China's Post-reform Development Strategy and Traditional Economic System in the New Structural Economics Perspective: Formation and Impacts

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Abstract. Since the reform and opening up in 1978, China has developed rapidly and become the world's second-largest economy. However, during the post-reform era, China was once considered as one of the poorest countries in the world. Though it appeared a fast growth rate of GDP driven by the construction of heavy industry, its excessive industrial structure and the resulting economic structure brought huge obstacles to its economic development and improvement in people's living standard.

Keywords: developing countries, development strategy, industrial structure, trinity of traditional economic system, comparative advantage

1. Introduction

From the new structural economics perspective, in consideration of the factor endowment structure, comparative advantage and firms' viability [1], this essay aims to provide a historical review of China's traditional economic system during the pre-reform period: How it was formed and what are its impacts. In addition, compare the different economies around the world which adopted the same heavy-industry oriented development strategy and formed the similar economic system and seeks to find a general pattern of the dismal performance in traditional economic system.

2. The Formation and Logic of the Traditional Economic System

2.1. Explanations of the Strategic Choice

After the founding of the People's Republic of China, the leaders of the new regime were faced with the problem of choosing a development strategy that can quickly achieve the ideal of strengthening the country and enriching the people. Given the poor foundation of China's poor economic development, Chinese leaders chose the strategy of putting the construction of heavy industry in priority, to drive the entire process of industrialization. It is accepted that three main reasons affected this decision.

Firstly, from the perspective of international competition. Research of industrial structure indicates that the extent of industrialization is related to the proportion of heavy industry in the industrial structure of an economy [2]. By analyzing developed countries at that time, it is clear that a strong heavy industry represents modernization. The high proportion of heavy industry indicates the level of national economic development and economic strength. To accelerate the process of modernization and improve the economic strength, China is inclined to put heavy industry in priority.

Secondly, the restrict of international political and economic environment. Due to the outbreak of the Korean War in 1950 and the military standoff with the Kuomintang regime, the appeal of constructing a strong national defense has emerged. Meanwhile, western capitalist countries imposed political isolation, economic blockade and sanctions on China, which cut off the normal international trade of China. This international political, economic and military situation makes it urgent for China to quickly establish its relatively complete and self-contained industrial structure, of which heavy industry is the key.

Thirdly, the constraint of China's national condition. At that time, China is a country with rural population account for 80% to 90% of its total population and most of the rural population are in a state of poverty [3]. If light industry or consumer goods industry were treated as the priority, the problem of insufficient demand, narrow market and thus lack of access to the capital accumulation which is necessary for industrialization will emerge. In addition, with the impact of Soviet Union, who had similar economic conditions and goals to China and achieved its economic growth through giving priority to the construction of heavy industry, the strategy was further supported [4].

During the First Five Plan, heavy industry has dominated a central position. The investment of heavy industry accounted for 85% of the investment in industrial infrastructure and 72.9% of the total investment in the sum of industrial and agricultural infrastructure [5].

2.2. Conflict Between Characteristics of Heavy Industry and the Reality of China

If resources are left for market system to allocate, producers determine what to produce and which technology to apply according to the price of different factors of production. However, in the early stage of China's development, capital is extremely scarce, therefore it has a relatively high price, if the price is determined by market. In contrary, labour force is abundant, therefore it has a relatively low price. Due to the high price of capital, the cost to develop heavy industry, which is capital-intensive, is hard to bear. In an open and competitive market, firms in such industry do not have viability [6]. If resources are allocated by the market system, it is impossible to divert resources to heavy industries, instead light industry which is labour-intensive will dominate industrialization. In that case, the developmental goal that put heavy industry in priority cannot be accomplished.

Heavy industry derives three basic characteristics based on its capital intensity: the first is the long construction cycle; Second, in the early stage of development, most of the equipment need to be imported from abroad. Third, the initial amount of investment is huge.

During that period of time, China's economic development was unsatisfactory, there are three characteristics corresponding to its endowment structure. First of all, capital is in short supply, the price or interest rate of capital is high; Secondly, there are fewer products available for export, a shortage of foreign exchange and a high level of market-determined exchange rates. Thirdly, the economic surplus is scarce, it is hard to mobilize fund for heavy industry construction [7].

