

Study on the effect evaluation of business environment policy implementation

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Abstract: The business environment plays an important role in promoting economic development. It is an important thrust for China to achieve high-quality economic development, which has been highly concerned by the party and the state. Taking Mianyang City as an example, this paper discusses the effectiveness of the implementation of business environment policy, constructs the evaluation index system, and uses the global principal component analysis method to carry out the research. The results show that the government has actively promoted the effective implementation of various policies and achieved remarkable results. However, compared with developed cities, there is still a big gap. The growth rate of business environment optimization is slowing down, and government departments need to further improve various policies and promote implementation. Therefore, this paper puts forward countermeasures and suggestions from four aspects: government affairs, legal environment, social services and healthy economic environment, so as to provide important theoretical reference and guidance for improving the government's business environment and enhancing the effectiveness of policies.

1. Introduction

China's economy is in a new era of transition to high quality. According to the "2020 Doing Business Report" released by the World Bank, China ranked 31st among 190 economies in the world, up 15 places from 2019, and its business environment score increased by 4.62 points to 77.9 points. This shows that my country's policies and measures to optimize the business environment have achieved remarkable results, but there is still a big gap compared with the world's leading countries and regions. The practical problems presented in the process of business environment optimization need to be solved urgently. At the same time, it can be found that a good business environment is an important breakthrough for local governments to improve their regional strength, and local governments play a role that cannot be ignored in the process of optimizing the business environment.

In the era of the strategy of strengthening the country through science and technology, military enterprises play an important role as an important support for scientific and technological strength. This requires military enterprises to continuously improve the efficiency of resource allocation and production. The continuous deepening of the degree of marketization is an effective means to

promote the competitiveness of military enterprises. A good business environment is an important basis for marketization. Therefore, this paper takes China Science and Technology City-Mianyang City as an example to study the effectiveness of the implementation of business environment policies in the new era and put forward relevant suggestions to promote relevant government departments to actively implement various policies and measures to optimize the business environment. High-quality economic development.

2. Theoretical analysis and research assumptions

The positive impact of the business environment on short-term and long-term economic growth has been widely recognized. Lai Xianjin (2020) based on the business environment report released by the world bank, the research shows that there is a significant positive correlation between the business environment and economic growth. he Daxing et al. (2020) empirically analyzed that the optimization of the business environment will significantly improve the development quality of the economy. With the vigorous development of green and low-carbon economy, Zhao Desen et al (2021) from the perspective of entrepreneurship research, it is pointed out that the business environment has a significant positive impact on green economic growth, and shows the characteristics of first rising and then falling.

Through literature review and analysis, it is found that the business environment mainly affects economic growth from the following three aspects. First of all, the improvement of the business environment is conducive to improving the overall productivity and promoting economic development. Dawson (1998) studied the data of 90 countries (regions) from 1975 to 1990 and found that improving the business environment will significantly improve total factor productivity and reduce the economy's dependence on investment. Secondly, optimizing the business environment will help attract foreign direct investment (FDI) and improve capital accumulation. Piwonski (2010) the study found that the absorption of foreign direct investment will increase by US \$44 million every time a government's ranking of business environment increases. At the same time, azman Saini et al (2010) based on the world bank's business environment data from 1976 to 2004, it is found that when the level of foreign direct investment is equal, the better the business environment is, the more conducive it is to promote economic development. Finally, optimizing the business environment is conducive to stimulate market vitality and promote economic development. Cebula (2013) takes 30 OECD countries as an example The data of (region) from 2003 to 2006 are taken as the research object. The empirical study found that the optimization of business environment will help stimulate economic vitality and improve per capita income. Xiong Kaijun (2020) pointed out that the government governance environment and legal environment in business environment help to promote the improvement of enterprise innovation output efficiency, while foreign direct investment has a restraining effect. Huang Xinhua (2020) from a systematic perspective, it is found that improving the business environment is a systematic project involving reform in many fields, which is mainly reflected in the relationship between the government and the market. Shi feifen (2021) studied the impact of market business environment on listed circulation enterprises, and found that the improvement of business environment will help reduce the cash holding scale of circulation enterprises and promote enterprises to expand reinvestment.

According to the expectation theory, the optimization degree of business environment is an important factor affecting enterprises and individuals to participate in market activities. Enterprises and individuals judge the suitability of regional economic development and future economic development based on the information they have, and make rational expectations, that is, decide whether to choose investment or employment and Entrepreneurship. A good business environment helps to form a good prospect for economic development, attract employment and entrepreneurship

groups and domestic and foreign capital, increase investment in economic development and drive economic growth. Therefore, it is very important to evaluate the effectiveness of regional business environment policies. The formation of this feedback mechanism will further promote the optimization of business environment and economic development.

