
Study on the operation performance of Chinese coal listed companies based on factor analysis

Jingye Lu ^a, Mengyang Xia ^b

School of Management, Xi'an University of Science and Technology, Xi'an, Shanxi 710054, China.

^a 314077295@qq.com, ^b397168083@qq.com

Abstract

Revenue in China's coal enterprises decline, the new situation of coal enterprises ills awaited in the government's macro-control, the supply side reform and enterprise development. In this context, the coal listed companies in the end how the operation of the situation, we need to re study. Based on China's Shanghai and Shenzhen two city listed coal company related information collected on the selection of 2016 annual report data of coal enterprises, selected financial indicators to represent the business performance, factor analysis by SPSS software, the results by cluster analysis. In order to explore our country exists in the current operating performance of the coal enterprises downturn environment, then the evaluation, and puts forward corresponding countermeasures and suggestions, and provide a reliable basis for the future reform of coal enterprises, coal enterprises to promote the benign development of the good.

Keywords

Factor analysis method; Coal listing corporation; Business performance; evaluation.

1. An Overview

Coal is an important component of China's energy structure, and is one of the major energy sources in china. However, since 2012, the national coal market volatility is enormous; the whole society stocks remain high. China's Bohai power coal price index fell all the way, from 633 Yuan in January 2013 to 530 Yuan. Entered 2016, coal prices rose slightly to 381 Yuan. The operation of coal enterprises is very dangerous, and many enterprises have been unable to hold on.

In China, many scholars have studied the performance of the coal industry or enterprises. Some scholars [1] is to study the performance of the coal business by using the factor analysis method; secondly, with the development of low carbon transformation, the goal of sustainable development, performance evaluation system of coal enterprises diversified development. Experts [2] combine the low carbon transition to study the development of the performance evaluation system of coal enterprises in China. In addition, some scholars[3] have studied the performance of coal enterprises from the integration of multiple development. In general, at present our research on the evaluation of coal enterprise performance gradually improved, but most studies still remain in the coal enterprise "glorious period" in the context of fluctuation of coal on the China and listed companies in all aspects of the business performance effectively reflect the current coal market downturn in the background.

When the economy is in the rising stage, coal prices and operating performance are good, but it is also easy to cover up the problems and shortcomings of enterprises. Therefore, it is necessary to study the important performance changes of China's coal listed enterprises during this period. The use of data analysis, find out the shortage problem of low or various indicators, fully embodies the influence factors, reflect the current situation of listed coal enterprises of different factors in operation

performance, put forward effective conclusion on future sustained and healthy development of the listed coal enterprises.

2. Present situation of coal market in China

2.1 Domestic and international coal market prices have dropped substantially

Coal has a strong regional character in the international coal market. The ups and downs of the Chinese market also have a certain impact on the international coal market. In 2015, the international coal prices have dropped to 120 U. S. dollars / ton, the lowest level since 2007. The price of China's Bohai power coal has dropped from 797 yuan / ton in 2012 to 371 yuan / ton in December 2015, with a drop of 53.45%. It can be seen that the trend of foreign and domestic price fluctuations is the same, both in a downward downturn, and the situation is not optimistic.

2.2 Domestic coal market climate index extremely cold

Since 2012, China's coal market climate index has been in the extremely cold level, and it is under -40 for a long time. In 2015 June, it is a record low to -46.3, and the demand for steam coal is weak, and its price continues to dip. December 30, 2015, the Qinhuangdao marine coal trading market released in Bohai coal power price index closed at 372 yuan / ton, down 154 yuan / ton, a decrease of 29.28% compared to the beginning of 2015. Since 2016, the price of domestic steam coal has risen slightly, but the contradiction between insufficient coal demand and excess production still exists. The problems such as declining profits of industry, tight capital of enterprises and difficulties in operation are still outstanding.

2.3 Coal overcapacity is still very serious

In 2016, both ends of China's coal supply and demand were "reduced" trend. With the beginning of the year to coal production and coal production reduction policies and measures implemented since April, production fell more than 10%, the national coal supply and demand situation than by serious supply and demand gradually to the basic balance between supply and demand; since September, gradually cancel coal reduction production measures, coal production capacity gradually released, the yield increased month decline narrowed. In 2016, the total output of raw coal of Coal Enterprises above Designated Size in China was 33.64 tons, down 9.4% year on year. China's coal overcapacity is still continuing.

