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The Effects of Hosting Mega Sporting Events on Local Stock Markets and Sustainable Growth

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Abstract: We examine the economic effects of the Summer and Winter Olympic Games and the FIFA World Cup on the economies of host countries. We found that in the short run, hosting the Olympic Games has a significant positive announcement effect on the host country's equity market. Our results also revealed a positive effect on the stock market in non-G7 countries hosting a mega sporting event and an insignificant effect in G7 countries hosting such events, indicating that hosting a mega sporting event can provide additional momentum for developing or emerging economies. We did find, however, that while the countries hosting the Summer Olympic Games initially experienced significant positive GDP growth, the effect rapidly diminished after the event. Our results suggest that hosting a mega sporting event such as the Summer Olympic Games is most likely to result in a short-term positive economic momentum, however it hinders sustainable growth for the host countries' economies.

Keywords: Olympics; mega sporting events; announcement effect; sustainable growth

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1. Introduction

Hosting mega sporting events is exorbitantly expensive. After the dramatic win by Argentina against France at the 2022 Qatar FIFA World Cup final game, concerns for enormous costs of constructing eight stadiums and their usage after the Game has arisen. The 2014 FIFA World Cup cost Brazil between USD 15 billion and USD 20 billion, while Beijing reportedly spent USD 40 billion prior to the 2008 Summer Olympics (Zimbalist [1]). Given such enormous figures in terms of costs of hosting such events, are mega sporting events worth it?

The claim is often made that hosting a mega sporting event can generate economic benefits for the host country through investment in infrastructure, an increase in consumption and enhanced consumer confidence. Although many countries compete to host mega sporting events, such as the Olympic Games and the FIFA World Cup, the benefits associated with such sponsorship remain unclear. This remains an old yet continually and heatedly debated issue. Baade and Matheson [2] examined the 1994 FIFA World Cup matches, held in nine cities across the United States, and found that several of the host cities suffered financial losses due to their involvement. They argued that there is no consistent positive and statistically significant gain associated with hosting a mega sporting event. In the same vein, Hagn and Maennig [3] state that the 1974 FIFA World Cup in Germany did not generate the expected positive employment effects in the matches' host cities. Gratton and Preuss [4] found no scientific evidence that mega sporting events have any positive economic effects. Some researchers, however, have found some positive economic effects for the host countries of mega sporting events but the magnitudes of the effect are rather small in these studies (see Sterken [5]; Tien et al. [6]). Therefore, it appears that the economic

benefits of hosting the mega sporting events are dubious for many researchers who have conducted research on the issue.

In contrast, Hotchkiss et al. [7] show that hosting the 1996 Summer Olympic Games positively affected employment across an extended area of the host counties. Rose and Spiegel [8] note that hosting the Olympic Games was likely to substantively increase the openness of the host country and that the effect on trade was caused by the activity or infrastructure associated with hosting the event. Allmers and Maennig [9] also found evidence of the positive economic effects of the FIFA World Cup held in France (1998) and Germany (2006). Brückner and Pappa [10], in their comprehensive study of the macroeconomic effects of hosting the Olympics, concluded that hosting the Olympics had significant effects on host country's economic growth.

Some researchers have found that the economic effects of mega sporting events vary with the types of mega sporting events. For example, Dick and Wang (2010) analyzed the economic effects of the Olympic Games and concluded that only the Summer Olympics were associated with a positive announcement period effect. Sterken [5] compared the effects of the Summer Olympics and the FIFA World Cup on national GDP growth rates. He found that the Summer Olympics stimulated the per capita GDP while the FIFA World Cup did not. Baade et al. [11] examined how the 2002 Winter Olympics in Salt Lake City affected the taxable sales in the host country and found that the activities produced winners in the hospitality industry, such as hotels and restaurants, although the taxable sales of general merchandisers and department stores dropped significantly.

