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INNOVATION AS A MEDIATOR IN THE RELATIONSHIP BETWEEN INWARD AND OUTWARD FOREIGN DIRECT INVESTMENT: A CONCEPTUAL MODEL PROPOSAL

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Abstract

Dunning, widely regarded as the father of international business, proposed the Investment Development Path, which posits that the growth of inward foreign direct investment fosters an increase in outward foreign direct investment relative to per capita gross domestic product. Due to its international prevalence, the investment promotion path causes the investment agencies of countries to prioritise and encourage inward foreign direct investment. Considering the motivations of foreign direct investment (FDI), such as market-seeking, efficiency-seeking, strategic asset-seeking and natural resource-seeking, it has been observed that companies prioritise enriching the home country by enriching their companies rather than enriching the host country. Foreign direct investments are strategic instruments that add value to both the company owners and the host country. It is important to identify the points that need to be improved in order for these strategic instruments to provide maximum benefit to the sustainable development of countries. For this reason, it is stated that inward foreign direct investments are valuable as long as they contribute to the innovation of the country in which they invest, rather than being investments that consume the host country's market, human resources, strategic assets or natural resources. The most valuable contribution of innovation is envisaged as increasing outward FDI as in developed countries. It is planned to explain the relationship between inward FDI and outward FDI through innovation instead of gross domestic product per capita, which is not a cause but an effect. The study shows that the benefits of inward FDI to a country depend on the innovation capacity of the host country. The study shows that the innovation capacity of the host country not only positively affects inward FDI but also encourages outward investment. The mediating role of innovation is suggested. In our study, 5 year (2018, 2019, 2020, 2021, 2022) secondary data from 61 countries in 6 continents were analysed. Inward foreign direct investment and outward foreign direct investment datasets are obtained from Organisation for Economic Co-operation and Development and innovation data are obtained from World Intellectual Property Organization. The study suggests that policy makers in countries aiming for sustainable development can maximise the benefits of inward foreign direct investment by improving innovation.

Keywords: Investment Development Path, Inward Foreign Direct Invesment, Outward Foreign Direct Investment, Innovation, Internationalization
JEL*:* F21, F23, O32

İÇE DÖNÜK VE DIŞA DÖNÜK DOĞRUDAN YABANCI YATIRIMLAR ARASINDAKİ İLİŞKİDE İNOVASYONUN ARACI ROLÜ: KAVRAMSAL MODEL ÖNERİSİ

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Özet

Uluslararası işletmeciliğin babası olarak adlandırılan Dunning'in yatırım geliştirme yolunda, içe dönük doğrudan yabancı yatırımların, kişi başına gayrisafi yurtiçi hasılaya göre dışa dönük doğrudan yabancı yatırımları arttırdığı ifade edilmektedir. Uluslararası yaygınlığı nedeniyle yatırım geliştirme yolu, ülkelerdeki politika düzenleyicilerin, içe dönük doğrudan yabancı yatırımları önceliklendirerek teşvik etmesine neden olmaktadır. Yabancı doğrudan yatırımların motivasyonları olan pazar arayışı, verimlilik arayışı, stratejik varlık arayışı ve doğal kaynak arayışı göz önüne alındığında şirketlerin önceliklerinin, ev sahibi ülkeleri zenginleştirmek yerine şirketlerini zenginleştirerek ana ülkenin değer kazanmasını sağladıkları görülmektedir.

