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Full Length Research Paper

Enterprise individual characteristic and analysis framework of transnational corporations (TNCs') origin and formation: Empirical study on Chinese listed companies from 2001 to 2009

Xiaoguang Lu*, Yanhong Zhou and Qingchun Lu

Business School, Hohai University, Nanjing, P. R. China.

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Based on the practice of transnational corporations (TNCs) and theories of new classical economics and new institutional economics, we demonstrated that the necessary condition for establishing TNCs is factor endowments dominance (FED) at the macro level, and the sufficient condition for establishing TNCs was enterprise individual characteristic at the micro level. On these grounds, an analysis framework of TNCs' origin and formation was constructed, namely, in an imperfect competitive market, international business develops from the potential profits produced by bi-directional FED between host countries and home country. Corporations with enterprise individual characteristic could gain potential profits derived FED by establishing TNCs, when the transaction cost of establishing TNCs was lower than that of international trade. This paper adopted panel data of Chinese listed companies' annual statement from 2001 to 2009. Then, we used interacting multivariate analysis of variance (MANOVA) for the empirical study. It was concluded that the analysis framework was effective, advantage of operation scale was common feature of enterprise individual characteristic and different types of TNCs had their own special features.

Key words: Transnational corporation (TNCs), enterprise individual characteristic (EIC), international business (IB), factor endowments dominance (FED), analysis framework, multivariate analysis of variance (MANOVA).

INTRODUCTION

Fayerweather John (1969). defined transnational corporation (TNCs) more comprehensively; he pointed that TNCs involved operating activities related to profitability business in two or more countries and these activities were based on cross-border transfer of factors of production (including nature resources, capital, labor, technology, management system, entrepreneurship). Obviously, his definition is a generalized TNCs, the basic characteristic of TNCs is to conduct international business by the multinational combination of factors of production. TNCs set up economic entities abroad to develop international business (IB) and bring the foreign corporation into the parent company's management system, so as to help the parent company to systematically manage foreign companies' capital, product and sales.

Based on practice of TNCs and theories of new classical economics and new institutional economics, we demonstrate an analysis framework of TNCs' origin and formation. Namely, in an imperfect competitive market, it is a necessary condition to establish TNCs, that is, bi-directional factor endowments dominance (FED) between host countries and home country. When the transaction cost of establishing TNCs is lower than that of international trade, enterprises have enterprise individual characteristic (EIC), which is the sufficient condition. IB is based on potential profits produced by price differences of factors for FED. Enterprises with EIC expand IB by establishing TNCs. The paper points out that FED and EIC constitute the two most important topics of TNCs' theoretical research, so they should be adopted different ways to study them. In views of transaction cost and

*Corresponding author. E-mail: hongrui@mailsvr.hhu.edu.cn.

internalization theory, EIC (the core of the TNCs' theoretical research) reveals the reason to realize potential profits by establishing TNCs. The paper adopts panel data of Chinese non-financial listed companies' annual statement from 2001 to 2009, then, we conduct an empirical research on EIC's inscape and mechanism of action by the methods of multivariate analysis of variance (MANOVA) and mean significant test on two independent populations and constitute EIC's index system: total assets (TA), net cash flow from operating (NCFO), cash from investment in fixed assets (CFIL), investment income (II), earnings before interest an tax (EBIT), retained earning (RE), market-to-book ratio (MB), and earning per share (EPS). The results support the analysis framework; the management scale advantage is the common feature of EIC, and different types of TNCs have their own special features.

This paper further summarizes the classical theories of modern TNCs and some scholars' discussions and improvements. The limitation of the theory of modern TNCs is to take corporate advantages as the necessary condition of the establishment of TNCs. Also, we demonstrate that FED is the necessary condition to establish TNCs and that EIC is the sufficient condition. We discuss the analysis framework of TNCs' origin and formation, divide TNCs into 3 different types, and propose four basic supposes of EIC according to the analysis framework of TNCs' origin and formation. We also conducted an empirical study on EIC by annual statement of Chinese listed companies from 2001 to 2009. Finally, some important conclusions were drawn from the work.

REVIEW OF THE MODERN TNCS

Followed with the developed countries' surplus of capital, the initial TNCs came into being, namely, the monopolistic companies conducted FDI for expanding international market share and possessing other countries' natural resources and primary products. With the development of science and technology, in social reproduction, the role of entrepreneurship is increasingly prominent. TNCs gradually develop themselves into enterprises with comparative advantage, conducting industrial gradient transfer and enhancing the enterprise's core-competitiveness. On these grounds, since the 1960s, the economists mainly from North America, Europe and Japan have conducted a systemic research by taking the transnational investments of developed countries enterprise as samples, then, the modern TNCs' theory and its research paradigm were constructed.

Hymer (1960) first put forward the theory of monopoly advantage theory of TNCs, which means, in an imperfect competitive market, the necessary condition for enterprises to establish TNCs was to display their some own monopoly advantages. They were intangible and tangible assets which were not easy to lose and related to enterprise's ownership. Enterprises with monopoly advantages gain monopoly profits by establishing TNCs and conducting product in host country. When these monopoly profits could totally offset the extra cost produced by the development of FDI, TNCs came into being. Kindleberger (1969) improved the theory of monopoly advantage. The monopoly advantages could be divided into scale advantage, market advantage, and the advantage of factors of production. The theory of monopoly advantage laid the foundations for modern TNCs' theoretical research and constituted the basic framework for modern TNCs' theory. In imperfect market, the monopoly advantages become the logical starting point of the monopoly advantage theory, and are imprinted on modern TNCS theory.

Vernon R (1996, 1979, 2006) raised the theory of product life cycle. The process could be divided into 3 types from going into production to standardization, namely, new, mature, and standardized products. He thought enterprises had different production costs during different stages of the product life cycle, thus causing different choices of production location. According to the stages of product, enterprise extended the life cycle of product by transferring product to the backward countries, which made enterprises profit maximization, then encouraged TNCs' FDI. Based on the three stages of the product life cycle, the factor of time was introduced into the research of TNCs' FDI. The theory expanded the monopoly advantage by dynamic research, and constructed the analysis framework for the TNCs' choice of time and location. However, the theory is still on the basic of the framework of monopoly advantage, so it is confined by the hypothesis.