3. Model setting

3.1. Selection and construction of evaluation indicators

From the existing research, scholars mainly build the evaluation index system from the following three aspects. First, based on the business environment report issued by the world bank every year since 2003, measure the time and cost of policies and regulations related to the life cycle of small and medium-sized enterprises. Second, the business environment index system formulated by the State Council, including three dimensions: enterprise life cycle, high-quality development and investment attraction. Third, the evaluation index system established by various institutions for China's specific business environment in recent years, such as the evaluation system established by PwC based on the results of the attraction of the city to enterprises and the development ability of enterprises in the city; Wanbo Research Institute divides the business environment into soft environment and hard environment, and subdivides it into 7 secondary indicators and 35 tertiary indicators to evaluate the business environment of each city; The Research Institute of Guangdong, Hong Kong and Macao divides the business environment into five aspects: soft environment, market environment, infrastructure environment, community service environment and business cost environment.

Table 1: description of relevant indicators

| Primary index | Secondary index |
|---|---|
| government behavior | financial expenditure (10000 yuan) X1 |
| economic development | per capita GDP (yuan) X2 |
| | regional GDP (100 million yuan) X3 |
| | tertiary industry GDP (100 million yuan) X4 |
| | average wage of urban employees (yuan) X5 |
| scientific and technological innovation | the number of college graduates (person) X6 |
| | R & D internal expenditure (10000 yuan) X7 |
| | R & D personnel converted into full-time personnel (person year) X8 |
| social service construction | urban basic old-age insurance insured persons (10000 people) X9 |
| | financial science and technology expenditure (10000 yuan) X10 |
| infrastructure | total mileage (km) X11 |
| market environment | the year-end resident population (10000 people) X12 |
| | total retail sales of social consumer goods (10000 yuan) X13 |
| | general budget expenditure (10000 yuan) X14 |
| | import and export volume (10000 yuan) X15 |

Based on the existing research, this paper draws lessons from the index selection ideas of song Ding and others, Construct the evaluation index system of business environment in Mianyang City (see table 1). In order to comprehensively and objectively investigate the overall situation of business environment in Mianyang City, this paper constructs the evaluation index system of business environment in Mianyang City from six aspects: government behavior, economic development, scientific and technological innovation, social service construction, infrastructure and market environment. Among them, government behavior selects financial expenditure (10000 yuan) index; economic development selects per capita GDP (yuan), regional GDP (100 million yuan),

tertiary industry GDP (100 million yuan) and average wage of urban employees (yuan); scientific and technological innovation indicators mainly include the number of college graduates (person), R & D internal expenditure (10000 yuan) and R & D personnel converted into full-time personnel (person year); social service construction mainly selects the indexes of urban basic old-age insurance insured persons (10000 people) and financial science and technology expenditure (10000 yuan); infrastructure is measured by the total mileage (km); the total market volume selects the year-end resident population (10000 people), total retail sales of social consumer goods (10000 yuan), general budget expenditure (10000 yuan), import and export volume (10000 yuan) index measurement.

3.2. Theoretical model construction

Classical principal component analysis is only applicable to plane data tables, but not to panel data with time series. In order to ensure the unity, integrity and comparability of system analysis, this paper uses global principal component analysis. It is expressed as follows:

Let K be a set of X sequences of plane data tables arranged in time sequence, and all data tables have sample points with the same name and variable indexes with the same name, that is, $K = \{K \in R_{n,m}, t = 1, 2, \dots, T\}$, Where X_t ($t = 1, 2, \dots, T$) takes e_1, e_2, \dots, e_p as sample points and X_1, X_2, \dots, X_m as variable indicators. If X_1, X_2, \dots, X_p is taken as variable indicators, in time t data table X_t , the values of sample points e_1, e_2, \dots, e_p are respectively, then they are the sample group points at time t , $N = \cup N^t$ is the global sample group points, and the principal component analysis with N as sample group points is the global principal component analysis.