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Bu minvalde doğrudan yabancı yatırımlar, hem şirket sahiplerine hem de ana ülkeye değer katan stratejik araçlardır. Bu stratejik araçların ülkelerin sürdürülebilir kalkınmasına azami fayda sağlaması için geliştirilmesi gereken noktaların tespiti önem arz etmektedir. Bu sebepten içe dönük doğrudan yabancı yatırımları, ev sahibi ülkenin pazarını, insan kaynaklarını, stratejik varlıklarını veya doğal kaynaklarını tüketen yatırım olmaktan çıkartıp yatırım yaptığı ülkenin inovasyonuna katkı sağladığı sürece değerli olduğu vurgulanmalıdır. İçe dönük doğrudan yabancı yatırımlar ve dışa dönük doğrudan yabancı yatırımlar arasındaki ilişkinin, bir neden değil sonuç olan kişi başına gayrisafi yurtiçi hasıla yerine inovasyon aracılığında açıklanması önerilmektedir. Çalışmada, içe dönük doğrudan yabancı yatırımların bir ülkeye fayda sağlamasının, ana ülkenin inovasyon kapasitesine bağlı olduğu belirlenmiştir. Çalışmada ana ülkenin inovasyon kapasitesinin yalnızca içe dönük yabancı doğrudan yabancı yatırımı olumlu etkilemediği aynı zamanda, dışa dönük yatırımı da teşvik ettiği görülmüştür. Bu yüzden inovasyonun aracı rolü önerilmektedir. Çalışmamızda, 6 kıta 61 ülkeden edinilen 5 yıllık (2018, 2019, 2020, 2021, 2022) ikincil veriler incelenmiştir. İçe dönük doğrudan yabancı yatırımlar stoku ve dışa dönük doğrudan yabancı yatırımlar stok verileri, OECD'den edinilirken inovasyon verileri ise Dünya Fikri Mülkiyet Örgütü'nden temin edilmiştir. Çalışma, sürdürülebilir kalkınmayı hedefleyen ülkelerdeki politika yapıcıların, inovasyonu geliştirerek doğrudan yabancı yatırımların faydalarını en üst düzeye çıkarabileceğini öne sürmektedir.

Anahtar Kelimeler: Yatırım Geliştirme Yolu, İçe Dönük Doğrudan Yabancı Yatırımlar, Dışa Dönük Doğrudan Yabancı Yatırımlar, İnovasyon, Uluslararasılaşma
JEL Kodu*:* F21, F23, O32

1. INTRODUCTION

In our study, the assessment that the gross domestic product per capita of developing and underdeveloped countries can only be improved through inward FDI, as stated in the investment promotion path, and that outward FDI can increase if the gross domestic product per capita increases is analysed. Our research seeks to answer the question of whether inward FDI is sufficient for the sustainable development of countries or whether increasing innovation capacity should be a more primary strategy. Although it is widely believed that inward foreign direct investment enhances the host country's investment ecosystem, empirical findings indicate a weak correlation between inward FDI and per capita gross domestic product but the fact that Dunning's investment development path is widely cited in the academic world prevents its accuracy from being questioned (Yücel and Çemberci, 2024). The aim of our study is to examine the impact of increasing innovation capacity on sustainable development by considering the weak relationship between inward FDI and gross domestic product per capita. In our globalised world, sustainable development is associated with maximising the benefits of both inward and outward FDI. In this study, the impact of innovation capacity on both inward FDI and outward FDI is analysed. The importance of this mediating role in closing the development differences between countries is emphasised.

This study contributes to the literature by emphasising that the impact of inward FDI on development is limited and that the main impact should be through innovation mediation. Our study shows under which conditions inward and outward FDI contributes to the country.

2. THEORETICAL FRAMEWORK

2.1. Inward Foreign Direct Investment

Inward foreign direct investment (IFDI) refers to foreign investment from the home country to the host country. The incentives that encourage companies to invest in another country rather than trade are investment motivations. These include the pursuit of natural resources, exploration of market opportunities, the search for efficiency and the pursuit of strategic assets. The other stakeholder in all these processes, the host country, expects the company to benefit the country while ensuring its profitability (Dunning, 2002). As an example, natural resource seekers need a physical motivation. Foreign mining companies operating coal mines in Zonguldak can be given as an example, their contribution to the region should be evaluated (Arca et al, 2014). Market seekers are after regional and local target markets and their contribution to the market should be evaluated while demanding consumption. Efficiency seekers aim to increase regional efficiency through systems engineering and process management. For example, a German machinery manufacturing company aiming to generate high profits through cheap quality labour in Türkiye may build a factory and train engineers in Türkiye (Celıkok and Saatcıoglu, 2020). Strategic asset seekers can acquire global companies and intellectual

capital to enhance their competitiveness. For example, a giant global company in its industry could acquire the largest local company at the same turnover threshold, or a company that has developed more advanced technology or acquire patents.

