Regional Economic Development: The Diamond Approach

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Chinese local governments have had two main ways to promote local economic development: attracting inward investment and seeking the supply of special policies. After accession to WTO, the way of depending on seeking the supply of special policies cannot be effectively used anymore because WTO requires the uniformity of the domestic legal system in members. Besides, only very few regions are lucky enough to enjoy policy preference. Under such circumstances, attracting inward investment becomes the most important way. The local governments use everything possible to attract inward investment. So-called competitive bid for investment is possibly harmful at the national level in the long term although this is a convenient way for local governments. But regretfully the efforts put by most local governments are not well rewarded because foreign capital still flows into the coastal, regions in the east. Actually it is very natural. FDI in manufacturing sector has very distinct assembly features. Foreign investors consider transportation very important. That is why they choose the coastal areas as their locations.

A new way to promote local economies has to be put forward. The Diamond theory, which is very popular both with academia and governments, provides new thinking. The theory , which was put forward by Harvard professor Michael Porter, was based on the study of dozens of industries in 10 countries. The cluster, a very important component and concept in the Diamond theory, has since become very popular because it has very clear policy implications. The Chinese scholar Wang Jici used the cluster concept to explain the development of the sock industry in Zhuji city Zhejiang province China.

1 Diamond Theory And Regional Competitive Advantage

The research on regional development always starts with location. A very important feature in regional economy is the agglomeration of the same or similar industries. It is Marshall who first realized the phenomenon. In his famous book *The Principles of Economics*, Marshall described the phenomenon and explained this in economic terms.

Marshall called the agglomeration as industrial districts. But this term is not well known. Many regional economists and economic geographers have since tried to explain agglomeration from different perspectives. But regretfully not a single view had been accepted by mainstream economists. The explanation for this, in Krugman's words, is that the agglomeration theory could not be modeled because the foundation for modeling, i.e., the economics of scale, had not been put forward. In the late 1990s, Krugman used the economics of scale to model the agglomeration.

In the 100 years from Marshall to Krugman, the focus of economists has been laid on the economic explanation of the industrial agglomeration. The theories' policy implications were quite vague. It is Porter who popularized the agglomeration concept and makes it applicable at different geographic levels, but the cluster concept put forward by Porter has more meanings. The cluster is an economic agglomeration of inter-related firms (including suppliers) and relevant institutions (industrial associations, government agencies, etc.).

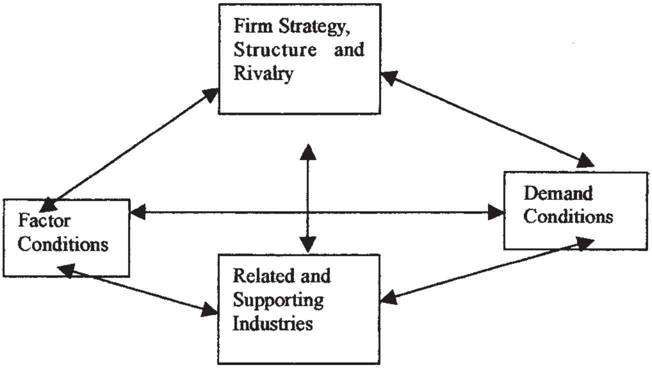

Figure 1 The Diamond model, showing the competitive advantage of a nation in a particular industry

The cluster is the core concept in Porter's Diamond (Figure 1). The Diamond is used to describe the advantage of a nation in a particular industry. The industrial competitive advantage rests on factor conditions, demand conditions, related and supporting industries and firm strategy, structure and rivalry. These four elements are placed at 4 corners, and the shape resembles a diamond. That is why Porter calls his theory of the competitive advantage of nations the Diamond model.

The Diamond is a system[2]. Each of the 4 elements constituting the system should be analyzed together with the other three. The force of each element is highly dependent on other three elements. For example, picky customers (demand conditions) cannot automatically lead to the production of good products unless very qualified human resources are available; if the competition is absent among the producers in the same industry (rivalry), then innovation cannot be aroused. Actually the system is self-reinforcing. But still Porter categorizes the degree of the importance of the 4 elements. Porter thinks rivalry and cluster (supportive and related industries) are the most important elements. Rivalry can improve other conditions. When a high degree of geographic agglomeration of a certain industry occurs, lots of talented and specialized people are attracted. Clusters reinforce and increase the interaction among the 4 elements. The value chain is formed when the firms interconnect horizontally and vertically. And all the firms involved are supportive of each other. The other benefit arising from the agglomeration is that all the upstream firms in the cluster have to increase R&D capability because of the bargaining power and pressure from the downstream firms.