3.3. Data source and processing

The data in this paper are from the statistical yearbook of Sichuan Province from 2015 to 2019. The factor process in SPSS is used to comprehensively evaluate the development of business environment, The correlation coefficient matrix of each variable in the time series three-dimensional data table is analyzed (the principal components of standardized variables are analyzed, which can eliminate the impact of different dimensions). In the analysis process, the maximum variance orthogonal rotation method is adopted to make the factor load value deviate from the poles of 0 and 1 as much as possible, so as to facilitate the extraction of information and the naming of principal components. According to the principle that the eigenvalue is greater than 1, the corresponding principal components are extracted.

4. Empirical analysis

4.1. Extraction of principal components

Table 2: Kmo and Bartlett test

| | | |
|--|------------------------|---------|
| Kaiser Meyer Olkin measure of sample sufficiency | | 0.876 |
| Bartlett's spherical test | Approximate chi square | 4300.34 |
| | df | 105 |
| | Sig | 0.000 |

Conduct kmo test and Bartlett spherical test on the standardized data to judge whether it is suitable for factor analysis. The test results are shown in table 2.

According to Kaiser, when the kmo test value is > 0.5 , it indicates that there are many common factors in the information contained in each index, and the significance of Bartlett spherical test is less than 0.01 ($P=0.000$), indicating that each index is independent of each other, so the data is

suitable for global principal component analysis.

Table 3 describes the initial solution and factor solution of principal component analysis. According to the principle that the eigenvalue is greater than 1 during data processing above, the principal components F1, F2 and F3 are selected to reduce the indicators to 3. The first principal component explains 76.669% of the original data, the second principal component explains 8.691% of the original data, and the third principal component explains 6.911% of the original data.

The weight coefficient of each evaluation index is calculated by regression method, and the specific values are shown in table 4. According to the factor load coefficients shown in table 4, the expressions of three principal components in the business environment assessment model of Mianyang City can be further constructed.

Table 3: Eigenvalues and variance contribution rate of each principal component

| component | Initial eigenvalue | | | Extract the sum of squares of the loads | | |
|-----------|--------------------|---------------------|-------------|---|---------------------|-------------|
| | total | Percentage variance | Cumulative% | total | Percentage variance | Cumulative% |
| 1 | 11.500 | 76.669 | 76.669 | 11.500 | 76.669 | 76.669 |
| 2 | 1.304 | 8.691 | 85.359 | 1.304 | 8.691 | 85.359 |
| 3 | 1.037 | 6.911 | 92.270 | 1.037 | 6.911 | 92.270 |
| 4 | 0.478 | 3.184 | 95.454 | | | |
| 5 | 0.311 | 2.072 | 97.526 | | | |
| 6 | 0.174 | 1.159 | 98.686 | | | |
| 7 | 0.107 | 0.714 | 99.400 | | | |
| 8 | 0.037 | 0.244 | 99.643 | | | |
| 9 | 0.020 | 0.132 | 99.775 | | | |
| 10 | 0.017 | 0.112 | 99.888 | | | |
| 11 | 0.008 | 0.055 | 99.943 | | | |
| 12 | 0.005 | 0.031 | 99.973 | | | |
| 13 | 0.002 | 0.013 | 99.987 | | | |
| 14 | 0.001 | 0.007 | 99.994 | | | |
| 15 | 0.001 | 0.006 | 100.000 | | | |

Table 4: Principal component load matrix

| | component | | |
|-----------------|-----------|--------|--------|
| | 1 | 2 | 3 |
| X ₁ | 0.960 | 0.180 | -0.120 |
| X ₂ | 0.724 | -0.203 | 0.589 |
| X ₃ | 0.995 | -0.045 | -0.018 |
| X ₄ | 0.988 | -0.021 | 0.021 |
| X ₅ | 0.295 | 0.710 | 0.604 |
| X ₆ | 0.988 | -0.070 | -0.026 |
| X ₇ | 0.962 | -0.039 | 0.053 |
| X ₈ | 0.978 | -0.054 | 0.026 |
| X ₉ | 0.988 | -0.098 | -0.029 |
| X ₁₀ | 0.964 | 0.007 | 0.050 |
| X ₁₁ | 0.338 | 0.822 | -0.407 |
| X ₁₂ | 0.759 | -0.016 | -0.280 |
| X ₁₃ | 0.784 | -0.164 | -0.237 |
| X ₁₄ | 0.989 | -0.034 | -0.046 |
| X ₁₅ | 0.977 | -0.025 | 0.019 |

