Research on Sustainable Development of Energy and Environment of China under New Situation

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Abstract. At present, all countries in the world are actively exploring the development route of energy transformation in the future, and accelerating the development and utilization of renewable energy has become the universal consensus and concerted action of all countries in the world. Vigorously developing renewable energy can not only reduce the dependence on traditional energy, but also reduce the emissions of harmful gases such as carbon dioxide and harmful substances. The United States ranks third in global emissions of harmful gases, after China and India. In order to solve the bottleneck of renewable energy development, the U.S. government has launched a series of energy strategies and policies. The United States is the first country in the world to formulate an energy security strategy, which includes four basic principles: saving energy, improving mechanisms, flexible financial support and maximizing the use of renewable energy.

1. Introduction
The core content of the energy security strategy formulated by the United States is energy conservation. From the perspective of source consumption, the government has completed the economic restructuring of the country. However, this is the result of large-scale use of renewable energy, which helps to reduce fossil consumption. The dependence on fuel imports can in essence serve as a long-term political task. The decision of the United States to withdraw from the Paris Accord has not changed the attitude of American society towards environmental protection. The governors and mayors of more than a million cities in the United States expressed their intention to continue to develop renewable energy on a large scale, especially wind and solar energy, at regular meetings held every year. There can be no doubt that energy and environment to ensure sustainable development of human society. The foundation and the key to today's world is also hot issues of common concern. In environmental analysis, it is necessary to establish an effective method of determining detection limit. Our country's research on financing efficiency has developed from the initial exploration to a relatively perfect evaluation system, and the combination of theory and empirical methods has been applied to the evaluation of various industries or regions of the national economy. In this paper, the listed coal enterprises in China are taken as the research object, and principal component analysis and factor analysis, entropy method, data envelopment analysis method are used to evaluate the financing efficiency. It is hoped that through the empirical analysis of the credit financing efficiency of coal enterprises. It can provide standards and references for coal enterprises. At the same time, through the empirical comparison of different methods, this paper tries to provide a more suitable reference for coal enterprises to evaluate the efficiency of credit financing.
2. Theory and Model of Analytical Method

Principal component analysis, also known as principal component analysis, was first introduced by American statistician Pearson in 1901; He applied this idea to psychological research in 1933 and made further development; He studied it independently in the form of probability theory in 1947; someone expanded and perfected this theory. Principal Component Analysis (PCA) is a statistical method that reduces the dimension of multi-index data by projection method, using statistical analysis principles and methods. On the basis of losing less data information, it transforms multi-index into a few representative comprehensive indicators, while maintaining a large amount of information contained in the original indicators. If the individual financial indicators of enterprise samples are selected, they are recorded as \( x_1, x_2, \cdots, x_p \), The random vector consisting of this random variable is

\[
x = (x_1, x_2, \cdots, x_p)
\]

Let \( y = (y_1, y_2, \cdots, y_p) \), The synthetic random vector is obtained by linear transformation:

\[
\begin{align*}
Y_1 & = \alpha_1 x_1 + \alpha_2 x_2 + \cdots + \alpha_p x_p \\
Y_2 & = \alpha_1 x_1 + \alpha_2 x_2 + \cdots + \alpha_p x_p \\
& \vdots
\end{align*}
\]

\[
Y_p = \alpha_1 x_1 + \alpha_2 x_2 + \cdots + \alpha_p x_p
\]

\[
a = (a_1, a_2, \cdots, a_p), \quad i = 1, 2, 3 \cdots p
\]

\[
A = (a_1, a_2, \cdots, a_p), \quad Y = AX,
\]

Formula (1)

As can be seen from the above formula, the original variable can be arbitrarily linearly transformed, and the statistical characteristics of synthetic variable \( Y \) obtained by different linear transformations are different. Each \( Y_i \) should reflect the information of \( P \) original variables as much as possible. The greater the variance of \( Y_i \), the more information it contains.

\[
\text{var}(Y_i) = \alpha_i^2 \sum a_i, \quad i = 1, 2, 3 \cdots p
\]

Formula (2)

\[
\text{cov}(Y_i, Y_j) = a_i a_j, \quad i, j = 1, 2, 3 \cdots p
\]

Formula (3)