Therefore, whether or not hosting mega sporting events produces a significant positive effect remains inconclusive and continues to be discussed. Accordingly, a better understanding of the short- and long-term effects of hosting mega sporting events would be valuable. In addition, previous studies have typically examined the effects of hosting mega sporting events using a small sample and a short-sample period. However, our study investigates the issue by expanding the set of events and the sample period in order to examine whether hosting a mega sporting event can result in sustainable growth of the host country's economy. We used a sample of eight Summer Olympics, nine Winter Olympics, and ten FIFA World Cups over thirty-four years. Thus, in contrast to earlier studies, we explore the effects experienced by the host and runner-up countries, examining both the short- and long-term effects of mega sporting events on the host countries' (G7 and non-G7) domestic equity markets and economic growth. We divided countries into wealthier G7 countries and non-G7 countries, which are more export-driven economies, as suggested by Rose and Spiegel [8].

Our study shows that hosting mega sporting events can lead to an increase in equity market returns and GDP growth, although the growth may not be sustainable. Hosting the Olympic Games has a significant positive announcement effect, while hosting the FIFA World Cup has an insignificant announcement effect in the host country's equity market. Our results also found that the positive equity market returns associated with hosting the Olympic Games is limited to the firms in non-G7 countries. The countries that host the Summer Olympics experience significant positive GDP growth, while this effect rapidly diminishes after the event without sustainable growth. Thus, the stimulation of GDP growth appears to be concentrated in the several years preceding the Summer Olympics. Although the economic benefits of hosting mega sporting events are limited, our results suggest that hosting mega sporting events such as the Summer Olympics is most likely to result in a short-term positive economic momentum while hindering sustainable growth for the host country's economy. For example, recent anecdotal evidence from the 2014 Sochi Winter Olympics has indicated that excessive investment prior to a mega sporting event could hurt and have serious adverse effects on the domestic economy after the event.

The remainder of this paper is organized as follows. In Section 2, we discuss the literature on the short- and long-term economic effects of hosting mega sporting events. In Sections 3 and 4, we describe our empirical methodology and sample construction. Section 5 presents our empirical results and in Section 6, we draw our conclusions.

2. Literature Review and Motivation

2.1. Positive Impact of Sporting Events

Brückner and Pappa [10] and Gratton and Preuss [4] have examined the effect of hosting mega sporting events on economic growth of host countries and concluded that such events have a positive effect on the host country's economic growth, while the magnitude of the effect might be rather small in some studies including Sterken [5] and Tien et al. [6].

2.1.1. Investment

Hosting the Olympics facilitate short-term gains in economic growth as a result of investment in the construction of related facilities and infrastructure. According to PricewaterhouseCoopers [12], the committees of these mega sporting events typically announce host countries 6–7 years in advance. Once the name of the host country is announced, the newly announced host country will start preparing for the event through the construction of sports facilities and infrastructure throughout the cities in the country that will host the event. During this preparation phase, construction companies and material companies generate substantial revenue through projects generated in preparation for the event. According to Brunet [13], for the 1992 Barcelona Summer Olympics, 61.5% of the overall expense for the hosting the event was spent on the new construction and expansion of roads, hotels, sports facilities, etc. For the 1996 Atlanta Summer Olympics, investment in construction companies started to rise three years prior to the Olympics. A similar trend was observed for the 2000 Sydney Summer Olympics. Song and Ranelli [14] examined an Olympic-related investment for the 2008 Beijing Summer Olympics from 2002 to 2008 and found that 46% of overall investment spending was related to the construction of sports facilities and transportation infrastructure. According to a study by Blake [15] that examined the estimated impact of the 2012 London Summer Olympics, the London Olympics added a value of GBP 500 million to the construction industry. In a more comprehensive study, Brückner and Pappa [10] examined the macroeconomic effects of bidding for the Olympic Games using panel data for 188 countries during the period 1950–2009. They concluded that economies reacted to news shocks and investment, consumption, and output significantly increased nine to seven years before the actual event in bidding countries. Furthermore, according to Brückner and Pappa [10], host countries also experienced significant increases in investment, consumption, and output five to two years before the hosting of the games.

