

Analysis on the Path of China's Energy Supply-side Reform Based on Capacity, Structure and Consumption Mode

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Keywords: capacity structure; consumption pattern; energy supply side; reform path

Abstract: At this stage, China's economic development faces an important issue which is how to understand and adapt to the new normal of economic development. Based on the new normal, the key factor to curb the development of China's energy industry is how to reform and use energy reform to solve the imbalance of supply-side structure. From the perspective of the new normal of economic development, the paper expounds the meaning of supply-side reform; the three points of overcapacity, imperfect energy structure and energy consumption model analyze the significance and key points of China's energy supply-side reform; Based on capacity, structure and consumption patterns, this paper proposes a reasonable reform path from meeting the cultivation requirements, building the energy Internet, improving the energy mechanism, increasing the government's correct guidance to improve energy technology, and optimizing energy laws.

1. Introduction

The supply-side structural reforms brought the Chinese economy into a new developmental normal, which was a precise reform and occupied a major position in comprehensive reform. In recent years, China's economy is in a downhill direction. Compared with the advantages and disadvantages of the energy supply side, it has formulated detailed reform paths and completed precise reforms within the specified time to optimize the energy structure and improve transformation and upgrading

2. Energy supply side reform implications

For a long time, the core driving force for China's continued economic growth is import and export, investment and consumption. Consumer demand in the three major sources of power still hinders the development of China's economy, and there are certain deficiencies. In the traditional sense, many economists pointed out that the reason for the continuous rise of the economy is the result of the failure of the overall demand, and the government's macroeconomic regulation and control is based on the Keynesian policy concept, manage from the perspective of demand, while using policies to stimulate consumption, investment, exports, and expand demand. In recent years, economic relations at home and abroad have become more and more tense, and gradually reforms have been made. The global economy is cumbersome, sluggish, and twisted. The population and

resource problems have inhibited China's economic development to a certain extent, compared with the traditional dividend economic development model, it is inconsistent with China's economic growth requirements. It is now in the “three-phase superposition” stage. As economic pressure increases, economic development begins to move toward the new normal. In order to solve the domestic and international demand problems, the relevant governments have successively launched a series of solutions, but the effect is not very obvious. For Keynesian demand side management, although it can satisfy the total demand, it does not have much effect on structural improvement and structural transformation. It cannot completely improve structural imbalances and change the economic development model. On the contrary, it increases the risk, at present, exports, investment, and consumption have no effect on raising economic growth.

Nowadays, the reason for restricting the rapid development of China's economy is the problem of “supply and demand misplacement”, which is reflected in medical, energy, housing and education. Compared with the energy range, on the one hand, some traditional energy industries such as thermal power industry, coal industry, and oil refining industry have overcapacity; on the other hand, the non-fossil energy renewable energy loss structure is unreasonable and the utilization rate is low. Mainly in the supply system, generally refers to low production efficiency and high quality mismatch rate. Therefore, the main factors limiting the rising Chinese economy are short-term cyclical pressures and long-term structural pressures. Based on this, in order to achieve the long-term economic development goals, It is impossible to rely solely on management, and to optimize and innovate the economic structure so that the potential economy can be improved. Starting from the supply side, it will increase the structural reform of the supply side.

In the national economy, the energy industry is its basic industry, which is consistent with the consumption requirements of the household's living factors and is consistent with the intermediate elements of the national economy. Both the element of life and the factors of production are the core of the supply system. Based on the capacity, structure and consumption mode, due to the imperfect supply-side structure, it is necessary to solve some problems faced by China's energy sources, such as overcapacity, energy structure bottleneck constraints, and overall low efficiency of the energy system. In this regard, we will intensify innovation and promote structural reforms in the energy supply side.

3. The significance of supply-side reform in energy

3.1. Overcapacity in the energy industry limits China's economic development

In China, due to the impact of rising economic trends, the investment rate has been accelerated to a certain extent. The investment in cement, coal, non-ferrous metals, steel and other industries is too high, so that the rate of demand expansion cannot keep up with the speed of capacity expansion. According to the analysis data, the fundamental reason for the decline of Chinese enterprises' economy is overcapacity. The enterprises involved are oil and gas, steel and coal. During 2017, the profit of minerals decreased by 76.8% compared with previous years. For the energy industry, there are coal enterprises and oil refining enterprises with overcapacity. At the end of 2017, China's coal production capacity has reached 7 billion tons per year. The scale of the audit project is 1.5 billion tons per year, and the annual output of the industry is 4.2 billion tons per year., the loss has exceeded 88%. In the thermal power industry, the installed capacity of full-caliber power generation has exceeded 1.5 billion kilowatts, and the utilization time of thermal power equipment has dropped from 4810 hours to 4,600 hours. For the refining industry, the reasonable operating rate is the mainstay, and the overcapacity problem in the refining industry is still very serious. During 2016, the crude oil processing volume was over 900 million tons, and the average operating rate was 82.4%. Compared with 2015, the average level is still very low. At the same time, the limitations of

