdot I / R\cdot I$. When $C\cdot R < 0.1$, it means that the judgment result of the comparison
matrix can be accepted, and the consistency is satisfied. Where R•I is the average random consistency indicator, which is related to the order n of the judgment matrix.

\[ \lambda = \frac{1}{n} \sum_{i=1}^{n} \frac{(A \cdot W_i)}{W_i} \]

First, calculate the consistency indicator C•I: C•I=(\lambda_{max}- n)/(n-1). And In this formula: A: is the known judgment matrix; n: judgment matrix order; Wi: relative weight column vector.

Secondly, check R•I, which is the average consistency index of the same order matrix.

Finally, calculate the consistency ratio C•R. C•R=C•I/R•I, when C•R=0, A has complete consistency. When C•R<0.1, A has satisfactory consistency. When C•R≥0.1, A has unsatisfactory consistency and should be adjusted or discarded.

The same order matrix average consistency index R•I is shown in Table 3.

| Order n | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| R•I     | 0.0 | 0.0 | 0.58| 0.90| 1.12| 1.24| 1.32| 1.41| 1.45|

Establishment of Indicator System of Influencing Factors

Through the above analysis, we select a number of specific indicators to analyze the factors affecting the construction of the China-Russia border free trade zone policy support dynamic mechanism, and construct the indicator system as shown in Table 4, the indicator meaning and economic significance are all reflected in the table.
Table 4, Index system of influencing factors for constructing China-Russia border free trade zone policy support dynamic mechanism

| Classification          | Specific factors          | Meaning                                                                                   |
|-------------------------|---------------------------|--------------------------------------------------------------------------------------------|
| **Extrinsic motive**    |                           |                                             | **Policy support factor**                   |                                             |
|                         |                           |                                             | 1) Policy direction                         | Includes financial support, public goods    |
|                         |                           |                                             | supply, tariff policy, value added tax,     |
|                         |                           |                                             | income tax policy, tax incentives, etc.     |
|                         |                           |                                             | 2) Fiscal and tax policy                    |                                             |
|                         |                           |                                             | Including offshore financial development,   |
|                         |                           |                                             | policy financial services, RMB internationalization, etc. |
|                         |                           |                                             | 3) Financial policy                         |                                             |
|                         |                           |                                             | Including policy environment, policy system, etc. |
|                         |                           |                                             | 4) Industrial policy                        |                                             |
|                         |                           |                                             | Including industrial support industry,      |
|                         |                           |                                             | industrial development planning, etc.       |
|                         |                           |                                             | 5) Policy of the law                         |                                             |
|                         |                           |                                             | Including policy environment, policy system, etc. |
| **Market demand factor**| 6) Product requirements  | Reflecting the demand for Russian products                                               |
|                         | 7) Service requirements   | Reflecting the services of relevant departments to Russian trading enterprises            |
| **Resource endowment factor** | 8) Labor force   |                                                                                          |
|                         | 9) Capital                |                                                                                          |
|                         | 10) Land                  |                                                                                          |
| **Internal motivation** |                           |                                             | **Business factor**                          |                                             |
|                         |                           |                                             | 11) Enterprise participate willingness      |                                             |
|                         |                           |                                             | 12) Leading role of leading enterprises     | Mainly regionally renowned companies with industry leadership |
|                         |                           |                                             | 13) The strength of the enterprise itself   | Reflect corporate asset strength, brand value, etc. |
|                         |                           |                                             | 14) Technological innovation               | Reflecting the technological innovation and cooperation capabilities of Chinese and Russian companies |
| **Economic interest factor** | 15) Government interests |                                                                                          |
|                         | 16) Corporate interests   |                                                                                          |
|                         | 17) Other stakeholders    | Intermediary organization                                                                |

