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China's Supply-side Reform: Background, Theoretical Models and Implementation Paths

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Abstract: Everything is changing. Drastic changes also take place in the international situation. This paper elaborates that human being is currently in the downward phase of the fifth long-term cycle after the industrial revolution, which is the global political and economic background of China's Supply-side reform. Seen from the Supply-side, the author thinks that the main driving force for economic growth is the combination of labor, capital, land and natural resources, technological innovation, and system and also their comprehensive efficiency therefrom. From the viewpoints of these five major factors and their motion rule, the paper establishes a theoretical model for these factors and their motion rule in the Supply-side structural reform and then clarifies the position of the government and the enterprise clearly. Further, based on long-term view and the theoretical model, the paper put forward that the main driving force to promote economic and social development and upgrading under the background of China's Supply-side structural reform is to release the potential of Supply-side factors, to foster the "new economy" with new technological revolution as the core and to optimize the overall economic structure in China. The paper also suggests that China's Supply-side structural reform shall be based on the current situation, take a long-term view and implement the "three step" strategy.

Keywords: New Supply, Structural Reform, Long-Term Cycle, Factor Motion, New Economy

1. Introduction

In previous studies on new Supply-side economics[1], it is emphasized that the essentials of Supply-side structural reform is striving to overcome difficulties, that is, solving the problem of effective institutional supply through deepening the reform so as to further liberate the productive forces and support the times choice in the process of China's modernization. The authors have been striving to establish a logical and systematic cognitive framework of new Supply-side economics from the perspective of combining theory and practice closely. The purpose of this paper is to further explain the grand historical background of China's Supply-side structural reform, establish the theoretical model for the structural reform based on the factors and their motion rule, then define clearly the position of the government and the enterprise in the supply system and the Supply-side reform, and finally put forward the implementation path and direction of the Supply-side structural reform in China.

2. Long-Term Cycle: Background for China to Promote Supply-side Structural Reform

There are many indications that the long-term cycle is evolving at roughly its own pace. In the history of economics, the Russian economist and statistician Nikolai D. Kondratieff made use of the time-series statistics of prices, interest rates,

1 This paper is one of the achievements of continuous research on new supply-side economics. For those who are interested in new supply-side economics, please refer to relative books of Jia Kang and his co-authors or visit the website of China Academy of New Supply-side Economics, http://www.newsupplyecon.org/

imports, exports, coal and cast iron production, etc. in main industrialized countries such as the United Kingdom, France, the United States and Germany, etc. in *The* Long Waves in Economic Life written in 1925. He concluded that there was a long-term wave of approximately fifty to sixty years in economic development. For the first twenty years, the economy would experience a prosperous period. After that, the economy would experience a recession period of about ten years, then a depression period of about ten years, and finally a recovery period of about ten years. He studied the circumstances in 140 years from 1780 to 1920, during which the capitalist economy had experienced two-and-a-half long-term cycles.[2] This is the well-known "The Kondratieff Cycle", namely the productivity cycle theory.

Joseph Alois Schumpeter and many other economists also believe that there are indeed four stages of "prosperity", "recession", "depression" and "recovery" in the capitalist economy and the four stages circulate. However, Schumpeter focused on technological innovation, which, in his opinion, was the main factor to promote cyclical changes in the economy. In his opinion, to a great extent, the cycle of economic growth was equal to the cycle of the technological revolution. Based on this, he divided the period of capitalist economic development into three long-term cycles. First, from the 1880s to 1840, the innovation in the textile industry played an important role. Second, from 1840 to 1897, it was mainly the innovation in the steam and steel industry. Third, from 1897 to the 1950s, it was led by the innovation in the electrical, chemical and automotive industries.[3] Seen from this point, it can be concluded that from the 1950s to the 1990s, the economy experienced an era of electronic information initiated by the innovation in semiconductor technology, which was also about fifty years. Since then until now, the wave of technological revolution has been advancing all the way to the era of Internet, mobile Internet and artificial intelligence. Major technological advances such as big data and cloud computing, etc. are leading a new wave of innovation in the world in the theme of "peace and development" during the process of informatization and globalization. The "digital economy" has emerged rapidly and the "share economy" is just under development.

Just as the "punkeek"[4] in the evolution of biology, technological advancements, especially when the new replaces the old, are often accompanied by some kind of stagnation and recession. The world financial crisis that took place in 2008 interrupted the flourishing globalization process. Since then, nine years have passed. Yet the entire world is still in a period of economic pain after the crisis and high uncertainty. Its main performances are as follows: the U.S. economy recovers moderately but not stably; the European economy continues to decline; the European Union's perspective is still uncertain after the British existed from the EU; the right-wing forces in many countries have risen; Japan has been in stagnation with almost zero growth for long periods; emerging economies and the developing countries also face many difficulties. In order to stimulate the economy, the central banks of several countries such as the EU, Japan, etc. have started the era of "negative interest rates". Meanwhile, as for the international relationship, the trend of nationalism, trade protectionism and the de-globalization have risen obviously. To a large extent, the astounding dramatic changes are taking place in the world today. According to the specific performances of this long-term cycle, the chart of the fourth long-term cycle as well as that of the first half of the fifth long-term cycle is figured out based on the cycle theory of Schumpeter, which are shown in Table 1. To put it plainly, the world economy is currently in the recession period of the fifth long-term cycle.

The major lessons we have learned from the long-cycle theory is that in the past two hundred years, the economic growth and prosperity mainly originated from the industrial revolution brought by major technological breakthroughs that changed the history of the world and the consequent "leap" of the economic structure. Vice versa, economic recession and depression are mainly caused by the declination of technological bonuses, that is, the aging industrial and economic structure resulted from the depleted "low hanging fruits" on the big tree of new technology. However, throughout the history, the invention and innovation spirits of human being will never stop. In time, the new technological revolution will inevitably come, and the economy will return to growth and prosperity. Thus human being will also enter the next period of rapid development.

