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Influence factors and the empirical analysis of the coal enterprise benefit

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ABSTRACT

With a new round of rapid development of the reform and opening up, energy demand is increasing. China as an energy power, it will have great significant implications for the future of coal industry if we can clearly understand the laws of the development of the coal industry. This article selects the coal enterprise business turnover in China from 2003 to 2012, establishes the nonlinear regression model which takes the cost data as sample, uses the Eviews6.0 software to thoroughly analyze the relationship between the variables and draws the conclusions as follows: Specifically, the total profit changes into the positive relation with Revenues, taxes, number of the enterprises, and the reverse relation with cost. The results of this paper provides some reference for the evaluation of coal enterprises.

KEYWORDS

Main business cost; Main business income; Economic benefit.

INTRODUCTION

Coal is one of the most widely used fossil energy in the world, China's reserves ranked third in the world, only after America and Russia. The total amount of the coal is 65 times that of the oil. In Asia, due to the economy, employment and other factors, coal is still a choice of safe fuel, and it is unlikely to change in the next few years[1,2]. Our coal resources are distributed in North China, especially in Shanxi Province, which accounts for one fifth of the resources reserves of the whole country. In recent years, the operating environment of our coal enterprises has changed dramatically, and the fundamental changes have taken place in the nature of the enterprises, they are the competitive subject under the system of market economy[3]. Along with the international financial crisis deepening, the sequela caused by the expansion of domestic coal industry chain appears gradually. At a macro level, it endangers the national energy security. At a medium level, it causes the fluctuations of the coal industry. At a micro level, it induces the huge risks of coal industry[4,5]. Therefore, the coal industry chain becomes the research hotspot of officer, production, study and research, especially the evolution mechanism and optimization and integration become the hot focus[6]. But the existing research stays in the application stage of this term of the coal industry chain, and lacks systematic theory. Making the national relevant policy, enterprises investment decisions lack the theoretical basis. But due to the long-term influence of the planned economic system, competitiveness is low. China's coal market is sluggish, the price declines. On the one hand, affected by the economic crisis, economic slow down, the demand of high energy-consuming industry declines, energy is excess, and the demand of coal also decreases. The economy is overly dependent on resource-based economy, the greater proportion the resource-based economy share, the more backward the per capita living standard of urban and rural compared to other regions is. This is the famous resource curse[7]. On the other hand, the overcapacity in domestic coal industry is very serious. Moreover, the low price imported coal also made a huge impact on the domestic coal price. Domestic and foreign scholars have done a lot of research on the influencing factors. The domestic coal industry, especially large and medium-sized state-owned coal enterprise are integrating, reforming and highly centralizing scale. But problem arises; excessive competition caused breakdown of the order and over-exploitation of resources, which also caused oversupply and over-capacity. There is no guarantee on the safety in the production. The pollution is very serious. At the same time of soaring coal prices, the cost is hard to sustain for the company. For example, in Ordos City, the enterprise scale is bigger, but most enterprises are in the primary stage and management is weak[8]. So during the financial crisis, many small and medium-sized enterprises went bankrupt in succession, large and medium-sized enterprises were in the red, leading to domestic coal industry's international competitiveness is inferior to before[9].

Based on the dilemma faced by coal enterprises now, we should be on how to increase the economic benefit as the direction of a discussion, verify the main influencing factors. In many influencing factors, the influencing degree are not equal, at present scholars' research is not thorough; they generally only consider the connection between the two or three factors. Even though the conclusion is accurate, which factor are dominant is not clear. If we can further clarify the most influencing factor of the enterprises benefit, coal enterprises will win in the future new life. This is also one of the topics in this paper[10].

On the basis of the research at home and abroad for reference, from the relation between the coal enterprise profit and the investment of the whole enterprise, and by using the method of empirical study and sample data, this article try to establish the economic model whose explanatory variables is based on five factors such as tax rate, raw coal production. Correct understanding of their relationship has very realistic significance for policy makers, enterprise manager.

THE ESTABLISHMENT OF THE MODEL AND EVALUATION

First, the selection of variables. Raw coal production is an important parameter to measure the coal production scale of the country. As coal production and consumption power in our country, it will need to select the data which can comprehensively reflect the coal market occupancy to study the relation between its fluctuation and growth. Raw coal production serves as a variable to measure variation of market price, it is not only a proportional number of price movement, but also a tool which is based on a certain basic level to measure fluctuations in prices. The principle of profit maximization and cost minimization is used to determine the raw coal economic production and insurance reserve of coal enterprises. It has very important practical significance under the condition of frequent fluctuations in the relation of coal market supply and demand, intense competition in the market[11]. This article selects raw coal production as the variables to measure corporate profits.

