

Research on the Enhancement of National Cultural Soft Power and the Promotion of Foreign Direct Investment: Evidence from the Olympic Effect

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Abstract. Holding international sports events is an important way to enhance the country's cultural soft power, and carrying out sports cultural exchange is also an important measure to enhance it. As a large-scale international sports event, the Olympic Games is an important channel for the country to demonstrate its cultural soft power. Facts have shown that although the pre-Olympic investment cost is huge, it can bring lasting economic benefits to the host country. Based on the panel data of outward foreign direct investment from 1970 to 2021, this paper empirically analyzes the promotion effect of hosting the Summer Olympic Games on host country's outward foreign direct investment (OFDI), namely the "Olympic effect", by constructing the least squares model. This research finds that hosting the Summer Olympics can significantly promote the country's outward foreign direct investment, especially in developing countries with low income and low openness. The mechanism analysis shows that the transmission mechanism of the promotion of OFDI from developing countries hosting the Olympics is to transmit policy signals and thus improve the openness of the country, while the developed countries realize the Olympic effect by significantly boosting the national economic fundamentals (such as unemployment rate, development of tertiary industry, etc.). Further heterogeneity analysis suggests that with the increase of a country's comprehensive strength, the Olympic effect relatively decreases.

Keywords: Outward Foreign Direct Investment; National Cultural Soft Power; The Olympic Effect; International Signaling Mechanism.

1. Introduction

In recent years, trade protectionism and hegemonism have become increasingly fierce, and the harm of COVID-19 has spread all over the world. The global industrial chain is facing the risk of interruption. Some countries have rearranged their industries, and the growth rate of global foreign direct investment has also slowed down. As an effective mechanism, foreign direct investment can transfer better practice, capital and technology on a global scale. In addition to increasing GDP and reducing poverty, it also brings benefits such as creating new supply chains, promoting knowledge sharing among economies and stimulating innovation potential. Foreign direct investment has long been a hallmark of globalization, helping to make changes in the entire company, city, sector and economy. Although the benefits brought by FDI to the economic operation are immeasurable, the global investment flows have been on a downward trend since the global financial crisis in 2008, especially since the COVID-19 epidemic caused a heavy blow to foreign direct investment in 2020. How to promote outward foreign direct investment and construct a new development pattern with a high level of opening to the outside world has become an urgent problem to be solved.

Based on international signaling theory and industrial linkage theory, this paper focuses on the analysis of the impact and theoretical mechanism of a country's hosting of the Olympics on its outward foreign direct investment. On this basis, the paper selects 186 countries or regions' outward foreign direct investment data from 1970 to 2021 to analyze the Olympic effect. Furthermore, this paper also makes differentiated investigation between developed countries and developing countries, and tests the potential impact mechanism for different types of countries from the perspectives of international signal transmission, national employment and tertiary industry development. The empirical test found that the economic benefits of the country can be fully released after the bidding

for the Olympic Games, and the outward foreign direct investment has been significantly improved, especially in developing countries. The mechanism behind it is that for developing countries, hosting the Olympics can expand the degree of opening to the outside world by sending international signals and significantly increase the international popularity. For developed countries, hosting the Olympics can boost national economic fundamentals and drive the development of related industries.

The marginal contributions of this study are as follows: First, it expands the literature on the contribution of cultural soft power to the national economy. Secondly, it discusses the influence of Olympic movement on OFDI from the perspective of informal system. Thirdly, this paper deeply reveals the mechanism of the impact of hosting the Olympics on the country's outward foreign direct investment from the perspectives of national openness, national employment and the development of the tertiary industry. Fourthly, in the process of research, this paper finds that there are great differences between developed countries and developing countries in the significance of the Olympic effect. Based on the heterogeneity analysis of different countries, it is helpful to expand relevant research and also provides an effective path for developing countries such as China to promote outward foreign direct investment.

