An Efficiency of Resource Allocation Research Based on DEA Within 30 Ethnic Minority Autonomous Prefectures

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Abstract. The 12th Five-Year is an important strategic opportunity period for the economic and social development in ethnic minority regions of China. The development strategy of ethnic minority areas should adhere to Scientific Outlook on Development as a guide, suit the measure to local condition, constantly optimize and improve the efficiency of resource allocation then further achieve economic and social scientific development with the national policy support for ethnic minorities. In this paper, the evaluation index system of input and output efficiency of resource allocation in Minority Autonomous Prefecture is established, and the DEA model is the main analysis tool for comparing China's resources allocation efficiency in 30 Ethnic Minority Autonomous Prefectures, and proposes some policy recommendations on optimization of resources allocation.

Keywords. DEA Model; Ethnic Minority Autonomous Prefecture; Resource Allocation.

1 Introduction

China is a multi-national country composed of 56 ethnic groups. To guarantee the construction and promotion of economic and social development in Ethnic Minority Areas, the Party and the Government design national regional autonomy system according to “Big Mixing-up, Small Inhabit” nation distribution characteristic and the historical evolution of Chinese nation. Among them, the ethnic minority autonomous prefecture is situated between the autonomy region and autonomy county level and unit, but also is a part of our local government. At present, there are 30 ethnic autonomous prefectures in Yunnan, Xinjiang and other nine provinces (see table 1).

Table 1. The Basic Situation of China's Ethnic Autonomous Prefecture.

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Autonomous Prefecture</th>
<th>Affiliation</th>
<th>Establishment Time</th>
<th>State Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMU(_1)</td>
<td>Korean Autonomous Prefecture of Yanbian</td>
<td>Jilin Province</td>
<td>1952-9-3</td>
<td>Yanji City</td>
</tr>
<tr>
<td>DMU(_2)</td>
<td>Tibetan Autonomous Prefecture of Gan'an</td>
<td>Gansu Province</td>
<td>1953-10-1</td>
<td>Hezuo City</td>
</tr>
<tr>
<td>DMU(_3)</td>
<td>Hui Autonomous Prefecture of Linxia</td>
<td>Gansu Province</td>
<td>1956-11-19</td>
<td>Linxia City</td>
</tr>
<tr>
<td>DMU(_4)</td>
<td>Tibetan Autonomous Prefecture of Yushu</td>
<td>Qinghai Province</td>
<td>1951-12-25</td>
<td>Jiegu Town</td>
</tr>
<tr>
<td>DMU(_5)</td>
<td>Tibetan Autonomous Prefecture of Hainan</td>
<td>Qinghai Province</td>
<td>1953-12-6</td>
<td>Qiabuqia Town</td>
</tr>
<tr>
<td>DMU(_6)</td>
<td>Tibetan Autonomous Prefecture of Huangnan</td>
<td>Qinghai Province</td>
<td>1953-12-22</td>
<td>Longwu Town</td>
</tr>
<tr>
<td>DMU(_7)</td>
<td>Tibetan Autonomous Prefecture of Haibe</td>
<td>Qinghai Province</td>
<td>1953-12-31</td>
<td>Xihai Town</td>
</tr>
<tr>
<td>DMU(_8)</td>
<td>Tibetan Autonomous Prefecture of Golog</td>
<td>Qinghai Province</td>
<td>1954-1-1</td>
<td>Dawu Town</td>
</tr>
<tr>
<td>DMU(_9)</td>
<td>Haixi Mongolian Tibetan Autonomous Prefecture</td>
<td>Qinghai Province</td>
<td>1954-1-25</td>
<td>Delingha City</td>
</tr>
<tr>
<td>DMU(_10)</td>
<td>Bayinguoleng Mongolian Autonomous Prefecture</td>
<td>Xinjiang Province</td>
<td>1954-6-23</td>
<td>Korla City</td>
</tr>
</tbody>
</table>

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Decision of the Central Committee on Some Major Issues Concerning Comprehensively Deepening the Reform was adopted at the Third Plenary Session of the 18th Central Committee of the Communist Party of China in which “improving the general transfer payment growth mechanism, focusing on increasing the growth of the transfer payment to minority areas and poor areas, accelerating the improvement of modern market system” have been presented. China’s natural resource bases are uneven in minority areas, the development degrees are different, economic and social development of ethnic minority regions are out of balance. This paper applies DEA model for quantitative comparison and analysis the resource allocation in ethnic autonomous prefectures in China in order to optimize the resources allocation, set some efficiency of differentiated support policy recommendations for the relevant government departments.