Based on the theory of international division of labor and marginal industry, Kojima (1978) proposed the theory of comparative advantage. That FDI of TNCs should comply with the principle of marginal industry, when compared with the FDI in host country, the product of TNCs' domestic enterprise have comparative advantages, TNCs should make use of the industry into other countries or regions with comparative advantages. The marginal industry in the theory of comparative advantage is these industries, which have been at or near in comparative advantages in host country. Though the theory replaces the monopoly advantage with the comparative advantage, it still shows a mass tint of monopoly advantage, namely, TNCs which should have comparative advantage, can establish TNCs.

Peter Buckle and Maik Casson (1976), Alan Rugman (1981), Alan Rugman and Alain Verbeke(2003), Buckley P and Ruane F (2006), Rugman A and Yip G (2008), Rugman A (2011), Buckley P (2011), Alain Verbeke and Wenlong Yuan(2011) introduced transaction costs theory into the theory of TNCs, and then proposed internalization theory of TNCs. The theory expanded traditional concepts of intermediate products. Through establishing TNCs, enterprise transferred intermediate products from

incomplete external market into internal, so as to internalize the external economy. Then, enterprise could protect its monopoly advantages in intermediate product, reducing its transaction cost and obtaining maximum profits. The core of enterprises was the contract of the internalization of its product elements, which was used to explain the inner motivation for enterprise to establish TNCs. However, internalization theory was still confined in the initial framework constituted by monopoly advantages, namely, intermediate products have natural monopoly characteristics, which caused the imperfect competition of the market of intermediate product. So, the firm's internalization advantage has been formed. Intermediate product advantage was the necessary conditions for enterprise to establish TNCs. This theory did not cover the other advantage of internalization. As such, there was external economy in host country, so, establishing TNCs could internalize the factors of production with lower price.

Dunning (1977, 1988, 1995) proposed eclectic theory of TNCs. It integrated various views of the theory of modern TNCs. The decision factors of TNCs' FDI could be summarized into three advantages: ownership-specific advantage (O), internalization advantage (I), and location advantage (L). O and I were the necessary condition for enterprise to conduct FDI, L was the sufficient condition. Only when enterprises had the three advantages at the same time, can TNCs conduct FDI. So, electric theory was also called OIL paradigm. The theory had high generality and was comprehensive, so it was still called the TNCs' comprehensive theory. However, the theory is still confined in the basic framework of monopoly advantage. O and I are the necessary conditions to establish TNCs. So, these cannot explain that the developing country without the two advantages conduct FDI in developed countries.

The research of the theory of modern TNCs is mainly based on the sample of developed countries' TNCs. So, these enterprises with some advantages are the necessary condition to establish TNCs. There are many differences between these conclusions and practice of TNCs; in reality economics, we call these differences "vision", and its main manifestation is summed up in the following three aspects. First, the non-advantage of the vision: enterprises without some advantages establish TNCs. For example, a lot of corporations from developing countries establish TNCs in developed country. Second, the vision of factors reverse flow: enterprises establish TNCs for the reverse flow of factors of product; including establish listed companies in foreign country for raising capital, establish TNCs for learning and introducing advanced technology, sci-tech achievements and management experience. Third, the vision of non-tradable products: companies establish TNCs for non-tradable products, such as, mineral resources, lands, cheap labors, tax preference, information sharing, cultural environment and social services. The common features of all these visions are that it is not directly related to enterprises' some advantages.

Many scholars study persistently and propose many better suggestions to explain these visions in real economy. Through empirical study, Roberto et al. (2003) found that it was the significant factors to establish TNCs that research and development intensity, industry concentration, firm size, technological spillovers, and past participation, etc. Dunning (2001) also pointed out that enterprises established TNCs to realize its ownership advantage, and at the same time paid more and more attention to use science, technology and enterprise management, etc., which increased the companies' competitive advantage, so enlarged the proportion of establishing TNCs in developed country. Dunning et al. (2007) proposed the progress of establishing TNCs was influenced by the competitive advantage and resource endowment between parent country and host country. However, these improvements are still based on the framework of the theory of modern TNCs. For example, Dunning et al. (2010) still persisted that the eclectic or OIL paradigm seeks to offer a general framework.

To sum up, the research of the theory of modern TNCs is mainly based on the sample of developed countries' TNCs. In an imperfect competitive market, the necessary condition of establishing TNCs is monopoly advantage, comparative advantage, ownership advantage or internalization advantage, which becomes core contents and logical starting of the research paradigm, still the theoretical limitation of the theory. On one hand, the theory of modern TNCs unilaterally emphasize advantages of companies, however, it ignores advantages of host country in elements endowment, which cause the lack of research scope. On the other hand, it simply mixes EIC and FED together to conduct research. All of these make the chaos of the theory of modern TNCs.

FED is the necessary condition for TNCs to establish TNCs

Factor endowment is the overall characteristic of various factors of production in a country, namely, it is the sum of various factors of production's quality, quantity, structure and price. In a country, the structure and the total number of FED determine the relative prices of factors of production, then determine the choice of the efficient industrial features and technology for a country in a competitive and open market. Factors of production are various social resources needed by social production and business activities, and it is the core of FED. In different economic and technology conditions, factors of production possess different specific content. The agricultural society takes the small-scale agricultural production as the mainstay, in which land and labor is the basic factors of production. William (1662) proposed that land was the mother of wealth, and labor was the father of wealth, which called as the theory of two factors of the production. Smith (1776) thought that labor and capital

was more important for the formation of wealth. The prices of commodity were determined by land, labor and capital, which are the famous theory: the theory of three factors of the production. In Marshall's (1890) knowledge and organization, he proposed that organization should be separated from capital as an independent factor of production, which was known as the elements of entrepreneurship, creating the theory of four elements of productions. As science and technology's role in economic development becomes increasingly prominent, knowledge was singled out another important factor of production. The theory of five factors of production emphasizes the importance of knowledge and technology in modern economic environment.

According to the different FED between countries and the potential profits produced by FED, Samuelson (1948) proposed factor price equalization theory; he thought a country should export productions produced by relatively abundant factors of production and import productions produced by relatively scarcity of factors of production. There is a substitute relationship between INT and factor mobility, namely, when the transaction costs of establishing TNCs is higher than that of INT, INT will substitute for factor mobility. The equalization of the price of production leads to factor price equalization between countries. Markusen (1983), and Markusen and Maskus (2002) proposed that the increase of factor mobility would not reduce the number of commodity trade. There was a complementary relationship between commodity trade and factor mobility, the potential profits produced by FED was also the reason of factor mobility, then, enterprises would achieve maximum profit, not for replacing INT. In modern society, FED specifically includes nature resources, labors, capital, entrepreneurship, knowledge and technology. Social and economic environment is formed by full extent of the market, the preference of social spending habits and institutional arrangements, etc. All of these restricts the realization of the value of factors then ultimately affect the comparative advantage of FED.

