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The Interplay of FDI and R&D: A Study in the Seven Developed Countries

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Abstract. With the globalization process in the recent two decades, more and more countries are focusing on improving their technology to get more comparative advantages than other countries. The purpose of this paper is trying to explain the causality between foreign direct investment and R&D. We will analysis seven developed countries (Denmark, Finland, Ireland, Japan, the Netherland, the United Kingdom, and the United States) and use pooling data analysis to investigate this causality during the last 35 years.

Keywords: FDI · R&D · Developed countries

1 Introduction

The purpose of this poster paper is to investigate the causality of foreign direct investment and R&D in the developed countries. One of the motivations in the globalisation foreign direct investment, called knowledge, which means the company may separate their headquarters and R&D activities. For example, the headquarters may be in one market, but served the knowledge generated from another market. Therefore, the research question in this paper set as what is the role of research and development played in the foreign direct investment flow? More specifics of this research question could be if one country had high technology, whether that country would like to produce new products in their own country and to attract foreign country investment inward flow; or this country will ‘sell’ this new technology and conduct investment into other countries?

For example, the United States had the latest technology in the world, which makes it has a more comparative advantage than other countries. Thus, the United States could conduct investment into other countries in some specific area, like agriculture and labour-intensive industry. Therefore, there is a mutual partner relationship between the United States and the other countries. The same situation also could exist in the other nations. We use seven developed countries as an example to estimate if there is a significant relationship between foreign direct investment and local R&D activities.

2 Pooling Data Analysis

Table 1 indicates a brief regression result in individual countries, which is including three pair relationships between, FDI, local R&D activities, and economic growth. According to the Table, the first causality is about the FDI inward flows and R&D.

Table 1. Regression result in seven countries

Country	FDIN to RD	RD to FDIN	FDIO to RD	RD to FDIO	GDP to RD	RD to GDP
Denmark	-	+	+*	-	+	+
Finland	+	+	+***	+***	-	-
Ireland	-*	-	-	+	+	+
Japan	-	-	-	+	-	-
Netherland	+	+***	+**	-	-	-***
The United Kingdom	+	-***	-	-*	-	-***
The United States	+	-	-**	-***	+*	-***

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In Ireland, FDI inward flows shows a significant negative influence on its R&D. That means in Ireland if they hold a high technology, the most thing they would like do is to conduct foreign investment in the developing country, which is their efficiency seeking motivation, rather than attract foreign investment from another developed country. On the other hand, the R&D in the Netherland displays a positive effect of FDI inward flows, but an antagonistic relationship in the United Kingdom.

For the second causality between FDI outward flows and R&D activities, in Finland, which illustrate a complementary relationship and also they have a positive influence on each other. That means the government prefer to spend more money on their innovation and to improve their unique technology, to have a comparative advantage; rather than conduct foreign investment into other countries. For the last causality, there is only one country, the United States, indicates the economic growth will support the R&D development. However, on the other side of this relationship, local R&D activities show a significant negative influence on GDP growth, which has the same result as the pooling data regression. Again, it has proved that in the short-run, the government could not get benefit from R&D Department.

3 Conclusion

In this paper, we have analyzed the relationship between foreign direct investment and technology in seven developed countries. In general, according to the pooling data regression (See Table 1), there is a bi-direction relationship between FDI flows and technology. However, the technology has a diminishing changed effect for both FDI inward flows and outward flows, which mean the technology, will not support FDI flows after few years. In another word, because the renewal of technology, the government have to update their technology frequently, to keep the high competition and comparative advantage in the global market.

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