2 An analysis model of resource allocation efficiency in ethnic minority autonomous prefecture

Under specific product conditions, groups of various production factors inputs possible producing maximum output is the core of the economic production theory. The production possibility boundary which is described by production function in the production theory model is generally called production frontier. The gap between actual production status and production boundary reflects the efficiency level of the production, that is, the technical efficiency, which also is known as resource allocation efficiency, describes a degree of resource allocation for production factors. The study on measure of resource allocation efficiency began in 1957 by economist Farrell.
Michael, who oriented to production frontier ideas, developed and proposed the parametric method and nonparametric method for research of the production frontier. Parameter method needs to construct a specific production function, which estimates the function parameters in production frontier, completes constructing the frontier function parameters; The non parametric method does not require prior assumptions and estimate parameters to structure the concrete function form, but observe a large number of actual data according to a certain production efficiency standard to find the relative effective point in production frontier. Non parametric effect of production frontier theory—Data Envelopment Analysis (abbreviated as DEA) is put forward by U.S economist A. Charnes et al to appraise relative validity of decision making unit in 1978, which also is an econometrics method.

2.1 C²R Model and Comprehensive Efficiency Measure of Data Envelopment Analysis

Use DEA to determine the comprehensive efficiency of resources allocation, the general use of C²R model was determined and described as follows:

There are n decision making units (DMU), each of which has a m DMU type of "input X", as well as S type of "output Y". Record the input variable of the first j DMU as \( X_j = (x_{1j}, x_{2j}, \ldots, x_{mj}) \), \( j = 1, 2, \ldots, n \); the output variable of first j DMU is recorded as \( Y_j = (y_{1j}, y_{2j}, \ldots, y_{nj}) \), \( j = 1, 2, \ldots, n \). Using \( (X_j, Y_j) \) represents the first j decision making unit DMU\(_j\) and its data structure is shown in Table 2.

<table>
<thead>
<tr>
<th>v</th>
<th>DMU(_1)</th>
<th>DMU(_2)</th>
<th>…</th>
<th>DMU(_n)</th>
<th>u</th>
<th>DMU(_1)</th>
<th>DMU(_2)</th>
<th>…</th>
<th>DMU(_n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_1 )</td>
<td>( x_{11} )</td>
<td>( x_{12} )</td>
<td>…</td>
<td>( x_{1n} )</td>
<td>( u_1 )</td>
<td>( Y_{11} )</td>
<td>( Y_{12} )</td>
<td>…</td>
<td>( Y_{1n} )</td>
</tr>
<tr>
<td>( v_2 )</td>
<td>( x_{21} )</td>
<td>( x_{22} )</td>
<td>…</td>
<td>( x_{2n} )</td>
<td>( u_2 )</td>
<td>( Y_{21} )</td>
<td>( Y_{22} )</td>
<td>…</td>
<td>( Y_{2n} )</td>
</tr>
<tr>
<td>…</td>
<td>…</td>
<td>…</td>
<td>…</td>
<td>…</td>
<td>…</td>
<td>…</td>
<td>…</td>
<td>…</td>
<td>…</td>
</tr>
<tr>
<td>( v_m )</td>
<td>( x_{m1} )</td>
<td>( x_{m2} )</td>
<td>…</td>
<td>( x_{mn} )</td>
<td>( u_s )</td>
<td>( Y_{s1} )</td>
<td>( Y_{s2} )</td>
<td>…</td>
<td>( Y_{sn} )</td>
</tr>
</tbody>
</table>

Table 2. N Decision Making Unit DMU Input and Output Data Structure.

Setting \( v=(v_1, v_2, \ldots, v_m)^T \) represents m input indicator corresponding to the weight coefficient vector, Setting \( u=(u_1, u_2, \ldots, u_s)^T \) represents s output indicator corresponding to the weight coefficient vector, so each decision making unit DMU\(_j\) has corresponding efficiency evaluation index:

\[
h_j = \frac{u^T Y_j}{v^T X_j} \leq 1, j=1, 2, \ldots, n \quad (1)
\]

