

# Silk Road Economic Belt: The Analysis about Performance of Spillovers and Innovation of China's Multinational Corporations

Jingfeng Zhao<sup>1, a</sup> and Yan Xian<sup>2, b</sup>

<sup>1</sup>Research Center of West China's Economic Development, Northwest University, Xi'an, P.R. China

<sup>2</sup>School of Economics and Management, Northwest University, Xi'an, Shaanxi710127, P.R. China

<sup>a</sup>171545892@qq.com, <sup>b</sup>573287547@qq.com

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**Abstract.** Under the current background of the construction of the Silk Road Economic Belt and the steady development of Chinese “Go Global” strategy, it is imperative to research the relationship between technology spillover and innovation ability of multinational companies. Based on the analysis of 2005-2014 ODI (outbound direct investment) data of countries along the Belt, especially Central Asia, we find out that China, in this context, vigorously increases direct investment to countries along the Belt. And the knowledge flow between Chinese multinational companies and local enterprises, not only prompts the promotion of local technical merit, but at the same time also improves the innovation ability and business performance of multinational companies.

## Introduction

In September 2013, Xi Jinping, Chinese General Secretary, put forward to ‘Build the Silk Road Economic Belt Together’ in Kazakhstan, and received a positive response from the central Asian countries and got the international community's extensive attention. The clear focus of the Belt is: China-Central Asia-Russia-Europe (Baltic sea); China-Central Asia and West Asia-the Persian Gulf and the Mediterranean; China - Southeast Asia, South Asia and the Indian Ocean [1]. Although Central Asia is located in the hinterland of Asia, it is the important point and strategic integration of the Belt. With the steady development of China's “Go Global” strategy, and the transfer of world export terminal markets to southern countries after the international financial crisis, China will increase ODI to countries along the Belt, especially Central Asia. By multinational companies, the labor-intensive industry and the capital-intensive industry will be expected to be transferred to countries along the Belt to reconstruct China's global value chain and to shift towards the high value-added industrial chain.

## Literature Review

Theoretical research on multinational technology spillover effect and the innovation ability in academic circle is rather rich. Abroad: Technology spillover effect is one of the most significant reasons of foreign direct investment [2]. Advanced technology of the multinational companies has a demonstration and copycat effect on local companies [3]. The spillover effect of multinational corporations will produce positive impact and negative impact on the technological innovation of local enterprises. And in the US and the UK market, local enterprises could benefit from the technology spillover of multinational corporations [4]. R&D activities of multinational companies will have a demonstration, imitation and communication effect on the host country's enterprises [5]. And R&D activities of multinational corporations in the host country can produce spillover effect only in consequent connection [6].

Domestic: In terms of multinational companies' advanced technology, it is certainly necessary to introduce multinational corporations to China in order to enhance the technological innovation capacity of local companies and then to upgrade the international competitiveness of domestic enterprises [7]. R&D investment of multinational corporations can promote China's technological

innovative ability [8]. In the indigenous technology spillover, university and other research institutions have a positive spillover effect on industrial innovation; in the international overflow channel, export plays a significant role in promoting innovation, while the spillover effect of foreign R&D activities is not conspicuous [9]. And research shows that there is a positive correlation between technology progress and the combination of FDI and human capital flows. Therefore, we should improve the quality of human capital flow so as to create superior talent environment for FDI technology spillover [10]. And the technology transfer of multinational corporations also has a positive effect on manufacturing industry's green innovation system and performance [11].

The literature of the relationship between technology spillover and innovation capacity on the Silk Road Economic Belt is not much. Xuling Huo (2014) calculated the total factor productivity (TFP) of 18 cities along the silk road of xinjiang, and studied the 18 cities' panel data from 2005 to 2012. And the research results showed that the TFP growth of the 18 cities came mainly from technological progress, and transportation infrastructure had an overflow effect on total factor productivity growth [12]. Shaojun Fu (2015) used the front panel data model to estimate the 1997-2013 technical efficiency of the provinces along the Belt, and then further analyzed the TFP influencing factors. The empirical results showed that the opening to the outside world, financial support and transportation infrastructure had a positive effect on technical efficiency for those provinces [13]. Li Diao (2016) argued that, in recent years, the pace of Chinese enterprises into Central Asia was accelerated, but the direct investment distribution was unbalanced. To improve the efficiency of direct investment, we should pay attention to the investment guidance, broaden the financing channels and enlarge the technology spillover effect [14].

Above all, there are a number of domestic literature and foreign literature demonstrating multinational technology spillover effect and innovation ability from the theoretical and empirical perspective. However, there is little literature specializing in multinational technology spillover effect and innovation ability on the Belt. But China's vigorous promotion of the construction of the Belt predicts that China's direction investment to the countries along the Belt will gradually become the main growth pole of ODI. Therefore, it is necessary to make in-depth research on this issue.