2.1.2. Multiplier Effect

Kasimati [16] provides two ways where Olympic events can facilitate GDP growth of the host countries. According to Kasimati [16], the impact of the Olympics on economic growth can be categorized as a *direct effect* or an *indirect effect*. First, the Olympic events help attract foreign tourists into the host countries, therefore generating monetary benefits through hotels, foods, ticket sales, etc. The income that is generated through hosting foreign tourists is called the *direct effect*. This direct effect then trickles down to the people serving the related service industries in the host country and boosts the overall economic activities through increased cash flow. This is called the *indirect effect*. This cash flow through the direct and indirect effects creates a multiplier effect. Indeed, according to the PricewaterhouseCoopers [12] report, the increase in the number of tourists in the host countries is directly correlated to the increase in income from food and hotel service industries while hosting the events (event year phase).

2.2. Adverse Impact of Sporting Events

There are some researchers who have raised questions on the true benefits of hosting such mega sporting events. Baade and Matheson [2] concluded that, although it was predicted to have a positive economic impact, the actual economic impact of the Los Angeles FIFA World Cup was a negative one. Szymanski [17] compared the GDP growth rates before and after various Olympics and FIFA World Cup events and concluded that

the differences in GDP growth before and after hosting such events were statistically insignificant. Furthermore, PriceWaterhouseCoopers [12] suggested that the true size of economic impact of such mega sporting events are difficult to measure, and while most economic studies often suggest positive economic impacts, the true extent of the benefits may be different from what is predicted due to questionable assumptions often made in the studies. In addition, the effects of mega sporting events are often inflated for political reasons. Yamamura and Tsutsui [18] further argue that postponing the 2020 Tokyo Olympics not only decreased the demand for tourism in Japan but also the lowered the happiness level of employees in the tourism industry.

2.2.1. Substitution Effect

Although mega sporting events generate revenues from ticket sales and sales of other related goods, spending on a mega event also displaces spending that would have occurred otherwise as local residents purchase tickets to the event rather than spend that money on other activities in the local economy such as going to the movies or music concerts. Indeed, according to Baade [19], failure to account for this important distinction between gross and net spending may be the main reason why sports events or teams do not contribute as much to metropolitan economies as boosters claim. Therefore, failures to account for decreased spending may be attributable to the overestimation of the economic benefits of hosting mega sporting events.

2.2.2. Crowding Out Effect

Mega sporting events attract large numbers of tourists to the host country, however because of expected congestion and increased cost of travelling during the time of the sports events, mega sporting events can potentially displace other tourists during the time of the sports event. Sports fans who are going to travel to the host country could simply crowd out the travelers who are not sports fans. For example, during the South Korea and Japan FIFA World Cup in 2002, the total number of foreign visitors to South Korea during the FIFA World Cup was estimated at 460,000, a figure identical to the number of foreign visitors during the same period in the previous year (Golovnina [20]).

Likewise, evidence of the economic effects of hosting a mega sporting event remains largely inconclusive. Furthermore, prior literature has typically explored the effects of hosting mega sporting events using a small sample and a short-sample period. In contrast, we investigate the relationship between hosting of mega sport events and the economic effects by expanding the set of events and the long-term sample period. We also explore the effects experienced by the host and runner-up countries, examining both the short- and long-term effects of mega sporting events on the host countries' (G7 and non-G7) domestic equity markets and economic growth.

3. Empirical Methodology

In this section, we describe our examination of the effects of mega sporting events on the stock market. We also discuss our univariate test and multivariate analyses for analyzing the differences in the GDP growth rates of host countries and the rest of the world.