In an imperfect market, differences of FED lead to the different prices of factors, which form a potential profit margin, including not only the potential profit margin formed for the price of relative surplus of factors lower than that in host country, but also that for the price of relative scarcity of factors lower than that of the home country. In this paper, the bi-directional comparative advantage constituted by the potential profit margin formed by the two aspects is called as FED. And FED is the necessary condition to establish TNCs. The potential profit margin formed by FED is the original motivation to develop IB. FED has the following five characteristics.

First, the FED is the national economy's comparative advantage of factor endowments on the macro level, rather than the enterprise's monopoly comparative advantage and intermediate products' internalization advantage on micro level. Secondly, the FED is a universal and open comparative advantage formed by the price differences of factor endowments between host country and home country. For the corporations in the same country, there must be some indifferent objects of price differences with a specific host country rather than comparing with some specific enterprises' individual, special advantages. Thirdly, the FED is a part of factor endowments between the host country and the home country, as well as advantages in some particular aspects. FED emphasize the relative advantages, namely, the reason why there is comparative advantage of FED is that there are significant price differences in a part of factors of production or some part of FED. The different level of cultural and technology caused by different stages of the socio-economic development between different countries and the differences of natural condition, living habits and institutional arrangement and so on, are the reason why there are significant price differences of some of the factors endowments , then form the relative advantage.

Fourthly, the FED results from the bi-directional comparative advantages of host country's relative abundance and scarcity factors endowment rather than unilateral advantages of TNCs. Host countries' relative abundance factors possess a lower price with comparative advantages of discount elements. Enterprise internalizes these factors of host country by establishing TNCs, then realizing the maximization of profit by reducing production costs. In host country, the price of the relative scarcity factors is higher, with comparative advantages at a premium. Corporations can transfer these factors of their own to host country by the establishment of TNCs. By increasing the price of these corporation's own factors, corporations realize their maximization of profit.

Fifthly, the FED is an objective existence of bi-directional comparative advantages, and it is self-evident in general sense. In imperfect competitive market, the difference of factor endowments will inevitably lead to FED, so FED is ubiquitous normal phenomenon, which is proved by INT between countries.

The content of FED is different between the host country and the home country, which needs to undertake specific analysis and comparative judgment. The FED's common features are self-evident and the existence of FED is objectivity and universality, the same as the necessary premise to establish TNCs. The specific content of FED is the FED's personality traits and decides the basic objective and value orientation of establishing TNCs.

Based on the bi-directional comparison of factors endowment between host country and home country, FED emprise that there are comparative advantages of factor endowment and it means that the necessary condition for corporations to establish TNCs is potential profit caused by these comparative advantages. Corporations internalize these potential profits by establishing TNCs realizing maximum profits.

EIC is the sufficient condition to establish TNCs

Enterprise is built on exclusive property rights of the owner of production factors and is a long-term contract about the portfolio, supervision, operation, audit accounts and profit distribution of production factors; owners of property rights deliver their rights to use factors of production and restructuring factors of production, which dispersed the property of production factors into unified enterprise's property rights combines an economic entity, and forms the corresponding enterprise system. Enterprise establishing TNCs is a decision-making process to expand its enterprise boundary, but there is a characteristic of crossing borders.

In the view of classical economics, social division of labor decide the size, and emergence of enterprises promote the specialization of production and increase returns to scale, then, more profits can be made by expanding the size of enterprise. The scale of commodities trading market determines the breath and depth of division of labor. When the scale of market is constant, the scale of enterprise's division of labor can be generally fixed. Enterprise is a form of social production organization to obtain profits by the efficient use of social division of labor. The scale of market decides the social division of labor which decides the scale of enterprise production. Based on marginal analysis, in the view of new classical economics, enterprise is the function of production about costs and benefits. In the precondition complete information, market clearing and complete rationale for the goal of maximum profit, enterprise reach the best scale of production when marginal cost equals the marginal benefit.

Based on transaction cost, Coase (1937) proposed the concept of enterprise boundary. He pointed that enterprise is the result of saving transaction costs by replacing external market coordination with internal management coordination.

Enterprise is an organization of element which coordinates resource allocation of factors of production by executive orders. On the view of Coase, when the transaction cost of establishing TNCs is lower than that of INT, TNCs appear, using long-term contract of production factors multinational combination instead of short-term INT contract of external market. Enterprise's boundary is constituted by the equilibrium of the transaction cost of establishing TNCs and conducting INT. Argyres (1996), and Argyres and Bigelow (2008, 2011) discovered thatenterprise's ability was an important factor to expand enterprise's boundary, though an empirical research. They pointed out that the choices about enterprise's boundary were decided not only by the enterprise's ability but also its transaction cost. Argyres and Bigelow (2008, 2010) introduce small companies into the sample of empirical study. They studied the early America car companies' choice about establishing TNCs or INT. The results show that the company's overall size influence the transaction cost of establishing TNCs or conducting INT. The interaction between enterprises' ability and transaction cost determined the choice of enterprise's boundary. Through empirical study, Parmigiani (2007), and Parmigiani and Mitchell (2009, 2011) pointed out that there is gradual integration of establishing TNCs and INT, in some occasions of IB, a mixed or intermediate form of IB emerge, that is, concurrency sourcing. They pointed that the three theories; new institutional economics, new classical economics and firm capabilities, can not only be used to make a choice between establishing TNCs or conducting INT, but also can efficiently explain all kinds of mixed or intermediate IB, the study of the phenomenon of IB's concurrency sourcing. Enterprises can develop IB by establishing TNCs and conducting INT.

The theory of enterprise's boundary is the foundation of the theory of TNCs. From classical economics, new classical economics, new institutional economics to firm capabilities, the theory of enterprise's boundary go along with social division of labor, transaction cost and firm abilities, which constructs a scientific paradigm for the study of TNCs. Internalization theory is an important pillar of the theory of TNCs.

The formation process of TNCs is that of factors of production's internalization. The purpose of the establishment of TNCs is to internalize the factors of production with comparative advantage in host country and home country, then avoiding the excessive transaction costs of conducting INT caused by imperfect market. Process of internalization will bring new transaction costs, including management costs, supervision costs and agency costs, increasing by establishing TNCs, the cost of the host country's political and economic risks, the cost of foreign exchange and interest test, cost of factors of production with non-comparative advantage. Only when the transaction costs in internal market is lower than that in external market, enterprise choose to establish TNCs. Firm abilities determine the transaction cost of establishing TNCs and the difference of transaction costs is based on the different company's ability. The establishment of anyone of TNCs is a unique and specific business decision making process; it needs to base on their firm's ability and comprehensively analyze the comparative advantages of establishing TNCs and INT, then make a choice.