### **Current Investment Situation of the Countries along the Silk Road Economic Belt**

With the deepening of economic globalization and China's steady strategy of "Going Global", in order to adapt to the new normal economy, President Xi Jinping put forward the construction of the Silk Road economic belt when he made a speech at Nazarbayev University in Kazakhstan. In 1992, China established diplomatic relations with the five Central Asian countries. At the beginning of the establishment, the volume of trade between China and the five countries was just \$460 million. After that, however, it increased to \$45 billion by 2014. Now China has become the main trading partner to the Central Asian countries, and the first largest investment source to Uzbekistan and Kyrgyzstan.

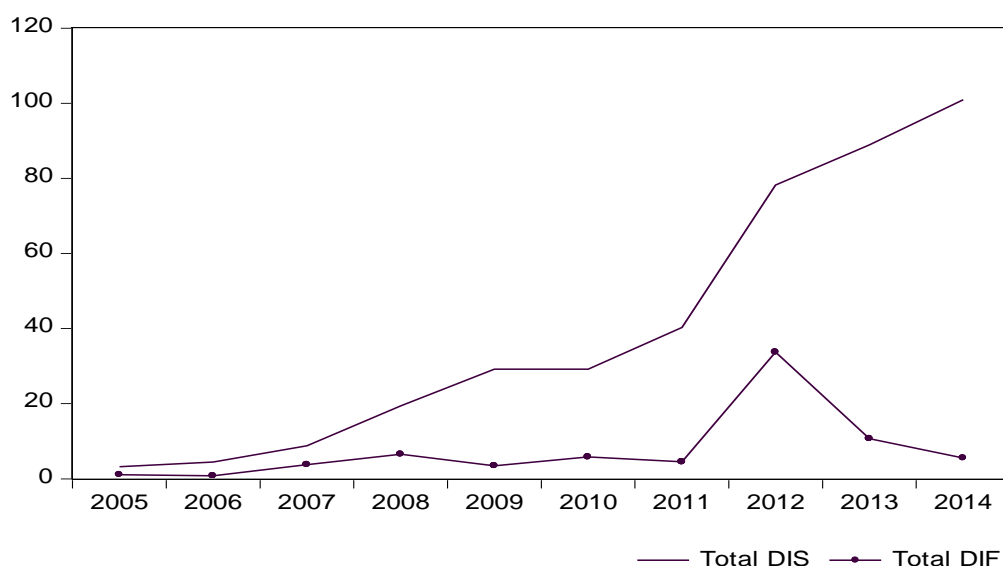
Table 1 shows us that the scale of China's direct investment to the five central Asian countries went up, but the investment structure was imbalanced. In 2014, China's direct investment stock for Kazakhstan accounted for 75% of the five central Asian countries' total DIS, and the investment field mainly focused on energy and mineral resources. China's direct investment to Central Asia was growing fast, the total DIS increased to \$10 billion in 2014 from \$300 million in 2005 and the average annual growth rate hit 40.9% with 40.8% in Kazakhstan, 36% in Kyrgyzstan, 41.4% in Tajikistan, 41.8% in Uzbekistan, and 116% in Turkmenistan.

Table 2 shows us that in China's direct investment to major countries along the Belt, the increase of the total DIF fluctuating while the increase of the total DIS was steady.

Table 1 2005-2014 China's direct investment to Mid-Asia [\$Billion]

Year	Direct Investment	Mid-Asia	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
2005	Flow	1.095	0.949	0.137	0.008	--	0.001
	Stock	3.252	2.452	0.451	0.228	0.002	0.119
2006	Flow	0.816	0.460	0.276	0.069	-0.000	0.011
	Stock	4.464	2.762	1.248	0.303	0.002	0.149
2007	Flow	3.772	2.799	0.149	0.679	0.013	0.132
	Stock	8.806	6.099	1.396	0.989	0.014	0.308
2008	Flow	6.562	4.964	0.071	0.266	0.867	0.394
	Stock	19.419	14.023	1.468	2.271	0.881	0.776
2009	Flow	3.450	0.668	1.369	0.167	1.197	0.049
	Stock	29.179	15.162	2.837	1.628	2.079	0.852
2010	Flow	5.797	0.360	0.824	0.154	4.505	-0.046
	Stock	29.179	15.905	3.943	1.916	6.585	0.830
2011	Flow	4.541	5.816	1.451	0.221	-3.830	0.883
	Stock	40.332	28.584	5.251	2.167	2.765	1.565
2012	Flow	33.769	29.959	1.614	2.341	0.123	-0.268
	Stock	78.236	62.513	6.622	4.761	2.878	1.462
2013	Flow	10.689	8.114	2.034	0.723	-0.324	0.442
	Stock	88.929	69.567	8.858	5.994	2.532	1.978
2014	Flow	5.507	-0.401	1.078	1.072	1.952	1.806
	Stock	100.939	75.411	9.842	7.289	4.476	3.921

Table 2 China's total direct investment to five countries in Central Asia



### The Analysis of the Relationship between Technology Spillover and Innovation Performance in Multinational Corporations

“The research shows that Chinese enterprises can't upgrade to the high value chain by integrating into the value chain that controlled by multinational companies in developed countries. It is inevitable to be locked in the mid-range of the global value chain [15].” However, the construction of the Belt brings bright opportunities to Chinese enterprises. Therefore, China's multinational companies must take advantage of the local knowledge effectively to strengthen its innovation ability and performance.