A Mega Sporting Event Effect on the Stock Market

To investigate whether hosting a mega sporting event produces a significant positive effect, we examined the abnormal stock returns following the announcement of hosting the Summer Olympics, the Winter Olympics, and the FIFA World Cup. We used two types of event study methodologies based on market models following Brown and Warner [21], De Carvalho and Pennacchi [22], and Kim and Park [23]. It is assumed that the stock market is efficient, and therefore an increase in stock price related to the hosting announcement can be measured by abnormal returns around the announcement date. To calculate abnormal returns, we determined the event window using the public announcement date of each mega sporting event. As in Becht et al. [24], we used three types of event windows.

- Window 11: one trading day before and one after the public announcement date
- Window 22: two trading days before and two after the public announcement date
- Window 55: five trading days before and five after the public announcement date

These event windows are based on the fact that host countries might release information shortly before public announcement dates, resulting in leakage to the financial markets. We used an estimation window from event date −70 to event day −6 which is consistent with the existing literature. The abnormal returns (AR_{it}) are obtained by applying a market model. First, to obtain the coefficients of α_i and β_i over the estimation period, we regressed a host country's return of stock *i* on date *t* (R_{it}) on the market capitalization weighted index returns ($R_{m,t}$) by Morgan Stanley Capital International (MSCI).

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

Second, the expected returns of a host country's return of stock *i* on date *t* ($E(R_{it})$) were calculated using the estimated $\hat{\alpha}_i$ and $\hat{\beta}_i$ from Equation (1).

$$E(R_{it}) = \hat{\alpha}_i + \hat{\beta}_i R_{mt} \quad (2)$$

Finally, the abnormal returns (AR_{it}) of a host country's stock *i* on date *t* were obtained by working out the differences between the observed returns of stock *i* on day t and the expected returns.

$$AR_{it} = R_{it} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{mt}\right) \quad (3)$$

To compute the cumulative abnormal returns (CARs), we calculated the abnormal returns across the 3 days, 5 days, and 11 days around the public announcement date (see Becht et al. [24]). For the robustness tests, following the procedure in De Carvalho and Pennacchi [22] and Kim and Park [23]), we estimated the following model specified in Equation (4). This model is a market model based on the market capitalization weighted index returns by MSCI, and it takes advantage of the panel structure of the data. We used a fixed effects method and then mitigated the potential endogeneity problem of the difference-in-means test caused by omitted variables.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \lambda W_{it} + \delta C_i + \gamma Y_t + \varepsilon_{it} \quad (4)$$

where R_{it} is a host country's return of stock *i* on date *t*, R_{mt} is a market capitalization weighted index return by MSCI and W_{it} is a dummy variable indicating the dates of the event window for stock *i*. C_i and Y_t are country and year fixed effects, respectively. Our tests considered three different event windows (window 11, window 22 and window 55) following previous studies. We estimated the market model parameters over the period from 70 trading days before the public announcement date. A positive value for λ, the coefficient on W_{it}, indicates positive abnormal returns generated by hosting a mega sporting event.

4. Data and Sample Description

4.1. Data

We obtained a list of events from the International Olympic Committee website and various newspaper articles drawn from the *New York Times*, *Wall Street Journal*, and the *London Financial Times.* The announcement days for the identities of host countries were provided by a review of *Factiva* news articles and a web search focusing on Olympic Games hosting decisions. A host country's total expense and GDP were obtained from the international financial statistics (IFSs) provided by the International Monetary Fund database and Economic Research Service of the U.S. Department of Agriculture. We used the data to derive the event expense to GDP and then used 11 different industry indices from Datastream to estimate the industrial differences.

4.2. Sample Description

Our sample comprises 27 mega sporting events, including those held from 1988 to 2010 and those that were held from 2014 to 2022. We used the data for the Olympic Games and the FIFA World Cup. To test the effect of hosting mega sporting events on stock market performance, we used 26 mega sporting events (eight Summer Olympics, eight Winter Olympics, and ten FIFA World Cups), but excluded the events held on 16 October 1986, because France won the 1992 Winter Olympics bid and lost the 1992 Summer Olympics bid on this same date. In Table 1, we provide the list of mega sporting events with event year, host country, announcement data, runner-up countries, and stock market index.