The characteristics of heavy industry were in conflict with China's economic situation at that time. Once China chose to give priority to the development of heavy industry as the strategic goal of economic development, the goal directly contradicted the characteristics of endowment structure and resource mobilization ability under the economic condition at that time. The first is the contradiction between heavy industry construction cycle and capital endowment. Heavy industry has a much longer capital construction period to establish its production capacity than light industry sector. In addition, due to the high capital intensity of heavy industry, a huge amount of capital needs to be continuously invested, on the other hand, the period of investment return of capital is long.

In the early days when China's economic development was at a very low stage. In 1952, the national income per capita was only 104 yuan. This low-income level inhibited the accumulation of capital, so capital was the most scarce among the main factors of production. The scarcity of capital inevitably leads to a fairly high market-determined price or interest rate for capital. In that case, the construction of heavy industry occupies a triplicity of huge amount of capital, a long period of time, and a heavy burden of paying interest.

The second is the contradiction between the import of heavy industry equipment and the ability of paying foreign exchange. For countries in the primary stage of development, technology and a large part of the technical equipment needed for the development of heavy industry needs to be imported from abroad. This requires the ability to pay foreign exchange. At that time, China's economy was basically in a self-sufficient and closed state, with limited varieties of products available for export. This leads to a shortage of foreign exchange. Coupled with China's mostly dysfunctional economic relations with the capitalist developed world, access to foreign exchange was even more limited.

Under these conditions, the foreign exchange rate was raised to a high level. This has further raised the cost of constructing heavy industry in China.

The third is the contradiction between the investment scale of heavy industry and capital mobilization ability. As a capital-intensive industry, heavy industry requires a larger initial investment scale than other sectors because of its economies of scale. This put forward high requirements on the capital raising and investment capacity of the whole national economy. Moreover, at the beginning of China's economic construction, not only was capital scarce, but also the economic surplus was small and scattered in the rural areas. Therefore, the ability to gather the surplus and mobilize fund for the investment of heavy industry was weak. In 1952, the total assets of the national bank were only 11.88 billion yuan, and the deposit balance was 9.33 billion yuan, accounting for only 20.2% and 15.8% of the national income respectively [8]. This situation does not meet the requirements of a country to develop heavy industry.

2.3. The Distorted Macro Policy Environment

The conflicts between characteristics of heavy industry and the reality of China mentioned ultimately indicates a problem for policy makers, which is how to mobilize factors of production to support the construction of heavy industry that does not have viability. To tackle these conflicts, a set of macro-policy that differs from the market mechanism is needed to make the allocation of resources conductive to the development of heavy industry. To be specific, it is to artificially reduce the cost of developing heavy industry and improve the ability to mobilize resources, including providing cheap labor force, capital, raw material, and imported equipment and technology. The core of this macro-policy is to completely exclude the role of market mechanism and artificially distort the relative prices of production factors and products. The policy includes the following aspects.

Lowering interest rate. Due to the high capital intensity and long construction cycle of heavy industry, if the capital price is allowed to the market to determine, the construction of heavy industry will be hard to obtain due to the high interest rate. Therefore, to ensure the rapid growth of heavy industry with low construction costs, the primary condition is to reduce the price of capital, thus maintain a stable low interest rate.

Lowering exchange rate. In the initial stage of economic development, a considerable part of relatively advanced technology equipment for heavy industry needs to be imported from abroad, and thus foreign exchange needs to be paid. Under the condition of capital shortage and insufficient export, foreign exchange is then scarce. The foreign exchange, if is determined by the market, will be too high for the capital-intensive heavy industry sector to bear. Therefore, in order to ensure that key technology can be imported at lower prices, the government intervenes in the setting of foreign exchange rate. Overvalues its domestic currency and lowers the foreign exchange rate have become an important protection to access the growth of heavy industry.

Lowering wages and price of raw materials. Under the condition that the production of the economy is generally low, traditional economic sectors can only create very limited surplus, and the accumulation level of the whole society is therefore very low. In addition, taxes were lowered to consolidate the new regime and protect the rights and interests of the working class. As a result, the high accumulation rate of capital needed for the development of heavy industry is difficult to by obtained by transfer payment through surplus, and largely depends on its own capacity. Since the accumulation rate depends on interest rates, which in turn depend on the gap between total output and total input, lowering cost of input, i.e. wage rate and price of raw materials, allows heavy industry to achieve high accumulation.

