

Econometric Analysis on Development of Mining Industry in Zhanjiang

Yanli Xu^{1,3} and Dan Liu^{2,3,*}

¹School of Business, Lingnan Normal University, Zhanjiang, Guangdong, 524048, P. R. China

²Library, Lingnan Normal University, Zhanjiang, Guangdong, 524048, P. R. China

³South China Sea Silk Road Collaborative Innovation Centre, Lingnan Normal University

*Corresponding author: liudan100liudan@163.com

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Abstract. In order to study the influence factors to the gross annual value of Zhanjiang's mining industry, this paper uses econometrics method to establish an econometric model and obtains a regression equation of the total fixed assets investment and the overall industrial energy consumption to the gross annual value of Zhanjiang's mining industry. From the analysis results, fixed asset investment has a greater influence on the mining industry.

Introduction

Zhanjiang, as the southernmost port city in Mainland China, owns superior geographical location, excellent harbors and has abundant mineral resources. So far, 33 types of mineral reserves and 155 mineral deposits have been discovered, the most valuable among which is the "Four Soil" resource (diatomite, bentonite, moor soil, kaoline, etc.) the continental shelf basin of the northern South China Sea, which borders on Zhanjiang, is one of the four major offshore oil and gas accumulation centers in the world. Though with abundant products, the abundant resources have not been properly exploited. The mining industry in Zhanjiang is still in its early phase. Compared to other cities with considerable resource conditions, there is still much space for the development of Zhanjiang's mining industry.

Zhanjiang has depended mainly on importing minerals for a long time. With the operation of the large-scale bulk-cargo terminal of Zhanjiang Port and the investment of Baosteel on the Zhanjiang's steel project, the transaction of ironstone in Southern China has become increasingly active.

According to statistics, 90% of the world's energy and 80% of industrial raw materials come from mineral raw materials. Mineral resources are the prerequisite for regional economic booms and the important symbol for economic strength. As part of Zhanjiang's economic composition, the mining industry is, to some extent, related to Zhejiang's economic construction and the pace and speed of the rise of Zhanjiang in Guangdong and even in the whole country. Therefore, this paper adopts the related data in the recent years to conduct research and analysis on the gross annual value of Zhanjiang's mining industry, the fixed assets investment and the energy consumption by establishing an econometric model to find the deficiencies and propose corresponding suggestions, which is of great significance for the development of Zhanjiang's mining industry and its economy.

Model Setting and Data Specification

The basic factors that influence the gross annual value of Zhanjiang's mining industry are mainly the total fixed assets investment and the overall industrial energy consumption (including water, electricity, etc.). Set Y as the gross annual value, X_1 as the total fixed assets investment, X_2 as the overall industrial energy consumption. For these three do not display a linearity relationship, the econometric model is established as follow:

$$\ln Y_t = \beta_0 + \beta_1 \ln X_{1t} + \beta_2 \ln X_{2t} + \mu_t$$

Inquire related data from May 2014 to August 2016 from Zhanjiang Statistical Information Net, the following data can be obtained by calculation and collation:

Table 1 Influence Factors to the Gross Annual Value of Zhanjiang's Mining Industry

Month-year	gross annual value (Y) (Ten thousand yuan)	total fixed assets investment (X1) (Ten thousand yuan)	overall industrial energy consumption (X2)
May-2014	5965.00	13513.13	2690.96
Jun-2014	10245.00	15091.73	3024.31
Jul-2014	11658.00	28020.96	7419.01
Aug-2014	12423.00	29756.44	952.90
Sep-2014	17547.00	40418.54	1035.33
Oct-2014	18606.00	42486.27	1162.44
Nov-2014	19483.00	45275.63	1196.92
Dec-2014	20468.00	59148.75	1553.36
Jan-2015	20554.00	63485.06	1576.35
Feb-2015	20554.00	69150.58	1576.35
Mar-2015	23955.00	83762.02	1599.34
Apr-2015	25184.00	91554.02	1873.32
May-2015	25549.00	91904.96	2004.33
Jun-2015	28186.00	105511.73	2161.27
Jul-2015	28808.00	111539.04	2384.90
Aug-2015	28808.00	109730.13	2235.37
Sep-2015	33955.00	122417.90	2454.34
Oct-2015	34398.00	129772.17	2531.86
Nov-2015	34545.00	129823.02	2690.61
Dec-2015	55661.00	146444.17	2730.41
Jan-2016	61215.00	152920.90	2857.62
Feb-2016	71954.00	154454.17	3544.09
Mar-2016	85078.00	172981.08	3544.09
Apr-2016	85788.00	180947.75	3557.01
May-2016	88954.00	201039.92	3609.07
Jun-2016	95875.00	211992.17	3724.87
Jul-2016	119312.00	212155.25	3725.25
Aug-2016	137393.00	273017.83	3735.32

Data Sources: Zhanjiang Bureau of Statistics

Parametric Estimation and Results of Model

Based on the above data and adopt Eviews, the regression results are as follows:

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids	
Dependent Variable: LOG(Y)										
Method: Least Squares										
Date: 12/30/16 Time: 11:30										
Sample (adjusted): 2014M05 2016M10										
Included observations: 28 after adjustments										
Variable		Coefficient	Std. Error	t-Statistic	Prob.					
C		-1.641441	0.935364	-1.754869	0.0915					
LOG(X1)		0.896773	0.067748	13.23686	0.0000					
LOG(X2)		0.235662	0.113913	2.068793	0.0491					
R-squared		0.902399	Mean dependent var		10.38206					
Adjusted R-squared		0.894591	S.D. dependent var		0.797825					
S.E. of regression		0.259028	Akaike info criterion		0.237194					
Sum squared resid		1.677385	Schwarz criterion		0.379930					
Log likelihood		-0.320717	Hannan-Quinn criter.		0.280830					
F-statistic		115.5727	Durbin-Watson stat		0.669227					
Prob(F-statistic)		0.000000								

Figure 1. Econometric Analysis Results

The econometric equation is:

$$\ln \hat{Y} = -1.6414 + 0.8968 \ln X_1 + 0.2357 X_2$$

The regression results show that 90% of the variation of the gross annual value of Zhanjiang's mining industry can be explained by the variation of the total fixed assets investment and the overall industrial energy consumption from May 2014 to October 2016.

Conclusion

The model estimation results show that, on average, the gross annual value of mining industry will increase by 0.897% if fixed assets investment increase 1%; the gross annual value of mining industry will increase by 0.236% if the overall industrial energy consumption increase 1% (assuming other variables remain unchanged). From the results, fixed assets investment has a greater impact on the mining industry.

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