INT and the establishment of TNCs is the two basic forms of IB. Enterprises choose to set up TNCs or to carry out TNCs, which needs to compare the transaction costs of them. When the transaction cost to establish TNCs is lower than to conduct INT, we called EIC with establishing TNCs; EIC is the sufficient condition to set up TNCs. Based on EIC, the transaction cost of establishing TNCs is significantly lower than that of conducting INT, which induces that enterprises achieve potential profit under FED by the way of establishing TNCs. EIC and FED which are the necessary condition to establish TNCs, construct the logical structure of this

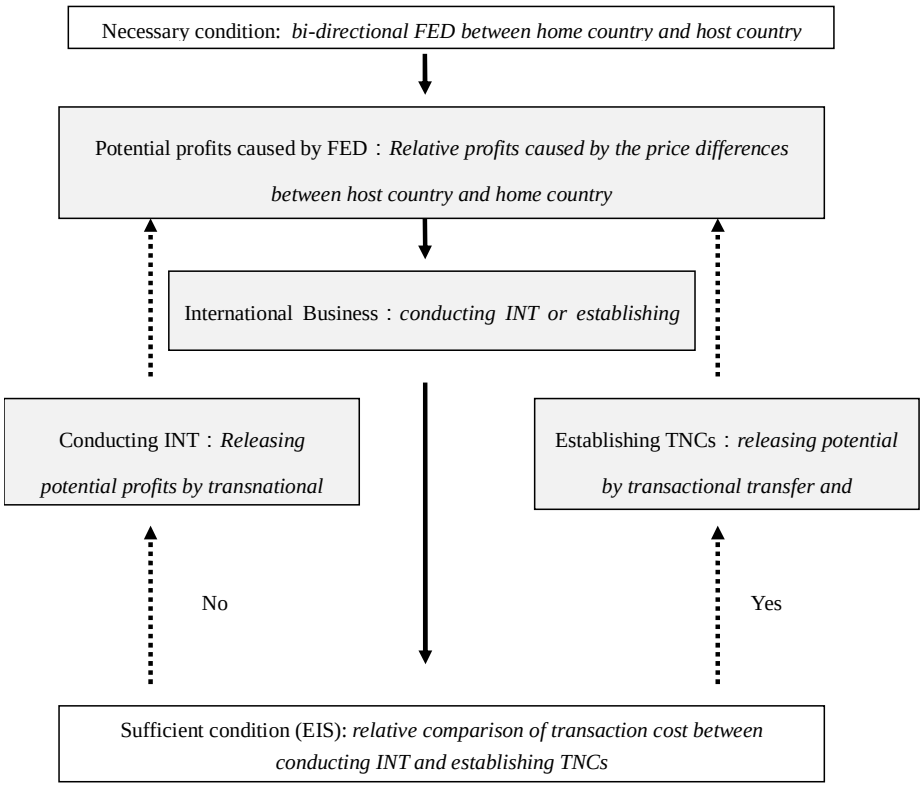

Figure 1. Analysis framework of the origin and formation of TNCs.

article. EIC has the following four characteristics.

First, the EIC is the comparative advantage of the transaction cost to establish TNCs, compared with developing INT, namely, when the transaction cost to set up TNCs is lower than that of conducting, INT enterprise has EIC. So, EIC is a comparative advantage based on the transaction cost of this two form of international trade. It is irrelevant to a company's monopoly advantage, comparative advantage and internalization advantage.

Second, the EIC is specific enterprise's individual and unique comparative advantage. It reflects the comprehensive ability of enterprises to set up TNCs. This ability is closely related with enterprise's production scale, profitability, structure of profit distribution cash flow level, the total number of long-term investment and capacity of growth, etc. So, EIC is a concept of micro-level and a comparative advantage attained under the comparison of companies not involving endowment advantage in macro level.

Third, the EIC reflects the ability of enterprise to set up TNCs. When enterprise has EIC, it shows that the enterprise has advantages in the establishment of TNCs comparing with general companies. So, EIC is the specific expressions of company's ability in the establishment of TNCs and it is different with monopoly advantage, comparative advantage and internalization advantage.

Fourth, the EIC is the key to study the origin of the establishment of TNCs. Under the premise of the FED's objectivity and universality, EIC become the reason why enterprise choose the establishment of TNCs rather than conducting INT and shows what is the key characteristics possessed by company's to set up TNCs.

The analysis framework of the origin and process of setting up TNCs

Figure 1 simply and intuitively describes the analysis framework of TNCs' origin and formation, namely, in imperfect competitive market, the price differences of bi-directional factors endowment produce the potential profits margins, which lead to IB. Enterprises with EIC conduct IB by the establishment of TNCs, realizing the potential profits.

In Figure 1, the white rectangular box indicates the origin of setting up TNCs- the necessary conditions- FED and sufficient condition- EIC; the gay rectangular box indicates the intermediate links of the progress of setting up TNCs, including potential profits formed in FED; the international trade induced by potential profit. Enterprises without EIC realize potential profit by conducting INT. Enterprises with EIC achieve potential profit by setting up

TNCs.

In Figure 1, solid line arrows mean the implementation path of FED- a necessary condition for the establishment of TNCs. In an imperfect competitive market, all countries' FED is constructed by the objective and bi-directional price differences of endowments between the home country and the host country, which encourage the enterprises to develop IB and realize the potential profits under FED. In the macro level, FED reflects the original and motivation of the establishment of TNCs.

In Figure 1, the upward clashed arrows indicate the implementation path of EIC- the sufficient condition for the establishment of TNCs. Whether enterprises have EIC, it is the principle for enterprises to make a choice between the establishment of TNCs and INT. As with EIC, the establishment of TNCs becomes the first choice to conduct IB and achieve potential profits formed by the price difference of endowment. The method of establishing TNs is chosen not only by the enterprise, but also the principle of maximum profit. In the micro level, EIC reveal the characteristics of the establishment of TNCs. Because the existence of FED-necessary conditions of setting up TNCs- is self-evident, EIC- the sufficient conditions- naturally become the focus of the analysis framework. The paper proposes the analysis framework of TNCs' origin and formation, which develop the useful and discard the useless of the theory of Modern TNCs.