2.2. Innovation

Innovation is one of the most critical elements for individuals, organisations and countries to achieve sustainable development and gain competitive advantage in the long term. Schumpeter, who is one of the important names thinking on this concept, evaluates innovation within the framework of the concept of 'creative destruction'. According to him, the desire for change is not only limited to improving the existing, but also has the potential to bring out the new (Schumpeter, 1942). When the diffusion process of innovation is analysed, it is seen that the speed at which individuals adopt new ideas and how these ideas spread in society are closely related to social trends (Rogers, 2003). Instead of limiting innovation only to technological developments, taking its social dimensions into consideration provides a better understanding of the scope of the concept. While technological innovation is based on the development of new products and processes with a focus on R&D, social innovation aims to produce solutions to social problems. Business model innovation transforms the way organisations create value (Moore, 2004). Underlying all these innovative processes is the desire to improve the current situation and take it to the next level.

2.3. Outward Foreign Direct Invesment

Outward foreign direct investment (OFDI) refers to the capital allocated by local firms to alien markets in pursuit of new opportunities compatible with their strategic objectives (Lizondo, 1993). Stephen Hymer, the first person to use outward FDI in the literature, states in his studies that outward FDI is not only the export of capital but also the transfer of technology and firm skills (Hymer, 1972). Depending on the motivation of the investment, it is stated that the outflow can be not only unilateral but also bilateral. In an increasingly interconnected world, OFDI plays an important role in contributing developing countries close the vacancy with developed economies, while enabling developed countries to maintain and increase their welfare. Research shows that inward FDI can contribute to technological progress, but it cannot fully replace outward FDI in spreading knowledge and promoting learning (Amann and Virmani, 2015). Investments to acquire strategic assets often take place through mergers and acquisitions and facilitate knowledge transfer (Stiebale and Reize, 2011). In addition, in line with the dynamic capabilities theory, such investments give dynamism to domestic firms and encourage job creation in domestic firms by providing access to international markets (Hsu and Chen, 2009). In essence, as the Schumpeterian theory of innovation suggests, outward FDI acts as a catalyst for domestic firms to absorb and replicate foreign knowledge, thereby increasing competitiveness and innovation (Ganguly et al, 2022).

2.4. Investment Development Path

According to Dunning's investment development path, it is argued that the initial effect in the development of countries is inward foreign direct investments which will increase the country's gross domestic product per capita and that outward foreign direct investments will increase due to the increasing gross domestic product per capita. According to the investment development path, which is frequently referred to in the literature, this process consists of 4 stages. In stage 1, if the GDP per capita in the home country is below $1000, there will be neither inward nor outward FDI; in stage 2, if the GDP per capita is between $1000 and $3000, there will be inward but not outward FDI; in stage 3, if the GDP per capita is between $3000 and $10,000, there will be more inward than outward FDI; and finally in stage 4, if the GDP per capita is above $10,000, there will be more outward than inward FDI (Dunning and Narula, 1996). As stated in the investment development path in Table 1, after inward FDI, the impact of the presence of outward FDI on GDP per capita is important. It is examined that Dunning's investment promotion path, which assumes that GDP per capita increases outward foreign direct investment is generally accepted but there are different study outcomes on the impact of foreign direct investment on gross domestic product per capita.

Table 1. Dunning's Investment Development Path

Stage	GDP per Capita	FDI Position
1	< 1000 $	Negligible
2	1000 – 3000 $	Inward FDI
3	3000 – 10.000 $	Inward FDI > Outward FDI
4	> 10.000 $	Outward FDI > Inward FDI

Reference: Dunning and Narula, 1996

3. HYPOTHESIS DEVELOPMENT

In this section, the relationships between variables are analysed based on the literature.

