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Logical system of development economics of large countries

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Abstract

Purpose – The development economics of large countries is a subject that studies how large developing countries evolve into developed countries through industrialization and structural transformation. By looking into the economic development of large developing countries in a systematic way, the purpose of this paper is to propose a logical system consisting of research objects, main issues, key principles and development strategies.

Design/methodology/approach – A large developing country refers to a country with a dual economic structure; it has a large population, vast territory and great market potential, but is low in labour productivity and per capita income.

Findings – The key issue of the large country's economy is the issue of the size, while the key issue of the developing country's economy is the issue of the economic structure. Therefore, the key issue of the economy of large developing courtiers lies in both the size and economic structure.

Originality/value – The endogenous capacity of a large country depends on the size of factors and the balance of supply and demand, while the comprehensive advantage of a large country depends on its diversified industrial structure and integration of factors. Based on the basic characteristics and key economic principles, large developing countries should seek endogenous, stable, coordinated and innovative development.

Keywords Theoretical system, Development economics of large countries, Logical structure

Paper type Research paper

Development economics is a subject that studies the evolution of a developing country from poverty to prosperity. To put it in an academic way, it is a subject that studies how a developing country evolves into a developed country through industrialization and structural transformation. By the same token, the development economics of large countries studies how large developing countries evolve into large developed countries through industrialization and structural transformation. Professor Zhang Peigang (1989) proposed that "the large developing countries should be regarded as a research object of development economics", and after that, numerous scholars have devoted themselves to the research of the development characteristics of large developing countries. Since the twenty-first century, along with the rise of BRICS, the economic development of large countries has drawn even more attention. My research team has been focussing on the theoretical research on the system of economic development of large countries for many years. In this paper, we discuss the concept and typical characteristics of large developing countries, their economic scale and structure, the endogenous capacity and comprehensive advantages, as well as the industrialization, urbanization and globalization strategy based on domestic demand, thus building up a logical system of development economics of large countries.

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1. The research object: large developing countries and their characteristics

According to Professor Zhang Peigang (1992), a large developing country refers to a developing country with a large population, vast territory, abundant resources, profound history and low per capita income. Based on his definition, we can make an elaboration and extension: the large developing country is a combination of "the developing country" and "the large country", and it has two initial characteristics: "developing" and "large scale". "Large country" means the country has a large population and territory, and therefore, its market, industry and the economy are also in a large scale. "Developing countries" share the characteristics of low per capita income and low modern economic growth, but different developing countries are at different stages of economic development. In this paper, we define the large developing country as a country with duel-economic structure; it has a large population, vast territory and great market potential, but is low in labour productivity and per capita income. After evaluating all developing countries under a system consisting of indicators such as the total population, territory area, GDP and human development, we determine 13 countries including China, India, Russia, Brazil, Mexico, Indonesia, Pakistan, Nigeria, Egypt, Ethiopia, Iran, The Democratic Republic of the Congo and South Africa as large developing countries, and take them as the research object of development economics of large countries (Ouyang *et al.*, 2016). In order to better demonstrate the significance and value of the research, we also need to take a look at the characteristics and status of the research object.