demand and regulation skills, the low efficiency of renewable energy use is still very obvious, which limits the development of renewable energy to a large extent. Large-scale idle productivity wastes energy resources, and the energy industry operates inefficiently, increasing economic costs and restricting development.

3.2. Unreasonable energy structure causes environmental pollution

Table 1 Primary Energy Consumption Structure of Global High Energy Consumption Countries In 2016

	COAL	OIL	NATUR AL GAS	NON-PETRO CHEMICAL ENERGY	NUCLEAR ENERGY	HYDRO POWER	RENEWABL E ENERGY
USA	23.9	38.0	31.5	16.6	8.4	2.6	3.7
CHINA	28.1	33.3	24.1	18.9	4.5	6.9	3.2
INDIA	56.9	29.4	6.2	10.2	1.2	4.0	2.3
JAPAN	26.9	41.4	22.5	4.2	0.9	4.1	4.2
GERMANY	23.3	31.5	22.4	20.2	5.9	1.4	11.8
FRANCE	3.5	32.4	16.2	55.4	38.7	5.7	3.5
UNITED KINGDOM	5.8	38.9	36.7	17.6	8.6	0.6	9.3
RUSSIA	13.0	22.0	52.1	13.2	6.6	6.5	0
CANADA	6.4	30.6	27.3	36.8	7.0	26.6	2.8
ITALY	7.2	38.4	38.4	20.1	0	6.1	9.9
SPAIN	7.7	46.3	18.7	30.3	9.9	6.0	11.5
KOREA	28.5	42.7	14.3	15.9	12.8	0.2	1.5
SOUTH AFRICA	69.6	22.0	3.8	5.23	2.9	0.2	1.5
IRAN	0.6	31.0	66.8	3.4	0.5	1.1	0
SAUDI ARABIA	0	63.0	36.9	0	0	0	0
INDONESIA	35.8	41.5	19.4	5.2	0	1.9	1.5
AUSTRALIA	31.7	34.6	26.8	7.88	0	2.9	3.9
MEXICO	5.2	44.4	43.2	9.36	1.3	3.6	2.2
BRAZIL	5.5	46.6	11.0	36.7	1.2	29.2	6.4
TURKEY	27.7	30.4	27.4	11.26	0	11.0	3.8
EU	14.5	37.4	23.5	26.8	11.6	4.8	8.3
OECD COUNTRIES	16.5	37.7	27.0	19.8	8.1	5.7	4.9
NON-OECD COUNTRIES	36.4	30.1	22.1	12.9	1.9	7.7	1.9
WORLD	28.1	33.3	24.1	15.8	4.5	6.9	3.2

According to past data, fossil energy is an important resource for China's energy supply side. So far, the energy system that previously maintained China's miracle of economic development has now become the chief culprit in restricting economic development and destroying the ecological environment. In 2016, coal consumption accounted for 64.4% of total energy consumption, non-fossil energy consumption accounted for 11.2% of total energy consumption, and carbon emissions exceeded the European and American countries, ranking first. The fundamental reasons for the difficult economic transformation are unreasonable energy structure and regional overcapacity. Combined with the analysis of BP energy statistics in 2016, it can be seen in China's primary energy consumption structure that non-fossil energy accounts for only 18.9% of the primary energy consumption ratio, which is lower than the world average. In addition, the proportion of renewable energy accounts for 2.5% of primary energy consumption, which is lower than the world average and lower than most high-energy countries. US coal consumption, non-fossil

energy consumption, and natural gas consumption accounted for 23.9%, 16.6%, and 31.5% of total primary energy consumption. The non-petrochemical energy consumption in France and Canada accounted for 55.4% and 36.8%. As shown in Table 1

At the same time, the main cause of serious environmental pollution problems is too much to rely on the black energy system. Due to the excessive emission of carbon dioxide, the haze weather in China has become very serious and has a wide range, which poses a serious threat to human health and restricts the development of China's sustainable economy. From 2009 to 2018, China's carbon emissions are on the rise year by year, it has been at the forefront of the world while the total carbon emissions of other countries have been in a stable state, as shown in Figure 1. Therefore, in order to achieve economic transformation and protect the ecological environment, the primary task is to adjust the energy structure, reduce the consumption frequency of high-energy pollutants, and build an energy consumption system based on clean energy and renewable energy.