3. Current performance of China's coal listed companies in a depressed market

3.1 Sample selection

As of December 2016, the paper selects 35 listed companies as samples to study, analysis of business performance of Chinese coal listed companies from the financial indicators, more energy reflects the present situation of coal enterprise performance. Factor analysis was used for analysis. Therefore, by collecting the data of the financial statements, a total of 13 indicators were analyzed from the four aspects of profitability, solvency, growth ability and operation ability, observation of the financial indicators to reflect the factors conducive to business performance and control.

3.2 Analysis of the operating performance of coal listed companies in China

The coal market has been out of sight since 2012. With the changes in national policy, 2016 has been substantially improved. However, the recovery time is relatively short, most coal enterprises are still in a state of accumulated losses, so it will take time to make up for the huge losses in previous years.

Table 1. Value indicators of coal industry operation in 2016

First level index	second level index	Industry mean	variance	kurtosis	The industry is higher	The industry is lower
Profitability	Operating profit margin %	18.1771	168.9689	0.053	40.6708	-16.0038
	Return on total assets %	-1.9669	241.0256	7.2538	20.3174	-65.2967
	Return on assets %	0.0627	27.6296	5.0716	11.1216	-19.6801
Operating capacity	Turnover of total assets %	-10.1715	1506.4257	15.1808	12.98	-191
	Accounts receivable turnover %	0.5246	0.1151	4.4442	1.7425	0.0018
	Inventory turnover (Times)%	17.2212	722.1983	19.0681	153.2778	2.4409
Debt paying ability	Asset liability ratio %	28.1603	8232.0042	35.4976	560.0465	0.4799
	Current ratio %	57.6861	327.91	-0.0674	50.607	17.0397
	Quick ratio %	1.0082	0.4101	14.4264	4.0503	0.2834
Growth ability	Growth rate of total assets %	0.8796	0.377	17.6291	3.9554	0.1927
	Business growth rate %	8.3488	169.2589	2.0458	38.9741	-31.5063
	Operating profit growth rate %	-14.4829	256.2158	14.1662	61.7524	-38.9082

data sources : Wind database

Figure 2016 business performance indicators of China's coal industry, with the year before, in 2015, the coal enterprises in the four aspects of operating capacity, profitability, solvency and growth performance were a record low. The same industry average value and lower value of industry continued to decrease, and the higher value of the industry is no longer rising since 2013, and the performance of coal enterprises has shown a trend of instability.

1) Profitability: Rate of return on total assets of the industry average is positive, but the sales net interest rate and asset return is negative, and the very large gap between the profitability of Listed Companies in different business, net interest rate as an example, the industry high value above 20%, and the lowest value of industry is only -65%, serious losses;

2) Operating capacity: total assets turnover and accounts receivable turnover rate in a gradual decline, the range is not large, the industry gap is within acceptable range. In view of stock turnover, the data dispersion is larger, the normal distribution is not balanced, the industry is higher, the lower value gap is too large;

3) Debt paying ability: corporate liquidity ratio and quick ratio are normal distribution, the industry average fluctuation is not big. The kurtosis of asset liability ratio is negative, skewness is positive, although the normal distribution equilibrium, but the higher value of the industry has risen to 50%, listed companies are generally in a high-risk state;

4) Growth ability: both the industry average and the lower value of business growth are negative, and the kurtosis is only 12%. This shows that the coal price decline has a greater impact on the profits and profits of individual listed companies.

4. Evaluation methods and process

4.1 Data analysis

SPSS is used to deal with 13 indexes: first, the Bartlett sphere test is used to select the sample data, and the results show that the basic data is suitable for factor analysis, as shown in table 2. Secondly, from the results of factor analysis, X1 - based index X13 have been synthesized by a factor of four, named as F1, F2, F3, F4, which contains the information content of the 69.05% basic indicators, such as table 3, reflects the specific variance contribution rate of each factor and the cumulative variance contribution rate.

