

## A Game Theoretical Meditation on the Strategy of Industrial Competition

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### ABSTRACT

*First, we analyze the present situation of market structure, enterprise behavior and organization performance in Chinese industry. Second, we integrate the model of competition and the strategy of technological innovation; third, we propose a game theoretic approach in studying strategy of industrial organization; finally the theoretical meaning and realism meaning of this study are given.*

**Keywords:** *market structure; enterprise behavior; organization performance; strategy of industrial competition; strategy of technological innovation.*

## **INTRODUCTION**

Since the 1980s, with China's deepening reform and the accelerated process of market-oriented, China's industrial organization policy and market environment has changed; the industry organization's own situation also has been a series of changes. Firstly, market competition is diverse and is need for effective study. Secondly, with the national economy promotion, technological progress and international competition intension, people keep on understanding of monopoly and competition deeply, some natural monopoly industries will be redefined, and some industries need to break the monopoly.

As a result, how to implement regulations on industry, how to achieve the requirements of national economic system on industry, etc, and theory of industrial organization needs to provide answers urgently. As the main market-enterprise, in the increasingly fierce market competition, a series issues of how to act, how to choose competitive strategy, how to manage also require us in-depth research to industrial organization issues between industries and enterprises.

## **THE STATUS OF CHINA'S INDUSTRIAL ORGANIZATION**

### **Market Structure**

Most industries in China, especially manufacturing, show a market structure where there is a large number of enterprises and serious surplus production capacity or called atomic structure. In recent years, China's large enterprises have developed by leaps and bounds, most industries are gradually tends to intensify. Compared with large international enterprises, however, China's industry concentration is still at a relatively low level. Industry structure is too disparate, self-organization is poor and economies of scale are at a low level. The level of professional collaboration is not satisfying and there is a universal existence of versatile enterprises.

Enterprise's exit barriers and entry barriers is asymmetry. State administrative monopoly industries, such as electricity, telecommunications, tobacco, finance and insurance should be subject to strict restrictions on access. On the other hand, many industries like manufacturing have lower barriers to entry, leading to excessive competition, serious surplus production capacity and economic benefits landslide. Administrative barrier in regions and departments is too high; mergers mechanism is blocked, the scale of the enterprises are hard to expand rapidly. Government and enterprise can't be divided clearly, government monopoly exists, and there is not market competition mechanism of survival of the fittest.

### **Enterprise Market Behavior**

From the perspective of China's enterprise market behavior, enterprises in administrative monopoly industries inclined to take exclusive, predatory or hypertension measures to sell their goods and service of poor quality, due to lack of potential competitive threats and pressure. In order to maintain its existing excess profits, they often lobby authorities through a variety of "rent-seeking" activities, to achieve the purpose of maintaining or raising prices and limiting output and serve. That leads to improper means of competition and competition disorder.

China's enterprises have low advertising spending, low R & D investment and poor non-price competition. Technology introduction, digestion and absorption are uncoordinated, and innovation ability is poor, which seriously hampered technological innovation, enterprise development and the upgrading of industrial structure.

### **Industrial Organization Performance**

As market competition intensifies, the average profit level of China's industrial enterprises has declining trend in recent years. The distribution of industry profit margins between industries is

unreasonable, showing that the allocation of resources between industries is unreasonable, allocation of social resources is inefficient, and industrial economies of scale achieve a lower level. The entry of many enterprises declines the proportion of enterprises that achieve the economies of scale, leading to excessive competition in many industries in recent years. That directly compresses the original large enterprise's market share and production. Some urgently needed goods have high prices and insufficient supply because of monopoly, which seriously harmed the interests of consumers.

Other goods have continuing surplus as a result of repeated investment, a large number of production factors and resources can not be sell, which are not conducive to the improvement of efficiency of resource allocation. Lack of motivation in enterprise technological progress and a relatively low level of technology perform as short of technology development organizations, short of technology advances, low level of absorption and utilization to external scientific and technological achievements, and small decline in product cost and product prices.