The long-cycle theory is useful for determining the historical position of the Supply-side structural reform in China. It clearly shows that the recovery of the world economy need to take some time after the financial crisis in 2008, and the world may still need to wait for more than one decade. Accordingly, China's economy, which has entered a 'new normal', will also need a relatively long period of time before embracing the next prosperity and rapid growth. It also clearly shows that without major breakthroughs at the technological level, the world economy can never walk out of the recession and downturn. It is inevitable to develop the new economy. The long-cycle theory also indicates that at each stage of the transformation, the old and new structural contradictions often occur. This is almost as same as the reality in China. In recent years, China has entered a period of hazard with "accumulated contradictions" and "overlapped potentials" while there still exists the features of "golden

2 Specifically: (1) from 1789 to 1849, the rising phase was 25 years while the declining phase was 35 years, totally 60 years; (2) from 1849 to 1896, the rising phase was 24 years while the declining phase was 23 years, totally 47 years; (3) from the year of 1896, the rising phase was 24 years and then the economy declined from 1920. By the time he wrote the book, the recession period of the third long-term wave still continued.

3 Joseph Alois Schumpeter, 1912: *The Theory of Economic Progress*, Chinese Version, The Commercial Press, 1990.

4 Namely the theory of punctuated equilibrium. It was proposed by Niles Eldredge and Stephen Jay Gould in 1972. The basic idea is that speciation generally alternates between long periods of stability and stagnation. There is no uniform, smooth or gradual change. Once new species form, it will experience a relatively stable and equilibrium state for long periods of time. Quoted from Kevin Kelly, *Out of Control: The New Biology of Machines, Social Systems, and the Economic World*, P129, New Star Press, 2010.

development period". In view to the reality in China, "the fifth cycle", revealed by the long-cycle theory, almost overlapped with "the third step" (2000-2050) proposed by Deng Xiaoping in China's "three-step" modernization strategy, and also coincided exactly with the time of overcoming "middle income trap" and realizing the "Chinese dream", namely realizing the rejuvenation of the Chinese nation. Therefore, thoroughly understanding this background will not only help to deepen the understanding of the historical and times background for promoting Supply-side structural reform, but also further clarify theoretically the extremely importance of new technology and new economy for China's economic transformation and upgrading. Thus, we can deeply realize and logically interpret the direction and implementation path of China's Supply-side structural reform, which is of great significance.

Table 1. *Four Long-Term Cycles After the Industrial Revolution.*

	Prosperity	Recession	Depression	Recovery	Markup Technology and Products
Long-term Cycle I	1782-1802	1815-1825	1825-1836	1838-1845	Textile Machine, Steam Engine
Long-term Cycle II	1845-1866	1866-1873	1873-1883	1883-1892	Steel, Railway
Long-term Cycle III	1892-1913	1920-1929	1929-1937	1937-1948	Electrical, Chemical, Automobile
Long-term Cycle IV	1948-1966	1966-1973	1973-1982	1982-1991	Automobile, Computer
Long-term Cycle V	1991-2007	2007-(2017)	(2017-2025)	(2025-2035)	Information Technology

Source: Zhou Jintao and Zheng Liansheng (2010): relative research on the Kondratieff Cycle and the authors' personal views. The data in the table is the starting year and the ending year. The year in the bracket is estimated by the authors.

3. Theoretical Models for Supply-side Structural Reform: Factors and Their Motion Rule

3.1. The Decisive Factor Influencing the Long-Term Economic Growth Is Five Major Factors on the Supply Side

According to the existing achievements in economic growth theory and new supply economics, we confirmed the primary dynamic significance of the demand, defined the responsive system of the supply to demand as the key dynamic contributions to the step development of the productivity, and then abstracted the factors of economic growth into five aspects: labor, land and natural resources, capital, technological innovation and system (including the management) from the supply side. In general terms, these five factors form an integral part and have their own contributions to economic growth. However, their relative contributions are different at different stages of economic development. The combination of different factors has a great influence on or even determines the economic growth situation and its overall performance. Thus, it is necessary to adapt to the transition of different stages of economic growth, innovate the combination of five factors, and adapt to the law to innovate and develop.

The five factors form a set of functions for economic growth. Its theoretical model is shown as the following formula (1):

$$G = f(L, R, C, T;\ I) \tag{1}$$

Among them, G represents economic growth, L represents labor, R represents land and natural resources, C represents capital, T represents technological innovation, and I represents system and management. The factors in the sense of economics refer to the main inputs that all the economic entities will involve in their production and business activities. However, at different stages of development and at different times, the effect and influence of each factor are different. In general, labor, land and capital are the most obvious and main factors at the early stage of economic growth. When the economy enters the middle-income stage, technological innovation and the system will generally show great potential, and hedge the degradation of the other three factors or even become the main contributors to total factor productivity (TFP) [5]. Looking ahead, from the point of view of technological change, an emerging factor - "data" or "information" may be considered to be added to the five factors. The above five factors can be divided into two levels. First, the liquid and more competitive factors, mainly including labor, land and natural resources (right of use, right of development), capital and technological innovation. Second, non-liquid and non-competitive factor, mainly referring to the institution. The institutional arrangements and the resulting institutional environment are also changing all the time. But they are generally slow variables, belonging to the category of production relationship that are determined by the development of productive forces. They will change and evolve under the comprehensive effects of inducement and pressure. In the end, formal or informal institutional supply system under specific historical conditions will be formed. In short, institutional supply is a relatively lagging, relatively steady but also significantly initiative response to the existing institutional needs in the economic and social life[6], which provides the environment and conditions that are favorable or unfavorable for the liquidity and reorganization of the competitive factors, thus resulting in the production relationship and social forms favorable or unfavorable to the "liberation of productive forces".

