Working Paper of Empirical Study on the Economic Effect of FDI on Natural Monopoly Industry

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Abstract. This study explores the economic effect of FDI on natural monopoly industry at this stage. The economic effect of FDI on natural monopoly industry will be divided into three dimensions for research, which are the impact of technical efficiency, the influence of competitive effect and the resource allocation effect of the industry. In addition, the pre-hypothesis was carried out for these three research dimensions, and the research data was selected for the research content, and the data was sorted out.

Introduction

As we all know, at the beginning of the founding of the People's Republic of China and for a long time to come, China has adhered to the planned economic system with the characteristics of communism, especially the natural monopoly industries closely related to people's livelihood, whose monopoly operation has been emphasized by the government. The main characteristics of these natural monopoly industries are: their enterprises are established by the government, the important leaders are all assigned by the government, and the funds needed for the operation are also uniformly allocated by the government. After the reform and opening up, although the government has a large number of independent property rights in China's natural monopoly industries, private capital began to appear in the natural monopoly industries, which is conducive to improving the effective market competition mechanisms. As one of the countries that joined the WTO, China made a commitment to the world that it would gradually relax the rules and regulations of telecommunications and other industries within a certain period of time in the "WTO accession" agreement, and allow foreign businessmen to enter these fields. This decision led to a large number of FDI into the domestic natural monopoly industries. The entry of these FDIs has brought about technological advances and economic scale growth in the related business of natural monopoly industries, but it also brought potential risks and put forward higher requirements for the regulation reform of natural monopoly industries. Therefore, the main purpose of this paper is to study the influence of FDI on the regulatory reform process of natural monopoly industries in what aspects, to what extent and how to formulate corresponding regulatory reform policies for these influences. This paper will discuss the research content and relevant research hypotheses of this topic.

The Research Content

This study systematically studies the economic effects of FDI on China's natural monopoly industries, including the following three aspects: The first is the technology spillover effect. Specifically, the investment enterprise and the invested enterprise realize the technological progress
of the domestic natural monopoly industry through the transfer, diffusion and absorption of technology, and indirectly promote the economic growth of the host country; the second is the competitive effect of the industry. Simply put, in the vertical market structure, when the upstream and downstream enterprises are in a monopoly position, how can the upstream and downstream enterprises price the products and share market information together under the principle of maximizing their own interests; the third is the resource allocation effect of the industry. The effect of resource allocation after the FDI on the natural monopoly industry. Resource allocation is the process in which the distribution subject combines and distributes scarce resources among different industries or enterprises.

**Hypothesis about the Economic Effects of FDI on Natural Monopoly Industry**

**Hypothesis about the Impact of FDI on the Technical Efficiency of Natural Monopoly Industry**

FDI spillover effect mainly consists of two parts: the spillover of technology and the receiver of technology. The spillover is usually a foreign-invested enterprise with advanced science and technology and management level, while the receiver is a domestic enterprise with the overall technology level weaker than the foreign-invested enterprise. In addition, the prerequisite for the technical efficiency spillover of foreign-funded enterprises is the existence of technical gap between domestic and foreign-funded enterprises. That is, only when the technical efficiency of foreign-funded enterprises is greater than that of domestic-funded enterprises, the technical spillover of FDI can occur (X.Z. Li, 2010). However, whether there is a positive or negative correlation between the technical gap in different monopoly industries and FDI technology spillover effects depends on different industries. For the information transmission and information technology service industry in monopoly industries, the technical advantages between foreign-funded enterprises and host-state enterprises are not obvious. That is, the technical efficiency level gap between foreign-funded enterprises and host-state enterprises is small. In order to maintain their technological monopoly advantages, foreign-funded enterprises tend to take various confidential measures to prevent technology spillover. Therefore, the possibility and space of FDI technology efficiency spillover will become smaller. Based on this, the hypothesis about the impact of FDI on the technical efficiency of monopoly industries is as follows:

\[ H1: \text{FDI has different positive and negative effects on technical efficiency in different monopoly industries.} \]