**Empirical Analysis of Influencing Factors**

In order to analyze the factors built in table 1 that influence the establishment of the Russia border free trade zone policy support dynamic mechanism, and comprehensively consider the advantages and disadvantages of various methods, this paper uses the analytic hierarchy process to study and try to rank the importance of the influencing factors. The factors that have a greater impact are selected in order to lay the foundation for the empirical analysis of the policy support for the construction of the Russia border free trade zone in the following chapters. Using the above method, the index system is sent to 60 experts for scoring, and then the MATLAB7.0 software editing program is used for calculation, and the weights of each index in each subsystem can be obtained (see Table 5 for details).
Table 5. The weight of built the indicator system of the influencing factors of the China-Russia border free trade zone policy support mechanism

| Classification          | Specific factors               | Weight          | Group weight | Overall weight | ordering |
|------------------------|--------------------------------|-----------------|--------------|----------------|----------|
| Extrinsic motive       | Policy support factor 0.3518   | 1) Policy direction | 0.2771       | 0.0975         | 2        |
|                        |                                 | 2) Fiscal and tax policy | 0.2619       | 0.0921         | 4        |
|                        |                                 | 3) Financial policy  | 0.1153       | 0.0406         | 1        |
|                        |                                 | 4) Industrial policy | 0.1343       | 0.0473         | 10       |
|                        |                                 | 5) Policy of the law | 0.2114       | 0.0744         | 5        |
| Market demand factor   | 0.1647                         | 6) Product requirements | 0.4194       | 0.0691         | 6        |
|                        | 0.1997                         | 7) Service requirements | 0.5806       | 0.0956         | 3        |
| Resource endowment     | 0.8) Labor force               | 0.1549          | 0.0309       | 15             |
| factor 0.1997          | 9) Capital                     | 0.2915          | 0.0582       | 8              |
|                        | 10) Land                       | 0.5536          | 0.1106       | 12             |
| Internal motivation     | Business factor 0.1772         | 11) Enterprise participate willingness | 0.3535       | 0.0627         | 7        |
|                        |                                 | 12) Leading role of leading enterprises | 0.3095       | 0.0549         | 9        |
|                        |                                 | 13) The strength of the enterprise itself | 0.203        | 0.036          | 13       |
|                        |                                 | 14) Technological innovation | 0.134        | 0.0238         | 17       |
| Economic interest factor| 0.1065                        | 15) Government interests | 0.409        | 0.0436         | 11       |
|                        |                                 | 16) Corporate interests | 0.2678       | 0.0285         | 16       |
|                        |                                 | 17) Other stakeholders | 0.3232       | 0.0344         | 14       |

The weights of the indicator system established by the analytic hierarchy process are shown in Table 5-5. The five major factors are policy support strength factors, resource endowment factors, enterprise factors, market demand factors, and economic interest factors. According to the expert’s opinions, the weights are: 0.3518, 0.1997, 0.1772, 0.1647, and 0.1065, that is, policy Supporting strength factors are the most important factors affecting the construction of the Russia border free trade zone, followed by resource endowment factors, enterprise factors, market demand factors, and economic interest factors.

In the calculation of the weight of specific indicators, experts are required to score the importance of the indicators in the group according to the above five categories of factors, and then use the AHP to calculate the weights within the group; the weights within the group are multiplied by the weights of the above five categories of factors. Calculate the overall weight, which is the weight of each indicator when they in the overall impact factor indicator system.

All the influencing factors can be ranked in order of importance according to the overall weight. We can know that the proportion of policy support factors is higher among the top 10 factors. And these factors are closely related to the support of the China-Russia border free trade zone policy.
Acknowledgement

This paper is supported by the research project of the basic research business fee of the provincial colleges and universities in Heilongjiang Province (key projects), the “construction and integration of financial and taxation financial policies, support for the construction of Longjiang Silk Road Belt” (Project No.: 2017-KYYWF-E0106)

References

[1] Wang Wenjing, Qi Dongsheng. Preliminary Thoughts on Tax Service China-ASEAN Free Trade Area [J]. Tax Research, 2017 (2).

[2] Yang Feihu, Yan Chaofei. Research on the Implementation Mechanism of China's Foreign Direct Investment under the "One Belt, One Road" Strategy [J]. Theoretical Discussion, 2015 (5).

[3] Chen Zhan, Zhou Guangren. Enterprise research on “Going Out”“Maritime Silk Road” [J]. Tax Research, 2017 (2).

[4] Chen Lin, Luo Liya. Research on the Policy Effect of China's Foreign Investment Barriers——Concurrently Discussing the Policy Dividend of Shanghai Free Trade Zone Reform[J].Economic Research, 2014 (4)