Constrained by nature and history, a nation (region) cannot have competitive advantage in all industries. It has to focus on certain industries or sectors. Therefore a viable strategy for a nation (region) is: finding existing or potential clusters based on scientific measures; adopting suitable public policies to improve the 4 elements in the Diamond.

2　Policy Implications Of The Diamond

The first step to increase industrial competitiveness is to find the cluster elements and determine the cluster borderline. In this respect, the procedure adopted by western countries is as follows: step one: according to appropriate standards, when a high degree of economic agglomeration in a certain industry (lots of SMEs, or big and SMEs) exists, try to find the suppliers and clients associated with these firms. Step two, find the producers who manufacture similar products if these producers use the same or similar technology or key inputs as the above producers. Step three, find the institutions who provide the above producers with information, specialized technology and infrastructure. Step four, find the government agencies who have a strong influence on all the above firms or institutions. All these firms, institutions and government agencies constitute a whole cluster.

After determining the borderline, the firms, institutions and government agencies should cooperate to produce synergy effect on industrial competitiveness. The government as the maker of the public policies and the manager of the public resources can play the most important role. It can play the role of catalyst and the challenger to encourage and motivate the firms to pursue grand goals and improve competitive positions. Though the government is not in the Diamond, the government can improve, transmit and magnify the energy of the 4 elements. To be specific, the government can do so in the following areas:

Factor conditions: In terms of importance, factors of production can be divided into basic factors like natural resources, geographic location, etc, and advanced factors like knowledge, science, etc. In terms of speciality, factors of production can be divided into general factors like highway system, employees who have higher education, etc, and specialized factors like pier for chemical products, designing cluster for motors. Basic factors and general factors are available, and any company can have access to them. They don't constitute competitive advantages, especially in the age of globalization. Conversely, advanced factors and specialized factors are scarce factors of production and they are not inherited, but obtained as a result of long-term investment. These factors are very important in hi-tech industry. A nation (region) with abundant advanced factors and specialized factors has competitive advantages. Governments should continuously create advanced factors and specialized factors and upgrade them. In this respect, governments can: promote specialized education and training; take proper measures to motivate local universities to do research on the cluster related technology; collect the cluster related information and channel it to the firms and institutions in the cluster for free; provide high quality transportation, communication and other infrastructure for some special industries, for instance, micro electronics need more stable supply of water and electricity than other industries.

Demand conditions: On the surface, the global competition weakens the importance of domestic market. But the reality doesn't prove this point, because the composition and features of the domestic market have huge influence on the recognition, understanding of customers' requirement. The more picky the customers are, the more sophisticated the products are, and the more pressure the firms will feel on improving the products and services. If the domestic market can provide a very clear signal for potential demand at an earlier time, it will motivate the firms to go faster and a step ahead of foreign competitors. On improving demand conditions, governments: should act like shrewd customers and have high requirement of products and services on procurement; set efficient and prone-innovation standards to lead the firms in the cluster to improve; sponsor and encourage independent rating agencies to categorize the firms.

Related and supporting industries: internationally competitive related and supporting firms based in the home country supply the downstream firms with the inputs in a very efficient way, sometimes at favorable prices, thus creating advantage for the downstream firms. More important, because of the proximity between the suppliers and customers, they can share information, knowledge and innovative output. The customers can become the test field of the innovation products. They are likely to innovate more themselves. If the suppliers are the leaders in certain fields, the customers benefit most. In this respect, governments: should take active measures to attract the suppliers from other regions (including foreign countries) to invest in clusters; encourage the firms in the cluster to set up industry forum and facilitate the exchange and cooperation because social capital play an important role in competition; establish cluster-oriented industrial zones and the supplier zones.

Firm Strategy, structure and rivalry: Porter thinks this element in the Diamond is determined by the national environment, and no managerial system is universally applicable. The competitiveness of a particular industry in a country is affected by the managerial method, organizational form and other factors this country prefers. Because there are no universal managerial models, firms compete in their own way they deem necessary.