5 Please refer to Jia Kang. Ten Topics on Supply-side Reform [M]. Shanghai: Orient Publishing Center of China Publishing Group Corporation. 2016. Pages 15-16.

6 Please refer to Jia Kang, Feng Qiaobin. On the Time-lag and Activity of the Institution Supply [J]. Finance & Trade Economics. 2004 (2). Page 79.

3.2 .The Factors Are Always in the Process of Cycling and Succeeding

In view of the "hypothesis of economic man", the process of human economic activity is an infinitely cycling process of the interaction between supply and demand that satisfies human interests, that is, the process of social reproduction. On the supply side, various competitive factors such as labor, land and natural resources, capital and technological innovation, etc. are always in constant motion so as to maximize the efficiency, which is reflected in market share and returns through maximizing "user experience" after a series of competition. In short, efficiency and returns are the direct driving forces that guide the flow of factors. The social inspection mechanism driven by returns shall improve the user experience, which is the most fundamental supporting force. Further, the basic mechanism that facilitates the flow of factors is the formation process of social average rate of profit in competition. To be specific, the industries or sectors whose return is lower than social average rate of profit will have factor outflows. The lower the rate of return, the larger the driving force of factor outflow. For the industries or sectors whose return is equal to social average rate of profit, the factors will keep a relatively steady state. The industries or sectors whose return is larger than social average rate of profit will have factor inflows. The quantity and speed of the factor inflow is directly proportional to the difference between this industry's actual rate of profit and social average rate of profit. As far as an industry is concerned, with the outflow or inflow of the factors, the returns will gradually converge to and at last equal the social average rate of profit. At this time, the motion of the factors will keep a relatively steady state in this industry. It is shown in formula (2)[7] as follows.

$$K_i = \Delta P V_i^{\Delta P} t^{\frac{1}{\Delta P}} \tag{2}$$

Among them, K_i is the resource inflows in I industry, P_i is the rate of profit in i industry, P_a is social average rate of profit, $\Delta P = P_i - P_a$, V_i is the resource inflows in unit time in i industry, t_i is the resource inflow time in i industry.

From a dynamic point of view, when $\Delta P_1 > \Delta P_2 > 0$, $V_i^{\Delta P_1} t^{\frac{1}{\Delta P_1}} > V_i^{\Delta P_2} t^{\frac{1}{\Delta P_2}}$, the factors flow in quickly. Vice versa, when $\Delta P_1 < \Delta P_2 < 0$, $V_i^{\Delta P_1} t^{\frac{1}{\Delta P_1}} > V_i^{\Delta P_2} t^{\frac{1}{\Delta P_2}}$, the factors flow out. When $P_i = P_a$, K_i=0, the factors are in a state of equilibrium and they neither flow out nor flow in.

From the perspective of the whole society, at any point, the factors are in three different and closely linked states of motion.

3.2.1. Release Outwards

Due to the profit-driven characteristics of the capital, its accompanying competitive factors will always seek to maximize the benefits under given conditions. The fields that cannot reach the social average rate of profit will have factor outflows. The more convenient and smooth the outflow of the factors, the more conducive it is to the exploration of the potentials in social productivity and to the improvement of the overall performance of economic operation.

3.2.2. Inward Attraction

The factors that are released from inefficient fields are oriented towards the fields with higher returns. The more profitable the sectors or fields, the more attractive they are to the agglomeration of the factors. When this type of adsorption mechanism works, it is essential that whether or not the factors can flow and how easily they can flow freely.

3.2.3. Reorganization

The flow of different factors forms a reorganization process. Once the factors find a chance to obtain more profits, they will gather together as that the scrap-iron will be absorbed by the magnet, and then they will produce a series of "chemical reactions", combine organically through the interaction, gradually form a specific structural feature, and finally be embodied as certain industrial structure and economic structure. On the whole, the factors are always reorganized either tightly or loosely, or quickly or slowly, and the resulting economic structure also evolves dynamically in a constant process. The more convenient and flexible the release and attraction mechanism, the more efficient and high quality of the reorganization of the factors, and the more efficient of the relevant structural state. This relationship and process is shown as follows in Figure 1.

Of course, it should be pointed out that the above succeeding movement processes of the factors are mainly a theoretical abstraction. For a specific time and place, the factors will always be in three states at the same time. Due to the heterogeneity of the entire system in economic development and also the imbalance, abruptness and discontinuity of "destructive innovation" in different fields, there are always some fields with high profit rates and others with low profit rates. There are always some people who can find and grasp more and better profit opportunities while others cannot. So the competitive factors will always be in a process of unceasing movement. It is this internal driving mechanism that seeks higher returns and profits, forms the driving force for economic growth through the responsive mechanism of supply to the demand. Therefore, the process of economic growth is a process in which the factors continuously seek higher returns. Vice versa, to realize the economic growth, it is necessary to create more free and flexible conditions for the factors to seek maximum returns in the flow and provide more abundant opportunities