3.1. The Relationship Between Inward Foreign Direct Investment and Innovation

These relationships have been examined through various studies in different countries. In a study examining the effects of inward foreign direct investment on the innovation capacity of Chinese firms, it was found that inward foreign direct investment stimulates innovation by creating competitive pressure, but that it responds differently depending on the country's competition regulations (Chen et al, 2022). In another study on national firms in China, the regulatory effect of inward FDI on innovation capacity is positive in the presence of industrial diversity (Li et al, 2017). A study conducted in Brazil, a country with different cultural dynamics in South America, examined the effects of inward FDI on regional innovation. It is stated that IFDI positively affects regional innovation and this is due to industrial diversity and knowledge accumulation (Garcia et al, 2023). In the study examining the relationship between IFDI and national innovation in emerging economies, it is determined that with increasing innovation comes more IFDI, but too much inward FDI reduces endogenous innovation. It is stated that government policies reduce the negative effects of inward FDI on national innovation (Shamsub, 2014). The regulatory role of government policies in the relationship has been attributed importance.

$H_{1:}$ There is a positive relationship between inward FDI and innovation.

3.2. The Relationship Between Innovation and Outward Foreign Direct Investment

The relationship between national innovation and outward foreign direct investment has been examined through various countries. A provincial-level study in the authoritarian system in China examined the impact of outward foreign direct investment on local innovation. The study found that OFDI has an impact on local innovation and that the impact is shaped by absorption capacity and the intensity of competition (Li et al, 2016). Another study on Chinese firms found that OFDI in developed economies increases innovation through reverse knowledge spillovers (Khan et al, 2020). In a sectoral disaggregated study on high value-added Chinese firms, it was examined that the impact of OFDI on innovation is U-shaped in terms of depth and breadth. In addition, as the rate of knowledge internalization of these companies increases, national innovation increases (Zheng et al., 2024). In the study that divides OFDI into investments in developing and developed countries, it is stated that investment in developed countries increases national innovation, but investment in developing countries decreases local innovation (Zhou et al, 2019). In another study conducted in China, it was determined that outward FDI positively affects innovation to the extent of the company's capabilities (Fu et al, 2018). Related studies show the two-way effect of outward FDI as a strategic tool.

$H_{2:}$ There is a positive relationship between innovation and outward foreign direct investment.

3.3. The Relationship Between Inward Foreign Direct Invesment and Outward Foreign Direct Investment

The investment promotion path developed on this relationship states that inward FDI increases outward investment over time. Gross domestic product per capita, an indicator of economic prosperity, is used

as an intermediate variable (Dunning and Narula, 1996). Although the welfare indicator shows which direction the relationship dominates, it does not show how IFDI increases OFDI. For this reason, it needs an intermediary variable. Various studies have been analyzed in this regard. In a study examining the impact of IFDI on OFDI, it was found that IFDI encourages OFDI to developed countries, but this relationship is weakened by unregulated competition (Gao, 2023). In a study conducted in Türkiye, one of the developing countries in Asia, it was stated that IFDI increases OFDI by accelerating the internationalization process of national firms (Yalçınkaya and Aydın, 2017). In a study conducted in South Korea, one of the shining star countries, the effect of IFDI on OFDI of South Korea-based companies was analyzed and the results are similar in Türkiye (Lee and Park, 2020).

H_3: There is a positive relationship between inward fdi and outward fdi.

3.4. The Mediator Effect of Innovation on Relationship Between Inward Foreign Direct Invesment and Outward Foreign Direct Investment

A study examining the dynamic relationship between inward and OFDI in China found that inward FDI encourages outward FDI through technology transfer and knowledge spillover (Yao et al, 2016). A study conducted in China, which examines the relationship in all directions, examined whether the relationship between IFDI and OFDI is complementary or substitutive. In the study, it was determined that IFDI encourages or hinders OFDI according to the level of innovation development (Poncet, 2010). In a study conducted in South Korea, one of the shining star countries, the effect of IFDI on OFDI of South Korea-based companies was analyzed. The results of the study are similar to innovation index. It was determined that IFDI encourages Korean companies to invest in international markets due to competitiveness (Lee and Park, 2020). When the related studies are analyzed, it is seen that IFDI encourages OFDI in countries with competition regulations. The existence of competition regulations minimizes the negative effects of competition and leads to positive effects such as innovation.

H_4: There is a mediator effect of innovation on relationship between inward fdi and outward fdi.