Table 2. Tests for KMO and Bartlett

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.511
Bartlett' s Test of Sphericity	281.415	281.415
	78	78
	.000	.000

Table 3. Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	%of Variance	Cumulative %	Total	%of Variance
1	3.858	29.678	29.678	3.858	29.678
2	2.287	17.589	47.267	2.287	17.589
3	1.634	12.570	59.837	1.634	12.570
4	1.198	9.214	69.050	1.198	9.214

Because each factor just reflect the ability of a certain aspect of the operating performance of listed coal companies so that the characteristics of each factor after rotation value of the contribution rate as weight, weighted factor performance comprehensive management of each company, the following formula:

$$F=(29.678\% F_1 +17.589\% F_2 +12.570\% F_3 +9.214\% F_4)/69.050\% \tag{1}$$

4.2 Result analysis

In order to reflect the four factors of enterprise performance as a reference, the method of "component average connection" in SPSS is used to cluster the system. The four major categories of clustering results, in the context of considering the downturn in the coal market, and further analysis, can also be divided into different enterprises in accordance with the development of the strength of the category, problem class and mature class. In order to reflect the four factors of enterprise performance as a reference, the method of "component average connection" in SPSS is used to cluster the system. By the four major categories of clustering results, considering the background of the coal market downturn, the specific analysis of the 35 listed coal enterprises based on the coal industry sales net profit rate, the growth rate of total assets, total assets turnover ratio, current ratio and quick ratio level is divided into four categories.

The first category of the Jingyuan coal, to do electrical appliances started, after the reorganization of assets, in the coal market downturn, still ranked the Gansu province tax by the industry forefront, dynamic effect. Total assets growth rate is higher than the other 34 enterprises, and the enterprise in

other industries such as electricity, electronic technology and other significant performance, and coal industry go hand in hand, reflects its excellent growth ability;

Second to A as the representative of new continents, it is an investment holding enterprise, the business model adopted by group cooperation strategy, the industry of independent operation, management decisions are made by gravity, each industry sector subsidiary, which creates a good foundation for the company's cross-border operations. This enterprise since the coal market into a downturn, the establishment of medical fund mergers and acquisitions from the aspects of the yacht industry, to try to start, continue to strengthen the enterprise bigger and stronger advantage, increase the profitability of the enterprise than other enterprises. ;

Eight companies in third categories, taking Jizhong energy as an example, enterprises to speed up the pace of reduction in assets occupancy, reasonably determine the economic yield, optimize the production system, streamline triage personnel, and strengthen the transformation of mine construction and production capacity of running to do, pharmaceutical, logistics, machinery and equipment and other non coal industry efforts to enhance profitability. In the case of substantial losses in the remaining coal enterprises, the situation is still in a state of slow growth without loss. Operating capacity of enterprises has improved significantly;

Fourth categories of listed companies are mostly old coal operators, coal based firm operation, coal sales in the downward trend of the market is still higher than the top three enterprises. Take China Shenhua as an example, from 2012 to 2015, its current assets have a higher degree of protection for current liabilities, especially monetary fund, which accounts for a relatively high proportion of current assets, which shows that enterprises have a strong short-term solvency. On the other hand, the long-term debt ratio is lower, and the enterprise interest guarantee ratio is higher, which further shows that Shenhua's long-term solvency is stronger;

5. Policy suggestion

An enterprise, only its business level up, and its operating performance will also have a good change. Coal market downturn, only identify the method, reasonable norms, in order to make coal enterprises better development. The article gives suggestions from the following aspects:

5.1 Promote the implementation of "go capacity" and enhance the growth ability of the coal industry

Increase the "go capacity" efforts. Do clean mining, clean utilization and clean transformation. As for Shenhua coal such a good momentum of development, low production cost, high degree of mechanization, the safety management level of enterprises, should control the allocation of capacity, rather than reduce. For enterprises such as China coal energy, once brilliant, but the other industries have poor economic returns and high cost problems, enterprises will accelerate the pace of orderly exit. Enterprises strive to achieve digital, intelligent, unmanned, energy-saving emission reduction should be as much as possible, the energy consumption of tons of coal to reach the minimum, such as the realization of comprehensive utilization of all mine water.