As can be seen from the above formula, the variance will increase infinitely if the coefficient vector is enlarged by any multiple. In order to prevent this coefficient from enlarging with infinite proportions in pursuit of maximizing variance, additional constraints are added: effectively reflect the information of original variables, the information contained in different components should not overlap. In summary, linear transformation needs to satisfy the following constraints:

\[
a_i a_i = 1, \quad a_1^2 + a_2^2 + \cdots + a_p^2 = 1, \quad i = 1, 2, \cdots, p.
\]

Formula (4)

(2) When the constraint formula is satisfied, the variance is the largest; when the constraint formula is satisfied and the variance is independent, the variance reaches the maximum. By analogy, the variance reaches the maximum when the constraint formula is satisfied and the variance is unrelated. The synthetic variables satisfying the above constraints are called the first principal component and the second principal component of the original variable respectively. The proportion of variance of each component in the total variance decreases in turn. For simplify the structure of the system, only a few principal components with large variances are usually selected in the research.

3. The Empirical Analysis

Data standardization processing, in order to eliminate the cardinal effect of various financial indicators, the first step is to standardize the indicators. The main characteristic of PCA model is to reduce the dimension of economic data of certain data quantity, and to explore the actual economic meaning through logical analysis of each principal component, without the need for co-integration test.
Therefore, this paper directly uses the principal component analysis method to rotate the 39 core financial indicators of the sample enterprises. The standardized data are analysed by principal component analysis, and the following table is obtained. As can be seen from the table, the cumulative interpretation of the first nine principal components is 86.46%, which is higher than 85% of the selection criteria.

Table 1 Cumulative Interpretation of Principal Components

| Number | Value  | Difference | Proportion | Cumulative Value | Cumulative Proportion |
|--------|--------|------------|------------|------------------|-----------------------|
| 1      | 9.5169 | 2.5712     | 0.2440     | 9.5169           | 0.2440                |
| 2      | 6.9457 | 1.5151     | 0.1781     | 16.4625          | 0.4221                |
| 3      | 5.4306 | 1.9150     | 0.1392     | 21.8931          | 0.5614                |
| 4      | 3.5155 | 1.0426     | 0.0901     | 25.4086          | 0.6515                |
| 5      | 2.4729 | 0.4847     | 0.0634     | 27.8815          | 0.7149                |
| 6      | 1.9882 | 0.2569     | 0.0510     | 29.8697          | 0.7659                |
| 7      | 1.7313 | 0.6463     | 0.0444     | 31.6010          | 0.8103                |

The dimensionality of financial indicators is reduced from 40 to 9 dimensions, and good dimensionality reduction effect is achieved. However, the economic attributes of each principal component have little difference because the load of more than two factors exceeds 0.2. Therefore, the following will be based on the principal component analysis method for factor the economic characteristics of each factor.. In summary, from the cross-sectional data, the financing efficiency of enterprises is mainly related to the overall level of operation and development of enterprises. The impact of income scale and tax level on financing efficiency is not significant. From the score of each factor, the overall level of development of enterprises has the highest correlation with the financing efficiency of enterprises.

Other factors, such as debt level and operating cost, will not have a significant impact on the financing efficiency of enterprises. In the long run, in order to improve the financing efficiency, listed coal enterprises should improve their management ability, credit rating, earnings per share, increase the proportion of capital stock and fixed assets, instead of pursuing the increase of stock size or tax and fee level. In the short run, enterprises should reduce the turnover rate of assets and the proportion of current assets. Improve the efficiency of financing.

4. Economic Analysis of Government Policy.

4. Views from different sides
In recent years, there has been a broad trend in domestic research on the connotation of energy security. Energy security includes not only the security of one kind of energy, but also the security of other main energy sources and the overall energy supply. Energy security includes not only the domestic energy security, but also the world energy security. For example, Huang and others believe that energy security is a global problem. Without global energy security, there will be no security for individual countries. The excessive pursuit of self-security Unilateralism Policy has not brought, on the contrary, it has brought disaster to all countries in the world. It includes not only the security of energy supply, but also the security of energy use. In the composite energy security structure, there is actually a hierarchical structure. The author has made a preliminary division of this hierarchical structure of energy security. Energy security includes three levels: energy supply chain security; energy use security; and energy structure security. Compared with developed countries abroad, China's energy security mainly focuses on the first level, while it needs to take into account the two and three levels of security.
Figure 1   Renewable Energy Consumption Fluctuates (Million tons/ %)