2. Theoretical Analysis and Research Hypotheses

2.1 Olympic Economy

The Olympic movement arose in the era of capitalist industrialization in Europe, and it still arouses the enthusiasm and widespread concern of people all over the world even after several decades. Its large scale and wide influence radiate to a country's politics, economy, people's livelihood and other fields, and also drive the development of related industries. Therefore, the concept of "Olympic economy" also frequently appears in academic research: "Olympic economy" refers to all kinds of activities that have economic effects or economic values and are related to the holding of the Olympics in a certain period before and after the Olympics. The overall effect and influence of the Olympic Games are the important foundation of the Olympic economic development. The Olympic economy has become a unique economic phenomenon in the world economic development in the past 30 years. At present, the academic circle is still full of different voices about the impact of the Olympics on the economy.

Many studies support local government funding of the sports industry, believing that they usually portend huge economic benefits. Anna Thompson (2021) once said in relevant reports that in the short term, hosting the Summer Olympics has proved to increase the per capita GDP of the region by about 3% to 4%. At the same time, some scholars are skeptical about the net economic benefits of hosting large-scale events. For example, Owen (2005) pointed out that it is predicted that an event of the scale like the Olympics would attract a large amount of capital from outside the local economy and have an economic impact of billions of dollars. He further explained that in many cases, the cost of building stadiums and gymnasiums is largely used to hire construction workers and purchase materials from local suppliers, which is regarded as a benefit to the local economy. However, this conclusion is backward-looking, because it only looks at the production aspect of the project and ignores the impact of actual consumption of the products.

2.2 Sending International Signals to Predict Future Foreign Trade Policies

With the maturity of the international trading system, signal has become a key concept in the field of international relations. The current research on sending international signals to indicate the future policy direction or convey the future policy aspiration is mainly divided into the following two branches. Bartolini and Drazen (1997) were the first to put forward international signals as a policy transmission path. They developed a model in which governments with asymmetric information about future fiscal positions send out expected signals through current capital account opening policies. Opening the capital account is more costly for countries with poor financial conditions (the capital

account opening policy refers to not imposing restrictions on cross-border capital transactions or taking related measures that may affect their transaction costs).

Unlike simply and directly conveying international signals, some scholars suggest that the transmission of international signals is also related to the game theory, which has proved to be effective in exploring competitive and strategic situations (Fearon 1997; Guisinger and Smith 2002; Morrow 1994; Schultz 1998). Signal game theory specifically means that when actors witness the opponent's behaviors, they will know more about the opponent's real intention, so they will adjust their behaviors accordingly. However, Taehee Whang and Hannah June Kim (2015) used a full-structure statistical model using signal game as the statistical model to investigate the existence of sanctioning signaling effect. In their view, estimated results of international signals related to economic sanctions show that sanctions cannot be a costly signal. In view of the impact mechanism of hosting the Olympics on the openness of the country, Andrew and Mark (2011) proved that the Olympics could directly send international signals to foreign countries to indicate their willingness to increase trade openness in the future by exploring the impact mechanism of reporting the Olympics on exports, and thus increase exports. They further pointed out that bidding for the Olympics is a costly policy signal, which will be followed by liberalization and openness in the future.

2.3 Boost Domestic Economic Fundamentals and Promote Trade

Compared with the international signaling mechanism, the idea that the Olympics will promote national trade by improving domestic economic fundamentals is more widely accepted by the public and easier to understand and accept. Xing Yusheng and Chen Limin (2008) suggested that according to the relevant statistics of previous Olympics (before the epidemic), the number of foreign tourists in the Olympics is 25 to 40 times of that of sports participants. The related effect of the Olympics on the tourism industry of the host country is self-evident. In terms of finance, according to the estimation of the Beijing Municipal Bureau of Statistics, the hosting of the Olympic Games will stimulate Beijing's economic growth by 2.5 percentage points each year, in which investment and consumption will boost by 1.5 and 1 percentage point respectively. The annual loan will increase by 23 billion yuan, and the business of financial service industry will increase rapidly.

In view of the above theoretical analysis, the following hypotheses are proposed:

H1a: Holding the Olympic Games can promote the country's outward foreign direct investment.

H2a: Developing countries can send international signals by hosting the Olympics, so as to increase their openness and further promote outward foreign direct investment.

H2b: Developed countries can further promote outward foreign direct investment by boosting national economic fundamentals and boosting employment and related industries.