Lowering the price of necessities and services. The lowered wage rate weakens the ability of labors to pay for the necessities required. If they are faced with the price system that prices of consumer goods are determined by the market, the low wage level may not be enough for them to afford the consumer goods and services necessary for their life. In addition, under the pressure of harsh living standard, labor will be lack of incentive, which causes social unrest and affect the labor supply of heavy industry. The solution to this problem is to lower the price of necessities and services, and to

reduce the cost of living for labors in line with low labor wages. Such necessities include food, housing, medical care, education, various services, etc [9].

The policies have fixed the conflict between the characteristics of heavy industry and China's economic condition at that time. However, if the prices of products or factors of production are artificially lowered to a position under the equilibrium level, two effects will emerge. The first is that demand will be stimulated. The second is that supply will be depressed. In that case, demand exceeds supply, therefore a shortage economy appeared [10]. In order to fill the gap between demand and supply, a planned resource allocation system was also brought to function.

2.4. The Micromanagement Institution

Due to the planned institutional arrangement and allocation system, the state issues a series of mandatory target to state-owned enterprise and implements direct management. However, the interests of corporate managers and workers conflict with the goal of the state. The goal of the state is to maximize surplus, increase accumulation for the development of heavy industry, while corporate managers and employees tend to increase wages and benefits. Due to the unequal information between firms and state, the difficulty of supervision, etc., where possible, they will under-report their production in order to reduce the profits turned in and therefore the surplus will be used to increase wages and benefits. As a result, national assets and profits will be eroded by enterprises and individuals. In this case, if the autonomy of production and operation is given to the enterprise, the surplus of state-owned enterprises will be eroded.

To ensure that the surplus created under the distorted macro policy environment would be used according to the state's strategic goals, the institution of state ownership was adopted. Means of production were supplied by the state based on the plan. Products were exclusively sold and allocated by the state. Profits of enterprise should be turned over to the national budget. Investment required for construction was given to firms by state's allocation. Employment and wage rate were completely arranged and set by the state, etc.

On the agriculture side, in order to make use of economies of scale, the unit of agricultural production was based on families, and formed mutual-aid teams, to cooperate temporarily during the busy seasons. However, with the implementation of the development strategy that put heavy industry in priority and the distortion of price system, the formation of agricultural collectivization was then accelerated, in order to facilitate the implementation of the monopoly of purchase and marketing by the government and increase the quantity of agricultural products purchased at low prices. This agricultural collectivization is mainly embodied in the people's commune [11].

3. The Economic Performance and Drawbacks of the Traditional Economic System

The trinity of the traditional economic system, namely the distorted macro policy environment, the planned resource allocation system, and the puppet-like micromanagement institution [12], was adopted to facilitate the development of heavy industries when China was a capital-scarce economy. Under this economic system, China has achieved a rapid growth in economic aggregate from 50s to 70s in the 20th century. At that period of time, the average annual growth rate of total output, gross industrial and agricultural output, and national income, calculated at comparable prices, are 7.9%, 8.2% and 6.0%, respectively [13]. Compare with neighboring countries and regions, it was approaching Korea. However, GDP per capita in 1952 was only $52, $220 in 1978[14], and has never break through the boundary of low-income developing countries, which was set at $265 in GDP per capita. This lack of improvement in people's living standard, despite a rapid growth in its production, is evidence of the unreasonable industrial structure and inefficiency.

3.1. Macro-perspective: the Abnormality of Industrial Structure

During the first national five-year plan, heavy industry accounted for 36% of the total investment, while light industry was at 6.4%, agriculture at 7.1%, and 50.3% for other industries. Later on, during the second national five-year plan, the proportion of heavy industry increased to 54.0%, while light industry was at 6.4%, agriculture at 11.3%, and 28.3% for other industries. Even in during 1976 to 1978, heavy industry still held 49.6% of total investment while light industry was holding 5.9%, agriculture 9.8% and 33.7% for other industries [15]. Such excessive industrial structure didn't conform deviates from China's comparative advantage and brought a series of obstacles to China's economic development and improvement of people's living standard.