To understand the characteristics of the research object, we will start from the initial characteristics first and then move on to the core and typical characteristics. The initial characteristic is the original and objective characteristic of an object that can be observed. It is the starting point for us to understand objective things and their laws. Kuznets (1971) took the population as the initial characteristic of a large country and regarded countries with a population of over 50m as "truly large countries"; Perkins and Syrquin (2017) considered the population and territory size as the basic characteristics, and discussed their influence on the economic growth of a large country. In this paper, we define countries with a population of over 50m and a territory of over 800,000 square kilometres as a large country. The large population leads to a large demand and human resources, and the vast territory leads to huge differences in the natural resources and regional development. The two basic characteristics can influence the country's economic scale and structure, which will, in turn, affect the development pattern and strategy of a large country. Based on the two basic characteristics, we then come to the economic characteristics of large countries: first, large scale: large countries have a large economic aggregate, total amount of factors, market and industry sizes; second, the endogenous driving force: large countries mainly rely on domestic supply and demand to achieve independent economic development; and third, the diversified structure: factor endowments in different regions may vary, giving rise to a diversified economic structure (Ouyang, 2014). At the same time, large developing countries also differ from other large countries in the following ways: first, the economic diversity of large developing countries is more prominent than that of large developed countries, and the differences in factors and regional development are more significant. For example, the per capita GDP of different regions in China in 2012 varied; the GDP of the eastern, central and western regions were $9,376, $5,948 and $4,640, respectively. Second, labour productivity is low. In 2010, the per capita GDP of the USA and Germany, two developed countries, were $48,374 and $41,726, respectively, while that of China and India, two large developing countries, were $4,515 and $1,417, respectively. Third, the per capita income is low. In 2010, the per capital income of the USA and Germany were $48,950 and $44,780, while that of China and India were $4,300 and $1,290, respectively.

In modern economic history, the economic power and international status of developing and developed countries are never equal. Raul Prebisch, a Development Economist, describes this relationship as a "centre-periphery" relationship, meaning the main role of developing countries on the "periphery" is producing food and raw materials for the developed countries in the "centre". Ever since the twenty-first century, as large emerging economies rise one after another, the contribution of large developing countries to world economic growth has increased, making them play a more important role in the world economy. According to the evaluation result of our index system, the comprehensive influence of developing countries increased from 0.1449 in 2001 to 0.1813 in 2014. In addition, as large developing countries have seen their international influence and status improving rapidly, differences in comprehensive influence among developing countries are also widening. The strong influences of large developing countries are demonstrated in the following five aspects: first, the organic influence: the 13 large developing countries we have selected cover a total of 4.1bn population and 51.47m square kilometres' territory, accounting for 57.7 per cent of the total population and 38.3 per cent of the total land area in the world; second, the economic influence: in 2013, the collective GDP of the 13 countries totalled $1.94382 billion, accounting for 25.67 per cent of the world total GDP, among which the BRICS contributed over 50 per cent to the world economic growth; third, the industrial influence: the large emerging countries are gradually growing and upgrading their industries, taking high-tech industry as a strategic emerging industry, and promoting the industrial transformation jointly with major developed economies; fourth, regional influence: China, Indonesia, Brazil, Mexico, Egypt, Iran, India, Pakistan, Ethiopia, South Africa and Russia have all become regional leaders of economic development; and fifth, the influence of governance: the large emerging countries are committed to establishing an international economic order that is fair and equitable, strengthening their institutional voice, and contribute to a global economic governance mechanism (Ouyang *et al.*, 2016).

The history of economics has shown that the creation of a new economic theory takes two basic conditions: the first is the object being interpreted must be of great importance, and the second is the object being interpreted must be universal. Large developing countries, as a research object, have met the two conditions. Ever since the twenty-first century, large developing countries have seen rapid economic development and play an increasingly more important role, which have attracted much attention. In addition, large emerging economies rise together and demonstrate some similarities, which shows that the universal law behind the phenomena is noteworthy. Therefore, it is necessary and feasible to study the economic development of large developing countries and develop a theory of development economics of large countries.

2. Starting point: the size and structure of large countries

The establishment of a new theory requires a theoretical system with justifiable and clear inherent logic. In order to construct the logical system of development economics of large countries, we need to have a thorough understanding of the basic characteristics of large developing countries, and grasp the key issue of large countries' economy accurately. These basic characteristics and key issues will be interpreted from the perspective of economics and become the starting point of the theoretical deduction.