3. Empirical Methods and Data

3.1 Model Setting and Variable Selection

In this study, the generalized least square method (GLS) is used to perform multiple regression analysis on the data (the robustness test and mechanism analysis in the following are slightly different from the variables and methods selected by the benchmark regression). The selected explained variable is $\ln_ofdi$, which represents the logarithm of the outward foreign direct investment stock of the country i in the t^{th} year. Considering that the impact of OFDI on the host country's economic growth may be lagged behind, which will not only directly affect the current economic growth level, but also further affect the host country's long-term economic growth level, in order to meet the basic economic logic, OFDI stock rather than its flow is selected as the core explanatory variable. The core explanatory variable is $Summer_{it}$, which is a virtual variable, representing whether the country i of the year t is the host country of the Olympics. This paper also collects control variables, the definitions of each variable and its symbol are shown in Table 1:

Table 1. Variable Declaration

Explained variable	<i>ln_ofdi</i>	Stock of outward foreign direct investment in different countries (unit: 10,000 yuan)
Key explanatory variable	<i>Summer</i>	If the city holds the Olympic games in a certain year, 1 is taken; otherwise, 0 is taken
Control variable	<i>gdpcap</i>	GDP per capita (unit: 10,000 yuan)
	<i>ln_pop</i>	Population (unit: 10,000 people)
	<i>ln_gdp</i>	Gross domestic product (unit: 1,000,000 yuan)
	<i>wto</i>	If the country is a member of the WTO, 1 is taken; otherwise, 0 is taken.
	<i>indusrty</i>	Proportion of output value of secondary industry in the GDP (unit: %)
	<i>urban</i>	Proportion of urban population in the national population (unit: %)

Based on the above variable settings, the following regression equation is established:

$$\begin{aligned} \ln_ofdi_{it} = & \beta_0 + \beta_1 Summer_{it} + \beta_2 gdpcap_{it} + \beta_3 ln_pop_{it} + \beta_4 ln_gdp_{it} \\ & + \beta_5 wto_{it} + \beta_6 industry_{it} + \beta_7 urban_{it} + \lambda_i + \lambda_t + \varepsilon_{it} \end{aligned} \quad (1)$$

3.2 Data Sources

The data of this paper include the data of 186 countries or regions from 1970 to 2021. Among them, the data of the host countries and the applicant countries of the Olympic Games are from the official website of the Olympic Organizing Committee. The relevant data of each country's OFDI are from the UNCTADstat database, the *gdpcap*, *ln_gdp*, *wto*, *indusrty* and *ln_pop* data are from the CEPII database. The *urban* data are from the World Bank, and all the data are sharpened and combined. In the parts of robustness test and mechanism analysis, the paper also uses the unemployment rate and tertiary industry GDP of various countries, and the relevant data are from wind database.

4. Benchmark Test Results and Robustness Analysis

4.1 Benchmark Regression Results

Table 2 reports the benchmark regression results of the impact of hosting the Olympic Games on national outward foreign direct investment. The first three columns are regression results with different variables added sequentially under fixed country effect only, and the last three columns are fixed country effect with year fixed effect. First, this paper will briefly discuss other determinants of capital flows. The regression model established provides an accurate estimate of the coefficients, which are reasonable. Regarding the explanation results of the control variables, under the fixed effect model, the national outward foreign direct investment increases with the increase of GDP per capita (*gdpcap*), and the promotion effect is statistically significant, which indicates that the national economic development is closely related to OFDI. National population (*pop*) has also highly significantly promoted the growth of its outward foreign direct investment, and the regression coefficient is large, which is an important driving force to promote the economic growth of various countries. Next, this paper will consider whether the regression will be significant after adding the core variable (*Summer*) when the standard trade factor is determined. Regardless of whether the annual variable is added or not, the regression result of the final core variable is significant considering several trade factors (except for columns 5 and 6, all others passed the significance level test of 1%). At all significance levels, the regression coefficient β_1 of the core variables are significantly greater than zero, which indicates that hosting the Olympic Games has injected vitality

into a country's outward foreign direct investment growth. From a statistical point of view, the point estimate of $\beta_1=0.69$, when considering all standard trade factors under fixed national and annual effects, means that the countries hosting the Summer Olympics are 99% ($e^{0.69} - 1 = 99\%$) higher in terms of outward foreign direct investment than those not hosting them. The minimum estimate of β_1 is based on the annual fixed effect of the country without considering the population factor, but the level of outward foreign direct investment of the host country of the Olympics is still 57% ($e^{0.46} - 1 = 58\%$) higher than that of other countries. Other things being equal, the OFDI level of countries that have hosted the Summer Olympics seems to be higher economically and statistically, with 60% of the impact being a reasonable lower bound. The sensitivity analysis and mechanism test below will discuss the robustness of this phenomenon and the reasons behind it more profoundly.