The analysis framework clarifies the logic of the theory of modern TNCs, and points out the necessary condition to establish TNCs, the bi-directional FED between countries and the potential profits. It negates the view that the essential prerequisite of the establishment of TNCs is monopoly advantage, comparative advantage and internalization advantage, breaking the limitation that the establishment of TNCs is just for realizing the enterprise's own advantage. It proposed that the intrinsic motivation to establish TNCs is to realize the potential profit caused by bi-directional FED between countries, which successfully explain the phenomenon that enterprises from developing country establish TNCs in developed countries and so on.

The analysis framework rebuilds the structure of the theory of TNCs from macro and micro level, and abandons the mixed analysis paradigm which combines EIC in macro level with FED of host country in micro level. FED and the potential profit can directly lead to two ways of IB: establishing TNC and conducting INT. Whether enterprises conduct IB by setting up TNCs is decided by the lower transaction cost of the establishment of TNCs than that of conducting INT. This is why the enterprise with internalization advantage such as technology does not set up TNCs. However, the general OEA without any internalization advantages invest and build factory in developing countries.

The analysis framework proposed a new concept of EIC, namely INT, and the enterprises conducted IB by establishing TNCs; although significant differences exist in EIC which leads to the transaction cost of the establishment of TNCs, which is significantly lower than conducting INT. EIC then becomes the sufficient condition for enterprises to achieve the potential profit under FED conducting IB by way of establishing TNCs. This EIC is different with monopoly advantage, comparative advantage and internalization advantage; it is just decided by the comparison of the transaction cost between the establishment of TNCs and developing INT without any prerequisites.

The analysis framework points out that EIC is the focus of the theoretical and empirical study on the theory of modern TNCs. In the premise of imperfect complete market, bi-directional FED between countries is self-evident. So, EIC becomes the key to explain why enterprises choose to set up TNCs.

Basic assumptions about EIC

Enterprises with EIC set up TNCs to reduce the transaction cost of conducting IB and realize the potential profit caused by bi-directional FED between countries by cross-combination of production factors and replacing the incomplete external market with enterprises' internal market. EIC become the basis and focus of the study of TNCs theory. Based on the relevant definition of TNCs and according to whether establishing TNCs and the main form of combination of production factors used by the active cross-party to set up TNCs, listed companies can be categorized as four types which are discussed thus.

The first type is to establish manufacturing by direct investment, which is the original form of TNCs, which also is the typical form. We called TNCs implementing foreign direct investment as foreign direct investment corporations (FDICs). FDICs take the transfer of capital factor among factors from home country to host country as the basic characteristics of the TNCs.

The second type is to set up TNCs by non-FDI. Namely, some enterprises did not conduct direct industrial investment, but establish foreign company by technical cooperation, franchising, etc. They also establish overseas permanents or affiliates. These companies carry out IB in host countries, such as marketing, technical services, project, contracting, labor export, professional counseling and after-sales services, etc. For these reasons, they are called non-foreign direct investment corporation (NFDICs). NFDICs take the transfer of non-capital factor among factors of production from home country to host country as characteristics of TNCs.

The third type is to establish TNCs by listing in host country. FDI include investment and financing. Some companies have entered into overseas securities markets to expand the size of the company by equity financing. These companies are usually called cross-border listed

corporations (CBLCs). CBLICs have the same characteristic as FDICs, namely, transferring capital factor among factors of production but it transfers out from host country. This transfer is implemented actively by CBLICs.

The fourth type is non-TNCs' domestic operating companies. These companies, which are purely domestic operating companies and solely conduct business activities in domestic country, belong to the last type of companies. These companies are called non-transaction corporation (NTNCs). The business activities of NTNCs do not involve any form of cross-border transfer of production factors. As the operating entity opposed to TNCs, NTNCs construct a benchmark platform for the empirical research of TNCs. NTNCs' INT include tangible INT- cross-border trading of tangible goods and intangible INT- transactional labor services technology transfer, project contraction, etc.

The first three types of companies are different forms of TNCs, all with basic characteristics of cross-border combination of production factors. So, FDICs, NFDICs and CBLCs are merged together as TNCs. One of the three of them has some characteristics of the other two at the same time, that is, there is non-empty interaction, among FDICs, NFDICs and CBLCs. But there is no non-empty interaction between NTNCs and the first three types of TNCs, that is, NTNCs is nether listing in foreign stock market nor developing FDI or non-FDI.

According to the definition and the classification of TNCs, then we propose the basic assumptions about EIC on the basic of the analysis framework of TNCs' origin and formation into four categories and divide TNCs into three types.

Assumption one: There are significant differences between NTNCs and the three types of TNCs

According to the analysis framework, there are significant differences between NTNCs and the three types of TNCs, which reflect the differences of transaction costs between the establishment of TNCs and conducting INT. So, this assumption is the basic one about EIC. The analysis framework is effective, when the assumption one works. Then, we can do a scientific empirical study on TNCs with EIC.

Assumption two: Management scale advantage is the common feature of the three types of TNCs' EIC

The three types of TNCs have the basic attribute conducting cross-border combination of production factors which lead to transaction costs, so, enterprises' management scale advantage becomes the common feature of the three types of TNCs.

Enterprises' management scale advantage strengthens the ability to defend the risk of the establishment of TNCs. Compared with NTNCs, TNCs has to face the excess risks. Such as, the host countries' political risk, the risk of exchange rate, interest rate and the risk of war, etc. Enterprise with management scale advantage has relatively abundant funds and strong power to defend risk. It is possible to reply the risk of bankruptcy and serious loss.

While establishing TNCs, enterprises' management scale advantage reduce the unit expense caused by the earlier construction of the project of setting up TNCs. Before establishing TNCs, enterprise needs to analyze national condition, study policies, do market research, have an interview of joint capital and cooperation, invite professional senior executives and register with the administrative agency for industry and commerce, etc. All expenses of these earlier investments are generally constant, which is not closely related with the size of the project of setting up TNCs. So the proportion of the expense of the earlier investment to the total expense of the project is smaller when the scale of the project is bigger, which is beneficial to reduce the transaction cost of setting up TNCs. The enterprise's management scale confines the scale of setting up TNCs, and then influences the unit expense of the earlier construction of project.

Enterprise's management scale advantage improves the value of real option of earlier investment of establishing TNCs which has the feature of typical sunk cost calculated by option pricing model. The earlier investment of establishing TNCs equal to buy a call option. When the project's required rate of return, volatility and the expiration date are the same as others, then the scale of the project is the only factor to decide the total value of the project, namely the larger scale of the project, the value of the real option is bigger.

