

中国中青年经济学家论丛

中国企业技术成长机制 及竞争力研究

—— 一个新的技术转移理论
与应用分析框架

**ON TECHNOLOGY GROWTH MECHANISM AND
COMPETITIVENESS OF CHINESE ENTERPRISES**

A New Theoretic and Applied Framework
of Technology Transfer to China

By Zeng Fanhua 曾繁华 著



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ABSTRACT

By the end of this century, the human society has begun to advance to the knowledge economy era. Some people think that the outstanding characteristic of the knowledge economy era which differs from that of agriculture economy era and industry economy era is that knowledge is the most important wealth for human society. Let's stop for a moment considering how the connotation standard of the national wealth of the world changes. The developed countries' absolute predominate position in the distribution pattern of the national wealth of the world remains the same. According to the calculation of UNCTA (1977), the per capita income of the main seven developed countries was as 20 times as that of the developing countries in 1965, and the income gap enlarged to 39 times in 1995. According to Moregen (摩根) JP's calculation on the basis of exchange rate, the GNP of the 29 countries of OECD accounts for 80.5% of the world GNP in 1995, the U.S 27.2%, EU 29.5%, Japan 19.2%. The population of the U.S, EU and Japan makes up 15% or so of the whole population of the world, but the GNP of them accounts for 77.9% of the whole output value of the world. One report made by the United Nation Development Program on

Sept 9, 1998 shows that, the rich persons who account for 20% of the world population possess 80% of the world wealth. The per capita GNP of the developed countries has exceeded \$ 20,000, while the per capita GNP of one thousand and three hundred million persons in the world is less than \$ 500. There are one hundred million hungry people, one hundred million homeless and one hundred million children who can't afford to go to school. In the recent years, the gap of per capita income between the developed and the developing countries has become not smaller, but larger. "The rich become richer, the poor poorer".

Many economists have studied the main reasons for the unfair distribution of the modern international income, such as "the theory of poverty vicious circle", "the insufficiency of Effective Demand", "the Economic Globalization", etc. some domestic scholars have studied that problem (Xiong Xian liang, 1999) from the following aspects: trade liberation, the increase of the developing countries' financial debt, the existence of too many surplus labors in the countryside, the developed countries' policy of intellectual and investment immigration, the non - customs barrier of developed countries for the developing countries' labor - intensive products. In my opinion, the fundamental reason for the unfair distribution of the international income, especially for the enlarging gap, is that there is a big gap of national competitiveness between the both sides. The national competitiveness depends on its industrial competitiveness which lies on the enterprise's ability to compete, and the latter is decided by the enterprise's ability at the core, especially by the enterprise's technology competence and the ability to blaze new trails. Therefore, the key reason for the predominate position of the devel-

oped countries in the distribution pattern of international wealth is that their enterprises have strong economic and technical strength, the ability to bring forth new ideas and their economic ability to compete. The disadvantageous position of the numerous developing countries in this distribution pattern decides the fact that they can only get their corresponding and small share of the international wealth. Consequently, how to promote the economic and technical strength of the enterprises of the developing countries, and how to narrow the gap of the international competitiveness between the developed and the developing countries become an important way to change their disadvantageous position and get their wealth share in proportion to their population.

At present, more than 80% talents of research, development investment, science and technology are in the developed countries, whose population is only 20% of the whole population of the world, the transnational corporations of the developed countries account for over 90% of the 500 most powerful ones of the world, the transnational corporations are the engineers of the technology improvement and innovation of the world, which also monopolize 70% technology transfer and 80% new technology and crafts in the world. Above all, technology is a crucial input factor during the course when a country is realizing its industrialization. At least it should obtain a lot of technology from abroad during its initial development period (Nagesh Kumar, 1996). Many developing countries can support their domestic enterprises to blaze new trails and form the endogenous growth mechanism. They can also improve domestic enterprises' competitiveness. But under the circumstances of the open world economic system and economic integration, to attract the interna-

tional direct investment, especially to transfer and spread technology by means of transnational corporations direct investment is undoubtedly one of the most efficient ways, for the developing countries, to realize the "catch-up strategy" and to improve their industrial and enterprises technical competence.