Table 2. Benchmark Regression Results

Variable	(1)	(2)	(3)	(4)	(5)	(6)
<i>Summer</i>	1.07*** (-0.22)	0.69*** (0.20)	0.90*** (0.33)	0.69*** (-0.21)	0.46** (0.19)	0.69** (0.32)
<i>gdpcap</i>	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.01*** (0.00)	0.02*** (0.00)
<i>ln_pop</i>	1.39*** (-0.06)	0.99*** (0.06)	0.94*** (0.09)	0.70*** (-0.08)	0.72*** (0.06)	0.79*** (0.09)
<i>ln_gdp</i>		3.50*** (-0.24)	2.35*** (0.21)		4.08*** (0.38)	2.05*** (0.55)
<i>wto</i>			1.65*** (0.69)			0.67* (0.39)
<i>industry</i>			1.02*** (0.06)			0.30** (0.14)
<i>urban</i>			0.62*** (-0.06)			1.59** (0.14)
<i>constant</i>	-9.17*** (-0.53)	-6.73*** (0.51)	-6.77 (0.51)	-6.24*** (-0.82)	-6.31*** (0.58)	-4.97*** (0.89)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes	Yes
N	5077	5077	5077	5077	5077	5077
Adj R ²	0.82	0.73	0.65	0.70	0.67	0.60

Note: The standard errors are in brackets, ***, **, *, represent significance at the significance level of 1%, 5% and 10% respectively. The following tables are the same.

4.2 Robustness Test

The first experiment in Table 3 shows the result of replacing a country's outward foreign direct investment (OFDI) by foreign direct investment (FDI), which means the capital flow changes from outward to inward, while the coefficient is still statistically significant and positive. In fact, these estimated values are larger than those corresponding to OFDI, which also proves that hosting the Olympics is related to the increase in openness of the host countries. The Olympic effect is not only to promote outward foreign direct investment, but also to promote two-way trade between the host country and the rest of the world. Next, the developing countries and the developed countries are regressed respectively. The results show that although both types of countries are significant, the significance level of the developing countries is higher, and the regression coefficient is significantly higher than that of the developed countries. This has also set the stage for the follow-up mechanism

inspection and further conclusion. Finally, according to GDP-related indicators (GDP, GDP per capita, wages), excluding some smaller regions or countries (small countries are countries with GDP less than US\$ 80 billion, poor countries are countries with GDP per capita less than US\$ 1,200, and middle-income countries are countries with GDP per capita between US\$ 1,200 and US\$ 12,000), the results are also significant at 10%.

Table 3. Robustness Test

Variable	(1) <i>FDI</i>	(2) Developing country	(3) Developed countries	(4) Excluding small countries	(5) Excluding poor countries	(6) Middle-income countries
<i>Summer</i>	0.73*** (-0.12)	0.75*** (-0.12)	0.28** (0.04)	0.30** (0.04)	0.35** (0.04)	0.32** (0.04)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	5077	3842	1235	3405	4890	1553
Adj R ²	0.61	0.69	0.57	0.59	0.53	0.60

4.3 Endogenous Problems

(1) Dimensions of data

Based on the research objects involved in this paper, the endogeneity problem mainly discusses whether the selection of the host country of the Olympics is exogenous. The selection of the host country can only exist in horizontal data, i.e. among different countries or cities. The empirical finding of this paper is that for individual countries, whether hosting the Olympics will promote outward foreign direct investment is a trade behavior existing in the time dimension. Due to different dimensions, endogenous problems are avoided to a certain extent.

(2) Level of research object

"Openness" describes the characteristics of a country. Although the conclusion drawn in this paper is that hosting the Olympics will promote a country's outward foreign direct investment, it is the cities, not the countries that actually bid for the Olympics. The difference at the regional level avoids the impact of the degree of openness of countries on the bid for the Olympics in the empirical analysis. Historical data show that four U.S. cities competed in the 1948 London Olympics and all failed. The five U.S. cities bid for the Olympics in 1952 and the six U.S. cities bid for the Olympics in 1956 were also unsuccessful.