Table 1. Sample of mega sport events (Summer Olympics, Winter Olympics, and FIFA World Cup).

Event Year	Host Country	Announcement Date	Runner-up Countries	Stock Market Index
		Summer Olympics (8 events)		
1988	South Korea	1981-09-30	Japan	KOSPI
1992	Spain	1986-10-16	France, Yugoslavia, Australia, UK, Netherlands	Madrid SE General
1996	USA	1990-09-18	Greece, Canada, Australia, UK, Yugoslavia	NYSE
2000	Australia	1993-09-23	China, UK, Germany, Turkey	ASX/S&P All Ordinaries
2004	Greece	1997-09-05	Italy, South Africa, Sweden, Argentina	ATHEX Composite Index
2008	China	2001-07-13	Canada, France, Turkey, Japan	SSE Composite SHARE
2012	UK	2005-07-06	Spain, USA, France, Russia	FTSE ALL
2016	Brazil	2009-10-02	Spain, Japan, USA	BRAZIL BOVESPA
		Winter Olympics (9 events)		
1988	Canada	1981-09-30	Sweden, Italy	S&P/TSE Total Index
1992	France	1986-10-16	Bulgaria, Sweden, Norway, USA, Germany	SBF 250
1994	Norway	1988-09-15	Sweden, USA, Bulgaria	OSLO SE
1998	Japan	1991-06-15	USA, Sweden, Spain, Italy	TOPIX General
2002	USA	1995-06-16	Sweden, Switzerland, Canada	NYSE
2006	Italy	1999-06-19	Switzerland	Milan COMIT General
2010	Canada	2003-07-02	South Korea, Austria	S&P/TSE Composite
2014	Russia	2007-07-04	South Korea, Austria	Russia RTS Index
2018	South Korea	2011-07-06	Germany, France	KOSPI
		FIFA World Cup (10 events)		
1990	Italy	1984-05-19	Soviet Union	Milan COMIT General
1994	USA	1988-07-04	Morocco, Brazil	NYSE
1998	France	1992-07-01	Morocco, Switzerland	SBF 250
2002	South Korea	1996-05-31	Mexico	KOSPI
2002	Japan	1996-05-31	Mexico	TOPIX
2006	Germany	2000-07-07	South Africa, England, Morocco, Brazil	DAX 30
2010	South Africa	2004-05-15	Morocco, Egypt	FTSE/JSE
2014	Brazil	2007-10-30	None	Brazil BOVESPA
2018	Russia	2010-12-02	Portugal, Spain, Belgium, Netherlands	Russia RTS Index
2022	Qatar	2010-12-02	USA, South Korea, Japan, Australia	MSCI Qatar

This table breaks down the sample by the mega sport events and reports event year, host country, announcement date, runner-up countries, and stock market index used in the study. Our sample includes the Summer Olympics, Winter Olympics, and FIFA World Cup.

5. Empirical Results

5.1. Short-Term Effects of Mega Sporting Events

To assess the short-term effects of mega sporting events on a host country's economy, we estimated the announcement period abnormal returns to the market index returns using the Morgan Stanley Capital Index and the methodology of Brown and Warner (1985). MSCI ACWI ex-U.S. is a market-capitalization weighted index maintained by Morgan

Stanley Capital Index (MSCI), designed to provide a broad measure of stock performance throughout the world, with the exception of USA-based companies. In Table 2, we show the announcement period returns from three different estimation windows for the host countries. Following Brown and Warner [21], De Carvalho and Pennacchi [22], Kim and Park [23], we calculated cumulative abnormal returns (CARs) and λ to estimate the announcement period abnormal returns in all 26 events in our sample (panel A) as well as for each separate event type: Summer Olympics (panel B), Winter Olympics (panel C) and the FIFA World Cup (panel D).