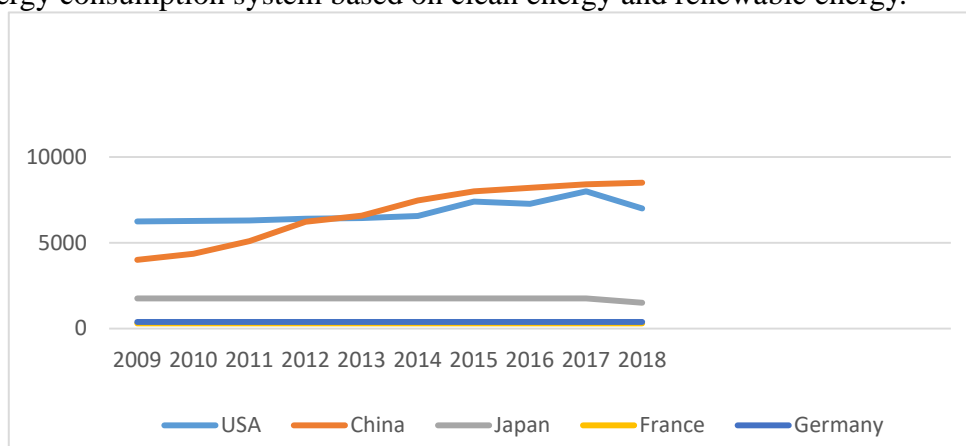


Figure 1 China and typical developed countries carbon emissions trends

3.3. High-loss energy consumption patterns lead to low energy efficiency

The rapid economic development in recent years has witnessed China's take-off and promoted the development of heavy industry and chemical industry to a certain extent. It is a miracle, but it also consumes a lot of energy to damage the ecological environment. Low energy efficiency is another way of presenting high energy consumption patterns. The role of energy consumption intensity is to make a preliminary measurement of the country's energy efficiency, energy consumption levels, energy conservation losses, and thus to obtain detailed indicators. This type of indicator represents the GDP energy consumed by the production unit, indicating the energy resources used by a country in economic production activities, highlighting energy efficiency and regulating the economic framework. Compared with the intensity of energy consumption, China's energy consumption per 10,000 US dollars of GDP is 4.1 tons of standard coal, which is in good condition compared with India, Russia, South Africa and Saudi Arabia, as shown in Figure 2. Due to the impact of high energy consumption and low efficiency energy consumption mode, it has reduced the national industrial competitiveness, restricted China's economic development, and increased the difficulty of China's economic upgrading.

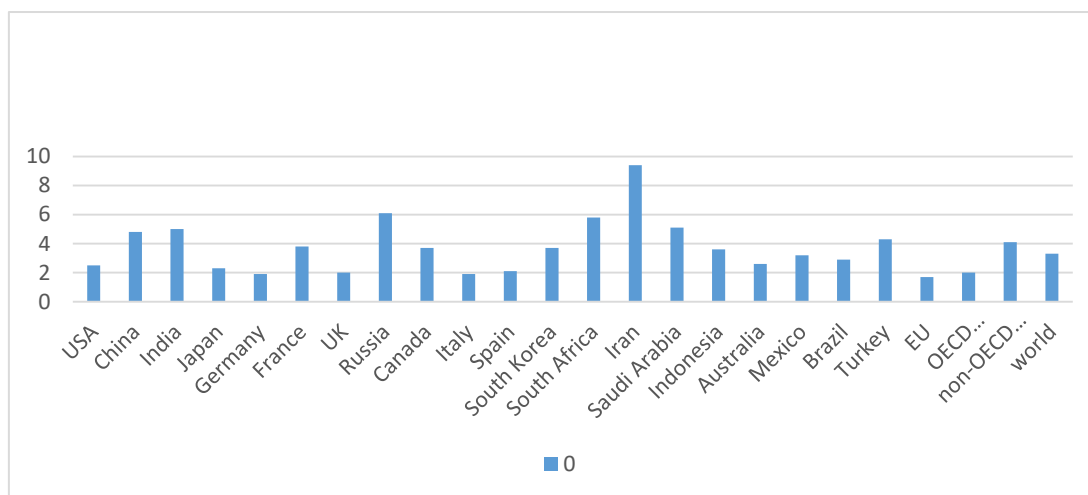


Figure 2 Energy intensity of energy consumption in the world's major energy-consuming countries in 2016