5.2 Speeding up the construction of "multiple integration" to enhance the solvency of the coal industry

To speed up the construction of diversified coal enterprises, expand the industrial chain cost effect, strengthen cost management, labor quota management and product quality management, cost accounting, cost veto system, product quality supervision and inspection system. More use of new technologies, new processes, new equipment, new materials, reduce manpower, material and financial resources to achieve low input and high output. Market demand oriented, technological innovation. Establish a reasonable system of employing people, regard diversified development as a whole, speed up together. Improve the efficiency of labor production, maintain stable credit quality, split the

pressure of debt repayment, and promote the transformation and development of Coal Group Company.

5.3 Implementation of coal resource tax reform to enhance the profitability of the coal industry

Since the transformation of value-added tax, the coal tax rate has changed from 13% to 17%. Deducting the input tax that allows deductible, the actual value-added tax burden is still three times more than the national average value added tax burden. In view of this phenomenon, the state will change the amount of coal resources tax from the amount levied to the ad valorem tax, the tax rate determined by the provincial government within the specified range. But the pace of reform is not fully involved, for different types of enterprises should have different policies on resource tax reform, such as Chinese Shenhua, A new continent type enterprise, on the basis of reform, to protect the enterprise production as the premise. Due to regional restrictions, the reform of resource tax has different impacts on coal enterprises in different regions. According to local conditions, to the resource tax reform of the enterprise system, not only conducive to improving the formation mechanism of coal price, for the region to benefit from the resources, promoting regional coordinated development. Can also be in the current downturn in the background, effectively improve the profitability of enterprises, reduce unnecessary losses.

Acknowledgements

This paper Supported by Soft science of Shaanxi province (Grant No. 2015KRM0852013KRZ02-01); Project Philosophy and Social Science Research base in Shaanxi province (Grant No. 14JZ025).

References

- [1] Cheng ling. Performance evaluation of traditional energy listed companies under factor analysis [J]. Commercial economy research,2015,14:90-91.
- [2] Gu Peihui,Tao Baoshan. The impact of R & D investment on operating performance of low carbon listed companies [J]. Green Finance and Accounting,2014,07:17-20.
- [3] Zhang Xu,Han Caijuan. Study on the correlation between diversification degree and operation performance of large coal enterprises in China[J].Coal economy research,2013,05:51-56.
- [4] Liu Dan. Empirical research on the operation performance of listed companies based on EVA -- Taking Coal Listed Companies in China as an example [J]. Friends of accounting,2011,19:72-74.
- [5] Liu Fangyu. A study on the performance evaluation of coal listed companies -- Based on factor analysis and cluster analysis [J]. Communication of Finance and Accounting,2014,23:27-28.
- [6] Zhang Fuming,Jing Puqiu. Sustainable development fund of coal industry and its effect analysis [J]. Chinese industrial economy,2006,09:30-37.
- [7] Perrini, Rossi (2008) Perrini F, Rossi G, Rovetta B. Does ownership structure affect performance Evidence from the Italy market [J]. Corporate Governance: An International Review.2008,16 (4):312-325.
- [8] Wang Xiaoying. Study on the implementation of circular economy model in Shanxi Coal Enterprises [J]. Economic Research Guide,2009,17:139-140.
- [9] Yu Zuo,Kong Xianli. The formation mechanism of China's coal electricity tension relationship from the perspective of policy conflict [J]. Chinese industrial economy,2010,04:46-57.
- [10] Wang Xiaodong,Zhang Shiqiang,Wang Yubao. Performance evaluation and analysis of circular economy in Coal Enterprises [J]. Technical economy and management research,2013,12:47-51.
- [11] Zou Tao,Xiao Xingzhi,Li Shasha. An empirical study on the impact of coal mine safety regulation on coal industry productivity [J]. Chinese industrial economy,2015,10:85-99.
- [12] Cui Tao,Nie Rui,Li Congmao. Coal enterprise diversification, industry synergy and performance relationship [J]. China Coal,2016,04:25-29.