The deviation of industrial structure from China's comparative advantage depresses the economic growth rate. Compare with the capital-intensive heavy industry, light industry is labour-intensive and suits the case that labour force is relatively abundant in China. Therefore, under the circumstance of a normal macro policy environment that is not distorted, light industry should be taking a greater proportion.

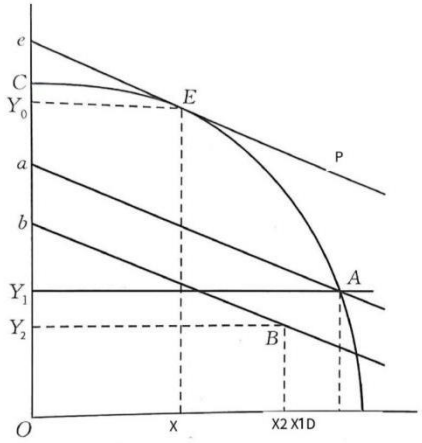


Fig. 1 Development strategy and production efficiency. Resource from The China miracle: Development strategy and economic reform

As shown in Fig. 1, the industrial structure that conforms to comparative advantage is manifested on the production possibility curve, and the appropriate arrangement of production is located at point E, that is, at the tangent point of production possibility curve and the line that represents the undistorted relative price. At point E, the amount of production of labour-intensive goods is OY0, and the amount of production of capital intensive goods is OX0. However, due to the strategy of developing heavy industry preferentially and the artificially distorted relative price, capital, on the contrary, becomes the cheaper factor of production. With government's planned allocation, the development of light industry is then restrained. On the graph, the restraint is shown as line Y1A. The consequence is, production possibility curve shrinks from CEAD to Y1AD, and the amount of production of labour-intensive goods is now presented as OY1 and capital-intensive goods is now presented as OX1 [16].

The distorted industrial structure lowers the speed of employment and urbanization. Heavy industry is capital intensive and therefore has a poor ability to absorb labour force and increase employment. Due to the overweight major position of heavy industry in the industrial structure, growth in employment is constrained. The statistical analysis shows that every 100 million yuan of investment from heavy industry sectors can create 5000 employment opportunities, which is only one third of the amount that light industry can create. On the other hand, every 100 million yuan of investment from state-owned enterprises can create 10 thousand employment opportunities, which is only one fifth of the amount that private enterprises can create [17].

In addition, due to the policy of developing urban and rural areas separately, manufacturing industries were mainly concentrated in large and medium-sized cities, which neither needs the complementary in industrial structure with surrounding areas, nor promotes the development in

related industries. As a result, the industrial structures in urban areas are complete, which ignored their own endowment structure and impeded the normal progress of urbanization. In 1980, urbanization rate in China is 19.4%, which only increased 6.9% compare with the rate in 1952[18].

The distorted industrial structure caused limited progress in people's living standard. In an distorted structure, resources are allocated to the production of capital goods to the maximum extent, and the production of consumer goods is restricted, which caused a shortage in consumer goods. On the other hand, to accelerate the growth of heavy industry, it is impossible to spend the very limited foreign exchange for consumer goods imports, which further constrained the supply of consumer goods. In another perspective, urban labors were receiving low wages and GDP per capita for rural residents was restrained by unemployment and lack of incentive in agricultural collectivization. This further effected the increase in consumption level and demand negatively.

The industrial structure contrary to the comparative advantage leads the country to internal-oriented economy. For import, resources are allocated to production of capital-intensive products, demand for imported capital goods decreases. For export, due to the lack of resources allocated to labour-intensive industries, the conditions for producing labour-intensive products, which obeys the comparative advantage and is competitive in international market, are restricted. On the contrary, capital-intensive products which run counter to the comparative advantage and thus uncompetitive are largely produces. From both perspectives, import and export are restrained[19].

3.2. Micro-perspective: Insufficient Incentive and Inefficiency

Due to the lack of competition from both foreign countries and domestic firms (caused by the high barriers to entry) and the planned allocation system, policy of unified purchase and sale, firms with protection had lack of incentive to innovate and improve the quality of their product.

Under the conditions of price distortion and lack of competition, the profits and losses of enterprises do not depend on the quality of their operation. In order to prevent the inevitable erosion of profits and assets by corporate managers and workers, it is necessary to deprive them of their autonomy. Without autonomy, however, wages cannot be determined according to the effort of workers, instead, the remuneration of urban workers is fixed. Therefore, individual labor effort and enterprise performance are not related, that is, no matter how much or how little work, will not affect the personal income of workers. Under such system, labor incentive is insufficient [20].