Table 2. Announcement effect of mega sporting events on local stock markets.

Window	CAR (%)	t-Stat	λ (%)	t-Stat
		All Events (27 events)		
[−1, +1]	0.969 ***	2.95	0.285 ***	2.88
[−2, +2]	1.282 ***	2.98	0.241 ***	2.70
[−5, +5]	1.226 *	1.84	0.107 *	1.70

Note: Statistical significance at the 1 and 10 percent levels is indicated by *** and *, respectively.

The first column in the table specifies the event windows, window 11, window 22, and window 55, as defined in Section 2 of this paper. The second column shows the percentage of CARs over the event windows. The third and fifth columns provide the t statistics. The fourth column reports the value of λ which is a value coefficient estimated in Equation (4). Note that a positive λ value indicates a positive abnormal return generated by hosting a mega sporting event.

The overall results reported in Table 2 show that hosting mega sporting events have broadly positive effects on host country's stock performances. What could account for such positive effect? Increased investments in construction and transportation infrastructure-related companies may be one reason for such positive CARs and λ. Indeed, according to Brunet [13] and Song and Ranelli [14], hosting mega sporting events increase investment spending related to new construction and the expansion of roads, hotels, and sporting facilities.

What is more interesting is that, looking at the results for each type of event in Table 3 (panels A, B, and C) over the day −1 to day +1 announcement window, the mean excess returns for the Summer Olympics are twice as large as those for the Winter Olympics while the announcement period returns for the FIFA World Cup are statistically insignificant. This suggests that the significant results of total mega sporting events could be mostly driven by the Summer Olympics. Kim et al. [25], Brunet [13], and Humphreys and Plummer [26] document the extensive job creation resulting from the Summer Olympics. The number of athletes is another way of comparing the effects of the Summer and Winter Olympics. Over the last six events, the Summer Olympics has averaged 10,000 athletes compared with 2100 for the Winter Olympics and 600 for the FIFA World Cup. This is consistent with the findings from Dick and Wang [27] and Vierhaus [28] that stress the importance of Summer Olympics in boosting local economies.

In Table 4, we compare the announcement period returns of G7 and non-G7 countries. Our findings show that a hosting announcement in non-G7 countries has a significant positive effect on the host country's stock market performance, but the same is not true for G7 countries. G7 countries can be characterized as developed countries with relatively large equity markets and economies and well-established legal and political infrastructure. Non-G7 countries tend to be developing nations with relatively small equity markets and economies and an immature legal and political infrastructure. Thus, the potential revenue for mega sporting events may have a greater marginal effect on the equity markets in non-G7 countries, especially those experiencing rapid development. Dick and Wang [27] and Mohamed et al. [29] also argue that the positive effect is greater in emerging economies rather than larger economies.

Table 3. Announcement effect of mega sporting events on the stock market by type of events.

Window	CAR (%)	t-Stat	λ (%)	t-Stat
Panel A: Summer Olympics (8 events)				
[−1, +1]	2.481 ***	4.07	0.499 ***	2.66
[−2, +2]	1.900 ***	2.39	0.275 *	1.62
[−5, +5]	2.468 **	2.00	0.169	1.42
Panel B: Winter Olympics (9 events)				
[−1, +1]	0.882 *	1.70	0.261 *	1.68
[−2, +2]	1.814 ***	2.66	0.368 ***	2.65
[−5, +5]	1.638	1.56	0.153	1.56
Panel C: FIFA World Cup (10 events)				
[−1, +1]	−0.170	−0.30	0.127	0.75
[−2, +2]	0.362	0.49	0.105	0.69
[−5, +5]	−0.097	−0.09	0.016	0.15

Note: Statistical significance at the 1, 5, and 10 percent levels is indicated by ***, **, and *, respectively.