The total number of enterprises reflects the scale and prosperity of the whole industry to some extent. At the same time it also reflects the intense level of competition of the whole industry. When production reaches a certain number, the small and medium-sized enterprise will face huge pressure because of the excessive competition among the enterprises. It is not conducive to healthy development of the industry. So, empirical researches of this paper select the total number of enterprises as the variables which affects corporate profits.

Because in the financial factors that affect the profits, the income is the most fundamental factor, and affect most directly and rapidly. It is stated that influence achieved by means of capital appreciation effect.

As an inevitable necessary expense of enterprise operation, it mainly reflected on the input of equipment and manpower, but in this aspect, our enterprise is far from the enterprise in the world. How to reduce the cost is also an important factor to increase the profit. At present the coal market is not clear, the situation is severe. The economic benefit of coal enterprise is remarkable improved because the coal sale price soared a few years ago. It weakened the concept of cost management, most of the coal enterprise profit declined and even experienced heavy losses in recent years, and the cost management became more important[12].

Main business taxes and other factors comprehensively consider its effect on the profit. Statistics of commodity and service price reflect the variation of the price of industrial products. In the system of macro economic index, every economic subject was paying close attention to. After the central and local governments implemented the tax distribution system, the chargeable projects of local governments are various. Even though the state take measures to clean up and cancel the governmental construction fund and fee, and achieved some results, the railway construction fund and port construction fee were implemented continually. with the coal economical situation becoming better, the state establish the system of paid use of natural resources and mine environmental compensation mechanism, and Introduce some new governmental funds and chargeable projects. The tax burden of coal enterprises increased year by year, and had a influence on the enterprise benefit[13].

The selection and processing of data. This paper select the data from 2003 to 2012 as sample (see appendix 1), The data comes from national statistics database.

The establishment of the modelThe true value, fitted value, residual plot reached by the Eviews6.0 software, as shown in Figure 1

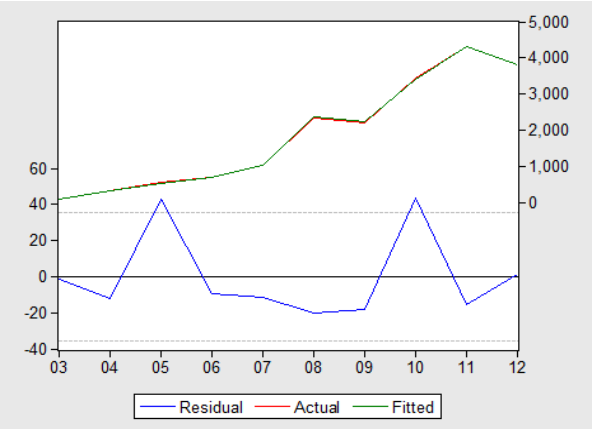

Figure 1 : True value and fitting value of each variable and residual figure

After heteroskedasticity and autocorrelation tests, the estimated results are shown in Figure 2, the model between them is obtained.

Y = 1898.14127804 + 3.6812942155e-38*X1^10 + 0.107894611078*X2 - 614180.942764*1/X3 + 14.9537235135*X4 - 6.93727286082*X5^2

Dependent Variable: Y
Method: Least Squares
Date: 04/18/14 Time: 19:57
Sample: 2003 2012
Included observations: 10

	Coefficient	Std. Error	t-Statistic	Prob.
C	1898.141	291.4921	6.511811	0.0029
X1^10	3.68E-38	1.17E-38	3.150188	0.0345
X2	0.107895	0.023260	4.638692	0.0097
1/X3	-614180.9	191210.7	-3.212064	0.0325
X4	14.95372	0.901218	16.59279	0.0001
X5^2	-6.937273	0.746318	-9.295325	0.0007

R-squared	0.999769	Mean dependent var	1877.993
Adjusted R-squared	0.999481	S.D. dependent var	1560.925
S.E. of regression	35.56957	Akaike info criterion	10.26457
Sum squared resid	5060.777	Schwarz criterion	10.44612
Log likelihood	-45.32284	Hannan-Quinn criter.	10.06541
F-statistic	3465.604	Durbin-Watson stat	2.662277
Prob(F-statistic)	0.000000		

Figure 2 : Estimates of the model

As can be seen from the Figure 2, the explanatory variables of Prob < 0.05,all pass the t-value test. The F of Model =3465.604>F0.05 (3, 19) =3.13,so reject H0, The overall regression equation is into a significant non-linear relationship. The nonlinear relation between profit and revenue, cost and tax, number of enterprises, raw coal production is remarkable. Use the corresponding residual In Figure 2 to conduct White test TR2=16.138<χ20.05 (9) =16.919. so there is no heteroskedasticity in the model. As shown in Figure 3:

Heteroskedasticity Test: White

F-statistic	0.215278	Prob. F(5,4)	0.9385
Obs*R-squared	2.120387	Prob. Chi-Square(5)	0.8322
Scaled explained SS	0.315087	Prob. Chi-Square(5)	0.9973