(3) Selection of host countries

The Olympic Committee has published the procedures for hosting the Olympics and the criteria for selecting the host country of the Olympics. In the detailed list of technical standards, there are few trade-related measures. There are also potential artificial and informal factors in the selection process. For example, the Olympic Committee has some incentive mechanisms for countries that have been actively bidding for a long time, and cities that have applied for many times are more likely to obtain the host qualification. In addition, studies found that there are some randomness and contingency in the determination of the ultimate Olympic host country. In order to further enhance the persuasive power of this paper, this research verifies that there is no reverse causality in the data. Table 4 shows the probit test for reverse causality with *Summer* as the explained variable, indicating that openness runs through all the time and the reverse causality does not exist.

(4) Sample selection

As the Summer Olympics are held every four years and only a small number of countries have the qualification and financial support to hold it, a significant proportion of the countries in the sample have never hosted the Olympics. If this part of the sample is simply excluded, it is impossible to

estimate whether hosting the Olympics will promote the country's outward foreign direct investment. Referring to Zhang Junyao et al. (2022), this paper uses the Heckman sample selection model to estimate the following model:

Table 4. Reverse Causality Test

Variable	(1)	(2)
<i>ln_ofdi</i>	-0.03 (0.05)	-0.01 (-0.02)
<i>gdpcap</i>	-1.23*** (0.21)	-0.02*** (0.01)
<i>ln_pop</i>	-0.36*** (0.11)	-1.12*** (-0.2)
<i>ln_gdp</i>	1.93*** (0.22)	1.83*** (-0.21)
<i>wto</i>	3.9019 (77.0325)	-0.04** (0.02)
<i>industry</i>	0.59** (0.24)	0.03* (0.02)
<i>urban</i>	-0.01* (0.01)	-0.02* (0.01)
<i>constant</i>	-0.04 (0.36)	-0.95* (0.41)
Controls	Yes	Yes
Country FE	Yes	Yes
Year FE	No	Yes
N	5077	4961
Adj R ²	0.46	0.42

$$\begin{cases} P(\text{Summer}_{D_{i,t+1}} = 1) = F(\alpha_0 + \alpha_1 EU_{i,t} + \alpha_2 \text{Control}_{i,t}) \\ \ln_ofdi_{it} = \alpha_0 + \alpha_1 \text{Summer}_{i,t} + \alpha_2 \text{Controls}_{i,t} + \lambda_i + \lambda_t + \varepsilon_{i,t}, \text{ when } y_{i,t+1} = 1 \end{cases} \quad (2)$$

Where, the virtual variable *Summer_D* represents whether the explained variable *Summer* introduced in the model (1) is 0, and *Controls* represents all the control variables, which is consistent with the benchmark model. In order to avoid multicollinearity and guarantee the estimation probability, a variable that affects *summer* but does not affect *ln_fdi* is set in the first stage. This paper chooses whether a country is an EU country (*EU*) as the virtual variable. *F* (·) represents the probability distribution function. In this paper, the covariates in the benchmark regression and the countries are forecasted through Probit model are selected to estimate the possibility of the countries hosting the Olympics and calculate the inverse mills ratio (*IMR*), which is introduced into the benchmark regression in the second stage. The regression results are shown in the following table. The second-stage regression results show that *summer*'s regression coefficient is still significant at 1%, indicating that after controlling the sample selection bias, hosting the Olympics can promote the country's outward foreign direct investment.