4. MATERIAL AND METHOD

According to the literature review, the direct impact of IFDI on OFDI is limited. In order to explain the effect of IFDI on OFDI, it is suggested that it will vary according to the innovation capacity of countries. A conceptual model is proposed with this approach. Due to the mediating role of the innovation capacity of the home country, it is predicted that the relationship between inward and outward foreign direct investment will be more meaningful. Our hypotheses are shown in Table 2.

Table 2. Hypothesis Table

H_1	There is a positive relationship between inward fdi and innovation.
H_2	There is a positive relationship between innovation and outward fdi.
H_3	There is a positive relationship between inward fdi and outward fdi.
H_4	Innovation has a mediator effect on the relationship between inward fdi and outward fdi.

For the evaluation of the developed hypotheses, the modelling developed by Baron and Kenny was proposed (Baron and Kenny, 1986). In the conceptual model we propose, if the change in the independent variable affects the mediator variable; if the change in the mediator variable changes the dependent variable; if the effect of the independent variable on the dependent variable decreases or disappears when the mediator and independent variables are tested together, our conceptual model is appropriate.

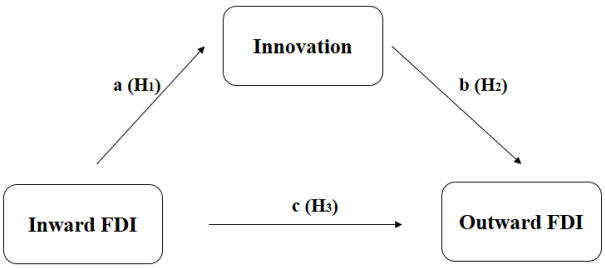

Figure 1. Research Model

Hierarchical regression is used to test the model in the Figure 1. The regression equations suitable for the model are as follows:

(a) Innovation = β0 + β1.InwardFDI+ ε

(b) OutwardFDI = β0 + β1.Innovation + ε

(c) OutwardFDI = β0 + β1.InwardFDI + ε

(c') OutwardFDI = β0 + β1.InwardFDI + β2.Innovation + ε

The sample of the research consists of 5 year (from 2018 to 2022) data of 61 countries. In our study, OECD (2023) data are used to measure the inward FDI variable, World Intellectual Property Organisation's innovation index (2023) for the innovation variable and OECD (2023) data are used to measure the outward FDI variable. The 61 countries whose data we analysed consist of the Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Hong Kong, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Republic of Korea, Latvia, Lithuania, Luxemburg, Malaysia, Mexico, Mongolia, Netherlands, New Zealand, Norway, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russian Federation, Saudi Arabia, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Turkiye, Ukraine, United Arab Emirates, United Kingdom, United States of America. Although there is information covering longer years in the relevant data sources, inconsistencies were observed in the data due to war, political instability and institutional reporting deficiencies in some countries. Therefore, in order to create a complete and comparable data set, a continuous five-year period between 2018 and 2022 was preferred.

5. EMPIRICAL RESULTS

The relationship between the variables was analysed by Pearson correlation test. As seen in Table 3, a statistically significant relationship was found between the variables.

Table 3. Pearson Correlation Table

	Description	Inward FDI	Innovation	Outward FDI
Inward FDI	Pearson Correlation	1	0,482**	0,872**
	Sig.		,000	,000
Innovation	Pearson Correlation	0,482**	1	0,603**
	Sig.	,000		,000
Outward FDI	Pearson Correlation	0,872**	0,603**	1
	Sig.	,000	,000	

** Correlation, significance level at 0.01 (two-tailed)

In the Pearson correlation examining the correlation, a very strong correlation was found between inward and outward FDI with 0.872. While there is a moderate correlation between inward FDI and innovation with 0.482, there is a strong correlation between innovation and outward FDI with 0.603.

Table 4. Model Summaries

Model	R	R^2	Adjusted R^2	Standard Error of the Estimate
(a)	0,482	0,232	0,229	***
(b)	0,603	0,364	0,361	***
(c)	0,872	0,761	0,760	***
(c')	0,897	0,805	0,803	***

As seen in Table 4, Inward FDI explains 23.2% of the change in Outward FDI. Inward FDI explains 36.4% of the change in Innovation. Inward FDI explains Outward FDI very well with 76.1% explanatory power. The R^2 value of model (c′) increased from 0.761 to 0.805. It is seen that the model is stronger and more explanatory when Innovation is added as an intermediary variable.