Proper choice of the weight coefficient of \( v \) and \( u \), makes them meet \( h_j \leq 1, j=1, 2, \ldots, n \). Evaluate the efficiency of j\(_0\) decision making unit DMU\(_{j_0}\) \((X_{j_0}, Y_{j_0})\). For any DMU\(_j\), the production possibility set is:

\[
T = \left\{ (X, Y) \mid \sum_{i=1}^m X_i \lambda_i \leq X, \sum_{j=1}^s Y_j \lambda_j \geq Y, \lambda_i \geq 0, j=1, 2, \ldots, n \right\}
\]

Construct the following maximization model (\( P_2 \)):

\[
\max_{\mu} \frac{Y_0}{\mu^T X_0} = V_{p2}
\]

\[
\text{s.t.} \quad h_j = \frac{v^T Y_j}{v^T x_j} \leq 1, j=1, 2, \ldots, n
\]

\[
v \geq 0, u \geq 0
\]

\[
(2)
\]

let \( t=1/(v^T X_0), w = tv, \mu = tu \), using Charnes-Cooper transformation, \( P_2 \) can be described as an equivalent linear programming problem (\( P_1 \)) (that is, C²R model):

\[
\max_{\mu} \frac{Y_0}{\mu^T x_j} - u^T Y_j \geq 0, j=1, 2, \ldots, n
\]

\[
w^T x_j = 1
\]

\[
w^T x_0 = 0
\]

\[
w \geq 0, \mu \geq 0
\]

\[
(3)
\]

Given the following C²R model DEA effective definition:

If Optimal solution of linear programming problem (\( P_1 \)) \( w_0 \) and \( u_0 \) meet \( V_{p1}=u_0^T Y_0=1 \), the DMU\(_{j_0}\) is called weak DEA efficiency; if the linear planning problems (\( P_1 \)) has an optimal solution of \( w_0 \) and \( u_0 \) meet the \( V_{p1}=u_0^T Y_0=1, w_0>0, u_0>0 \), DMU\(_{j_0}\) is called DEA efficiency.

The Non Aqi Mead infinitesimal \( \varepsilon \) is introduced into C²R model which is described as (\( P_{1c} \)):

\[
\max_{\mu} \frac{Y_0}{\mu^T x_j} - u^T Y_j \geq 0, j=1, 2, \ldots, n
\]

\[
w^T x_j = 1
\]

\[
w^T x_0 = 0
\]

\[
(4)
\]
where, \( e^T = (1, 1, \ldots, 1) \in E_m \) \( e^{T*} = (1, 1, \ldots, 1) \in E_m \) \( e \) is Non Aqi Mead infinitesimal.

Introducing variable \( s^- \) and \( s^+ \), pairing C^2R model (D_{i0}) is:

\[
(D_{i0}) = \begin{align*}
& \min \left[ 0 - \varepsilon (e^{-T S^-} + e^{+T S^+}) \right] = V_{D1} \\
& \text{s.t.} \\
& \sum_{j=1}^{n} \lambda_j X_j - s^- = 0 X_0 \\
& \sum_{j=1}^{n} \lambda_j Y_j - s^+ = 0 Y_0 \\
& \lambda_j, j = 1, 2, \ldots, n \\
& s^- \geq 0, s^+ \geq 0
\end{align*}
\]

(5)

Suppose the optimal solution of C^2R model (D_{i0}) are \( \lambda^*, s^*, s^* \theta^* \), when \( \theta^* = 1 \), and \( s^- = 0, s^* \neq 1 \), the DMU_{j0} is non DEA efficient. According to C^2R model operation results (0 \leq \theta \leq 1) is comprehensive efficiency of decision making unit.

2.2 Data Envelopment Analysis BC^2 Model and Scale Efficiency and Technical Efficiency Measurement

The scale efficiency and technical efficiency of resource allocation were determined by DEA, and the BC^2 model was used.

There is a hypothesis in prior C^2R model (D_{i0}): C^2R model (D_{i0}) is scale invariant, the hypothesis is very strict, and difficult to meet this condition in practice. So, adding a convexity assumptions in the C^2R model (D_{i0}); \( \sum_{j=1}^{n} \lambda_j = 1 \), then production possibility set becomes as follows:

\[
T_{BC^2} = \left\{ (X, Y) \mid \sum_{j=1}^{n} X_j \lambda_j \leq X, \sum_{j=1}^{n} Y_j \lambda_j \geq Y, \sum_{j=1}^{n} \lambda_j = 1, \lambda_j \geq 0, j = 1, 2, \ldots, n \right\}
\]