7 Thanks to Professor Chen Jiandong from Southwestern University of Finance and Economics for his help and support.

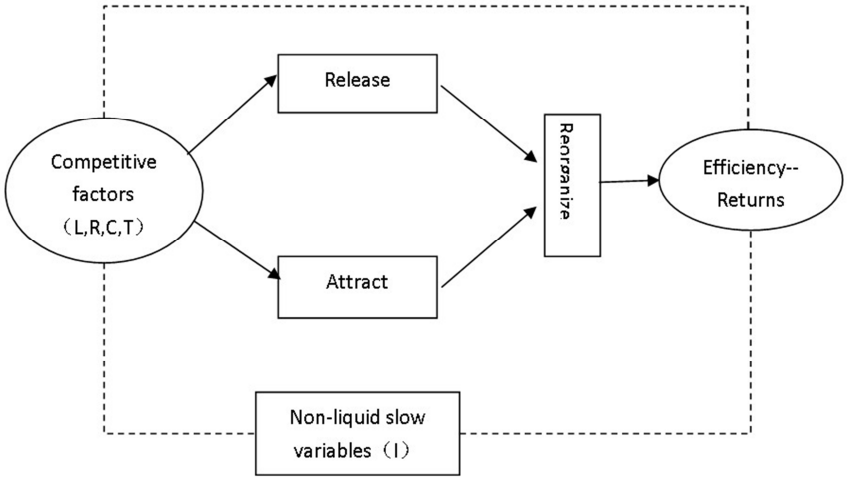

Figure 1. *Diagram for Factor Motion in Economic Society.*

What is the decisive condition that whether the release and attraction mechanism of the factors is flexible and convenient or not, or whether the process of factor reorganization and dynamic structural optimization is smooth or not. This is determined by the non-liquid and non-competitive factors in supply side – institutional supply. As mentioned above, the institutional arrangements and "institutional environment" are also changing. However, they are slow variables and fall in the category of production relationship, which is determined by the development of productive forces. They are driven by various factors during economic and social development. Finally, formal and informal institutional supply is formed through gradual natural evolution and active design. However, once the system is formed, it will be in a relatively steady state for a long period of time, affecting and shaping the incentive mechanism and behavior of all the subjects in a society. For transition economy such as China, the great institutional change from planned economy to market economy and the continuous development and improvement of the socialist market economic system are the most fundamental determinants of China's modernization strategy.

4. Correctly Understanding the Positioning of the Government and the Enterprise in Supply-side Structural Reform

The main battlefield for the structural reform on the supply side is the construction of factor markets. Based on the theory of factor motion expressed in the above-mentioned theoretical model, a question highly concerned by all parties can be clearly answered: In the Supply-side structural reform, how should the government and the market players (the enterprise) be positioned? In the allocation of resources realized through the flow and interaction of the factors, how to divide and cooperate?

Implemented on various entities related to economic growth, the five factors can be further subdivided into the following three levels:

4.1. Micro Level

The main factors involved in the production and business activities of the manufacturer or the company are labor, land and natural resources, and capital, which can be referred to as "people", "land" and "money." Different entrepreneurs use their unique vision and talents to combine these three factors into specific production or service supply capabilities. In an economy, most companies play their role as market players at this level.

4.2. The Combination of Micro-Level and Macro-Level

In addition to the above three factors, large corporations, multinational companies and industry leading companies, etc. will also pay special attention to the "scientific and technological innovation" when they engage in production and business activities. For large companies, on one hand, the ability of scientific and technological innovation determines their core competitiveness and the ability to survive and develop in long term. It determines that whether the large companies can maintain their leading position in the industry and obtain excess profits. On the other hand, due to the huge uncertainty and enormous costs of the technological innovation, generally, only large companies have the ability to make long-term huge investments. In addition, during the mid to late stages of industrialization, a large number of SMEs seeking innovative development in strategic emerging industries have got the support of venture capital and angel investment funds that are in line with the "new economy", taken technological innovation as key development supporting conditions and growth breakthrough, striven to from their own core competitiveness and successfully led a new trend with "Silicon Valley experience". Going further, no matter large corporations or small and medium-sized technology-based enterprises, they can combine their own scientific and technological innovation activities with the government's industrial policies, technical policies, fiscal and

taxation policies, etc. provided at meso and macro level, and seek the huge multiplier effects resulted from the integration of the "first productivity" – science and technology and the economic society. In addition, the top-level land development plans that are developed and implemented by local governments and the Central Government at meso-level and macro-level [8] have also become closely related to the combination of factors that the companies have independently selected at the micro level, and even become preconditions. People have profoundly realized from the history of world industrial development that technological innovation and the achievements of major technological breakthroughs are undoubtedly direct dynamic sources and main supporting forces for "step-wise" economic development. The government must pay attention to supporting basic education and basic science and technology, cultivate innovation and innovative capabilities. Meanwhile, the government should actively make use of industrial policies, technical and economic policies, and fiscal and taxation policies to promote the technological innovation.

4.3. The Macro Level

This level is mainly regulated by the government and corresponds to the supply of institutional factors, which are slow variables. Institutional economics has fully proved that the institution is of extreme importance in promoting the growth and prosperity of a country's economy. The government is the only, monopolistic and formal institutional supplier in society (and it is also a powerful influence and leader of the informal system).). All other subjects - businesses, families, individuals, etc. - are acting under the "ceiling" of the institutional rules maintained by the government with public power. For example, the top-level land development plan determined by the government is the comprehensive premise for all market players to carry out various combinations of factors. Besides, the spatial allocation of real estates and mesh systems related to "natural monopolies" shall also be included in the provision of government-based planning. Further, the government must comprehensively design and operate the institutional system related to income redistribution, such as taxation, benefits, pension and relief, etc. in order to properly balance and handle the contradictory relationship between "fairness (equalization)" and "efficiency" that has been existed in economic life[9]. In short, the effective institutional supply oriented by the government is of unparalleled importance to economic growth. Studies have shown that no matter the birthplace of the industrial revolution - the United Kingdom, the leading country with highly developed market economy - the United States, or the "Four Asian Tigers" that emerged in the second half of the last century, and China that developed rapidly in the course of reform and opening up, have provided excellent cases of "institutional changes promoting the economic growth". The widespread poverty and wars seen in sub-Saharan and Middle East countries are inextricably linked to their lack of a strong and powerful government and effective institutional supply. Of course, it should be realized that the inherent "strong" and "promising" role of the government must be properly matched with its "limited" functions and scope of action. The effective institutional supply oriented by the government should be "inclusive". Thus, it can fit in with the dominant trend of the development of human civilization and adapt to the objective needs of the micro-subjects to play potential and vigor in the flow of factors.