Table 5. Anova Tables

Model		Sum of Squares	df	Mean Square	F	Sig.
(a)	Regression	70,741	1	70,741	91,500	,000
	Residual	234,259	303	,773		
	Total	305,000	304			
(b)	Regression	110,888	1	110,888	173,090	,000
	Residual	194,112	303	0,641		
	Total	305,000	304			
(c)	Regression	232,177	1	232,177	0,240	
	Residual	72,823	303			
	Total	305,000	304			
(c')	Regression	245,443	2	122,721	622,289	,000
	Residual	59,557	302	0,197		
	Total	305,000	304			

As seen in Table 5, when innovation is added, the residual decreases from 72,823 to 59,557 at summary of squares and the explanatory power of the model increases. Model (c′) stands out as the best explanatory model with both high F value and low error.

Table 6. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	Critical Ratio (t value)	Sig.
		β	Std. Error	β		
(a)	Constant	-1,663	0,050		0,000	1,000
	Inward FDI	0,482	0,050	0,482	9,566	0,000
(b)	Constant	3,023	0,046		0,000	1,000
	Innovation	0,603	0,046	0,603	13,156	0,000
(c)	Constant	2,784	0,028		0,000	1,000
	Inward FDI	0,872	0,028	0,872	31,081	0,000
	Constant	3,179	0,025		0,000	1,000

(c')	Inward FDI	0,758	0,029	0,758	26,121	0,000
	Innovation	0,238	0,029	0,238	8,202	0,000

As seen in Table 6, the t-value for the relationship between IFDI and innovation is 9.566, which exceeds 1.96, indicating a strong causal relationship between the variables. This finding is reliable due to the standard error being close to 0. Similarly, the t-value for the relationship between innovation and OFDI is 13.156, which is also greater than 1.96, suggesting a strong causal link between these variables. This relationship is likewise reliable, as the standard error is close to 0. Finally, the t-value for the relationship between IFDI and OFDI is 31.081, significantly exceeding 1.96, indicating a very strong relationship between the variables, which is highly reliable due to the small standard error. The p-value of 0 further confirms the statistical significance of these findings. Inward FDI affects Outward FDI very strongly. Standardised β is 0.872. This indicates a rather large effect, highly significant with p-value, 0.000. When the innovation mediation is analysed, it decreases from 0.872 to 0.758. The reason for this decrease and the significance of both variables is partial mediation.

The Sobel test is a classical method used to test whether the mediation effect is statistically significant. The Z test was found to be 6.25. The Sobel test shows that the innovation variable has a significant mediation effect on the relationship between inward fdi and outward fdi. It is statistically highly significant.

6. CONCLUSION AND DISCUSSION

In the literature, there is a widespread view that the effect of inward FDI on outward FDI by referring to the investment development path varies according to the gross domestic product per capita, but when the investment motivations of inward FDI are taken into account, the necessity of a mediating variable that gives cause rather than effect is determined. In the literature review conducted in this direction, similar country-specific findings were analysed. It has been stated that inward FDI benefits the country according to the innovation capacity of the host country, and in the absence of capacity, it operates only by pursuing investment interests. It is seen in the studies that the innovation of the host country not only benefits inward FDI but also encourages outward FDI. It has been stated that innovation not only increases outward FDI, but also increases innovation through knowledge spillovers in contrast to outward FDI in developed countries. As a result of all these analyses, the hypotheses were found to be significant in the study conducted using 5-year data of 61 countries. The partial mediation effect of innovation between inward FDI and outward FDI was determined and its statistical significance was expressed. It is suggested through the conceptual model that the effect of inward FDI on outward FDI varies according to the innovation of the host country instead of the gross domestic product per capita. There is no study that analyses the relationship between inward FDI and outward FDI through innovation, which is supported by empirical studies that they are highly correlated. The fact that the study is planned with data from 61 countries instead of being country-specific increases the generalisability of the conceptual model. The study is recommended to question the contribution of inward FDI to the home country in country policies and to implement policies that increase the innovation performance of the home country in order to maximise the benefits.

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