Table 5. Endogeneity Processing: Heckman Test

Variable	(1) <i>Summer_D</i> Stage1	(2) <i>ln_ofdi</i> Stage2
<i>Summer</i>		3.0745** (1.4173)
<i>EU</i>	-0.33*** (0.05)	
<i>IMR</i>		-2.09*** (-4.31)
Controls	Yes	Yes
Country FE	Yes	Yes
Year FE	Yes	Yes
N	5047	5047
Adj R ²	0.27	0.79

5. Mechanism Analysis

5.1 The Law of Diminishing Marginal Benefit on "Olympic Effect"

Table 6. Influence of National Economic Development Level on Olympic Effect

Variable	(1) <i>ln_ofdi</i> All countries	(2) <i>ln_ofdi</i> All countries	(3) <i>ln_ofdi</i> Excluding poor countries	(3) <i>ln_ofdi</i> Excluding poor countries
<i>Summer</i>	0.32 (0.21)	0.31 (0.21)	0.32 (0.21)	0.01 (0.20)
<i>developing</i>	-1.82*** (0.35)	-1.90*** (0.35)	-1.78*** (0.34)	-3.65*** (0.32)
<i>summer</i> × <i>developing</i>	2.06*** (0.55)	2.05*** (0.55)	2.02*** (0.55)	1.83*** (0.52)
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
N	5077	5077	4890	4890
Adj R ²	0.59	0.57	0.63	0.59

According to the robustness test, this study found that the promotion effect of Olympics on FDI is significantly different between developing countries and developed countries. In view of this, a new variable, *summer*×*developing*, is introduced as the interaction item between *Summer* and *Developing*, in order to explore whether a country's economic development level will have an impact on the significance of the "Olympic Effect". As shown in Table 4, the regression coefficient of *summer*×*developing* is 2.05, significantly greater than 0, and it is significant at the level of 1%. Since *developing*=1 represents developing countries, the results show that the Olympic effect in developing countries is more significant than in developed countries.

Considering that the developed countries have a higher degree of openness and stronger economic strength than the developing countries, this paper argues that the Olympic effect weakens with the when a country's comprehensive strength improves. This view is in line with the actual situation, because countries that have reached a high level of openness do not need to hold large-scale

competitions to raise their international attention. In addition, the investment in the later stage of infrastructure construction has little impact on the original scale of infrastructure construction. Next, this paper will investigate developing countries and developed countries respectively to further verify the hypothesis.

5.2 The Influence Channel of Developing Countries: Sending Policy Signals

(1) International signaling mechanism

Through the above analysis, it is found that the result of "Olympic effect" in developing countries seems to be more significant and steady. The introduction of the new virtual variable *candidacy*, *candidacy*=1 represents the country that bid for the Summer Olympics (which may not be the ultimate host country), *candidacy*=0 represents the country that did not bid for it. First, the regression analysis is carried out for all countries under the fixed annual effect. The results show that *candidacy* is not significant, which is contrary to previous scholars' conclusions about the impact of Olympics on exports. Considering the significant difference between the developing countries and the developed countries in the regression results, this paper makes regression for the two types of countries, and the results are shown in Table 7.

During the differentiated investigation of developing countries and developed countries, the results of the regression were also unexpected. As shown in the last two columns of Table 7, for developed countries, the regression coefficient of *candidacy* is not only significant, but also far less than zero, which indicates that the declaration of the Olympic Games not only does not promote the outward foreign direct investment of developed countries, but also has certain inhibition. For developing countries, the regression coefficient of *candidacy* is significant and greater than zero. The results show that once developing countries bid for the Olympics, their outward foreign direct investment will increase significantly.

Table 7. Heterogeneity Test of the Promotion Effect of Olympic Declaration on OFDI

	(1) All countries	(2) Developed countries	(3) Developing countries
<i>candidacy</i>	0.18 (0.15)	-0.58*** (0.14)	1.13*** (0.27)
Controls	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	5507	1235	3405
Adj R ²	0.42	0.65	0.63

5.3 The Channels of Influence of Developed Countries-Enhancing Domestic Economic Fundamentals

The differentiated investigation between developing countries and developed countries shows that developed countries do not realize the Olympic effect by sending policy signals. So what is the specific mechanism? According to previous research, the views on the impact of hosting the Olympics on trade are mainly to send policy signals and boost domestic economic fundamentals. After denying the possibility of the former, this paper will verify whether the latter may become the approach for developed countries to realize the Olympic effect.