In the previous part, we have discussed the initial characteristics and typical characteristics of large developing countries. The core characteristic of the large country economy is the size, which is the key to understand the economic advantages of large countries. Studies on the advantage of large countries' size dated back to Adam Smith, the Founder of Modern Economics. In his *Wealth of Nation*, he put forward the issue of market size in the "market extent hypothesis". He believed that "as it is the power of exchanging that gives occasion to the division of labour, so the extent of this division must always be limited by the extent of that power, or, in other words, by the extent of the market" (Smith, 2003a). At the same time, he talked China's market size and its large country effect: "But the great extent of the empire of China, the vast multitude of its inhabitants, the variety of climate, and consequently of productions in its different provinces, and the easy communication by means of water carriage between the greater part of them, render the home market of that country of so great extent as to be alone sufficient to support very great manufactures, and to admit of very considerable subdivisions of labour" (Smith, 2003b). It can be seen that it is based on the two basic characteristics, territory area and population, which Smith discussed the market size or market extent of the large countries and implied the large country effect drives the specialized division of labour and economic development. Simon Kuznets (2007a) also discussed "the effect of a country's size" and argued that "size also may determine feasible economies of scale, thereby shaping the structure of domestic output". Hollis Chanery and Moises Syrquin analysed the development pattern of large country from the perspective of "scale effects", and proposed that the most obvious effects of large scale are on the pattern of production. The more closed, less specialized trade pattern has its counterpart in a more balanced, less variable pattern of domestic production (Chanery and Syrquin, 1988). In addition, large countries have with few exceptions adopted more inward-looking development policies which have repercussions on other aspects of accumulation and resource allocation. In the *Handbook of Development Economics*, Dwight Perkins and Moises Syrquin further elaborated on the size of large countries and its influence, they argued that: first, the size of the country, especially the population size and instead of the geographic size, does have a significant influence on the economy; second, the huge market and the economies of scale in large countries are conducive to many industries and yield to higher efficiency in terms of the capital and human resources investment; and third, differences in distribution and in many other areas in large countries are more prominent than that in smaller countries (Perkins and Syrquin, 2017). In short, the large country has its advantage in terms of the size, and the advantage of scale is the core advantage of the large country economy.

As the core feature of the large country's economy lies in its economic scale, the core feature of the large developing country's economy lies in its diversified structure, and the key to the economic transformation of large countries is the structure. Generally speaking, the economic structure of large countries is more complicated than that of small countries, and the economic structure of large developing countries is more complicated than that of large developed countries. These two "complications" demonstrate the structural characteristics of large developing countries. Arthur Lewis has put forward the "dual-sector model", which is a great contribution to the development economics. He believes that in the developing economy, there is a "modern sector" and a "traditional sector" that interact with each other, and "labour moves from the tradition to the modern sector with an infinite elasticity of supply" (Lewis, 1989).

The theoretical model of Arthur Lewis reveals the "dual structure of production" in developing countries, that is, the coexistence of the "agricultural sector" and the "industrial sector". A concept that is closely related to it is the "urban–rural dual structure". The transfer of labour from the agricultural sector to the industrial sector is actually a transfer from the rural to the urban areas. Lewis's model not only reveals the structural features of developing countries' economies, but also shows the essence of dual economic growth: it is an allocation of labour from low-efficiency sectors to high-efficiency sectors. Simon Kuznets also elaborated the structural changes in economic growth in a systematic way. He argues that major aspects of structural change include the shift away from agriculture to non-agricultural pursuits and, recently, away from industry to services; a change in the scale of productive units, and a related shift from personal enterprise to impersonal organization of economic firms, with a corresponding change in the occupational status of labour. Shifts in several other aspects of economic structure could be added (in the structure of consumption, in the relative shares of domestic and foreign supplies, etc.) (Guo, 1998a).

According to Simon Kuznets, the economic structure involves the structure of economic organization in the industry, the consumption structure, etc. In Gunnar Myrdal's study of the economic disparity in different regions of a country, he finds that population, capital movement and trade activities “are rather the media through which the cumulative process evolves upwards in the lucky regions and downward in the unlucky regions” (Guo, 1998b).

As the population, capital and trade activities all favour more well-off and more advanced regions, the unbalanced development of regional economy is aggravated. Therefore, the structure is a prominent characteristic of large developing countries’ economy, which involves the structure of factor endowment and the corresponding industrial, urban–rural and regional structures.