Therefore, according to the above understanding, grasping the internal logic of Supply-side structural reform and understanding the respective functions and roles of the government and the business in this framework can be summed up in four points:

First, in the Supply-side structural reform, the space for the enterprise (led by entrepreneurs) is to actively improve the combination of the factors, which include labor, land and natural resources, capital and technological innovation, improve the quality and benefits of their goods or services, and form and improve their core competitiveness in the survival of the fittest.

Second, in the Supply-side structural reform, the space for the government (led by decision-making officials) is mainly reform, that is, improving the institutional supply and promoting institutional innovation. Especially, in the "self-revolution of production relations", the government shall overcome the difficulties, change those economic and social management rules, methods, and mechanisms that do not meet the requirements for the development of productive forces and create favorable inclusive environment and conditions with "high standards and rule of law" for the enterprise to engage in production and business activities, thus releasing all the potential and vitality for economic and social development.

Third, in advancing the Supply-side structural reform, the government cannot and should not go down to the corporate level, go down to the specific organizational level of the factors, or intervene excessively in specific matters such as industrial restructuring and corporate restructuring. Special attention should be paid to using or carefully using administrative means to organize the implementation of the so-called "standards" as less as possible, and should seek to provide and implement relevant systems that can effectively guide the behaviors of market players.

Fourth, in advancing the Supply-side structural reform, the government and the enterprise should identify the fields for cooperation and optimize cooperation mechanisms. The fields of cooperation between the government and the enterprise are mainly in technological innovation. Both the large and small-and medium-sized enterprises can make use of the industrial policies, technical and economic policies, fiscal and taxation policies, and funding policies provided by local governments and even the Central Government to form and play the leading role and multiplier effects of science and

8 Please refer to Jia Kang, Su Jingchun. Supply-Side Reform - China New Supply-Side Economics [M]. CITIC Press Group. 2016. Pages 234-235.

9 Please *r*efer to Jia Kang. Income Distribution: Policy Optimization & Institutional Reform [M]. Economic Science Press. 2012. P188.

technology as "the first productive force". In addition, the cooperation mechanism between the government and the enterprise should also be innovated. In recent decades, PPP (Public-Private Partnership Mechanism, which is called the cooperation between the government and social entities in China) has been increasingly concerned and developed. PPP has provided not only a new cooperation mechanism between the government and the enterprise in public works, infrastructure, industrial parks and new towns, etc., but also a broad arena for the combination of various factors.

The examination of the position of the government and the enterprise here has actually changed from the hypothesis of "complete competition" to the "inevitability", and has also extended to the "ought to" cognitive framework of "imperfect competition", as shown in Figure 2.

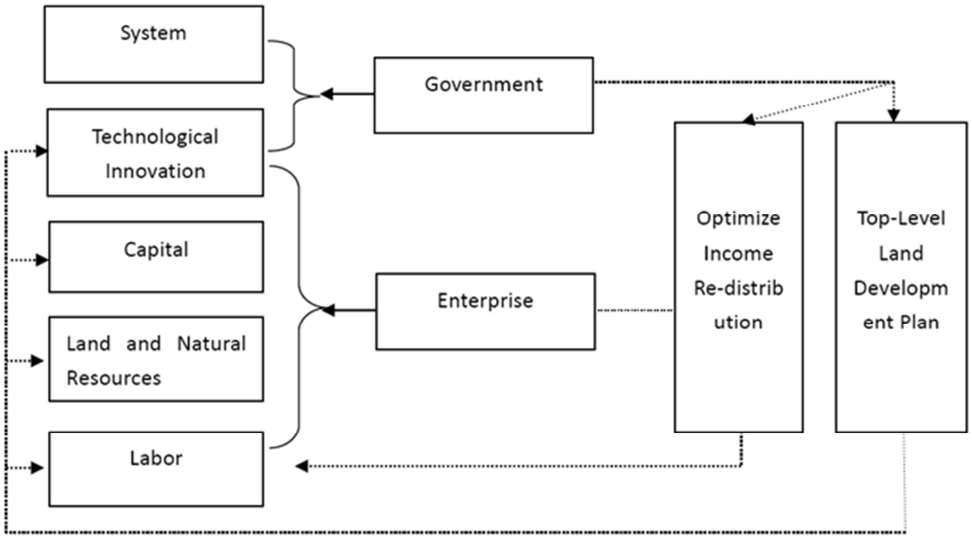

Figure 2. *Positioning of the government and the enterprise in Supply-side structural reform from the perspective of the factors.*

5. Implementation Path for Supply-side Structural Reform

At present, China's Supply-side structural reform with "cutting overcapacity, destocking, deleveraging, reducing costs and improving areas of weakness" as the entry point has been launched in various places. Many people have formed a simple and narrow understanding that Supply-side structural reform is to complete these five tasks. In this regard, it is necessary to make further analysis by combining the theory and practice to expand relevant knowledge.