Table 4. Announcement effect of mega sport events on stock market, by type of country.

Window	CAR (%)	t-Stat	λ (%)	t-Stat
Panel A: All Events of G7 Countries (12 events)				
[−1, +1]	−0.181	−0.49	0.009	0.09
[−2, +2]	0.136	0.28	0.072	0.72
[−5, +5]	0.127	0.17	0.041	0.59
Summer Olympics of G7 Countries (2 events)				
[−1, +1]	0.826	1.19	0.235	1.14
[−2, +2]	1.147	1.26	0.185	1.00
[−5, +5]	1.765	1.25	0.132	0.96
Winter Olympics of G7 Countries (5 events)				
[−1, +1]	0.197	1.19	0.071	0.43
[−2, +2]	0.930	1.37	0.146	1.57
[−5, +5]	−0.265	−0.25	−0.011	−0.11
FIFA World Cup of G7 Countries (5 events)				
[−1, +1]	−0.961	−1.46	−0.129	−0.67
[−2, +2]	−1.062	−1.23	−0.120	−0.70
[−5, +5]	−0.136	−0.10	0.062	0.50
Panel B: All Events of Non-G7 Countries (14 events)				
[−1, +1]	1.955 ***	3.74	0.513 ***	3.29
[−2, +2]	2.264 ***	3.31	0.399 **	2.84
[−5, +5]	2.168 **	2.05	0.172 *	1.73
Summer Olympics of Non-G7 Countries (6 events)				
[−1, +1]	3.032 ***	3.89	0.615 ***	2.58
[−2, +2]	2.151 **	2.12	0.330	1.53
[−5, +5]	2.703 *	1.71	0.196	1.29
Winter Olympics of Non-G7 Countries (3 events)				
[−1, +1]	2.024 *	1.87	0.537 *	1.73
[−2, +2]	3.287 **	2.31	0.580 **	2.08
[−5, +5]	4.810 **	2.18	0.439 **	2.23
FIFA World Cup of Non-G7 Countries (5 events)				
[−1, +1]	0.622	0.68	0.390	1.42
[−2, +2]	1.787	1.48	0.390	1.57
[−5, +5]	−0.058	−0.03	−0.020	−0.11

Note: Statistical significance at the 1, 5, and 10 percent levels is indicated by ***, **, and *, respectively.

Hosting a mega sporting event requires the construction of extensive physical infrastructure including stadiums, competition and training facilities, and lodging for athletes and staff members (Veraros et al. [30]). To further examine the relationship between hosting such events and the returns in the construction and materials industries, we estimate the following model

$$CAR_i = \alpha + \beta_1 SUMDUM_i + \beta_2 WINDUM_i + \beta_3 VOT_i + \beta_4 BM_i + \beta_5 \ln(MKT_i/GDP_i) + \beta_6 \ln(MV_i) + \beta_7 USDUM + \varepsilon_i \quad (5)$$

where

CAR = the cumulative abnormal return over the day −5 to day +5 window
SUMDUM = Summer Olympics dummy variable
WINDUM = Winter Olympics dummy variable
VOT = the vote difference between the host country and runner-up country
BM = the construction and materials firms' book to market ratio
ln *(GDP)* = log of the country's GDP on the announcement day
ln *(MKT)* = log of the country's equity market capitalization on the announcement day
ln *(MV)* = the market capitalization of cons/mat company in the event month
US_DUM = 1 if the company is from USA.