4. Key points of China's energy supply side reform

4.1. Establish a good environment, safe and efficient energy structure

The energy supply side reform is an important factor in promoting the development of industrial structure in the energy region. It gradually shifts from “black system” to “clean system”, guiding China's energy to gradually move from fossil energy to new energy. According to the status quo of China's energy structure development, only by receiving the supply side signal of the fossil energy industry, can we quickly break away from fossil energy and let resources flow into new energy enterprises. At the same time, due to the contraction of the supply end, the supply and demand structure of the fossil energy industry tends to be rationalized.

4.2. Establish a resource-saving energy consumption system

Based on the capacity, structure and consumption patterns, China's new energy supply side reform path mainly includes: promoting the energy consumption revolution and the energy technology revolution, establishing an energy-saving industrial structure, rationally controlling the total energy, and improving energy efficiency. Rapidly develop low-energy, low-emission industries, adjust the depth of industrial structure, create energy-saving emission reduction projects, start with the development of new industries such as high-end manufacturing and production services, innovate supply and demand, and transform traditional energy supply thinking. Control the total energy consumption, and finally form a resource-saving production model and a coordinated and sustainable consumption model.

5. The realization path of energy supply side reform

5.1. Meet energy development requirements

With the continuous advancement of the reform of the energy supply side, we should comprehensively consider the issue of energy supply and requirements, establish a supply task based on energy requirements, balance energy production and consumption, and completely eliminate the “mismatch between supply and demand” of energy. From the perspective of requirements, the supply-side reform specifically refers to the change of supply management to

meet the basic requirements of energy development. In the energy industry, supply-side reform is to reform energy conservation and environmental protection, so that service quality has improved, and the energy industry has gradually formed green and energy-saving development requirements. From a green perspective, it is necessary to divide the green energy level and meet the energy requirements of different groups by means of power connections. From the perspective of energy saving, we collect information data of different energy groups and finally design an energy management plan that not only meets user requirements but also meets scientific standards. Use the guidance method to meet the requirements of energy-using groups for new energy, build on the energy demand reform, activate the energy revolution industry, innovate energy technology and business models, change traditional fossil energy, and gradually replace it with clean energy and renewable energy. Adjust the proportion of renewable energy in primary energy consumption, reasonably control the total energy consumption, further improve energy efficiency, improve energy structure, and realize the reform of energy consumption mode.

5.2. Innovative energy mechanism

The main way to promote energy supply side reform is to achieve a green transformation of the energy industry. The green energy transformation is based on the formation of the energy price mechanism and the innovation of the market trading mechanism. The lack of a sound innovation system and market mechanism is inconsistent with the requirements of the modern energy market and increases the difficulty of creating a green, low-carbon, safe and effective modern energy system. Only by innovating the energy market competition mechanism, pricing mechanism, and supply and demand mechanism can we demonstrate the role of the energy mechanism and achieve the energy supply side reform goal on the premise of energy green transformation. In addition, to strengthen the structural reform of the energy supply side, it is necessary to always implement the market-oriented principle and maximize the decisive role of the market in the optimization and upgrading of resource allocation, thus creating an open energy market system. In detail, utilize the optimization of the energy market mechanism to improve the allocation of energy resources, reduce human intervention as much as possible, and implement the goal of improving energy efficiency and efficiency in the energy industry.

6. Conclusion

In summary, China's supply-side structural reform of the energy industry is imperative and urgent. In the long run, this is not only the current requirement to accelerate the recovery and growth of China's economy, but also the process of storing energy and power for future economic health and high-quality development.

Acknowledgments

Shaanxi Provincial Department of Education 2017 Special Scientific Research Project—A Strategic Study on the Transformation and Upgrading of Shaanxi Energy Industry under the Supply-side Reform, Project Number: 17 JK1045

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