Based on the motion rule of the factors - "release-adsorption-reorganization" and the technological direction indicated by the long-cycle theory, it can be seen that China's Supply-side structural reform needs to consider a "three-step" strategy, which has both a sequential order and a close connection. First, release the factors from inefficient and surplus fields, which is reflected by completing the five tasks, namely, "cutting overcapacity, destocking, deleveraging, reducing costs and improving areas of weakness". Second, deepen the structural reform and systematically optimize the effective supply of institutional factors so as to promote the free flow of competitive factors. Third, actively seize the opportunity of the new technological revolution, vigorously develop the new economy and promote the upgrading of traditional industries based on the "Internet +" strategy to form an "upgraded version" of optimized factor allocation, thus laying a solid foundation for a new round of economic growth and prosperity.

5.1. Release the Factors from the Inefficient and Surplus Areas: Taking the Five Major Tasks as the Entry Point

The five major tasks of "cutting overcapacity, de-stocking, deleveraging, reducing costs and improving areas of weakness" brought forward by the Central Economic Work Conference in 2015 mainly aimed at the "sequelae" left by past stimulation policies so as to promote market clearing and improve the quality and efficiency of the supply system. First, actively and steadily "cutting overcapacity" and optimize the supply structure. Currently, the focus is on steel, coal, cement, shipbuilding and electrolytic aluminum, which are five industries with seriously excess production capacity. Improve the standards for products, quality and environmental protection, etc. and govern the "zombie enterprises" to eliminate backward production capacity and release valuable factors. At present, special attention shall be paid to preventing the excessive exaggeration of the role of administrative forces in the process of cutting overcapacity. For a few large-scale enterprises, if they are regarded as insurmountable components of "backward production capacity", no doubt administrative measures can be adopted to "close down, suspend operation, make them merge with others or shift to different line of production" quickly and easily. However, faced with all the market players totaling to more than 100million, the government has no ability to identify the majority of SMEs to distinguish the backward production

capacity. The real effective mechanism is to promote the mechanism of "survival of the fittest" that plays a full role in promoting fair competition. Even the dividing line of the so-called "excessive production capacity" is actually floating and uncertain. The innovative mechanism of "effective investment", such as PPP, can convert some of the excess capacity into non-surplus effective capacity overnight. Therefore, the essence of "cutting overcapacity" is to form correct incentive and restraint mechanism, and eliminate the backward production capacity by "survival of the fittest" through market competition, instead of relying on the government to strictly limit excess production capacity and then shut down. Second, de-stocking, that is, digesting the redundant stock of the real estate on the supply side. At present, there are serous real estate inventories in China's third- and fourth-tier cities, which have become an important factor dragging down the economy. In the coming period, a reasonable combination of multiple policy measures and economic leverage shall be used to actively resolve this part of real estate inventory and promote the healthy development of the real estate industry. Third, prevent risks and de-leverage to ensure economic security. In recent years, China's leverage rate has risen rapidly. It includes both the higher broad measure of money supply and the higher debt ratio of non-financial companies. Thus it is necessary to design a reasonable and feasible risk control plan to prevent and resolve risk factors. Fourth, take several measures to "reduce the costs". At present, the cost of various types of institutional transactions in China is too high, especially "five social insurances and public housing fund" outside the taxation, administrative charges and other hidden costs, etc., resulting in a heavy burden on the company. Thus measures shall be need to be taken in several fields, such as public finance and taxation, finance, social insurance, circulation, energy and clean governance, etc. to cooperate to reduce the costs of the company. Fifth, improve the areas of weakness to expand effective supply, that is, to make up for the shortcomings and bottlenecks in economic and social development, such as precision poverty alleviation, quality education, inclusive medical care, various forms of old-age care, urban-rural infrastructure upgrading, major issues of technology innovation, the development of "agriculture, rural areas and farmers, etc.", thus creating better conditions for economic and social development.

5.2. Break up the Barriers and Obstacles That Hinder the Free Flow of Factors: Deepening the Reform in Important Areas

The essential attribute of the Supply-side structural reform is to "overcome the difficulties". From the perspective of the supply side, there are obvious improper restrictions and restraints in the flow of the factors in China, which is inevitable related with existing institutional barriers and excessive monopolies. Therefore, it is imperative to deepen the reform, reduce the threshold and eliminate the barriers, creating good conditions and environment for the free flow of factors.

The reform of state-owned enterprises. Due to historical reasons, the ongoing efforts to reduce overcapacity, deleverage and de-stock, etc. are all directed to state-owned enterprises. Therefore, state-owned enterprises are the first to be affected in the Supply-side structural reform. The direction of the reform should adhere to separate the government and the enterprise, clarify the property rights, conform to the laws of the market, establish a modern enterprise system and governance mechanism, implement a strategic reorganization of mixed ownership, and bring the reform of state-owned enterprises and the development of private enterprises into a win-win situation.

Reform of the administrative examination and approval system. The purpose of this reform is to regulate the government's way of exercising its rights, to manage and control the government's "visible hand", and to streamline the government and delegate the authority. On one hand, the government should get away from the concrete management of a large number of economic and social affairs. On the other hand, the government should actively strengthen the functions of macroeconomic regulation, market supervision, public services, and social management, etc., and follow the principle of "super ministry system" and "flattening" to systematically transform the entire organization of the government so as to optimize the market environment and release economic and social vitality.

The reform of financial system and investment - financing system. Finance is the core of a modern economy. Funds are the blood of a market economy. Investment, a major economic support factor, needs to match the leverage of financing and effectively prevent risks. In view of the long-standing structural imbalances, serious shortage of diversified financial products and frequent occurrence of financial risk factors etc. In China's financial system, we should actively introduce multiple financial and investment - financing entities, develop multi-level capital markets, and strengthen the prudential supervision of the financial in macro level, promote the construction of "new financial" and new investment - financing mechanisms such as the Internet and PPP, and support the deepening of the reform.