Assumption three: High-growth and abundant funds are the important feature of RIC in FDICs

FDICs are TNCs which establishes manufacture entity by direct investment and quickly expand enterprise's boundary by the way of capital expansion, with a typical feature of high-speed. Enterprise setting up TNCs by direct investment needs abundant capital. Sustained growth of cash flow is reliable financial sources for FDICs' FDE. So, high-speed growth and abundant funds are the important feature of EIC in FDICs.

Assumption 4: There are remarkable differences between different types of EIC in FDIC

In TNCs, FDICs, NFDICs and CBLCs have their own features. FDICs take the transfer of capital factor from home country to host country as the basic characteristics of the TNCs. NFDICs take the transfer of non-capital

Table 1. Significant test of EIC's indicator system.

Indicator	NTNCs		NFDICs		CBLCs		FDICs	
	t value	Sig.	t value	Sig.	t value	Sig.	t value	Sig.
MB	6.777	0.000	2.592	0.010	2.173	0.030	18.110	0.000
TA	8.091	0.000	6.164	0.000	5.817	0.000	7.216	0.000
II	5.631	0.000	4.836	0.000	3.443	0.0005	4.259	0.000
EPS	7.989	0.000	6.199	0.000	8.632	0.000	2.895	0.004
CFIL	15.532	0.000	4.589	0.000	4.354	0.000	5.376	0.000
NCFO	5.788	0.000	4.974	0.000	4.624	0.000	5.318	0.000
EBIT	5.431	0.000	4.783	0.000	4.554	0.000	4.810	0.000
RE	5.356	0.000	4.459	0.000	4.325	0.000	4.770	0.000

factor from home country to host country as characteristics of TNCs. However, CBLCs take the equity financing in foreign stock market as the basic characteristics. So, FDICs needs high-growth and abundant cash flow and the advantage of investment income and retained earnings; EIC of NFDICs mainly represents the business scale of enterprise, investment income and retained earnings, but lack the high-growth of FDICs. CBLCs do not possess the feature of high-speed growth or the advantages of II and RE. The lack of the financing abilities in domestic country is the chief motivation for enterprises to list in host country. However, these companies need significant advantage of profitability to meet the rules of the foreign securities market. There are different requirements and characteristics for the three types of TNC's EIC.

EMPIRICAL RESEARCH BASED ON THE FINANCIAL DATA OF CHINESE'S STOCK MARKET

After decades of fast development of Chinese economy, the securities gradually improve and become perfect. In the modern enterprise management system, audited financial statements of listed companies systematically reflect the general characteristics and progress of enterprise's business activities and it also provides the actual data for the empirical study on conditions and components of EIC in TNCs. This paper is based on the data of all Chinese listed companies and takes a total of 1651 listed companies after excluding financial companies as sample companies. And unbalanced panel data is constructed by all financial indicators from these companies' annual statement from 2001 to 2009. The basic characteristics of the empirical sample are all data without any man-made processing, a sufficiently large sample size, data of companies' business in micro level and audited annual financial statements.

Based on underlying assumptions, significant differences of the abilities of companies setting up TNCs among FDICs, NDICs, CBLCs and NTNCs form the EIC for companies to establish TNCs. All these differences can be reflected by the different financial indicators. FDICs, NFDICs CBLCs and NTNCs set up independent test samples and conduct a significant test on financial indicators. Finally, eight financial indicators are selected including total assets (TA), net cash flow from operating (NCFO), cash from investment in fixed assets (CFIL), investment income (II), earnings before interest and tax (EBIT), retained earning (RE), market-to-book ratio (MB), and earning per share (EPS). All of these construct the indicator system for the empirical study on EIC. Table 1 shows the t value of the population mean about 8 indicators of the four types of companies and with probability under the condition of two-side test.

In Table 1, the value of the probability of the column of NTNCs is less than 0.0005, indicating that there are extremely remarkable difference of the 8 indicators between NTNCs and the other three types of TNCs. This proves that the 8 indicators comprehensively reflect EIC of the three types of TNCs from different angles, demonstrating assumption one is effective.

In Table 1, the value of the probability of NFDICs, CBLCs and EDICs is less than 0.0005, except EPS of FDICs, MB of NFDICs and MB and II of CBLCs, including that every type of TNCs has significant differences with the other two types of TNCs, therefore, assumption 4 supposedly correct.

According to the economic attribute of the 8 indicators, they are divided into 3 categories. First group reflects the characteristics of the operating scale of EIC in total asset cash flow and investment in assets, which is composed by TA, NCFO and CFIL. Second group reflects the summation characteristics of investment income and internal accumulation of EIC in the aspects of investment income, profit scale and retained scale, which is composed by II, EBIT and RE. Third group reflects the relative level of the growth and profitability of capital in the aspect of the market performance and income in stock market, which is composed by MB and EPS. Table 2 shows that the mean value of *TA*, *NCFO* and *MSPS* and the relative number calculated by the comparison of the mean value of NTNCs with the other three types of TNCs.

Table 2. Comparison analysis of enterprises' business scale.

Type of companies	AT	NCFO	CFIL
FDICs	60439211643	7373214963	7282656600
NFDICs	28377182050	3619396675	3299155351
CBLCs	17744332445	2012318835	1754129489
NTNCs	2836908124	169364340	208411925
FDICs/NTNCs	21.305	43.535	34.944
NFDICs/NTNCs	10.003	21.370	15.830
CBLCs/NTNCs	6.255	11.882	8.417

Table 2 shows there is an extremely prominent performance for EIC in enterprise's business scale, the value of TA, NCFO and CFIL of the three types of TNCs is significantly larger than that of NTNCs. Among them, from the perspective the three types of TNCs, the difference between FDICs and NTNCs is the largest, above 20 times more than NTNCs. The difference between CBLCs and NTNCs is lowest, but still above 6 times. From the view of the enterprise's business scale, the values of NCFO and CFIL are larger than TA.

There is an extremely prominent performance for EIC in enterprise's business scale. The requirements of the enterprise's business scale are highest for FDICs, which illustrate that the business scale of FDICs is significant larger than generally enterprise; second for the enterprise setting up TNCs by non-direct investment, the average value of enterprise's scale is more than 10 times of that of NTNCs. So, the enterprise's scale significantly influences EIC of the establishment of TNCs. Among the three types of TNCs, the requirements of the enterprise's business scale is relative lower for CBLCs, but the smallest value of TNCs is more than 6 time than that of NTNCs the advantage of EIC is significant.