Since 1960s, there have been lots of economic documents in the western countries on the relationship between international direct investment and technology transfer, the chief opinions, such as "the Unity", "the opposite", "Cybernetics", "the limited", "uncertainty", the main theories in that field are J. H. Dunning's Three Advantages (OIL, 1970) based on the compromise of P. J. Buckley and M. Casson's theories, Japanese scholar (高藤优)'s "NR" hypothesis and k. kojima's Expansion of Marginal Industry, J. H. Dunning's "Investemnt and Development Stage (1981), professor Michael. E. Porter's the National Competitive Advantage" (1990), J. H. Dunning's "Economics of Common Governance" (1993), etc. In addition, many economists have contributed a lot to the research of the international management of the transnational corporations. For example, Vermon (1966), Kindleberger (1969), Caves (1971, 1974, 1984), Rugman (1981), Teece (1981, 1983), Williamsion (1981) and Hennart (1982). Because the outward direct investment of the transnational corporation is often connected with the transfer of capital, technology, management skill and the admission to market. As a result, to various degree, these economists often deal with the international transfer of technology. Being influenced by the historic background and the great nation's interest, most of the modern theories (outward direct investment and the technology transfer of transnational corporations) are often

devoted to the explanation of how the transnational corporations have come into being, many of which are a kind of great nation's economic expansion.

The productive factors such as capital, technology flow transnationally more and more quickly, which promotes the world economy to become global and a network. The globalization, network and the knowledge economy are the inexorable trend of the modern international economy, and they also provide new increase mechanism for the numerous developing countries. The developing countries can reduce gradually the technology gap between them and the developed countries through the learning curve of the technology introduction, and improve their international competitiveness by innovation and the limited transfer of international technology, but the practice of the developed countries externally direct investment since the 1950s and of the foreign businessmen's direct investment and transfer of technology to China show that the technology transfer during the course of international direct investment is still a "black box" difficult to pin down and operate for the developing countries, especially under the ready circumstances of the OIL Advantage pattern, if they don't bring forth new ideas and strategic breakthrough of "the black box" and "technology transfer", they can never jump out of the set pattern of technology "second pass", "third pass" and "the processing workshop".

The great potentialities of Chinese market and the more and more adequate investment environment have attracted lots of direct investment of foreign businesses since China reformed and opened to the world—more than 400 of the 500 most powerful transnational corporations have entered our country. By the end of 1999, China

has actually made use of foreign direct investment over \$ 270 billion. China has been the second largest country (just second to the U.S) in the respect of receiving the foreign direct investment for six years. The foreign businessmen's direct investment to China has contributed a lot to the make-up of the insufficiency of constructive capital, the increase of the market-oriented foreign exchange earning and the employment, and has increased the technical and administrative competence of China. However, as a whole, the transfer and spillover of the technology is still much less than we expected and the government's policy "Exploiting Market For Technology" in the late of 1980s hasn't produced ideal result.

On the research of the foreign businessmen's direct investment to China, the domestic scholars concentrated on the following: I. Considering the fact that the foreign businessmen have squeezed or occupied Chinese industry and products markets, and with view to the foreign businessmen's market share, holding share, dumping and monopoly of the industrial market, they have analyzed the influence of foreign businessmen's entry on our national industry and industrial competitiveness. II. From the composition of countries and areas where the foreign capitals come from, they have analyzed the whole of the present situation of their technology content. Although there is evident technology content difference between different countries, areas and projects, as a whole, the technology content of the foreign businessmen's investment of the developed countries is higher than that of the developing ones, the large transnational corporations higher than the small and medium-sized businesses. III. Wang Zhile, a research fellow, has supervised the publication of several works on the investment in China of the world famous transna-

tional corporations, and made a empirical study of them. IV. With regard to the reason for the failure of "Exploiting Market For Technology", some scholars have explained the following aspects: the technology monopoly of the foreign businessmen, the strategy of globalization, the Chinese ability to absorb foreign technology, the supply and demand of the technology, the external environment of the technology transfer. V. About how to "Exploiting Market For Technology", everyone knows the importance of demanding technology from transnational corporations, but "how to exchange for technology", some trains of thought are clear, but others not.

In my opinion, the reasons for the unsatisfactory result of "Exploiting market for Technology" are diverse, in addition to the blind introduction, impatience for success and the lack of experience in the introduction of foreign capital, the fundamental reasons are the technology monopoly and inherent advantages of the transnational corporations. Because only six Chinese corporations have entered the world 500 most powerful transnational corporations and our theoretical and practical study on the Chinese and world transnational corporations is still at the initial stage. Most of the western scholars' growth theories and strategies of the transnational corporations are based on the backgrounds of the developed countries and they reflect the international management, investment and technology offers of the transnational corporations of the developed countries. In the unfavorable pattern of international division of labor, if the developing countries want to obtain more advanced technology from the western transnational technology at the least cost, they need reasonable theory basis, proper institutional arrangement and strategic choice. In a way, the modern international competition is the one between