The core issue of the large country’s economy is the size, and the core issue of the developing economy is the structure. Therefore, the core issues of large developing country are the size and the structure. Based on the issue of “size”, we can demonstrate an evolution from the size of population, territory, to the size of the market, industry and enterprises, thus figuring out the economic development advantages of large countries and the corresponding economic strategies. Based on the issue of “structure”, we can demonstrate the evolution from the structure of factors, the industrial, urban–rural and regional structures, to the structure of modern economy, thus putting forward the strategy of economic restructuring in large developing countries. We will develop a logic chain of large country economics revolving the issue of “size” and a logic chain of development economics revolving the issue of “structure”. Combining the two parts organically, we will be able to construct a logic system of development economics of large countries (Ouyang, 2018).

3. Basic principle: endogenous capacity and comprehensive advantages

By studying the economic development path of large developing countries, we can reveal a universal operation mechanism and put forward theoretical principles of regularity. On the one hand, large developing countries, with the initial characteristics of the large population and the large territory, have an advantage of scale in human resources, natural resources and market demands, which provide them with an endogenous capacity to balance the supply and demand of domestic production factors. On the other hand, the factor structure of large developing countries is diversified, which gives rise to the diversified technological structure, industrial structure and spatial structure, thus forming a comprehensive advantage in realizing the coupling of factors. Based on the scale of factors and the equilibrium mechanism of supply and demand, we come up with the principle of endogenous capacity of large countries; based on the diversified structure and the factor coupling, we come up with the principle of comprehensive advantage of large countries.

3.1 Principle of endogenous capacity of large countries

The “endogenous capacity of large country” refers to an endogenous development capacity of large developing countries due to their rich resources and the vast market. In terms of the development dynamics, large countries enjoy abundant natural resources and human resources, which can provide sufficient factors for the domestic production. Large countries also enjoy a vast domestic market, which can support the specialization and economies of scale of domestic industries. The organic combination of these two factors forms the endogenous capacity of large countries (Figure 1).

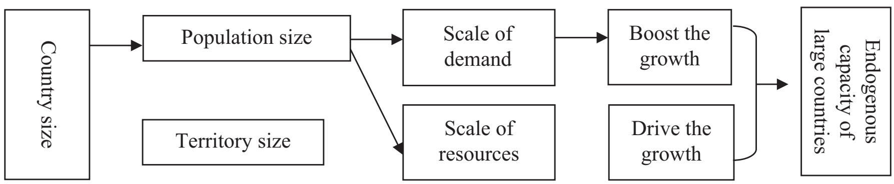

Figure 1. Model of endogenous capacity of large countries

In the dynamic system of economic growth, resources and demands are two basic factors. Resources include natural resources, human resources and financial resources, while demands cover consumption demand and investment demand. In a closed economic system, countries mainly rely on the domestic resources and markets to develop their economy. While in an open system, countries will make use of both the domestic and international resources and markets to achieve economic growth. However, in the latter case, the growth advantages of countries of different sizes varied. Relatively speaking, small countries can only rely on the international resources and markets to grow their economy, while large countries can make discretionary decisions: under a favourable international environment, it can make use of both domestic and international resources and markets to grow their economy in an open way, while under a less favourable environment, it can mainly utilize the domestic resources and markets to realize inward economic growth. Under this inward development mode, large countries will exert their endogenous capacity, that is, making use of their own resource advantages to promote economic growth and utilize their own market advantages to stimulate economic growth (Ouyang, 2013a).

In the book *Patterns of Development*, Hollis Chenery analyses the patterns of economic growth of large countries, and argues that "large countries have adopted more inward-looking development policies which have repercussions on other aspects of accumulation and resource allocation". By looking into the data of exports, savings, investment and consumption from 1950 to 1970 in 26 large countries, he finds that the scale effect of large countries results in "a whole set of introverting policies with extensive consequences", which boosted the rapid economic development of these countries at the early stages of industrialization (Chanery and Syrquin, 1988).

