Maennig, Wolfgang; Richter, Felix

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Universität Hamburg

WOLFGANG MAENNIG / FELIX RICHTER

THE OLYMPIC EFFECT: A REPLY

Urban
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HAMBURG CONTEMPORARY | ECONOMIC DISCUSSIONS

Wolfgang Maennig
University of Hamburg
Faculty Economics and Social Science
Chair for Economic Policy
Von-Melle-Park 5
D-20146 Hamburg | Germany
Tel +49 40 42838 - 4622
Fax +49 40 42838 - 6251
wolfgang.maennig@wiso.uni-hamburg.de

Felix Richter
University of Hamburg
Faculty Economics and Social Science
Chair for Economic Policy
Von-Melle-Park 5
D-20146 Hamburg | Germany
Tel +49 40 42838 - 4628
Fax +49 40 42838 - 6251
Felix.richter@wiso.uni-hamburg.de

Wolfgang Maennig & Felix Richter

The Olympic Effect: A Reply

Abstract: Rose & Spiegel (2011) find that Olympic Games host countries experience significant positive and lasting effects on exports. They interpret their results as an indication that countries use the hosting of such an event as a signal of their (new) openness and competitiveness. We challenge these empirical findings on the grounds that the comparison of structurally different and non-matching groups might suffer from a selection bias. We demonstrate that with an appropriately applied matching and treatment methodology, the significant Olympic export effect disappears.

Keywords: export, Olympic Games, international trade, treatment

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Rose & Spiegel[1] (2011) (RS) find that Olympic Games host countries experience significant positive and lasting effects on exports. They interpret their results as an indication that countries use the hosting of such an event as a signal of their (new) openness and competitiveness.

We challenge the empirical findings of RS because they compare Olympic nations such as the US, Japan, Germany, Canada, Italy, Spain, and Australia, which are countries that have been among the leading export nations for centuries, to all other nations. This comparison of structurally different and non-matching groups might suffer from a selection bias. We demonstrate that with an appropriately applied matching and treatment methodology, the significant Olympic export effect disappears.

To illustrate the structural differences between the subsamples, Figure 1 displays indices (1950 = 100) of the logarithms of real exports. The solid line depicts the average exports of the summer Olympics host countries, which clearly outperforms the dashed line depicting the average exports of the non-hosts.[2] The dotted

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[1] We thank Andrew K. Rose for providing the data as well as the STATA do-file for the base case regressions.

[2] As in RS, we focus our analysis on the summer Olympic Games.

line shows the average exports of the OECD member states of 2006 excluding the Olympic hosts. The export development of the founding members of the OECD (1961) does not significantly differ.[3]

Fig. 1   Indexed Real Log Exports.
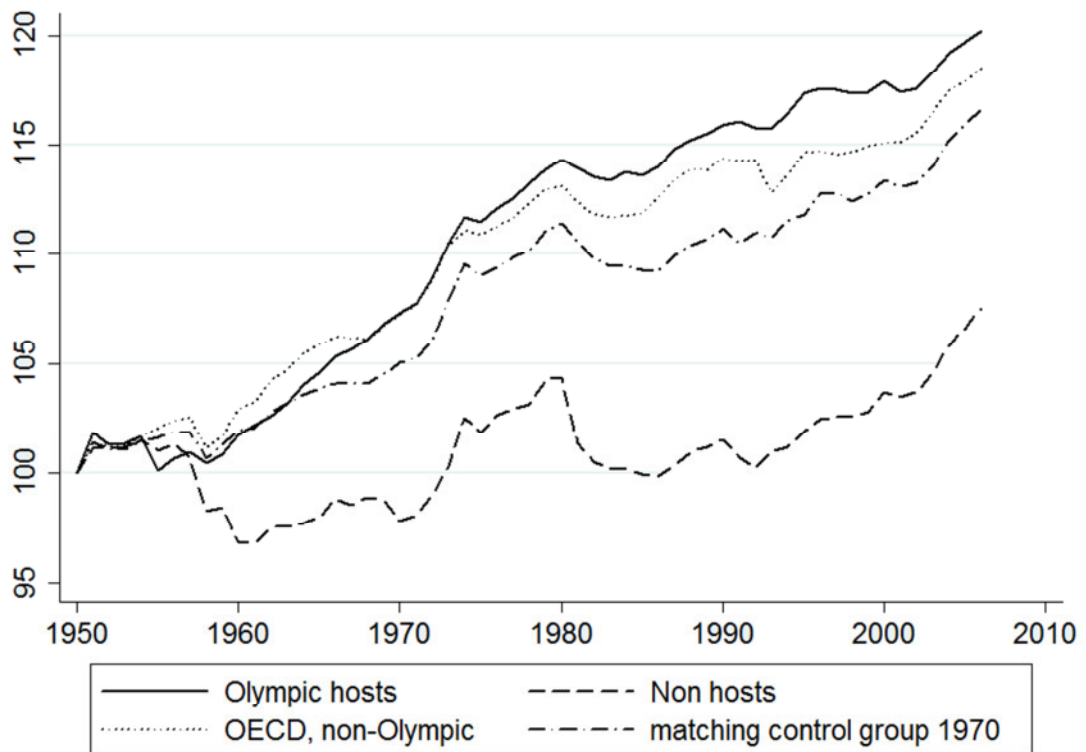
Because there may be non-OECD countries that are structurally similar to Olympic hosts (and because some OECD members may not be structurally similar to Olympic hosts), we estimate propensity scores (ROSENBAUM & RUBIN, 1983), i.e. the probability of being part of the treatment group given a set of covariates. We use these estimations to systematically discriminate between summer Olympic Games host countries ("treatment group") and non-host countries ("control group"), which are otherwise structurally similar. The covariates included in the propensity score estimation should affect both the outcome variable (exports) and participation in the treatment (Olympic hosts) and should either be measured before the treatment or be time-invariant (CALIENDO & KOPEINIG, 2008, p.