After removing cone condition in C^2R model, make DEA efficiency evaluation which is the input of the DEA model—the BC^2 model \( (P_2) \), bases on the production possibility set \( T_{BC^2} \):

\[
(P_2) = \begin{align*}
& \max \left( \mu Y_0 + u_0 \right) = V_{P2} \\
& \text{s.t.} \\
& w^T X_j - \mu^T Y_j - u_0 \geq 0, j = 1, 2, \ldots, n \\
& w^T X_0 = 1 \\
& w \geq 0, \mu \geq 0
\end{align*}
\]

(6)

And dual problem DEA model -- BC^2 model (D_2):

\[
(D_2) = \begin{align*}
& \min \ \theta = V_{D2} \\
& \text{s.t.} \\
& \sum_{j=1}^{n} X_j \lambda_j \leq 0 X_0 \\
& \sum_{j=1}^{n} Y_j \lambda_j \geq 0 Y_0 \\
& \sum_{j=1}^{n} \lambda_j = 1 \\
& \lambda_j \geq 0, j = 1, 2, \ldots, n
\end{align*}
\]

(7)

Introduce Non Aqi Mead infinitesimal \( \varepsilon \) in DEA model—BC^2 model, get BC^2 model (P_{2\varepsilon}):

\[
(P_{2\varepsilon}) = \begin{align*}
& \max \left( \mu Y_0 + \mu_0 \right) = V_{P2\varepsilon} \\
& \text{s.t.} \\
& w^T X_j - \mu^T Y_j - \mu_0 \geq 0, j = 1, 2, \ldots, n \\
& w^T X_0 = 1 \\
& w^T e^{-T} \mu \geq \varepsilon e^{+T}
\end{align*}
\]

(8)

Where, \( e^T = (1, 1, \ldots, 1) \in E_m \) \( e^{T*} = (1, 1, \ldots, 1) \in E_m \) \( e \) is Non Aqi Mead infinitesimal.

When introduction of variable \( s^- \) and \( s^+ \), dual BC^2 model (D_{2\varepsilon}) is:

\[
(D_{2\varepsilon}) = \begin{align*}
& \min \left[ 0 - \varepsilon (e^{-T S^-} + e^{+T S^+}) \right] = V_{D2\varepsilon} \\
& \text{s.t.} \\
& \sum_{j=1}^{n} \lambda_j X_j + s^- = 0 X_0 \\
& \sum_{j=1}^{n} \lambda_j Y_j - s^+ = 0 Y_0 \\
& \sum_{j=1}^{n} \lambda_j = 1, \lambda_j \geq 0, j = 1, 2, \ldots, n \\
& s^- \geq 0, s^+ \geq 0
\end{align*}
\]

(9)

In which, \( e^T = (1, 1, \ldots, 1) \in E_m \) \( e^{T*} = (1, 1, \ldots, 1) \in E_m \) \( e \) is Non Aqi Mead infinitesimal.

Suppose the optimal solution of C^2R model (D_{2\varepsilon}) are \( \lambda^*, s^-, s^+ \theta^* \), when \( \theta^* = 1 \), and \( s^- = 0, s^+ = 1 \), the DMU_{j0} is DEA effective; when \( \theta^* < 1 \) or \( s^- = 0, s^+ \neq 1 \), the DMU_{j0} for non DEA effective.
In short, the previous C²R model represents the comprehensive effect of the evaluated object, while the BC² model represents the technical efficiency of the evaluated object, that is, the BC² model operating results \(0(0≤θ≤1)\) is to be evaluated technical efficiency.

### 3 Evaluation indicators system of resource allocation efficiency in ethnic minority autonomous prefecture

Efficiency refers to the relationship between input and output or cost and benefit, and its essence is the general name of effective resources allocation, input versa output capability. the efficiency of evaluation object, according to different purposes of study, can be divided into technical efficiency, scale efficiency and comprehensive efficiency. Among them, the technical efficiency reflects the ability of the maximum output, while the scale efficiency reflects the suitability of the investment scale. Using C²R model to determine the comprehensive efficiency and utilization BC² models to determine the technical efficiency, can get scale efficiency = comprehensive efficiency/ technical efficiency, and then comprehensive measure evaluated object scale efficiency, technical efficiency and overall efficiency as well as efficiency comparison in similar evaluated object.