In economics, there is a method to measure the contribution rate of certain demand factors to economic growth in a certain period of time, which is mainly calculated by the ratio of the increment of consumption demand, investment demand and net export demand to the increment of GDP. We select China, India, Russia and Brazil as typical large countries, and use the data from 2000 to 2011 for a real-time analysis. We find that the economic growth of these countries is mainly driven by consumption demand and investment demand. For example, in 2011, the total contribution rate of consumption and investment in the USA was 93.6 per cent, while the contribution rate of net export was only 6.4 per cent. For China, the total contribution rate of consumption and investment was 74.8 per cent, and that of net export was 25.2 per cent. At the same time, for a mature large country as the USA, the contribution rate of the three major demands to economic growth tends to be stable, and the domestic demand plays an absolutely prominent role in the economic growth, whereas for China, a large country in transition, the contribution rate of the three major demands to the economic growth rate keeps changing, and the contribution of domestic demand is still gradually increasing (Ouyang, 2013b).

3.2 Principle of comprehensive advantages of large countries

The "comprehensive advantage of large countries" is an integrated advantage formed based on the large developing countries' economic scale and diversified structure, which involves the diversified technological, economic and spatial structures of the country. Specifically speaking, the large developing country has a vast territory, a large population, abundant natural resources and a huge market potential, and all these give rise to a large-scale, differentiated, diversified and full-range economy, thus forming advantages in terms of division of labour, complementarity, adaptation and stability. This is what we call "comprehensive advantages of large countries" (Ouyang, 2009) (Figure 2).

First, the economic scale, market scale and industrial scale of large developing countries are huge, which can give rise to the advantage of division of labour. A broad market can support the development of large industries, and the deepening of division of labour will promote specialized production, which are conducive to improving the technical level and

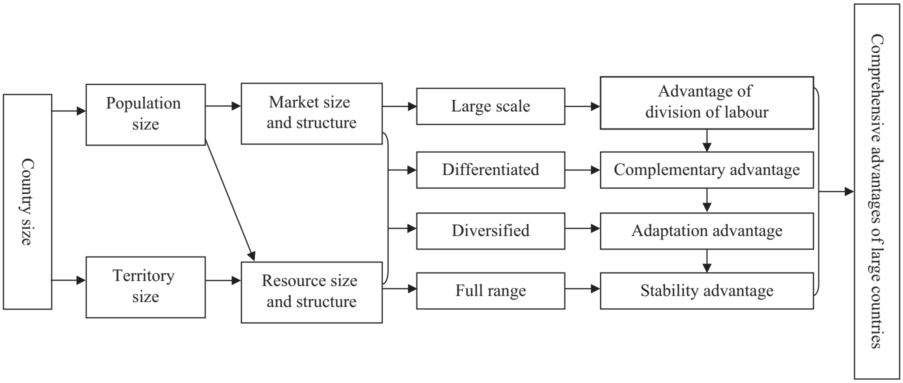

Figure 2.
Model of comprehensive advantage of large countries

production efficiency. Moreover, the expansion of production scale will lower the marginal cost, leading to lower industrial price and higher profits. The huge domestic demand can boost economic growth, promote the expansion of industrial scale and cultivate some pillar industries that can play an important role in national economy.

Second, large developing countries have a vast territory and wide spatial differences. They have a wide range of advantages in resource, industries and products, and enjoy complementary advantages among different regions, industries and products. In terms of regions, different regions have different natural and economic characteristics, and are suitable for different industries, which allow large developing countries to develop different economic zones and promote the coordinated development of the national economy. In terms of industries, with diversified resource structures, large developing countries can establish a complete industrial system, and make different industries complement each other. In terms of products, based on the varied demands of different consumer groups, a diversified product structure that can meet different domestic and foreign demands will take shape.

Third, large developing countries have diversified economic structures, and their human resources, technology and product structures are diversified, which give them an adaptive advantage, allowing them to be adaptable to different needs in production and daily lives. To be more specific, a diversified human resources structure can meet the needs of different industries and is conducive to the coordinated industrial development; different levels of professional technology can be applied to the production of different products, and thus a diversified product structure will be formed; varied products can meet the varied needs of consumers, thereby promoting the economic prosperity and coordinated development.