Adopting full factorial with an interaction of multiple factors analysis test, the main effect of the four different types of companies demonstrate that the interaction effect among different types of companies systematically influence the change of enterprises' business scale, which is used to analyze whether or not the enterprises' business scale is the basic characteristic of EIC. Empirical study takes the four different types of companies as the factor of variance analysis. Because of the reciprocal relation between NTNCs and three types of TNCs, the six indicators including NTNCs are empty and the set of the 6 cross influences do not exist. In addition, companies only have the characteristics of two types of TNCs and do not have that of three types of TNCs. The interaction set of FDICs, NFDICs and CBLCs is empty, the cross influences do not exist. So, various analyses were only used to test the main effect of the 4 different types of companies, the interaction effect between two of the three types of TNCs, and the probability and F-values of the 7 effect.

Table 3 shows that probability of the F test of the three types of TNCs and the interaction effect between two of three types of TNCs is more than 0.0005 significance; however, that of NTNCs is more than 0.9, which is very non-significant. Therefore, FDICs, NFDICs and CBLCs can systematically influence the change of enterprise's business scale, but NTNCs can not, which illustrate that the ability of enterprise's business scale significantly reduce the transaction cost of the establishment of TNCs, forming EIC. At the same time, it shows that companies with characteristics of two types of TNCs are the motivation of the change of enterprise's business scale. The comprehensive ability and practical experiences of setting up some kind of TNCs are beneficial to the establishment of the other type of TNCs.

The results of the empirical study on TA, NCFO and MSPS support assumptions one, two and four.

Table 4 is the mean value of the second group's indicators: II, EBIT, RE. There also are relative numbers calculated by the comparison of the mean value of three types of TNCs with that of NTNCs.

Table 4 shows that there is an extremely prominent performance for EIC in enterprise's investment and income. The mean values of the three types of TNC's II, EBIT and RE are very significantly lager than that of NTNCs. The difference between FDICs and NTNCs is largest. The difference between CBLCs and NTNCs is smallest, which reflect that the object requirements of NFDICs and three types of TNCs in the indicator of II, EBIT and RE, are the important factors of EIC.

Table 5 is the F-value, and with the probability factor, different types of companies and their interaction effect were calculated by an interaction of multiple factor analyses, which are used to study whether or not the types of companies are the systematic factors of the change responsible for the value of II, EBIT and RE; then the statistic significance of II, EBIT and RE of the three types of TNCs was analyzed.

Table 5 shows that there are significant F-value of the FDICs and NFDICs, which illustrate that these two types of TNCs, must have significant advantage of II, EBIT and RE. So, these three indicators are the important part of the study of the EIC of FDICs and NFDICs. The F-value of II and RE of CBLCs are not significant, only that of EBIT is significant, which reflect the basic characteristics of CBLCs-raising capital by listing on foreign stock markets. On the one hand, CBLCs raise capital by listing

Table 3. Variance analysis of enterprises' business scale.

Types of companies	TA		NCFO		CFIL	
	F value	Sig.	F value	Sig.	F value	Sig.
FDICs	2336.333	0.000	678.569	0.000	582.078	0.000
NFDICs	202.797	0.000	63.634	0.000	47.731	0.000
CBLCs	149.719	0.000	44.883	0.000	7.428	0.006
NTNCs	0.000	1.000	0.014	0.907	0.010	0.919
FDICs ∩NFDICs	2011.023	0.000	594.359	0.000	380.496	0.000
FDICs ∩ CBLCs	941.960	0.000	239.746	0.000	68.251	0.000
NFDICs ∩ CBLCs	679.332	0.000	150.134	0.000	61.695	0.000

Table 4. Comparison analysis of enterprises' investment and income.

Type of companies	II	EBIT	RE
FDICs	177637489	4875433603	17984288393
NFDICs	140627085	2544544985	8934665733
CBLCs	67921116	1344603474	4427750629
NTNCs	18336407	170088251	690268746
FDICs/NTNCs	9.688	28.664	26.054
NFDICs/NTNCs	7.669	14.960	12.944
CBLCs/NTNCs	3.704	7.905	6.415

Table 5. Variance analysis of enterprises' investment and income.

Type of companies	II		EBIT		RE	
	F value	Sig.	F value	Sig.	F value	Sig.
FDICs	94.791	0.000	572.601	0.000	510.410	0.000
NFDICs	8.365	0.004	55.208	0.000	47.312	0.000
CBLCs	1.158	0.282	14.591	0.000	0.783	0.376
NTNCs	0.962	0.327	0.016	0.899	0.004	0.949
FDICs ∩ NFDICs	61.076	0.000	415.665	0.000	277.959	0.000
FDICs ∩ CBLCs	48.842	0.000	81.284	0.000	11.872	0.001
NFDICs ∩ CBLCs	10.684	0.001	57.725	0.000	17.647	0.000

Table 6. Comparison analysis of enterprises' growth and profitability.

Types of companies	MB	EPS
FDICs	0.93449	0.28757
NFDICs	0.79327	0.33929
CBLCs	0.78627	0.33287
NTNCs	0.75802	0.17455
FDICs/NTNCs	1.233	1.647
NFDICs/NTNCs	1.047	1.944
CBLCs/NTNCs	1.037	1.907

on foreign stock market, which is typical exogenous financing, opposing with the endogenous financing reflected by RE. On the other hand, CBLCs take raising capital as the basic characteristic, which is not relative with II. So, II and RE will not influence the EIC of CBLCs. However, the enterprise's profitability, reflected by EBIT, is the basic requirement for enterprise to list on foreign capital market. Therefore, enterprises can not be

Table 7. Variance analysis of enterprises' growth and profitability.

Type of companies	MB		EPS	
	F value	Sig.	F value	Sig.
FDICs	47.326	0.000	4.756	0.029
NFDICs	0.080	0.778	0.437	0.509
CBLCs	1.709	0.191	4.618	0.032
NTNCs	0.001	0.973	0.020	0.887
FDICs ∩ NFDICs	0.243	0.622	0.292	0.589
FDICs ∩ CBLCs	0.116	0.733	1.374	0.241
NFDICs ∩ CBLCs	0.144	0.704	2.882	0.090

financed by issuing stock until they have higher profitability and sustained profitable years. So, the significant characteristic for CBLCs to finance on overseas capital market is that the value of EBIT of CBLCs is larger than that of the average of overall companies, which is the important of the CBLC's EIC. The F-value of TNCs' II, EBIT and RE is not significant, illustrating that NTNCs is not the systematic factor of the change value of II, EBIT and RE, which is very different with the other three types of TNCs. The F-value of the interaction items of the three types of TNCs is very significant, that is, when CBLCs transfer factors of production to foreign by the form of FDICs or NFDICs, they must satisfy the requirement that their level of II and RE is higher than that of the average overall companies.