However, the lack of detailed research, failed to carry out in-depth study on the elements that should be included in each level. Although the above views explain the connotation of energy security from different perspectives, the main object of their investigation is the oil problem. The difference lies in the different understanding and attention to the oil problem. From the background of the formation of the energy problem, these views have their rationality and summarize the basic connotation of energy security. But at the same time, to some extent, it ignores the fact that the connotation of energy security changes with time and national conditions, especially the lack of in-depth study on the hierarchical structure of energy security. Moreover, as he pointed out, the content of energy security has not been clearly defined, making it difficult to measure and balance the relationship with other policy objectives. Therefore, from the perspective of development, there is still a need for further improvement and improvement of these views.

5. Discussions on Details

In the process of establishing multivariate regression model, in order to make the characteristics of things more accurately reflected, more relevant explanatory variables are often set up. However, this will complicate the analysis of problems, and the possible multi-collinearity among variables will often overlap data and information, thus, even deviate from the essential characteristics of things; moreover, with the increase of explanatory variables. The difficulty of passing the test among variables often becomes an obstacle to the construction of economic models.

Figure 2   Consumption proportion before and after the Reform (%)

Principal Component Analysis and Factor Analysis are just used to solve this kind of problem. Its main principle is to use a few indicators to reflect the information of all indicators through dimensionality reduction. In low-dimensional space, the information is decomposed into unrelated
components so as to get a closer explanation to the essential characteristics of things. At the same time, there is no restriction of test in the selection of explanatory variables. The applicability of selecting explanatory variables is strong. The risks that enterprises assume in credit financing are mainly debt risk and reputation risk, while banks are facing financial losses. Bank and corporate credit transactions are a cross-border transaction. The risk exposure of this transaction is asymmetric. Compared with corporate banks, it faces greater risks. From loan issuance to loan recovery, banks and enterprises face many external and internal risks.

Scholars have put forward various strategic ideas to ensure energy security from different perspectives. The first is the strategic choice of global energy security. Zhang Lei and Zheng Pi believe that with the acceleration of global political and economic integration, there are many similarities in the energy security strategies of various countries: first, attaching great importance to the development of energy-saving technology of domestic enterprises and the adjustment of industrial structure to minimize the waste of energy; second, at home. The rational allocation of the development and utilization of the two kinds of energy resources abroad, the diversification of the sources of energy resources, the diversification of transportation modes, the diversification of risks, the use of market means to transfer and avoid risk ridicule; the third is to attach great importance to national energy security and its impact on environmental quality and economic competitiveness, and To formulate relevant laws and regulations as a basis. Others believe that the global energy security strategy mainly includes three aspects: one is to control the rapid growth of global liquidity. The reason is that reasonable oil price is the basis of global energy security, and oil price has become the basic tool for global benefit distribution; it is necessary to establish a more rational energy consumption structure and diversify the risk of energy supply. Third, it is necessary to promote the further integration of regional energy consumption markets. These regions include Northeast Asia regional energy market, Southeast Asia regional energy market, Central Asia regional energy market and North Pacific energy market.

6. Conclusions and suggestions
In the process of urban development and expansion, how to deal with the coordinated development with the ecological environment is a worldwide problem that governments all over the world need to face. China's urbanization development is no exception. Considering the actual problems of urban ecological environment in China, we need to fully refer to the experience and lessons of European and American countries in urban ecological environment restoration and governance, attach importance to the construction of ecological environment while developing industry, attach great importance to the investment in environmental governance, and establish compulsory measures and management methods to protect urban ecological environment. We should use new scientific and technological means to reduce environmental damage in the process of urbanization, widely absorb diversified restoration and management system, and realize the steady progress of ecological environment restoration and protection in the process of urbanization. From the cross-sectional data, the financing
efficiency of enterprises is mainly related to the overall level of operation and development of enterprises; the higher the proportion of fixed assets and equity, the higher the financing efficiency of enterprises; the scale of enterprise income, tax and fee levels have no significant impact on the financing efficiency of enterprises.

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