



## Focus on the current competitiveness of coal industry in China: Has the depression time gone?



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### ABSTRACT

Since 2012 the coal industry in China has deeply fallen into depression. When entering into 2015, the tragedy continued. What the future of China's coal is has confused the scholars and managers. In order to evaluate the current competitiveness of coal industry in China, the diamond model is employed in present study to analyze the influence of six components on the competitiveness, namely factor condition, demand condition, related and support department, firm strategy, structure and rivalry, government, chance. The result of diamond model shows that the coal industry suffers from excessive capacity, low industry concentration ratio, low price and low investment, etc. The current competitiveness of coal industry in China is not satisfactory. Fortunately, China government has issued lists of policies to recover the industry. Besides, some strategic plans provide great chances for the recovery of coal industry. At the end of this paper, a gear model is applied to design a dynamic competitiveness improvement mechanism of coal industry in China. The model shows that the power comes from the coal industry itself is the main active force to impel the improvement of coal industry competitiveness, and the government, chance, related and support department play accessory but indispensable roles.

### 1. Introduction

The years between 2002 and 2012 are the Golden Decade of the coal industry in China. In the decade, a large amount of social capital inflow was attracted by the increasing market demand and coal price. However, it also resulted in over-production and yield over-concentration. After May in 2012, the coal industry in China fell into depression. The coal sales growth was only 2.83%, 7% lower than that of 2011. Meanwhile, the growth of coal yield fell by 5%. In 2014, the coal yield was 3.87 billion tons, decreasing by 2.5% year on year (NBS, 2015); the consumption was 3.55 billion tons, 2.9% cut compared to that of 2013 (NBS, 2014). Oversupply resulted in the coal inventory staying in a high level. Up to the end of 2014, the inventory was 87 million tons, 2.6% higher than that at the beginning of the year (BP, BP Statistical Review of World Energy, 2015). The benefit of China coal enterprises declined rapidly since 2012, and the scale of loss extends continuously.

A number of scholars paid more attention to the reason and the solution of the slump in coal industry. Guan indicates (Guan and Li, 2015) that slack demand results in sale slump, and the utilization of

new energy to a certain extent affects the coal consumption. China has strengthened the air pollution control, so the development of non-fossil energy compresses the coal demand (Dai et al., 2015). What's more, high investment and taxes are the key reasons for coal industry depression (Luo, 2015). For the purpose of coal industry recovery, China should eliminate backward and inefficient coal mines and reduce the construction of new mines. Besides, industry concentration ratio and operation efficiency should be improved (Zhou, 2015). Li (Li, 2015) indicated that coal benefit maximization can be realized by increasing the intensity of coal washing and coal quality, decreasing coal transportation expense. In addition, rational marketing strategy and inner reformation also can help coal enterprises deal with the depression (Zhan, 2015).

In short, the yields and sales of coal in China fell, the inventory increased, and the coal enterprises suffered great loss. The golden time of coal industry in China has gone and the slump still continues. The current competitiveness of coal industry in China is pessimistic. Many researches focus on the reasons and the solutions of coal industry depression in China. However, the competitiveness of coal industry in

*Abbreviations:* R/P, reserves-production ratio; UHV, ultra-high voltage; CNY, Chinese Yen; AC, alternating current; DC, direct current; S/D, supply-demand ratio; ARA, Amsterdam-Rotterdam-Antwerp; GCV, gross calorific value at constant volume; SC, State Council; GOSC, General Office of the State Council; NDRC, National Development and Reform Commission; NEA, National Energy Administration; GAC, General Administration of Customs; SAT, State Administration of Taxation; MIIT, Ministry of Industry and Information Technology; MOF, Ministry of Finance; EPS, electricity power substitution; SGCC, State Grid Corporation of China; B & R, Belt and Road; CCT, Clean coal technology; NBS, National Bureau of Standards; BP, British Petroleum; CEC, China Electricity Council; GF Securities Co., Ltd, Guangfa Securities Company Limited

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China at current period and the way the coal industry recovers haven't been studied yet. Present study adopts the diamond model to analyze the current competitiveness of coal industry in China, mainly focusing on the four major components and two accessory components. What's more, a gear model is introduced to highlight the interaction of the components in the process of coal industry competitiveness improvement. The layout of present study is designed as follows: Section 2 describes the principle of diamond model. In the following section, the analysis of coal industry competitiveness is detailed. In Section 4, the interaction mechanism of coal industry competitiveness improvement is elaborated. Section 5 concludes this paper.