**Hypothesis about the Impact of FDI on the Competitive Effect of Natural Monopoly Industry**

Natural monopoly industries have the characteristics of network economy and vertical market structure. That is, upstream enterprises control the input of downstream enterprises. In real life, the output of monopolistic industries will be limited to a certain extent. For example, the power industry, the impact of dry season, the maintenance of production equipment or limited equipment capacity can affect the production capacity of enterprises (K.R. Chen, 2013). Therefore, it is particularly evident that the entry of FDI improves the effective competitive advantage of monopolistic industries, especially for transportation, warehousing, postal services and power, heat, gas and water production and supply industries that require advanced technology support. However, for some monopoly industries, such as culture, sports and entertainment, these monopolistic enterprises are not dependent on technology, and domestic and foreign-funded enterprises are almost the same. The competitive advantage brought by foreign-funded enterprises cannot play an active role. It is very likely that the input of foreign capital has no obvious impact on the performance of the monopoly industry. Based on this, the hypothesis about the impact of FDI on the competitive effect of monopoly industries is as follows:

\[ H2: \text{For some monopoly industries, FDI has no effect on its competitive effect; for some monopoly industries, FDI has a positive impact on its competitive effect.} \]
Hypothesis about the Impact of FDI on the Resource Allocation Effect of Natural Monopoly Industry

The resource allocation efficiency is the embodiment of whether the resource configuration is reasonable. The higher the resource utilization degree and the more reasonable the resource allocation, the higher the resource allocation efficiency (ZH.Y. Li, 2014). Not only can FDI investment affect the investment decisions of external investors but also it affect the investment decisions of the internal management of listed companies on different projects. FDI injection can restrain the information asymmetry of all parties to the contract, so as to avoid the adverse selection and agency problems of the management, reduce the investment risk and decision-making uncertainty of external investors, so that they trust and accept the accounting information of enterprises (ZH. X. Yi, 2014). Thus, the financing cost of enterprises can be reduced, and listed companies can obtain the capital and opportunities for best investment at the lowest cost. Based on this, the hypothesis to be tested about the impact of FDI on the resource allocation effect of monopoly industries is proposed:

H3: for monopolistic industries, FDI effectively increases the resource allocation effect of monopolistic industries.

Research Data Sources

This paper intends to select the A-share listed companies of transportation, warehousing, post office, power, heat, gas and water production and supply industries, information transmission, information technology service industry, culture, sports and entertainment industry in monopoly industries from 2008 to 2017 as the test samples. In addition, in order to avoid the interference of special projects and data on empirical analysis and ensure the authenticity, comparability and operability of data, the original samples were screened as follows: excluding listed companies with missing data. In the process of empirical analysis, data such as main business costs, main business tax and surcharges, and shareholder equity ratios need to be calculated. Some listed companies lack these financial data and are therefore excluded. After the sample screening of the above process, a total of 2,490 listed companies were obtained as the final research samples. The classification and sample number of each industry are shown in table 1. The data used in the empirical analysis comes from Sina Finance Network, Shenzhen Stock Exchange website, Juchao Information Network and RESSET financial database; By using EXCEL, SPSS17.0, stata14.0 and DEAP software for data processing and statistical analysis, cost weakening of natural monopoly industries and the dynamic changes of their boundaries caused by the introduction of FDI were obtained. That is to say, the changes of various economic effects of FDI on natural monopoly industry are analyzed concretely.

Table 1. Industry Classification and Sample Size.

| The name of the industry                                      | The company number |
|--------------------------------------------------------------|--------------------|
| transportation, warehousing, post office,                    | 100                |
| power, heat, gas and water production and supply industries  | 109                |
| information transmission, information technology service     | 15                 |
| culture, sports and entertainment industry                   | 25                 |

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