(1) The investigation of the unemployment rate

Firstly, the impact of hosting the Olympics on the unemployment rate in developed countries is studied: for developed countries, the original explained variable is replaced by *unemployment_{it}*, which is the unemployment rate level in country *i* at time *t*, and the explanatory variable is consistent with the benchmark regression. Table 8 shows the regression results under both the unfixed annual effect and the fixed annual effect. The influence of standard trade factors is significant and reasonable,

which indicates that the established model is reliable. This study found that the impact of hosting the Olympics on the unemployment rate was significant at least at the level of 10%, and significantly less than zero, indicating that hosting the Olympics would reduce the unemployment rate and improve the domestic employment situation for developed countries. As the foundation of people's livelihood, employment is related to economic development and social harmony and stability. It has always been a major issue of great concern to the government and an important measure of a country's economic development. The decline in the unemployment rate proves from the perspective of employment that the transmission mechanism of the Olympic effect in developed countries is to promote outward foreign direct investment by enhancing domestic economic fundamentals.

(2) The investigation on the GDP of the tertiary industry

For the developed countries, the original explained variable is replaced by *servicesector_{it}*, which is the GDP level of the tertiary industry of country *i* at time *t*, and the explanatory variable is consistent with the benchmark regression. The regression results in Table 8 show that the effects of standard trade factors are significant and reasonable, indicating that the establishment of the model and the selection of variables are relatively appropriate. Focusing on the regression coefficients of the core variables, the paper finds that the results are significant and greater than zero, indicating that hosting the Olympic Games will boost the development of tertiary industry in developed countries. It also explains the transmission mechanism of the Olympic effect in developed countries from the perspective of industry conjunction theory.

Table 8. Impact of Olympic Games on Unemployment Rate in Developed Countries

Variable	(1) <i>unemployment</i>	(2) <i>unemployment</i>	(3) <i>servicesector</i>	(4) <i>servicesector</i>
<i>Host</i>	-2.27*** (0.45)	-1.29*** (0.19)	0.76*** (0.26)	0.31** (0.03)
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
N	1235	1235	1235	1235
Adj R ²	0.61	0.59	0.49	0.42

6. Conclusion

This paper explores the relationship between hosting the Olympics and promoting outward foreign direct investment through empirical analysis, and further points out the realization mechanism of the Olympic effect in the mechanism analysis. For economists, the motivation for hosting a big event like the Olympics seems elusive, because net economic benefits are usually meager or even negative. However, it is not only unreasonable but also difficult to verify that the motive of the event is not economic. Nonetheless, in practical observation and historical experience, countries have launched fierce competition for the right to host such events. What may be the reason behind this? This paper puts forward a possible explanation: the countries hosting the Olympics enjoy substantial permanent growth in trade, which is the Olympic effect. Similarly, the realization of this effect can also be extended to the promotion of other aspects of cultural soft power. With the increasing attention paid to international cultural soft power, this conclusion has guiding significance and reference value for international cultural dissemination and cultural soft power output, and provides a way for policy makers to obtain economic benefits in the long run.

In the benchmark regression part of the empirical analysis, the paper proves that hosting the Olympics has a significant and steady promoting effect on the country's outward foreign direct investment. However, this effect cannot prove the direct and inevitable causal relationship between the two. Therefore, this paper wants to explore the transmission mechanism behind it. According to

the latest research, the transmission mechanism of the Olympic effect is to increase the openness of the country by sending policy signals. However, that study did not make a distinction between developed and developing countries, and admitted that the existing model “cannot easily explain the behavior of countries that bid for large-scale sports events many times, why open economies bid for large-scale sports events, and why countries spend huge amounts of money to bid for them”. In this paper, the model building and variable selection are adjusted, and the sample scope is expanded. The results obtained to a certain extent negate the views put forward in the mechanism part of the existing research. Through further heterogeneity analysis, it is found that there may be different transmission mechanisms between developed and developing countries. The proposal of this view not only passed a large number of robustness tests and mechanism analysis, but also answered the unsolved problems in the existing research, which are the reasons why open economies bid for large-scale events and spend huge amounts of money on bidding. Considering the differences between the developed countries and the developing countries, which is the difference in the degree of openness and the difference in the level of economic development, the marginal decline law of "Olympic effect" is proposed. According to the law, with the expansion of a country's comprehensive strength, the promotion effect of the Olympic effect on its trade will be weakened. Based on the Olympic effect, this paper can further speculate that the promotion of national soft power can promote outward foreign direct investment, especially in developing countries.

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