Figure 3 : White test

Because T = 23 in the model, there are five explanatory variables, Under the α=5% significance level, dL=1.0,dU=1.66,while the DW = 2.11. so there is no autocorrelation in the error term ut. At the same time,TR2 = 0.206 < χ (1) = 3.841 20.05 known by LM test, so there is no autocorrelation in the model. In addition, R2 = 0.999769 in the model, the fitting degree of the model is good. As shown in Figure 4:

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.965797	Prob. F(1,3)	0.3982
Obs*R-squared	2.435317	Prob. Chi-Square(1)	0.1186

Figure 4 : LM test

Evaluation of the model. The advantage of the mode: first of all, this paper establish the model which take six factors which involves cost, income, taxes, number of people, number of enterprises, production together to investigate the variation of enterprise profit. the fitting degree of the model is good, can reflect the effects of six variables to a certain extent. Secondly, the model can help managers to understand the exposure of the risk of the market. Grasp the forecast information of the relation between various factors and profit, and make effective predictions. And right decisions to ensure the stability of market and healthy development.

There are also disadvantages in the model: the method to deal with different data may produce different results, and produce certain error between model and actual situation.

THE EMPIRICAL RESULT ANALYSIS AND COUNTERMEASURES AND SUGGESTIONS

Regression results of model show that there are certain correlation between raw coal production and the total profit, business revenues, costs, taxes, number of enterprises Under the α=5% significance level. Specifically, the total profit changes the positive relation with revenues, taxes, number of the enterprises, and the reverse relation with cost. This result is consistent with the conclusion of the above documents. The rising income and output shows that the enterprise scale is enlarging; the space of enterprise profit will increase. The rise of enterprise production costs means that the profit margins of the enterprise and individual producers can obtain will be compressed. It will make investors downgraded the prospection of enterprise future income, and then affect profit decline.

Moreover, from the the empirical analysis, the number of enterprise has certain influence on the profit, but it is not very significant. From the perspective of the estimated results of model, there is a parabola relationship, their coefficient reflect that they change into positive relation. this is contradictory to the theoretical basis. The reason that caused contradiction to the theoretical basis may be that: the domestic coal enterprises are not standard compared to the foreign market institutions, the establishment of the system is not yet perfect, management mechanism is not sound. Besides, influenced by many other factors, which reduces the effects of companies, and make the relation inconsistent with the basic theory.

This article, through the analysis of the previous empirical results, draw a conclusion that there is correlation between the coal enterprise profit and raw coal production, main business cost, revenue, tax, total number of enterprises, average number of practitioners. But through the study of this article, the coal market in China can not reflect theoretical relationship between the number and enterprises profit. It also shows that the effectiveness between enterprise access system and corporate profit is not strong. this will affect the effect that our country government support the healthy development of the coal market

through monetary policy. This article, through the conclusion obtained from the above model, put forward the following Suggestions:

(1)Due to the rising of raw coal production, it is not beneficial to the concentration of coal enterprises, therefore, for enterprise managers, there is no doubt that will help them to make advisable economic decisions timely when the raw coal production rises if they can accurately have an insight into the relationship between prices and inflation.

(2)From the above empirical results, the number of enterprises can't reflect well the relationship with variation of enterprise profit. Therefore, in terms of policy, First, standardize the coal market, strengthen enterprise access system, and then to improve the influence of coal enterprise market. Second, carry out the marketization reform step by step, standardize management of the company, Third, build up a good external environment, define the enterprise management strategy reasonably.

CONCLUSIONS

This article on the basis of the research at home and abroad for reference and through the empirical analysis knows influence of five factors to the total profit. Establish relevant non-linear regression model, and the model has high credibility. Of course, the influencing factors are numerous. Here is analyzing and thinking on the macro level, but some factors involved in the micro level can not be ignored yet, it needs us to do further analysis and research.

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APPENDIX

year	Profit total	Enterprise number	The main business and income	Main business cost	Advocate business wu taxes and add	Raw coal production
	y	x1	x2	x3	x4	x5
2003	88.31	1008	1930.92	1311.7	25.35	16.67
2004	306.92	3624	3858.08	2607.74	60.36	19.59
2005	561	5787	5912.45	4040.22	100.68	22.05
2006	690.54	6797	7461.15	5226.32	134.83	23.74
2007	1022.18	7537	9593.08	6609.03	173.76	25.26
2008	2348.45	9212	15315.15	10284.61	278.33	28.02
2009	2208.31	8798	17379.94	12607.03	303.01	29.73
2010	3446.52	9016	23609.59	16788.74	409.49	32.35
2011	4299.6	7695	31413.27	22632.84	509.79	35.2
2012	3808.1	7869	34049.98	25908.44	499.35	36.5

Note : The data come from national statistics database