The results of the empirical study on II, EBIT and RE support assumptions one, three and four. Table 6 is the mean values of MB and EPS and the relative numbers calculated by the comparison of the mean values of the three types of TNCs with that of NTNCs, which intuitively describe the difference of the growth and profitability between NTNCs and the other three types of TNCs.

Table 6 shows that the mean values of MB and EPS of the three types of TNCs are larger than that of NTNCs. There is a larger range of the difference on the value of EPS, illustrating that the profitability of the three types of TNCs is significantly higher than that of NTNCs. However, there is a small range of the difference on the value of MB, illustrating that the growth advantage of the three types of TNCs is slightly higher than that of NTNCs.

Table 7, based on the interaction of multiple factors analysis of the growth and profitability of the four types of companies and their interaction effect, shows the statistic significance of the growth and profitability of companies' EIC. The F-values of FDICs' MB and EPS are very significant, showing that, in the development stage of the rapid growth in profitability and expanding the scale of increase, the significant advantage of FDICs' MB and EPS is based on the capacity of sustained capital investment. According to the results of empirical study, the F-value of NFDICs' MB and EPS are not significant, illustrating that the EIC of NFDICs is lack of the advantage of rapid growth and higher profitability, which confine the NFDICs, the ability of setting up TNCs by direct investment. So, they establish TNCs only by the way of indirect investment. The F-values of CBLCs' EPS are significant but that of MB is not significant, which illustrates that CBLC's EIC do not have the advantage of growth but have the advantage of profitability. The profitability reflecting EPS is the basic requirement for CBLCs to list on overseas capital market. F-values of NTNCs' MB and EPS are not significant, illustrating that NTNCs is not the significant factor of the change of MB and EPS. The results of the empirical study on MB and EPS support assumptions one, three and four.

Conclusion

To sum up, the following conclusions are presented.

FED was the necessary condition for setting u p TNCs

In imperfect competitive market, FED was formed by the significant price difference of factors of production between the host country and home country. In macro level, FED was independent with specific enterprise and its monopoly advantage, comparative advantage and internalization advantage. The original motivation of the establishment of TNCs was the potential profit formed by FED, which was the necessary condition to set up TNCs. TNCs will not exist without FED. For example, the enterprise (possessing monopoly advantage, comparative advantage and internalization advantage) would not establish TNCs in host country by direct investment when the price of labor and land in host country was higher than that in home country, the price of capital.

EIC was the sufficient condition to establish TNCs

FED and potential profit margins led to IB. Enterprises would conduct internal business by the establishment of TNCs, if the transaction cost of the establishment of TNCs was lower than that of international trade. When

the transaction cost of establishing TNCs was significantly lower than that of international trade, the enterprises had the EIC of TNCs. So, EIC became the sufficient condition for enterprise to set up TNCs and achieved the potential profit caused by FED. These potential profits were the necessary prerequisite of the establishment of TNCs. EIC was the comparative advantage of enterprise based on FED, that is, EIC would not exist without FED. Enterprises had monopoly advantage, comparative advantage and internalization advantage but did not possess the advantage of business scale, these enterprises' transaction cost of setting up TNCs was significantly higher than that of INT, and they would not establish TNCs.

FED and EIC were the basic of the analysis framework of the origin and progress of TNCs

The analysis framework of TNCs' origin and formation was based on the FED and EIC. According to the empirical study on 1651 listing companies' annual statement in Chinese stock market, the test of relative assumption reflected that there were significant differences between NTNCs and the three types of TNCs, which illustrated that the indicator system composed of 8 financial indicators showed the basic characteristics of TNCs' EIC. Based on the objectivity and universality of FED, EIC was not the only sufficient condition to establish TNCs, but also the core content of the analysis framework of the origin and progress of TNCs. The results of empirical study showed that there were significant differences between NTNCs and the three types of TNCs. The latter was the systematic reason of the change of the 8 financial indicators, which illustrated that the 8 financial indicators were the core content of EIC. The results supported the theoretic assumption of EIC, then, proving that the analysis framework of the origin and progress of TNCs was effective.

The advantage of business scale is the common feature of TNCs' EIC

The empirical analysis on the first group of indicators: TA, NCFO and MPS, illustrated that the mean value of the three indicators of the three types of TNCs was significantly higher than that of NTNCs, and the F-value of multi-factor interaction between the three types of TNCs were very significant. However, the indicators of business scale of NTNCs were not significant, which showed that the advantage of business scale was the common feature of TNCs EIC.

High-growth and high-accumulation were the individual characteristics of FDICs' EIC

In the five indicators of II, EBIT, RE, MB and EPS, comprehensively reflecting the enterprise's growth and internal accumulation capacity, the number level of FDICs was very high, and the F-values of the five indicators by variance analysis of multi-factor interaction of FDICs were very significant, which illustrated that FDICs' EIC not only had the advantage of business scale but also possessed the advantage of high-growth and internal financing. Under the protection of the abundant funds, high growth and high accumulation was the FDICs' basic attributes of quickly expanding the companies' scale by the way of element' cross-border combinations of capital and factors' direct investment.

High-yield and high-accumulation were the individual characteristic of NFDICs' EIC

According to the variance analysis of multi-factor interaction on the five indicators: II, EBIT, RE, MB and EPS, the number values of NFDICs were very high and significant, which showed that NFDICs (taking the transfer of non-capital factors from home country to host country as the basic characteristics), should have the advantage of the overall level of yield and accumulation scale reflected by investment income, profitability scale and internal financing. The F-value of MB and EPS were not significant, illustrating that NFDICs did not possess the advantage of units of capital growth and profitability, which directly confined the NFDICs' ability of the establishment of TNCs by FDI. Then EIC of NFDICs and FDICs could be distinguished significantly.

High-profitability was an individual feature of CBLCs' EIC

According to the results of the variance analysis of multi-factor interaction, CBLCs' value of EBIT and EPS was statistically significant, which illustrated that CBLCs' EIC need to possess the advantage of significant profitability and the profitability of unit capital to satisfy the principle of foreign stock market. The values of CBLCs' II, RE and MB were not significant, showing that CBLCs did not have the advantage of investment income and internal financing. So, CBLCs need to finance in foreign capital market by the way of equity financing. All of these EIC could be distinguished significantly between CBLCs and the three types of TNCs.

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