## **MODEL COMPETITION AND TECHNOLOGICAL INNOVATION STRATEGY**

Michael E. Porter, an American famous strategic management of Jurists and Harvard Business School professor, lead in the analysis of industrial competitiveness. Before Porter, many scholars have conducted in-depth study of competitive strategy. Andrews, a Harvard Business School professor, proposed the most influent SWOT analysis framework," The theory of competitive strategy framework is to a large extent proposed by Andrews".

Porter's new enterprise competition strategic theory is the outcome of many years' research. He think the state of competition within the industry depends on the interact of five basic factor(the relation with

suppliers, the relation with buyers, new entrants, substitute products, and existing competitors). The five competitive forces to determine the strength of an industry's competitiveness and ultimate profit potential. One or more of the forces occupy a dominant position and play a key role on the formation of a corporate strategy. Technological innovation can play a considerable role in gaining a competitive advantage. From the perspective of relationship between the suppliers and buyers, technological innovation can bring new opportunities and enhance competitiveness, such as reducing dependence on material suppliers in order to increase the competitiveness on the supply side. From the perspective of potential rivals and alternative products, legal protection measures such as establishment of standards and patent can reduce the threat. From the perspective of existing competitors, competitors break the monopoly by innovation or imitation. In one word, technological innovation affects many aspects.

According to the analysis of Porter, industrial competitiveness strategies can be divided into the total cost of the leading strategies, differentiation strategy and objectives gathering strategy. The implementation of these three strategies needs different resources and skills, but there are different degrees of risk. Porter also detailed exposition on other important component-theoretical models of competitors, including three aspects on how to identify competitors, how to analyze competitors, and how to find market action signals of competitors. Porter's theory and analysis are highly realistic significance to many enterprises facing fierce market competition and trying to maintain the relative competitive advantage.

When doing innovative strategies in decision-making, competitor's situation must be considered, specifically make comparative analysis in the following four aspects: compare the size of the business and the composition of resources; compare the efficiency of the use of resources; consider the enterprise's own efficiency of learning knowledge and experience; maintain the enterprise's competitive edge. Besides,

enterprise management sector must evaluate the market position on innovative strategies in two aspects, one is from the competitor's strategic intentions and capabilities, the other is from the characteristics of innovation. Its purpose is to decide to be the leader or follower of innovation.

### **GAME THEORY RESEARCH ON INDUSTRIAL TECHNOLOGY INNOVATION COMPETITION STRATEGY**

From the above analysis we can see that China's industrial organization and structure need to improve. With the transformation from the traditional planned economic system to modern market economic system, enterprise begins to change from government executive appendage to independent main competition in the market. Competition is the key to business success, and decides the industrial organization whether or not reasonable. Corresponding, there are increasing demand on research on competitive strategy by the business, the theoretical circle and the government's economic management departments. However, it is not until 1990s that China's enterprise first contacts with the advanced competitive strategic theory. Mainstream theory of industrial organization is opposed to any behavior directing to monopolize. However, the situation in China is that industry concentration is too low, far below the requirements of economies of scale, seriously undermining China's enterprises in the international market competitiveness.

Therefore, China's industrial organization policy can not choose anti-monopoly as the keynote. The policy position of Chicago School and the new Austrian school is safeguarding competition and opposing government intervention. China can not simply adopt this idea too, because China has a large number of state-owned enterprises. Its property features decide that government would not treat state-owned enterprises as private enterprises, or it will cause serious loss of state

assets. No state intervention is inconceivable for a country with fundamental structural reform and change in various institutional arrangements. Therefore, China's industrial organization policy is to strike a balance between maintenance monopoly and promoting competition.

Game theory studies decisions and balance when the policy-making main bodies' act is interacting directly, or decisions and balance when a main bodies' act is affected by other bodies. Traditional microeconomics sums up all other person's behavior in a parameter when studies individual policy-making effectiveness maximization. It doesn't consider the mutual influence between their choice and others'. Individual utility function researched by Game theory not only relies on his choice, moreover relies on other people's choice. Individual most superior choice is the function of other people's choice. A technological innovation strategy's choice must involve many kinds of factors, such as how to innovate the strategy, innovation time, risk policy-making factors and so on. When making the decision, it must consider other people's response to their policy-making. How can make the decision to balance everybody's benefit, this is precisely the issue which the game theory studies.