Fourth, the full-range domestic demand, resources and industries in large developing countries will give rise to a stability advantage that allows them to promote the stable development of the national economy. Large developing countries need to establish a relatively independent and complete economic and industrial system out of strategic consideration. Their resources and market conditions are also suitable for the establishment of relatively independent and complete national economic system. Large economies tend to adopt an inward development approach due to their huge size and diversified structures, and their dependence on foreign trade is often lower than that of small countries. Relying on the circulation system of domestic economy, it can develop a self-adjusting ability to ensure the stable development of the economy (Guo, 1998a).

4. Development strategy based on the characteristics of large countries

The national economic development strategy refers to the overall thinking in the development of the national economy with holistic and long-term significance. It is also the overall plan and guiding policy for the national economic development and its implementation. Functionally speaking, it is a policy tool for the government to guide economic development. The economic development strategy is formulated based on the following: first, the national conditions, mainly including natural resources, human resources and the economic development level of the country; second, the law of economics, involving the characteristics of economic development and its inherent inevitability. The formulation of economic development strategies for large developing countries should also be based on the national conditions and follow the law of economic development. Strategic research and discussion should be made, so as to form a set of relatively well-rounded guiding principles, policies and measures. Based on the characteristics of large developing countries, a series of strategic ideas including endogenous development, stable development, coordinated development and innovative development have taken shape in practice (Ouyang, 2011).

4.1 Economic globalization strategy of large countries based on domestic demand

Since the hypothesis of "large country's economy mainly depending on domestic demand" was proposed on the 1957 Hague International Economic Association, economists including Kuznets, Chenery and Perkins have conducted a number of empirical studies, proving that the more populous the country, the lower the share of foreign trade in GDP. In addition, the share of foreign trade in GDP decreases as the size of the country increases, leading to the conclusion that large countries are more inclined to adopt an inward-approach. Nevertheless, under the economic globalization, large countries who fail to open up and participate in the world economy may lose the dividends of globalization and be overtaken by small countries. For this reason, large countries tend to implement a globalization strategy based on domestic demand. By taking full advantage of the huge domestic demand, large countries can make use of the high-quality resources at home and aboard to the maximum extent, so as to promote high-quality economic development.

It is impossible for large developing countries to develop their economies through outward-oriented economic development, as small developing countries do; they mainly develop economy through inward-oriented strategy. As large countries have relatively rich natural resources and labour resources, as well as a considerable domestic market, they may have some development advantages at the early stages of industrialization. In the 1960s, countries including Mexico, Brazil and Argentina chose an inward-looking development strategy of "import substitution", which focussing on the protection of domestic import-substitution producers through protective tariffs and import quotas. Specifically speaking, at the first stage, they developed the final consumption goods industry. At the second stage, they shifted to the production of capital goods and intermediate products needed by the countries. This strategy had indeed promoted the rapid economic growth of large developing countries. From 1950 to 1984, Brazil's industrial growth rate was remained above 7.7 per cent, and even reached 12.7 per cent from 1969 to 1976, rendering a "Brazilian miracle" recognized by the world. From 1945 to 1972, the average annual growth rate of Mexico reached 6.5 per cent, creating a "Mexican miracle". However, under the protection policy of this inward-looking strategy, enterprises in these countries lacked the motivation to make technological innovation and failed to enhance their international competitiveness. As a result, at the end of the twentieth century, these countries saw a decline in economic growth and even a depression. It can be seen that with the long-term protection policy, large countries failed to give full play to their economic advantages. In order to utilize the economic advantages of large countries under the economic globalization, large countries should adopt a globalization strategy based on domestic demand. The USA is a successful example of this strategy. With a large population, strong purchasing power and a huge domestic market, the USA focusses on producing high-quality products for themselves to meet the demands of the domestic market, and then guide the needs of the international market, thus building a globalized economic system (Ouyang, 2018).