**Technology Spillover Effect of China's Multinational Corporations.** The behavior of China's multinational companies which set up subsidiaries in countries along the Belt provides opportunities for local enterprises to obtain advanced technology. Compared with those local companies, subsidiaries of China's multinational corporations have a large technical comparative advantage. So the subsidiaries can occupy more market share and marketing profits. Under the pressure of competition, local enterprises begin to intensify R&D activities and imitate the advanced technology of the subsidiaries so as to improve its own innovation ability. And also, multinational corporations can unconsciously improve the development of human capital for the host country. China's multinational companies put factories or set up subsidiaries in host countries, and this will promote the development of local education through labor market and price. And local staff working in the subsidiaries will also grasp advanced technology through "Learning by Doing".

**Knowledge Overflow Effect of Countries along the Belt.** Knowledge flow needs to be achieved by interaction. Some specialized knowledge has been printed in executor's brain for a very long time. So this kind of knowledge, to a large extent, only can be transferred to recipients through personal interaction. And if multinational corporations want to take advantage of this knowledge, they have to obtain it through the process of knowledge flow. When China's multinational corporations develop in countries along the Belt, they must pay attention not only to advanced technology but also to local knowledge. Local knowledge is essential for the development of multinational corporations, especially when the economic and social development status, the policy environment, and the custom and culture are very different among the countries along the Belt. So Chinese enterprises must actively obtain relevant knowledge from the local market and improve its technology and management level so as to adapt to local needs and consumption habit.

**Bidirectional Knowledge Transfer between Multinational Corporations and Local Firms.** In recent years, the subsidiaries of multinational corporations are playing a more and more important role in innovation. And innovation function is more and more diversified. So, to comprehensively and reasonably utilize local knowledge can significantly promote the localization of the subsidiaries, help to adapt to the local policy environment, and improve competitiveness. And the parent company can absorb all kinds of local knowledge by subsidiaries. This will help the parent company to improve the level of decision-making, to promote innovation management mode, and to develop special products. And the feedback from the parent company will in turn enhance the performance of subsidiaries. This cycle will greatly improve the performance of multinational corporations and the adaptation ability of subsidiaries.

## Summary

In order to better open the local market, the obstacles in the process of knowledge transfer must be eliminated or reduced. Through positive technology spillover to promote local enterprise's technical level and at the same time, through reverse knowledge transfer to increase the ability of technological innovation and to improve the performance of China's multinational corporations.

**Optimize the Development Environment of Multinational Corporations.** As the political culture system, legal norms, economy development, and social demand are deeply different among those countries along the Silk Road economic belt, the construction environment of the Belt is facing a very complex situation. However, the potential abilities of enterprise and individuals are not enough to optimize the development environment. Therefore, in order to better promote the construction of the Belt, to optimize the environment of outbound direct investment, we must actively promote the process of bilateral or multilateral free trade with countries along the Belt. Establishing free trade area will contribute to increase investment facilitation and create better investment to the countries along the Belt. At the same time, the government should timely release the current economic and trade information of the countries along the Belt and guide Chinese enterprises "go out" rationally. Through this, multinational corporations can get relatively sufficient local information and realize the knowledge interaction with local companies. As a result, this will enhance the technology innovation and improve the business performance of multinational corporations.

**Optimize the Knowledge Transfer Mechanism of Multinational Corporation.** First, increase the degree of target matching. The key to keep core competitiveness and innovation ability for multinational corporations is to recognize, transfer and create knowledge. Therefore, we must promote the level of parent-subsidiary knowledge structure. For one thing, improve the degree of the support and attention from managers. For another, set up and improve the parent-subsidiary internal knowledge transfer performance evaluation system. Second, improve the knowledge transfer channel. Keeping an unobstructed parent-subsidiary knowledge transfer can speed up the liquidity of knowledge, and promote the utilization efficiency of existing knowledge and the development of new knowledge. This can accelerate the reflection of local knowledge from subsidiaries to parent companies and eliminate the parent-subsidiary communication barriers caused by asymmetric information. Third, develop the knowledge sharing culture. This can promote the enhancement of the concept of parent-subsidiary knowledge performance, and reduce the possibility of opportunistic in the process of knowledge transfer. Through internal multi-sector's cooperation, we can enhance the parent-subsidiary trust and cohesion.

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