#### 3.1 Input Indicator

Resource allocation efficiency of the input indicators mainly include three aspects of human, financial and material resources, capital investment and human capital which constitute the basic elements of economic development, especially the contradiction between economic development and demand for talent becomes an important factor restricting in minority areas. Generally selecting the number of people with a certain degree of education as a measure of indicator, this paper replaces permanent resident population as this indicator. China has increased the financial support to the minority regions, such as high speed growth of fixed assets investment and the scale of fiscal expenditure. Therefore, selection of permanent resident population, financial expenditure, fixed assets investment as Input Indicators to measure the efficiency of resources allocation.

#### 3.2 Output Indicator

Local fiscal revenue is an indicator of regional comprehensive strength, which shows the financial resources of local government as well as a very important role in measuring the efficiency of resource allocation in a region. Average capita fiscal revenue is an important indicator to measure economic development and economic strength for a country or a region, GDP reflect the new creation value, and it is the final outcome of the national economic activities. Urban disposable income and rural per capita net income indicate free disposable income of urban residents and the development of rural economy, respectively. Therefore, in this paper, selection of local fiscal revenue, GDP, per capita income, urban disposable income, rural per capita net income as output indicators for measure of resource allocation efficiency. The concrete index system is shown in Table 3

<p>| Table 3. Evaluation Index System of Resource Allocation Efficiency in Minority Autonomous Prefecture. |</p>
<table>
<thead>
<tr>
<th>Primary Index</th>
<th>Secondary Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input</strong></td>
<td></td>
</tr>
<tr>
<td>Permanent Resident Population</td>
<td></td>
</tr>
<tr>
<td>Plant Asset Investment</td>
<td></td>
</tr>
<tr>
<td>Per Capita Fiscal Expenditure</td>
<td></td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td></td>
</tr>
<tr>
<td>Local Fiscal Revenue</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td></td>
</tr>
<tr>
<td>Per Capita Fiscal Revenue</td>
<td></td>
</tr>
<tr>
<td>Urban Disposable Income</td>
<td></td>
</tr>
<tr>
<td>Rural Per Capita Net Income</td>
<td></td>
</tr>
</tbody>
</table>

### 4 Determination of resource allocation efficiency based on the c2r model and bc2 model in minority autonomous prefecture

Import input indicators and output indicators data for 30 Minority Autonomous Prefecture into DEAP2.1 software, resource allocation efficiency results based on C²R and BC² model are showed in table 4.

Table 4 shows that the technical efficiency of the 30 minority autonomous prefecture is 0.918, the average technical efficiency is 0.949. From its resource allocation efficiency score, it’s known that a total of 18 ethnic
autonomous prefectures are DEA effective, which represent resource allocation efficiency optimized when input fixed.

Among them there are 12 Minority Autonomous Prefecture of resource allocation with non DEA effective, DMU14, DMU15 pure technical efficiency value is 1.000, which indicate that the 2 Minority Autonomous Prefecture with non DEA effective because of low scale efficiency, requiring reasonable control scale of investment to improve the efficiency of resource allocation; the comprehensive technical efficiency and pure technical efficiency of DMU2, DMU3, DMU4, DMU5, DMU6, DMU7, DMU8, DMU9, DMU10, DMU11, DMU12, DMU13 do not equal to 1.000, indicating that the non DEA effective results from not only inappropriate scale of inputs but also lower output level. According to the 10 Minority Autonomous Prefecture, the improvement measurements are put forward by introducing slack variables into DEA model. Analysis for Resource allocation efficiency in 30 Minority Autonomous Prefecture, non DEA effective accounts for 40%, which shows that there is a great potentiality in resource allocation in the Minority Autonomous Prefecture.

Table 4. Efficiency of Input–Output in China’s Minority Autonomous Prefectures.