## 2. Diamond model

Porter's Diamond Model is an effective method to analyze the competitive advantage of domestic industry (Zhao et al., 2009). Diamond model consists of four major components including factor condition, demand condition, related and support departments, firm strategy, structure and rivalry, as well as two accessory factors namely government and chance (Porter, 1990). Factor conditions mean initial advantages, including nature resource, human resource, capital resource, infrastructure, etc. Demand condition is the industry domestic demand. Generally, the domestic demand can stimulate the international competitiveness. Related and support departments are the upstream and downstream related industries. A competitive related and support department can drive the competitiveness of this industry. Firm strategy, structure and rivalry are the local context and rules that encourage investment and sustained upgrading, the incentive systems across all major institutions, and the open and vigorous competition among locally based rivals (Porter, 1990). Government is not one of the competition subjects, but it is a reform facilitator or a strategy executive. It can bring in opportunity and pressure to the diamond system. Chance means uncertain factors that change industry competitiveness, and can further influence the main components.

All the components in diamond model can fully summarize the competitiveness of an industry, and the analysis result can help explore new paths to improve industry competitiveness. Therefore, in present study diamond model is applied to analyze the current competitiveness of coal industry in China. The structure and analysis of the diamond model are detailed in Fig. 1.

## 3. Competitiveness analysis

### 3.1. Major components

#### 3.1.1. Factor condition

This part contains four main contents: coal resource, human resource, infrastructure and investment.

**3.1.1.1. Coal resource.** China possesses rich coal resource. By the end of 2014, the proved coal reserve in China is 114.5 billion tons, accounting for 12.8% of the global coal reserve (BP. BP Statistical Review of World Energy, 2015). China ranks the third after United States and Russia. However, the R/P of coal resource in China is only 30 (BP. BP Statistical Review of World Energy, 2015), which ranks 33rd in the world. Besides, the coal resource in China is buried deep underground, which makes the coal exploitation difficult. The coal resource distributes unequally, appearing on diminishing scale from north to south and from west to east. The inverse distribution between coal resource and economic development in China makes a wide range of coal transportation inevitable.

**3.1.1.2. Human resource.** Backward capacity elimination is an effect way to recover the coal industry, but it also brings negative affect. In China there are 6.11 million workers in coal industry (The number of workers of the coal industry in China reaches 6.1 million, 2014). With the implementation of capacity elimination, a large number of surplus workers lost their jobs, or suffered from 10% to 40% salary reduction due to low benefit of coal enterprises (Unemployment risk accumulates in coal industry, 2016). For example, nearly half of the mines of Inner Mongolia closed in June 2015, which led to more than 100 thousand workers lost their jobs (More than 500 coal mines closed and thousands of workers are faced with lay-off, 2015). China Coal Consumption Control Planning Report indicates the number of coal enterprises will reduce from 6390 in 2015 to 3000 at the end of the 13th Five Year Plan, which means that more than half of coal enterprises will withdraw from the market, and more than 8.62 thousand workers will be out of work (Capacity of coal mines are required to be checked, 2015).

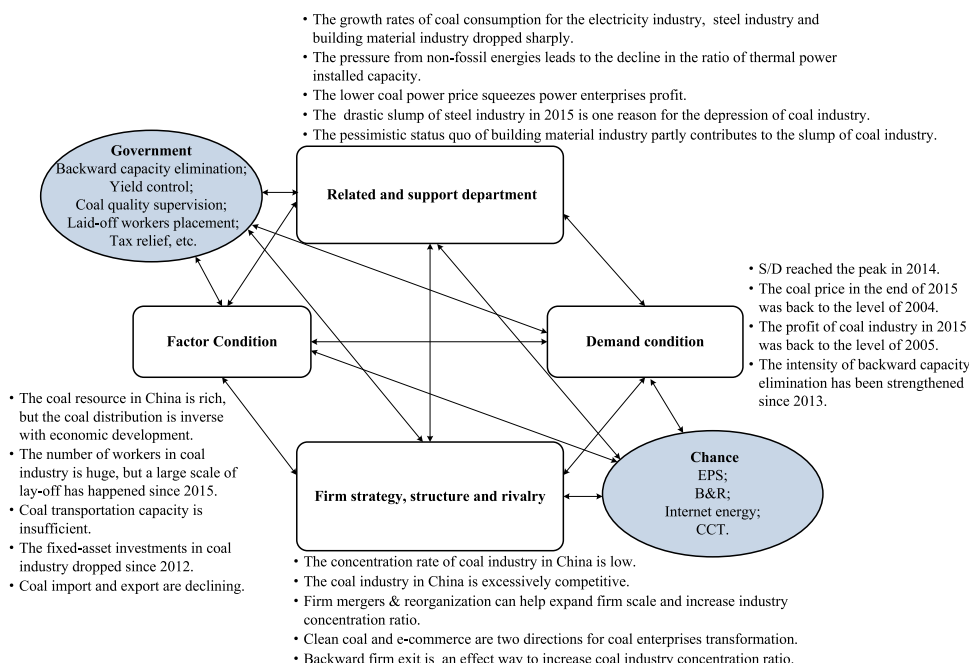


Fig. 1. Diamond model structure and analysis.

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