China also has a large population, but at the beginning of the reform and opening up, its per capita income and purchasing power were low. China resorted to an outward-economic strategy and achieved rapid development in manufacturing industry. At the current stage, China has begun to shift to a globalization strategy based on domestic demand. Through supply-side reforms, China can better meet the demands of the domestic market, cultivate large-scale industries and enterprises, and enhance its international competitiveness.

4.2 An independent and complete strategy for the overall development of the national economy

The Hague Conference in 1957 also put forward a hypothesis arguing that "the economy of a large country is more stable than that of a small country". The stability of a large country's economy stems from an all-round development strategy that pursues the independence of the national economy. It means large countries tend to establish an independent and complete national economic system at the early stages of the development. In line with this concept, development economists put forward the theory of "balanced growth" and the theory of "big push", arguing that in order to get rid of poverty and backwardness, in the national economy, all sectors require large-scale investment simultaneously. Rosenstein-Rodan holds that indivisibilities exist in production demand and investment, and therefore developing countries need a "big push", which means investment should be made in all sectors on a large scale, so as to establish a relatively complete industrialization system (Guo, 1998c).

Ragnar Nurkse argues that in order to break the vicious cycle in developing countries caused by low per capita income and a lack of effective demand, developing countries need to make large investment in all sectors in a holistic approach to achieve diversified and balanced growth. This will help stimulate the market demands required by economic growth, enlarge the domestic market and boost the economic development (Guo, 1998d).

The "big push" strategy is actually an economic development strategy suitable for large developing countries at their early stage of industrialization. It has helped many large developing countries establish a relatively complete national economic system and form a diversified structure of finished products. Due to the limited capital in developing countries, it is impossible to rely on the price mechanism to allocate the precious capital to basic industries. In order to ensure the capital needed for large-scale investment is in place, it often requires the government to pool the limited capital and invest the money into various industrial sectors in a highly centralized manner. In the 1930s, when Brazil entered a period of rapid industrialization, the government invested heavily in various sectors of the manufacturing industry, and the country saw a rapid growth in light industrial sectors such as textiles, clothing, food and tobacco. After the Second World War, heavy industry grew rapidly, and new sectors such as petroleum, chemical industry, automobile, shipbuilding, machinery manufacturing, aircraft manufacturing and electronic industry had been built up. Brazil took 40 years to eventually build up a relatively balanced and complete industrial system. China started its socialist industrialization in the early 1950s, with an overall goal of establishing an independent and complete industrial system. From 1952 to 1958, the government made large-scale investment and the real growth rate of industrial development reached 18 per cent. Soon a number of basic industries badly needed by the country were built up, forming a relatively complete industrial and regional structure. After the reform and opening up, the industrial modernization has gathered pace. Industrial sectors such as steel, electricity, coal, petroleum, chemical products, machinery, building materials, textile, food and medicine have developed robustly, and the aerospace, electronics and automobile industries have also seen rapid growth; a modern industrial system with 39 major sectors has been established.

4.3 Growth pole strategy for unbalanced regional economic development

Large developing countries usually have a vast territory and their economic resource in different regions varies. Therefore, these countries need to implement an economic development strategy that will help them gradually shift from the unbalanced mode to a balanced mode. Albert Hirschman contends that the economic development of developing countries is restricted by insufficient resources. When the country's investment demand exceeds the total amount of existing resources, priority should be given to high-efficiency projects. The government should focus on making breakthroughs in key industries, so as to promote all-round economic development through newly induced investment. Therefore, unbalanced growth is a method to achieve balanced growth at a higher stage of development (Guo, 1998e).

Correspondingly, other development economists also propose the theory of "growth pole" and "spread effect". According to Francois Perroux, "growth does not appear everywhere and all at once; it appears at points or poles of growth, with variable intensity; it spreads through different channels, with variable terminal effects on the whole of the economy" (Guo, 1998f).

Such geographically concentrated key industries will have a special impact on economic development. It will not only change the direct geographical environment, but also possibly change the entire structure of the national economy and promote the concentration and accumulation of other resources. Gunnar Myrdal believes that in the process of economic growth, there is a "spread effect of momentum from a centre of industrial expansion toother localities and regions", and "it is quite possible that all the regions in a country may be inside this margin of balancing forces […] if the centrifugal spread effects work relatively effectively" (Guo, 1998g).