In agriculture, although the production team has the autonomy to control a part of the surplus, the high dispersion and long production cycle of agriculture make it extremely difficult to supervise its labour. Although distribution according to work is applied in people's communes, it is difficult to accurately measure the effort of workers, to judge the quality of labour, to compare different kinds of labour, such as raising pigs or growing vegetables, and to convert abstract labour effects into numerical workpoints. In that case, it is impossible to accurately measure the effort of workers and workers will not be paid for their effort. In collective agriculture, a person who works harder receives the same share of the product created by the collective as someone who works less hard; The loss of the product to the collective by those who do not work hard is equally shared among all workers. This free-rider phenomenon then creates insufficient labor incentives in collective agricultural production [21].

4. International Comparison

By expanding the scope to the world, it is accepted that the economic performance was dismal in all socialist countries that adopted the similar development strategy. Moreover, for capitalist countries with a similar endowment structure that adopted the same development strategy, it also had a similar macro policy environment, resource allocation system and micromanagement institution and similar economic performance. The whole set of economic systems with the thought of applying industrial discrimination, government intervention and distorting the macro policy environment is so called "forging ahead" strategy [22].

The impact of "forging ahead" strategy mainly focuses on the unsatisfactory growth rates and relatively low-income level, the abnormality economic and social structure and thus the unequal distribution of income, inefficiency caused by lack of incentive, the damage to social benefits caused by a series of protection, rent-seeking and corruption, and the worsening financial situation and inflation.

Take Brazil as an example. From the perspective of average annual growth rate in GDP, from 1961 to 1981, it increases from 5.4% to 8.4%. This is because of their export-oriented policy that stimulated aggregate demand and the high level of protection and subsidy by the government. However, after that period of time, from 1980 to 1991, its average annual growth rate in GDP was only 2.5% [23]. which is far beyond its goal of overtaking developed countries. As for employment, due to the capital-intensive characteristic of heavy industry and thus its poor ability of increasing employment, while its growth rate of manufacturing production was 6.5%, its average annual growth rate of employment in manufacturing industry was only 1.1% [24]. This has caused a high level of unemployment. Furthermore, due to the policies that encourage investment and capital construction, the rise in supply caused a surplus, which further triggered inflation. The average annual inflation rate in Brazil was 46.1% in the 60s and remained high to 42.1% in the 70s[25]. In addition, for Brazil in 1967, the loss of GDP from misallocation of resources due to conservation is 1 percent, while rent seeking is 7 to 9 percent. Considering its Gini coefficient, it was 0.50 in 1960, 0.56 in 1970 and 0.60 in 1976[26].

5. Conclusion

Despite the differences in thoughts, different development strategies universally consider the differences between industrial structures as the fundamental difference between developed economy and backward economy. Their fundamental goal therefore concentrates on improving industrial structure. The problem is, improvement of industrial structure is an endogenous variable of economic development, in another word, only the result of economic development, yet "forging ahead" strategy treated it as an exogenous variable.

During the post-reform era in China, due to China's own goals and construction needs as well as the international environment, China chose the "forging ahead" strategy, from which the trinity of traditional economic system -- the distorted macro policy environment, the planned resource allocation system, and the puppet-like micromanagement institution was derived. The system seriously distorted the relative price of resources and violated China's comparative advantage. Despite the fast-growing rate of GDP which was driven by heavy industry, people's living standard had no significant improvement. In addition, poor work incentives and low efficiency also emerged due to micro arrangement of depriving corporate autonomy and agricultural collectivization.

By looking through different economies around the world, the fundamental cause of the dismal economic performance in developed countries is precisely their common choice of the "forging ahead" strategy, as well as the economic system with a distorted macro policy environment, planned allocation system and government intervention in enterprise management. Thus, it can be seen that the real essence of economic development is not the outstanding growth of a few heavy industries, but the improvement of a country's comprehensive economic strength. The country should gradually develop in accordance with comparative advantages and gradually improve the factor endowment structure. The upgrading of the industrial structure, the level of technology and the level of income are only the natural results of this process.

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