transnational corporations. If China has not tens of large transnational corporations to resist the western ones, it will be very difficult for China to narrow the gap of international economic competitiveness between China and the developed countries, China will never be able to obtain their share in proportion to its population in the distribution pattern of world wealth, nor can China reduce the per capita GNP difference from that of the developed countries. So Chinese enterprises growth mechanism of international technology, the growth course, the research of the growth strategy and choice of Chinese enterprises are urgent and sophisticated problems for Chinese economics, international economics and strategic management. Technology, like other kinds of knowledge, has a characteristic similar to public goods. Although the developed countries often support their domestic businesses to bring forth new technical ideas, few of them encourage to export their most advanced technology to the developing countries. And the technology gap decides the income gap between the developing and the developed countries. Therefore, to quicken the spread of technology (especially the ripe technology) to the developing countries for value or for nothing, will be helpful to increase the technology supply to the developing countries, and to speed up their development pace, and to reduce their income gap.

No doubt the endogenous growth is important for the improvement of the international competitiveness of Chinese industry and enterprises, however, too much of the world technical resources and competence gather in the transnational corporations of the developed countries, so how to accelerate the international growth of the enterprises' technology is especially important for China--the biggest developing country. If the numerous developing countries want to ac-

celerate the international growth of the enterprises technology, it will be crucial to destroy or weaken the advantages of the technology monopoly and market internalization of the transnational corporations. So we must bring forth new ideas and breakthrough in the aspect of basic theory of international technology transfer, the institutional arrangement and strategic choice.

The main contents of this book include the following four parts:

I . The Theoretical Review. It mainly looks back western economists' theories of outward direct investment and technology transfer of the transnational corporations since 1960s. It aims to explain the relationship between the outward direct investment and technology transfer of them, and to illustrate the difficult positions of the developing countries, say, the theoretical basis, when they use the capital of the transnational corporations and spread the technology.

II . New theory of Property Rights. It mainly studies the advantages of market ownership. In view of the more and more extensive use of property rights, and on the basis of the abundant practice of the market ownership, this theory has made normative and empirical analyses of the five hypotheses. 1. Analysis of the origin of the market ownership; 2. The market ownership has national exclusion, to practice the system of national market ownership; 3. The market ownership is a kind of "scarce goods", not public goods; 4. The earnings of the market ownership can be measured; 5. The market ownership can be exchanged and allocated. In the western countries, the ownership includes the right of use, the right of control, the right of disposal, the right of earnings. The market owner-

ship belongs to the government, but the right of market operation (management) can be transferred and exchanged. In essence, every trade war is to fight for the right of market operation, control and earnings. Under the circumstances of open to the world and free trade, the limited transfer of the right of market operation, control and earnings, the economic regionalization and globalization are only the exchange and limited share of the right of market operation. Given the market economy conditions, the world national wealth is, in fact, that the market ownership is economically realized. The distribution pattern of the world wealth is decided by the competitive pattern of the right of market operation, control and earnings, and the latter is decided by the competitiveness chains (the competitive power of a country—that of the industry—that of the enterprise). The most superior advantage of China is that she has the advantage of the market ownership, the crux of the matter is how to turn the advantage of the market ownership into the advantage of market competition.

Ⅲ. The innovation of institutional Arrangement—the study of the institutional arrangement of “Exploiting Market for Technology”. In this part, I’ve introduced the Theory of Gaming which is more and more extensively used in the west, and studied the gaming problem of “Exploiting market For Technology”, the model of a country’s negotiation power and the institutional arrangement of “Exploiting Market For Technology”.

Ⅳ. The Contrast and choice of strategy—the research on the international strategic alliance. The ways of integrating the resources of the transnational corporations are internalization, Virtual Organization, etc. On the one hand, the Chinese enterprises are re-

stricted by their small-sized scale, it is difficult for the most Chinese enterprises to get the advanced technologies of MNEs by the way of merging of ally, on the other hand, they are bound by their technology competence and other abilities at the core, therefore, it's very difficult for Chinese enterprises to enlarge its integral boundary of resources in the world by Virtualization. The practical way is: On the one hand, it can enlarge its enterprises scale by alliance and annex, so China can build up her own "aircraft carriers". On the other hand, to improve the nucleus competence and the international competitiveness of the Chinese enterprises by the strategical alliances. As a new kind of international management, the international strategic alliance has attracted more and more attention of many countries all over the world. Presupposing that the competitiveness of the enterprises depends on the competitive strategy of them, and on the basis of the innovation of theory and institutions, this part has made a study (the situation is that our enterprises are under the circumstance of asymmetrical competitiveness) on the foundation of an enterprise group, the successful case of strategic alliance of technology development, the alliance mechanism, and the strategic alliance network, etc.