Domestic rivalry has the greatest effect. There is huge stimulative effect on creating and maintaining competitive advantage when powerful players are out there. Fierce competition in domestic markets is definitely not a waste of resources. Superstar firms without any competitors are not results of domestic competition, they come from the protection and subsidy given by the government. As a matter of fact, static efficiency is much less important than dynamic development. The latter is just the fruit of the competition. In encouraging and promoting competition, governments: set and enforce proper regulations in the areas of affecting competition, like licensing, ownership, etc; clear barriers to impede the competition in the cluster; attract big corporations to invest in the cluster; motivate domestic producers to compete directly with foreign rivals.

3 Several Issues Involved When Applying the Diamond

A. Demarcating the cluster borderline

Because there are no proper statistics and standards available, it is hard to determine the members and the border of the cluster. The members in the cluster are often categorized into the different industrial sectors. For instance, the firms which produce medical appliances can either be ascribed into the group of electric equipment or into the group of plastic products. Some scholars recommend using input-output standard, but the data which show input-output cannot be obtained. This method is practically unusable. Porter recommended using the strength of spillover. The strength of spillover is measured by its effect on the productivity and innovation. But this method was also criticized by some economists because they argne the method arbitrary. From the perspective of practices, it is only controversial how to categorize some few peripheral firms. I suggest adopting a loose standard to put these firms in the cluster.

B. Knowing the life cycle of the cluster

Like the product cycle, the cluster experiences three phases, namely birth, development and decay. But unlike the short life of a product, the industry cluster can last for decades or even centuries once the cluster goes through the threshold at the early stage. When the number of the firms is so large that the cluster will develop a self-reinforcing mechanism. The ceramic cluster in Jiangxi China has a history of several hundred years, and the Silicon Valley is also an example.

There are various reasons for the birth of a cluster. But to sum up, we can find however different clusters are, we can always trace the birth of a cluster to the elements of the Diamond. For instance, the birth of the Silicon Valley was dependent on the human resources and technology (factor conditions) Stanford University provided, the birth of the Israeli irrigation cluster can be traced to the shortage of water (demand conditions). The cluster can establish competitive advantage only after a long period of strenuous efforts, and the process probably takes 10 years or even more time. Therefore governments should not attempt to build a cluster from scratch. What government can do is to try to find the sprout of the cluster and provide support.

Another factor in determining the healthy and stable development of the cluster is how the elements in the Diamond work and whether these elements develop a self-reinforcing mechanism. The level of local competition, the birth environment for new firms, the formal and informal mechanisms which motivate the cluster members have bearings on this respect.

The weakening or even decay of a cluster can arise from either endogenous factor or being unprepared for the change of the outside environment. Endogenous factors usually are: rigidity of cluster members or organizations, lack of entrepreneurship, inelasticity of laws and regulations, prevalence of barriers to competition, etc. When the cluster firms are completely unprepared for the technology change, they are set to lose. For instance, computers lead to the disappearance of the typewriter industry.

Recognizing the life cycle of clusters governments can adopt proper public policies to promote the development of clusters when they find potential clusters. If clusters encounter difficulties and barriers, governments can take measures to help firms upgrade their technology. But governments should know that they can never subsidize firms or take measures which impede competition.

C. The difference between the Diamond and industry policies

Industry policies are based on 2 assumptions:

1. Great prospects of a particular industry. Proper support from the government is helpful to the birth and development of the industry.

2. International competition is zero-sum game, government support can make benefits flow into the home country. Subsidy is the most common industry policy. Exemption of taxation, barriers to import, restriction of FDI are also examples of industry policies. The nature of industry policies is to hinder competition.

Implicit assumption of industry policies is: the competitive advantage of a firm comes from the firm itself, and the cost-cutting is the most efficient way. But the Diamond thinks the competitive advantage of a firm is determined by each element in the Diamond, factor conditions (including cost) are only one of them. The level of local competition is a more important factor in determining the competitiveness. So unlike industry policies, the Diamond emphasizes the opening of the domestic market and promote competition.

Notes

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2 The Diamond is both applicable to a nation and to a region.

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