Our country just starts in the industrial organization theory research, and lack of basic data and material about industries' development condition. Therefore, we should mainly do case study as western scholars did in 1950 to 1970s, especially research the competition environment and enterprise's competition strategy. In view of the unique situation of individual case, it establishes the game theory model to realistic condition, applies the game theory in the concrete cases analyzes. As a kind of analysis tool, the game theory has influential role and significance to the competition strategic analysis. It can be trusted that the competition strategic research based on the game theory will become an important issue of the industrial organization economics.

## **RESEARCH SIGNIFICANCE**

### **Theory Significances**

Theoretical study is to the requirements of practice. Our country's current economic development requests us to strengthen the research on Industrial organization theory. Looking from our country's situation, under planned economy system, there are not monopoly and compete relations between enterprises in identical industry, so it doesn't need to do industrial organization fundamental research. After more than 20 year reform and open policy, however, our country's market mechanism of monopoly competition has formed basically. In current economical reforming time, the enterprise competition needs the Industrial organization theory and strategic theory in order to win the competitive advantage.

Compared with the West, the Chinese economical educational world falls far behind on value degree of industrial organization theory and Research level. Since many years, our country's research key point is to grasps the economic activity's macroscopic law but neglect the microscopic and intermediate perspective. After Industrial organization theory introduction, we starts to emphasize on organically unifying microscopic, intermediate perspective and macroscopic in the society reproduces. The initial period discusses the industrial structure emphatically on industrial proportion coordination and single factory expansion. In recent years, although some scholars have discuss Chinese major industries structure (the concentration degree, entry barriers), behavior and achievements(S-C-P), there still exists insufficient. Especially in the issue of industrial competition strategy, it lacks system standard and real diagnosis research, not to mention researching influence on enterprise business strategy by game theory in Industrial organization theory.

### **Practice Significances**

The industrial organization theory is important component of modern economics, an newly emerging applied economic theory analyzing and researching economy operational problems under market economy condition. The industrial organization theory takes the price theory as a foundation. In modern market economy developing process, it analyze efficiency influence causing by industrial organization condition and changes, and provides theory basis and the countermeasure way to maintains the reasonable market order and economic efficiency. Looking from China's reality, research on China industrial organization has the very vital significance. It mainly manifests in following several aspects:

#### 1 promotion resources reasonable disposition

Realistic market is often monopoly competitive market where competition and monopoly mix in different shape. The government may judge whether there is the Cartel behavior, price distortion, market failure, excessive competition and fair competition based on the Industrial organization theory. Then it can formulate corresponding industrial organization policy (counter-Trust policy, entry barrier policy) to limit enterprise's excessive monopoly, finally make up the market flaw and realize the resources reasonable disposition.

2 be advantageous to the choice of enterprise competition strategy  
Choosing which industry to invest need not only make forward-looking analysis and the forecast to the industrial prospect, but also emphatically analysis this industry's present situation. For example, the forecast to entry barrier would provide the theory cornerstone for original enterprises formulating defensive strategy to new enterprises. In addition, analysis to the industrial organization theory is helpful for enterprises making concrete price and non-price competition strategy.

3. Strengthen the China industrial organization international competitiveness

Strengthening our country's industrial organization theory research, reforming the pattern how government adjusts industrial organization, is helpful for promoting the transformation of the government functions, eliminating the administrative monopoly, deepening economic restructuring, formulating scientific industrial organization policy, establishing standard market competition order, displaying the organization function of market competition mechanism. It is also helpful for enlarging the advertisement and R&D investment and enhancing the non-price competitive power to China's enterprise. In a word, this topic is advantageous in enhancing and strengthening China's industrial organization international competitiveness.

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