Apparently, large developing countries can adopt a "growth pole" strategy and allow the "spread effect" to boost the economic development of the whole country.

The shift from unbalanced to balanced economic development is one of the characteristics of large developing countries and it is recognized as a law of economics. For example, in India's economic development, the "growth pole" has played a prominent role. In the mid-1980s, Rajiv Gandhi, former Prime Minister of India, put forward a strategy of giving priority to the development of knowledge-intensive industries. He took computer and electronic technology development as an important driving force for India's economic development and hoped that these industries would bring India into the twenty-first century. In addition, the Indian Government established a number of software technology parks to provide high-quality infrastructure and related services. According to the statistics in 2004, these software parks contributed 80 per cent of the software products and services exported by India. In terms of regional economic growth, there are over 5,000 software enterprises in Bangalore, which contributes over one-third of the total output of the software industry in India and is reputed as "India's Silicon Valley". In terms of regional economic development in China, after the reform and opening up, the Chinese Government also implemented the strategy of "unbalanced development". A number of coastal cities were opened up; special economic zones and industrial parks were established; domestic and foreign resources and markets were utilized to develop manufacturing industries, and the economic growth pole has taken shape; the eastern coastal areas have exerted its spread effect and boosted the economy of whole country. Ever since the twenty-first century, the government has implemented the strategy of "the rise of the central region" and the "development of the western region", promoting a tiered and gradual shift of the industries, so as to realize a coordinated development of the national economy.

4.4 Innovation-driven strategy from technology imitation to transcendence

The Hague Conference also put forward the hypothesis of the innovation advantages of large countries, holding that the economic scale of large countries can enable them to achieve higher achievements in technological research and development. Relatively speaking, large countries boast a large number of technical professionals and greater technological demands. There are not only many organizations engaged in technological research and development, but also great demands for new technologies. Therefore, the cost on research and development can be diluted, yielding to a higher rate of return. According to Simon Kuznets (2007b), "a country's economic growth may be defined as a long-term rise in capacity to supply increasingly diverse economic goods to its population, this growing capacity based on advancing technology and the institutional and ideological adjustments that it demands".

This shows that advanced technology plays the most important role in economic growth, and the improvement of labour productivity cannot be achieved without technological progress. Robert Barro believes that the latecomers can take advantage of the spread effect of the technology in developed countries and catch up with the developed countries through technology imitation. However, once the technological inventions of developed countries have been widely imitated, the latecomers need to enter a stage of innovation. In the open world we live in today, a value chain has been formed in the global economy, and different countries are located at the low, middle and high end of the value chain due to their different technological level. Countries on the lower end can move upward through technological innovation, which is also the only way for the latecomers to catch up with and even surpass the developed countries. Only by implementing the innovation-driven strategy can the latecomers catch up with the developed countries, and realize the transformation from an underdeveloped economy to a developed economy (Barro and Sala-i-Martin, 2011).

In terms of large countries implementing innovation strategy, the USA has presented some successful experience. In the early stage of industrialization, the USA mainly transplanted British technology, machinery and organizational management system, and made use of the advantages of its economic scale to implement large-scale production and standardized production. It quickly shifted from an imitator to an innovator, replacing the UK and becoming a pioneer of the new industrial revolution. After the reform and opening up, China has also vigorously promoted the development of manufacturing industry by introducing a large number of technologies and equipment from developed countries and carrying out imitation and innovation. It has successfully tuned itself into a major manufacturing country in the world. However, due to its failure to master key core technologies, this low-end lock in technology has also locked it at the lower end on the industrial value chain. Ever since the twenty-first century, China has paid great attention to the implementation of innovation-driven strategy, and gradually shifted from imitation to independent innovation, from extensive growth to intensive growth, and from a large economic country to a strong economic power. The innovation-driven strategy is the only way for a large developing country to avoid the "middle income gap".

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