The weight of each index in the principal component calculated by the principal component eigenvalue and load coefficient, the three principal component calculation formulas are as follows:

$$F_1=0.076X_1+0.057X_2+0.078X_3+0.078X_4+0.023X_5+0.078X_6+0.076X_7+0.077X_8+0.078X_9+0.076X_{10}+0.027X_{11}+0.06X_{12}+0.062X_{13}+0.078X_{14}+0.077X_{15}$$

$$F_2=0.072X_1-0.082X_2-0.018X_3-0.008X_4+0.285X_5-0.028X_6-0.016X_7-0.022X_8-0.039X_9+0.003X_{10}+0.33X_{11}-0.006X_{12}-0.066X_{13}-0.014X_{14}-0.01X_{15}$$

$$F_3=-0.048X_1+0.233X_2-0.007X_3+0.008X_4+0.239X_5-0.01X_6+0.021X_7+0.01X_8-0.011X_9+0.02X_{10}-0.161X_{11}-0.111X_{12}-0.094X_{13}-0.018X_{14}+0.008X_{15}$$

4.2. Principal component analysis

Through principal component analysis, we can get the specific meaning and relevant index composition of the three types of principal components. The first component mainly reflects economic development and social expenditure, including fiscal expenditure, regional GDP, GDP of tertiary industry, R & D investment and other indicators; The second component reflects the infrastructure, which is composed of the total mileage of the highway; The third component is composed of the average wage of urban workers and per capita GDP, which reflects the living standards of regional residents.

4.3. Business environment index evaluation model and results

According to table 3, the weight of four principal components and the calculation formula of total score can be obtained:

$$F=0.0831 F_1+0.094F_2 +0.075F_3$$

Bring the F1, F2 and F3 formulas into f to calculate the score formula of Mianyang business environment:

$$F=0.066X_1+0.057X_2+0.063X_3+0.065X_4+0.064X_5+0.061X_6+0.063X_7+0.063X_8+0.06X_9+0.065X_{10}+0.041X_{11}+0.041X_{12}+0.038X_{13}+0.062X_{14}+0.064X_{15}$$

According to the scoring formula, the standardized variable data can be used to calculate the score of Mianyang's business environment from 2015 to 2019, and further compare its ranking changes in Sichuan Province. The results are shown in table 5.

Table 5: Scores of business environment

| Year | Chengdu | | Mianyang | | |
|------|---------|-------------------------|----------|-------------------------|------------------|
| | score | Ranking in the province | score | Ranking in the province | Score difference |
| 2015 | 2.43 | 1 | 0.10 | 2 | 2.33 |
| 2016 | 2.72 | 1 | 0.18 | 2 | 2.54 |
| 2017 | 3.02 | 1 | 0.23 | 2 | 2.79 |
| 2018 | 3.75 | 1 | 0.49 | 2 | 3.26 |
| 2019 | 4.11 | 1 | 0.49 | 2 | 3.62 |

It can be seen from the table that from 2015 to 2019, Mianyang's business environment score has always been the second in Sichuan Province. From the change of its score, the business environment policy has achieved obvious results in recent years, with an increase of 0.39 points in 2019 compared with 2015. However, it also shows that there is a big gap compared with the first Chengdu. From 2015 to 2019, the score of Chengdu increased by 69.13%, about 1.68 points; The gap between the two cities increased from 2.33 points in 2015 to 3.62 points, a cumulative change of 55.36%. Therefore, although the implementation of the policy of optimizing the business environment in Mianyang has achieved good results, it is still necessary to improve and deeply implement the reform measures of "release, management and service" from the aspects of government affairs, legal environment, social service system and excellent economic environment.

5. Countermeasures and suggestions

First, government departments should comprehensively investigate the actual needs of various business entities in the market at different development stages, timely formulate preferential policies that meet the urgent needs of enterprises and do not violate the market rules, avoid local perspectives and short-term behaviors in the process of policy formulation, and improve the supply level of preferential policies for enterprises.

Second, we should take the rule of law first and administration according to law as the original intention of government affairs, promote the construction of the rule of law in the business environment, issue laws and regulations suitable for our own economic level, development stage and cultural environment, and establish rules and regulations in line with local development.

Third, make up for the historical shortcomings and promote the construction of urban infrastructure. First, carry out in-depth research, fully grasp the practical demands of enterprise subjects on infrastructure, and solve the problems encountered by enterprises in urban water, electricity and gas within a limited time, so as to minimize the impact on enterprise production and operation. Secondly, we should formulate a scientific and reasonable transportation infrastructure construction plan and build a diversified aviation service system relying on the current infrastructure resources.

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