The academic value of this paper is: Firstly, the author's New Theory of Property Rights—the theory of the advantage of the market ownership, which fills a blank of the research on property rights. As a basic category of economics, the market ownership has an extensively applicable fields. Secondly, based on predecessors' theoretical paradigm, I propose the analytically theoretical paradigm of international economics: the market ownership—the institutional arrangement—strategic choice paradigm, that is the MIS

paradigm, which has enriched and developed the system of international economics. So the research of this problem will not only help to deepen the study of technology transfer and the international strategic alliance, but also be a general guide to make proper institutional arrangement, to carry out "Exploiting Market For Technology" for our government, it will also be helpful for our enterprises to join the international strategic alliance, for the developing countries to implement "Catch - up strategy" and to improve the enterprises' international competitiveness.

内容提要

20 世纪末人类社会开始向知识经济时代迈进，有人认为，知识经济时代不同于农业经济、工业经济时代的显著特征，在于知识是人类社会的第一财富。暂且不论世界国民财富内涵标准如何变迁，经济发达国家在世界国民财富分配格局中的绝对主导地位始终没有改变。据联合国贸发组织计算（UNCTA，1997 年），1965 年 7 个主要发达国家与发展中国家人均收入差距为 20 倍，1995 年这一差距扩大到 39 倍。据摩根 JP 按汇率计算，在 1995 年世界 GNP 中，经济合作与发展组织 29 个国家的 GNP 占 80.5%，其中美国占 27.2%、欧盟占 29.5%、日本占 19.2%。美国、欧盟和日本的人口约占世界人口 15%，其 GNP 却占世界总产值的 77.9%。联合国开发计划署 1998 年 9 月 9 日发表的一份报告显示：占世界人口 20% 的富人享有世界财富的 80%。主要发达国家人均 GNP 已超过 2 万美元，全世界却有 13 亿人年均 GNP 不到 500 美元，有 1 亿人在挨饿、1 亿人无家可归、1 亿儿童不能上学……近年来，发达国家与发展中国家的人均收入水平之间的差距不是缩小了，而是扩大了。“富的越来越富，穷的越来越穷。”

对于造成现代国际收入分配不公现象的主要原因，国内外许多经济学家进行了一些研究，有诸如“贫困恶性循环论”、“有效需求不足论”、“经济全球化论”等。国内有的学者从贸易自由化、发展中国家金融债务增加、大量农村剩余

劳动者的存在、发达国家的智力移民和投资移民政策、发达国家对发展中国家优势产品特别是劳动密集型产品的非关税壁垒、发达国家对发展中国家净官方发展援助额的减少等方面进行了研究(熊贤良, 1999年)。笔者认为, 国际收入分配不公, 特别是经济发达国家与发展中国家收入差距拉大或收入分配不公现象的最根本原因, 在于双方在国家竞争力方面存在巨大差距。国家竞争力取决于产业竞争力, 产业竞争力取决于企业竞争力, 而企业竞争力又取决于企业的核心能力, 特别是企业的技术水平和创新能力。因此, 发达国家之所以能在世界财富分配格局中占有绝对大的比例, 关键在于其在国际竞争力格局中, 处于竞争力前沿的企业有强大的经济技术实力、创新力及其经济竞争力。而广大发展中国家在这一分配格局当中所处不利地位, 决定了其只能获得相应的、较少的世界财富分配份额。这样一来, 如何迅速提升发展中国家企业的经济技术实力、创新力及其国际竞争力, 缩小与发达国家在国际竞争力方面的差距, 就成为发展中国家争取改善其自身在世界财富分配格局中的不利地位, 从而获得与其自身人口对称的财富分配份额的重要手段。

目前, 全球 80% 以上的研究与开发投资、科技人才集中在世界人口 20% 左右的发达国家, 发达国家跨国公司占世界最大 500 家跨国公司 90% 以上, 跨国公司是世界技术进步和技术创新的引擎, 跨国公司垄断了世界上 70% 的技术转让与 80% 的新技术与新工艺。特别是, 技术在一个国家实现工业化过程中是一个关键性的投入要素, 至少在其初期发展阶段大量技术应该从国外获取 (Nagesh Kumar, 1996 年)。对于广大发展中国家来说, 虽然可以通过扶持国内企业进行技术创新, 形成企业技术内生成长机制, 也可逐步提高国内企业的竞争力, 但在开放型世界经济体系和经济全球化条件下, 通过吸引国际直接投资, 特别是利用跨国公司对外直接投资实现技术转移与技术扩散, 无疑是广大