The reform of fiscal and taxation system. Public finance is the foundation and important pillar of national governance. Public finance is the pivotal mechanism of the financial distribution system between the government and the enterprise, between the Central Government and local governments, and between the system of public rights and the citizens, and also the pivotal mechanism of basic economic relations. It is necessary to adhere to the general direction of the tax-sharing system reform and construct a three-tier structure of the Central Government, provinces, and cities and counties according to the principle of flattening. Follow the institutional principle of "corresponding political power endowed with government authority, financial authority, tax base, budget, property right and debt financing power", and implement the modern multi-level taxation-sharing fiscal system that transfers funds from top to bottom by the Central Government and provincial-level governments. Thus a

scheme optimizing the fiscal system between the Central Government and local governments is formed. It will promote the transformation of taxation system, which will then be dominated by direct taxes instead of indirect taxes. Rationally form the local income system and deepen the budget system, etc. to form a good distribution and adjustment mechanism of economic and social benefits.

The reform of technological system. The importance of innovation for China today cannot be overemphasized. The top priority is to crack the "Qian's doubt" on the basis of education reform to cultivate talents, to create an innovation system that conforms to the laws of scientific research through scientific and technological reform, to support basic scientific research for long periods of time, and to vigorously promote the integration of scientific and technological innovation with the industrial economy. For the high end technologies that "cannot buy", in particular areas, rely on primitive and independent innovation to advance hard. For the mid-to-high end technologies, rely on full-scale opening up and "bringing doctrine", firstly "introduce, digest and absorb, and innovate", then realize "integrated innovation", and eventually build an "innovative country."

The reform of land system and real estate system. Land system and real estate system are the fundamental systems of the country. They are related to the optimization of the pattern of national economy and the people's livelihood. The government needs to take long-term planning, careful grasping and active promotion in the supporting reforms. The difficulties in the reform of the land system mainly focus on the transfer mechanism for rural collective land designated for commercial construction, the farmers' contracted land and residential land, etc., as well as land acquisition, demolition and compensation for urban-rural fringe area. We should actively summarize the practical experience of Chongqing's "land ticket", land purchase and reserve system and the practices of Shenzhen to resolve the land of the natives and the remaining historical real estate problems. The state have introduced the registration requirements for real estates with a clear timetable. Real right law stipulates that usufructuary rights will renew automatically when expire. The Third Plenary Session of the 18th Central Committee requires to accelerate the legislation and timely promote the reform of real estate taxes. In view of the above, we should overcome the difficulties, resolve various conflicts and open up new roads leading to long-term stability.

Optimize population policies and the reform of labor market. Human capital is the most fundamental supporting factor for economic growth. With the gradual disappearance of China's demographic dividends and the imminence of aging social pressures, China should continue to optimize and adjust the population policies after the "universal two-child policy". China should decisively transfer from the population control model with family planning policy as the core to the population strategy focusing on good prenatal care, improving the quality of the population and encouraging fertility. Meanwhile, vigorously improve the reform of the household registration system and the reform of the social security system that are closely related to the flow of population so as to truly form a unified urban and rural labor market and a unified national labor market.

5.3. Optimize the Allocation of the Factors: Vigorously Promoting the Upgrading of the Real Economy and Actively Developing a New Economy

Releasing the factors from the inefficient surplus areas and promoting free flow of factors through structural reform aim at optimizing the allocation of the factors according to the market law, improving the quality and benefits of Supply-side economic system and liberating the productive forces. In view of previous theoretical understanding of the long-term cycle, the changes of the current world industrial structure in the tide of new technology revolution and the new requirements for recognizing, adapting, and leading the new normal in the process of China's economic growth, it can be judged that the factors, aiming at optimizing the allocation of the resources, will inevitable flow to the transformation and upgrading of the real economy and the development of the new economy. In other words, at the new stage of economic growth, the main indicator of whether the Supply-side structural reform in China has been successful or not is to realize the upgrading of real economy and the development of the new economy, which is also necessary for overcoming the "middle income trap".

One of the fundamental goals of Supply-side reform is to revitalize the real economy. Take the institution and science and technology as the starting point, focus on Total Factor Productivity (TFP), and support China's real economy to break through the "ceiling" and achieve industrial transformation and upgrading. Historically, China's Pearl River Delta, the Yangtze River Delta and other former growth pole regions have adopted the "reform of emptying the cage and changing the bird" to adjust the economic structure, which indicated that the comparative advantages of low labor costs, land development potential etc. supporting China to go all the way to the "world factory" and "totaling the second in the world" gradually receded when China entered the middle-income stage. A new round of industrial transformation and upgrading must be carried out. "Emptying the cage" means that a large part of the traditional manufacturing capacity is transferred to the underdeveloped regions in China or the surrounding economies. This is the same reason why this type of production capacity is transferred from outside to China at the early stages of reform and opening up. "Changing the bird" is to realize the upgrading of industries and products. However, if a cage is emptied but a bird is not replaced, then the "ceiling" that jumps upwards will not be broken, and it will be lost. The frustration represented by Wenzhou has already sounded the alarm. It is imperative to promote the transformation and upgrading of the real economy.