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[3] Details are available from the authors upon request.

38). Additionally, the chosen covariates should not be *too good*; matching would not be possible if they perfectly predicted the assignment into the treatment or the control group (HECKMANN et al., 1997, p. 637). We aggregate the RS data to obtain a single export observation for each country *i* and year *t*. We use the logs of output and population of the exporting country as covariates to fulfill the balancing property and impose the common support condition of BECKER & ICHINO (2002, p. 2 & p. 9).[4]

We first estimate propensity scores for 1950, which is the first year of the RS sample range from 1950 to 2006 and is long before the first Olympic Games included in the RS investigation (Helsinki 1952). Thus, no treatment effects should be incorporated. In the 1950 dataset, values for four Olympic hosts are missing (USSR, Germany, Korea, and Greece), and the number of non-host countries is restricted to 64 territories. Twenty countries fulfill our common support condition, including eight Olympic host countries.[5] We repeat the procedure with the reference year 1970, for which data for all hosts except for the former Soviet Union (Olympic Games in Moscow, 1980) are available. The non-host group comprises 106 countries. The common support condition is now fulfilled by 34 countries, including all of the 11 available host countries.[6]

In addition to restricting our analysis to a subsample of matching countries, we copy the investigation strategy of RS by employing an augmented version of the gravity model. We regress the logs of distance and output, a further set of covariates, and an Olympic effect variable on the logarithms of exports of the country.

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[4] RS also apply a matching strategy to evaluate the robustness of their results; however, their STATA log file indicates that their covariates are not balanced.

[5] Hosts on the Common Support, t=1950: Australia, Canada, Finland, Italy, Japan, Mexico, Spain, and the United States. Non-hosts on the Common Support, t=1950: Austria, Brazil, Denmark, France, India, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and Venezuela. | Additional hosts on the Common Support, t=1970: Germany, Greece, and Korea. | Additional non-hosts on the Common Support, t=1970: Argentina, Chile, Colombia, Hungary, Indonesia, Kuwait, Philippines, Poland, Portugal, Saudi Arabia, and Turkey.

[6] The common support region is [0.098; 0.948] for the 1950 subsample and [0.076; 0.954] for the 1970 subsample.

The covariates include the log of the populations of both countries and a set of dummy variables that control among other things for common borders, common language, regional trade agreements, and common currency. The Olympic effect variable is a dummy variable with a value of one for the exporting country since the year it hosted the Olympic Games. For the sensitivity analysis, we follow RS by alternatively estimating different combinations of year, dyadic and country-specific fixed effects, and country-specific linear time trends.

Tab. 1 Olympic Effect, Diverging Control Groups, and Methods

Specification:	a	b	c	d	e	f	g
1. ROSE SPIEGEL	0.33**	0.24**	0.30**	0.19**	0.16**	0.34**	0.35**
(2011)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)
2. Common Support	-0.08*	0.03	0.02	0.07	-0.02	-0.07*	0.02
t = 1950	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
3. Common Support	0.00	-0.03	0.00	0.09*	0.03	0.02	0.01
t = 1970	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
4. OECD 2006	-0.03	-0.08	-0.05	0.06	-0.04	0.00	-0.06
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Year Effects	X	X	X	X	X	X	
Dyadic Fixed Effects		X					
Exporter Fixed Effects			X				X
Importer Fixed Effects			X		X		
Exporter*Time Fixed Effects				X	X		
Importer*Time Fixed Effects						X	X

Notes: Significance: * (**) at 0.05 (0.01). Robust standard errors are in parentheses.

Table 1 reports the regression results for the Olympic effect coefficient when we restrict the RS method to the countries that fulfill the common support condition in 1950 (row #2) and 1970 (row #3). For ease of comparison, row #1 displays the RS results, which we were able to replicate. With the single exception of the common support (CS) identification on the basis of $CS_t = 1970$ and specification (d) (which, following the RS investigation path, includes year effects and interac-

tive "Exporter*Time" Fixed Effects), no significant positive "Olympic" effects are identifiable. On the contrary, with CS_t = 1950 and the RS specifications (a) and (f), significant negative effects can be found.

For readers who mistrust complex data selection methods such as the matching procedure, we alternatively compare the Olympic OECD countries with the non-Olympic OECD countries, which can be reasonably assumed to be structurally alike. Again, no significant positive effects on exports are found (row #4). Overall, when controlling for structural (dis)similarities, there is hardly any evidence of a significant positive effect on exports after hosting the Olympic Games.

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