<table>
<thead>
<tr>
<th>Decision Making Module</th>
<th>Technical Effective</th>
<th>Pure Technical Efficiency</th>
<th>Scale Efficiency</th>
<th>Appraisal Result</th>
<th>Scale Efficiency State</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMU1</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU2</td>
<td>0.593</td>
<td>0.678</td>
<td>0.874</td>
<td>Non DEA Effective</td>
<td>Decreasing</td>
</tr>
<tr>
<td>DMU3</td>
<td>0.603</td>
<td>0.620</td>
<td>0.974</td>
<td>Non DEA Effective</td>
<td>Decreasing</td>
</tr>
<tr>
<td>DMU4</td>
<td>0.663</td>
<td>0.881</td>
<td>0.752</td>
<td>Non DEA Effective</td>
<td>Decreasing</td>
</tr>
<tr>
<td>DMU5</td>
<td>0.779</td>
<td>0.817</td>
<td>0.954</td>
<td>Non DEA Effective</td>
<td>Decreasing</td>
</tr>
<tr>
<td>DMU6</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU7</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU8</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU9</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU10</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU11</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU12</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU13</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU14</td>
<td>0.943</td>
<td>1.000</td>
<td>0.943</td>
<td>Non DEA Effective</td>
<td>Decreasing</td>
</tr>
<tr>
<td>DMU15</td>
<td>0.988</td>
<td>1.000</td>
<td>0.988</td>
<td>Non DEA Effective</td>
<td>Increasing</td>
</tr>
<tr>
<td>DMU16</td>
<td>0.778</td>
<td>0.780</td>
<td>0.997</td>
<td>Non DEA Effective</td>
<td>Increasing</td>
</tr>
<tr>
<td>DMU17</td>
<td>0.813</td>
<td>0.900</td>
<td>0.904</td>
<td>Non DEA Effective</td>
<td>Decreasing</td>
</tr>
<tr>
<td>DMU18</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU19</td>
<td>0.899</td>
<td>0.942</td>
<td>0.955</td>
<td>Non DEA Effective</td>
<td>Decreasing</td>
</tr>
<tr>
<td>DMU20</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>DEA Effective</td>
<td>Invariable</td>
</tr>
<tr>
<td>DMU21</td>
<td>0.973</td>
<td>0.978</td>
<td>0.995</td>
<td>Non DEA Effective</td>
<td>Increasing</td>
</tr>
<tr>
<td>DMU22</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
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In 30 Minority Autonomous Prefecture, 18 of which are scale efficiency invariable, 9 of which keep decreasing state, 3 of which keep increasing state, and the proportion are 60%, 30% and 10% respectively.

Those show that the scale efficiency of the 30 minority autonomous prefecture keep the same or increasing state. The reason is that in recent years, China government increase input in Minority Autonomous Prefecture. For the Minority Autonomous Prefecture of decreasing scale efficiency, it should be appropriately controlled to increase output efficiency. For the Minority Autonomous Prefecture with increasing scale efficiency, it should be appropriate to expand the scale of investment in order to improve the efficiency of input-output.

5 Policy suggestion

From the above analysis, this paper proposes some suggestions to optimize Minority Autonomous Prefecture resource allocation efficiency.

5.1 Adhere to the Principles of Classified Guidance

The reasons for non DEA effective in Ethnic Minority Autonomous Prefecture resource allocation are different, therefore, we should first find out the factors ineffective of resource allocation, then optimize resources allocation measures in the Minority Autonomous Prefecture to improve the efficiency of resource allocation. In view of the low efficiency of resource allocation, the investment scale of fixed assets should be controlled, guide direction of investment, optimize the structure of fiscal expenditure and establish the regional economic and social development to match the personnel training plan, strengthen the construction of talent team according to the actual need; for resource allocation problems resulting from pure technical efficiency, not only need reasonable adjustments of fixed assets, fiscal expenditure scale and structure, but also pay attention to strengthen the building of local resources, maintain a certain economic growth rate, improve urban disposable income and rural per capita income to improve the efficiency of resource allocation.

5.2 Implement of Differentiated National Support Policies

China's natural resource bases in ethnic minority regions are with traits of uneven, different levels of economic and social development, weak self accumulation capacity, especially require funding support. But the "GSP" financial support without considering the actual needs of local, the pertinence is not strong. Therefore, it should differentiate national funds support policy, establish national regions transfer payment mechanism according to the input redundancy and output shortfall analysis results; determine funding support level according to actual demands. All those can effectively improve the efficiency of resource allocation in minority regions.

5.3 Multiple Supports for Economic and Social Development in Minority Areas

The factors that affect the efficiency of resource allocation in ethnic areas from many aspects, such as insufficient investment scale, irrational industrial structure, uneven educational level and the difficulty of talent introduction, which affect their economic and social development. Resource allocation in minority areas needs national policy support, financial support, education and personnel support, but in every minority area of specific performance is not identical from only unilateral financial support to a full range of support. Therefore, when the state and the government take specific support steps for the minority regions, it is necessary to consider natural resource endowment, the degree of market development, economic and social development level, self accumulated ability factors. The implementation of multiple support programs, abandoning "foot painful medicine foot" and "headache medicine head".

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References


