Industry Transfer and Local Industry Matching Capability Building in Wuhan of China

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Abstract This paper examines the nature of industry transfer from eastern region to central and western region. It employs a case study in Wuhan city in central China. Through analyzing the motives, backward linkage and forward linkage between industry transfer firms and local firms, we find that the knowledge flow within industry transfer firms is obvious but limited. According to the extent of technological learning by the local partners or local personnel and the impact of the technology transfer and learning on the host region, we can draw a conclusion that the record of industry transfer firms in transferring technology to the local economy has been very varied and technology flow in uneven. What's more, lack of the various know-how learning limited local industry matching capability building.
Key words Industry transfer; Local industry matching capability; Technological learning; Technology transfer

1 Introduction

In recent years, China's industries are marching upstream along the Yangtze River as Chinese government has designated central and western region to accept new industrial development transfers. The growth of the new economic zones will play an important role in narrowing China's regional development gap. Therefore, the topic of industry transfer from eastern region to western and central region has been one of great interest and importance. Existing research has revealed the features of industry transfer in China[1-3]; industry transfer and technology development[4-6]; and changing government policy approaches[7]. However, there are few studies addressing the relationship between industry transfer and local industrial matching capability. This research, based on a case study of industry transfer to the city of Wuhan in central China, assesses the nature of and the difficulties in industry transfer and local capability building.

2 Methodology

This study was designed to reveal the problems existing in industry transfer and local industrial coordination capability building based on a case study in Wuhan city in Central China. This city is situated in the middle of Hubei Province of China. It connects the east with the west, channels the north to the south, and links rivers with seas by means of its water, land and air traffic. Some of China's metropolises such as Beijing, Shanghai, Guangzhou, Chengdu, and Xi'an are all within a circle around the center of Wuhan with the radius of 1000km. Wuhan is the important strategic supporting point of Central China. Total population of Wuhan (capital of Hubei Province) has grown from 7.6 million in 2001 to 8.3 million in 2007, representing a 9.2% growth over a period of six years. Wuhan's nominal GDP per capita has doubled from 17, 776 RMB in 2001 to 37, 936 RMB in 2007. In 2007, the disposable income per capita of urban population and net income per capita of rural people increased by 16.2% and 13.1%, respectively. GDP per capita is expected to continue to rise as Wuhan's GDP broke the 400 billion RMB mark in 2009 (Wuhan Statistic Bureau, 2010).

This study used two methods to collect data. The first was a postal survey, which obtained 249 responses to a questionnaire directed to a random sample of 400 firms in Wuhan. The second was a personal interview survey with 25 of these firms, representing a 10% sample of the postal survey responses; the firms were chosen so as to provide a range of experiences with industry transfer and capability building.

3 Results

3.1 Linkage motives between industry transfer and local firms

The willingness of industry transfer firms' supplying technology and local partner' receiving technology lay down the foundation of contact in their cooperation. The motives of foreign firms and local partner could heavily influence technology transfer and learning between two sides.

It is commonly argued that China's national strategy is to make western and central region rapidly

catch up with the eastern region by industry transfer. Consequently, it is assumed that primary motivations for a local firm in cooperation with an industry transfer firm are (1) to gain access to and learn advanced technology as well as (2) to gain access to modern management techniques[8]. The motive of industry firms is to gain local market access, to learn about the political and regulatory environment. This section is based on a questionnaire to investigate the motives of industry transfer firms and local partners at the same time.

The answers are displayed in Table 1. The data not only shows the common phenomena which appears in other developing regions, but also reveals some features and dynamics of the linkage between two sides. The motive structure is characterized by:

(1) The industry transfer and local partners have different priorities. They establish cooperation in order to benefit from each other: each one tried to appropriate the resources, assets and competencies that the other provided. Five items clearly related to motives predominantly pursued by industry transfer partners: they want to learn about the local context, they want to learn how to manage the workforce, they want to gain access to local market and low cost production, and they want to exploit "*Guanxi*". It is striking that all these are precisely what local partner side provides. In terms of local partners, they want to gain access to production technologies, to product technologies, to manufacturing know-how and to new product models. Local partners also want to learn organization and management knowledge.

Table 1 Changes of the Partners' Motives over Time

Motives	Past	Present
Industry transfer firms:		
Accessing local market	40	46
Accessing national market	10	19
Getting low cost	46	46
Getting favorable policies	21	16
Getting natural resources	35	32
Getting capital	0	0
Getting market knowledge	23	34
Getting production know-how	2	5
Getting organization and management knowledge	14	21
Getting core technology	0	0
Getting Guanxi	21	30
local partners:		
Accessing outside market	10	19
Getting favorable policies	21	24
Getting capital	30	37
Getting market knowledge	18	45
Getting production know-how	35	45
Getting organization and management knowledge	25	48
Getting core technology	0	8

Source: Questionnaire survey.

(2) The result shows that access motives of the two sides set a favorable environment for transferring technology. Local context, Guanxi, access to distribution networks, product development skills, manufacturing know-how, etc. typically fall into the class of knowledge that represents, at least partially, some tacit understanding that is unarticulated and almost impossible to formalize. Industry transfer is used here as the appropriate channel for each partner to acquire this knowledge in the context of intimate contacts. .