The second fundamental goal of the Supply-side reform is to vigorously develop the new economy. The new economy mainly refers to the Internet-based economic innovation and development, which mainly include two aspects. First, the

new industry, new types of business and new business model that are generated by the Internet-based infrastructure. Second, the new space and new fields when the traditional industries get in touch with the "net" ("Internet +"). It is involved with the primary industry, the second industry and the tertiary industry, for example, the emerging industries and types of business such as e-commerce in the "tertiary industry", smart manufacturing and new customized production based on socialized production, etc. in the "second industry", "order agriculture" that is beneficial for promoting moderate-scale operation and family farms in the primary industry, the fusion development of the agriculture and the second and tertiary industries, and so on. Currently, China has become the first country, which is most popular with the Internet. According to *China Statistical* Report *on Internet Development (2015)*, as of December 2015, the number of Internet users in China reached 688 million, which is even larger than the population of the entire European Union. The Internet penetration rate is 50.3%. The scale of mobile Internet users is 620 million. The coverage of wireless networks has been significantly improved, and the usage rate of Wi-Fi by Internet users has reached 91.8%. Correspondingly, China's Internet economy attracts worldwide attention. At present, China accounts for four of the top ten Internet companies in the world. Taking Alibaba Group as an example, its total transaction volume in fiscal year 2015-2016 amounted to RMB 3 trillion Yuan. It has surpassed Wal-Mart to become the world's largest retail platform. It was considered as a landmark by the industry that the retail business has fully transformed from offline to online. According to the statistics of the National Bureau of Statistics, the nation's online retail sales in 2015 was 3877.3 billion Yuan, increased by 33.3% over the previous year. Among them, the online retail value of physical goods was 3242.4 billion Yuan, increased by 31.6%. The online retail sales of non-physical goods was 634.9 billion Yuan, increased by 42.4%. Some international organizations predict that by 2020, the online penetration rate of China's retail market will climb to 22%, and the total market size will reach 10 trillion Yuan. Taking the sharing economy as an example, which is still in the stage of have the troubles of growing up, its development momentum is even more surprising. According to the conclusion of "*Report on China Industry*", in 2015, China's industrial market share has reached 1956 billion Yuan, which is mainly concentrated in six major areas such as finance, life services, transportation, production capacity, knowledge and skills and short-term housing rental. In the sharing economy, about 50 million people are involved in providing services (including about 5 million employees in platform companies), which accounts for about 5.5% of the total workforce. It is conservatively estimated that the total number of people participating in sharing economic activities has exceeded 500 million. Looking into the future, it is expected that the average annual growth rate of the sharing economy in the next five years will be around 40%. By 2020, the share of the sharing economy in GDP will be above 10%. The incredible potential and space presented by the new economy has brought hope for China's economy and even global economy in recession, and it also represents the frontier and general direction of China's Supply-side structural reform and that of the economic transformation and upgrading. Globally, the world is now at the "entrance" of the third industrial revolution. China is expected to stand with the United States and other developed countries on the same starting line to pursue the height of the new economy. Seizing this historic opportunity is essential for the Chinese nation to realize the great rejuvenation and return to the top of the world. It is imperative to make use of the "late-development advantages" of developing economies and meanwhile, achieve the "early-development advantages" of the Supply-side structural reform.

6. Conclusion

Briefly summarized, the main conclusions of this paper are as follows:

First, understand that the background for China to implement the Supply-side structural reform should not be limited to the specific difficulties encountered by China in domestic economic transformation and upgrading, but should also be put into the "changes of the world unprecedented in the past century" at the level of international political, economic and national competition since 2008. In short, human beings are currently in the downward period of the fifth wavelength cycle since the industrial revolution, and this is precisely the grand background formed comprehensively by the world political, economic and social evolution in which China's Supply-side structural reform is located.

Second, the main driving force and mechanism for economic growth on the supply side are different combinations of five factors of labor, capital, land and natural resources, technological innovation, and system and management, and the resulting overall efficiency. Based on the five factors and their motion rule, the authors construct a theoretical model of Supply-side factors and their motion rule in the Supply-side structural reform, namely, three types of operational processes, "outward release", "inward attraction" and "reorganization", which are formed by the factors under the guidance of the efficiency. The authors pointed out that the so-called economic growth process is the movement process in which factors continuously seek higher returns. Whether this kind of process is smooth or not is determined by the supply of institutional factors among the five factors. In other words, to make the economy continue to grow, it is necessary to create more free and flexible conditions for the factors to seek maximum returns in the flow and provide more abundant opportunities. Therefore, this directly points to the most challenging part of China's economic reform – the institutional building of the reform of factor marketization, and the closely related and crucial proposition in China – how to handle the relationship between the government and the enterprise in the Supply-side structural reform.

Third, based on the theoretical model related to Supply-side structural reform, this paper points out that China's Supply-side structural reform must be based on the current situation, take a long-term perspective and implement the

"three-step" strategy. The first is to release the factors from the inefficient and surplus fields. The focus is to accomplish five tasks of "cutting overcapacity, destocking, deleveraging, reducing costs and improving areas of weakness". The second is to break down the barriers and obstacles that hinder the free flow of factors, and deepen the reforms in key areas such as the labor force, land and natural resources, finance, public finance and taxation, science and technology, education, and so on. The third is to optimize the allocation of factors, vigorously promote the transformation and upgrading of the real economy, and actively develop the emerging digital economy. In short, China's Supply-side structural reform has a clear background of the times, a long and deep view and prominent practical significance. Consider thoroughly by means of theoretical models, and then accurately grasp the basics of economic operation quality and efficiency by optimizing and improving the combination of Supply-side factors. In a word, whether the competitive factors involved in the supply side can be smoothly released, flowed, reorganized, or transferred smoothly from inefficient sectors to highly efficient sectors is the original dynamic mechanism and essential institutional arrangements, which decide that whether China can realize a long-term sustainable economic growth or not. Considering the overall situation, China's Supply-side structural reform is intended to be "problem-oriented". The reform shall accurately grasp the key factors impeding economic growth, play the leading role of effective institutional supply, and address the urgent issues to stride towards "fully building a well-off society", "overcoming the middle income trap" and the "Chinese Dream" of the great rejuvenation of the Chinese nation from a new historical starting point. In order to seize the historical opportunity to achieve this goal, it is imperative to make use of the "late-development advantages" of developing economies and meanwhile, achieve the "early-development advantages" of the Supply-side structural reform.

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