(3) The survey also finds that the structure of motives of industry transfer firms and their local partners show a favorable change over the last few years. The share of local partners who aim to obtain production know-how, market knowledge, and organizational and management knowledge increased.

3.2 Backward linkage and capability promotion in industry transfer

Industry transfer firms' local sourcing is regarded as backward linkage that is the purchase of local inputs, which show the relationship between these firms and local suppliers. Compared with forward linkages of inward investment, backward linkages are more favored by the host regions' government, because the purchase of local products and services not only brings more development opportunities such as increased employment and improved balance of payment to the local economy, but also offers chance for local firms to learn technology, for example, the increase of their production standards, access to markets and information, and the reinforcement of the local technology infrastructure. So

enlarging backward relationship of inward investment has been a focus of host regions' policy, both in developed and underdeveloped regions.

In order to measure the backward linkages of industry transfer firms in the host region, the interviewees were asked to estimate how much input they sourced locally. Their answers show that, in term of local sourcing level, backward linkages of industry transfer firms in Wuhan seem impressive. There are 60 percent of them buying more than 50 percent of their inputs in Wuhan, and some purchasing even over 80 percent of their inputs in Wuhan, although some firms purchase less than 20 percent of their inputs locally. It seems that industry transfer firms in Wuhan buy a lot locally and have a close relationship with local economy.

The main obstacles to increasing local purchasing, as shown in Table 2, are mainly on the supplier side. The survey finds that over 80 percent of industry transfer firms in Wuhan would like to purchase more locally, it will help them to keep their total costs low. It is apparent that there are rooms for local firms to increase their supply by updating their products and increasing their production standards.

Table 2 The Obstacles to Local Purchase

Items	No. of Answers	%
low quality	42	65
lack suitable product	35	54
price is too high	7	11
supply is unreliable	30	46
foreign company's global strategy	12	18

Source: Questionnaire. Total firm number: 65. Multi-answer questions.

3.3 Forward linkage and capability promotion in industry transfer

Forward linkages are the local use of industry transfer firms' output. They reflect the relations between inward investment and local buyers. The output sold by industry transfer firms on the local market, as (Michalet 1994[9] and saggi 2002)[10] state, is also a vehicle of technical knowledge flow between foreign investors and local buyers, whether these buyers are consumers or enterprises.

The survey finds that most industry transfer firms in the host region hold an important position in terms of local sales. In addition to the high level of local sales, the following characteristics of industry transfer firms' local sales are noteworthy. Local sales levels show some differences among firms from different regions. Secondly, some trend can be identified that international sales are increasing over time. Interview data shows that there are more firms began to do international sales. The factors which promote this shift are twofold: One is that the wholly-owned firms, especially from Japan, are increasing very quickly. The other is that the local government incentives and policies have paid more attention to promoting exports and takes incentives and policies to build a national automobile and part export base in WEDZ (Wuhan Municipal Government, 2009).

When local buyers are enterprises, the technology diffusion through industry transfer forward linkage can be viewed at the two levels. The first level is reflected in the flow of products provided by industry transfer firms. Questionnaire data shows that over 50% of the industry transfer firms' answer that their provision of products leads local buyers to improve the quality of their products. Their high-quality products play an important role in local firms' upgrading of their products.

Table 3 Results of Industry Transfer Through Forward Linkage

Items	No. of Answers	%
Increase buyer's products quality	35	54%
Offer after sales service and training	45	70%
Provide technology information	35	54%
Pressurize other suppliers for improvement	38	58%

Source: Questionnaire Total firm number is 65.

Technology diffusion at the second level is tied up with the other activities conducted by industry transfer firms when they sell their products to Chinese indigenous firms. Table 3 shows over 50 percent of firms' answers is that local sales are channels in transferring technical knowledge. These associated activities can be divided into three groups. One is after sales service and personnel training for local buyers, which are mainly in high technology projects, especially in the electronics industry, because local buyers are not familiar with these products. These efforts usually combine products and operating skills together and accelerate the process for local buyers to get familiar with certain new technologies.

The second group is that the high level of competition sometimes forces industry transfer firms to provide more technical information to convince the local buyers to put in their orders. At the same time, a third group of associate activities follows. The products provided by industry transfer firms could be shown to local buyers' previous suppliers and form a stimulus to force them to improve their products and services.

4 Conclusion

The city of Wuhan, as the heart of Central China, accounts for over one percent of national economy in most aspects at present. Its economy is characterized by diversified industrial activities, a comparatively advanced economic structure, and a huge market. Industry transfer has been playing an increasingly important role in the development of the city. The examination of the transfer process and effects by interviews and questionnaire shows that the knowledge flow within industry transfer firms is obvious but limited. According to the extent of technological learning by the local partners or local personnel and the impact of the technology transfer and learning on the host region, we can draw a conclusion that the record of industry transfer firms in transferring technology to the local economy has been very varied and technology flow in uneven. What's more, lack of the various know-how learning limited the technology transfer.

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