We used the explanatory and dependent variables introduced in previous studies. For example, Martin and Serra [31] report a correlation between the winning vote margin and the CARs at the time of the announcement. Hence, we include a voting difference between the host country and the runner-up as an independent variable capturing global competitiveness. We recognize however that the documented corruption in global voting linked to these events might compromise the integrity of this variable. Dick and Wang [27] further show that the effect of event hosting on a country's stock market is closely linked with the size of the host country's economy. We control for the size of a national economy and the country's GDP, the size of its financial markets, its equity market capitalization, and its overall level of economic development with a dummy variable for the USA. The firm's market to book ratio can also influence CAR, as it reflects the growth potential of the firms and suggests its ability to react to the opportunities provided by mega sporting events. Finally, we include a set of binary independent variables that allow us to distinguish between the Summer Olympics, the Winter Olympics, and the FIFA World Cup. The results of estimation of Equation (5) are provided in Table 5.

In Table 5, our results show that the effect of the Summer Olympics is consistently positive and significant across all five model specifications. We also found that the effect of the Winter Olympics on the construction and materials industries was only half as large as that of the Summer Olympics at the most. This is similar to our earlier findings in Table 4.

Based on our analysis of the short-term effect of mega sporting events on the host country's domestic equity market, we make the following arguments. First, not all mega sporting events affect the market equally. Hosting the Summer Olympics results in the largest gain while gains from hosting the FIFA World Cup demonstrated insignificant results. Second, hosting announcements for the Olympics acts as a positive signal in non-G7 countries' stock markets—a favorable reaction driven by the anticipated gains to the construction and materials industries. However, such a positive effect is limited only to the construction and materials industries. Other sectors fail to experience comparable positive abnormal returns at the time of announcement. We separately examined the energy, basic materials, industrial goods and services, consumer goods, health care, consumer services, telecom, public utilities, financial, and technology sectors and did not find statistically significant abnormal returns for these industries.

Table 5. Multivariate analysis of construction and materials industry excess returns.

Dependent Variable	**Cumulative Abnormal Return**				
Equations	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Intercept	0.035 (0.453)	0.142 (0.101)	0.407* (0.094)	0.485** (0.048)	0.384 (0.134)
SUMDUM	0.041 *** (0.000)	0.0402 *** (0.000)	0.042 *** (0.000)	0.058 *** (0.000)	0.061 *** (0.000)
WINDUM	0.013 (0.191)	0.014 (0.141)	0.0189 * (0.069)	0.022 ** (0.033)	0.022 ** (0.030)
VOT	−0.005 * (0.092)	−0.055 * (0.053)	−0.083 ** (0.016)	−0.053 (0.157)	−0.024 (0.577)
B/M	−0.025 ** (0.048)	−0.026 ** (0.032)	−0.026 ** (0.028)	−0.013 (0.332)	−0.014 (0.322)
ln(GDP)	−0.003 (0.541)				
ln(MKT)		−0.005 (0.280)			
ln(MKT/GDP)			−0.020 * (0.099)	−0.026 ** (0.030)	−0.021 * (0.093)
ln(MV)				0.004 ** (0.027)	0.004 ** (0.035)
USDUM					−0.019 (0.195)
Firm effects	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes
R-square	0.12	0.13	0.14	0.17	0.18
Firm Obs	163	163	163	163	163

Note: The number in parenthesis is the *p*-value. Statistical significance at the 1, 5, and 10 percent levels is indicated by ***, **, and *, respectively. The Pearson correlation coefficient between ln(GDP) and ln(MKT) is 0.915.

5.2. Results on the Long-Term Effects of Mega Sporting Events

In this section, we examine the long-term effects of hosting a mega sporting event. In panel A of Table 6, we compare the annual growth rate in GDP between host countries and the rest of the world. The rest of the world includes all of the countries available from the Economic Research Service of the U.S. Department of Agriculture. In panel B, we compare the annual growth rate in GDP between host countries and the competitors. The competitors include the runner-up countries who fail to win the bid on a specific mega event. The examination period in our analysis extends from five years prior to the event (t − 5) through four years after (t + 4). Our results show that countries that host the Summer Olympics experience higher growth rates in their GDP for three years prior to the event year compared to the rest of the world. We also observe that, for the Summer Olympics, the GDP growth rates for host countries are higher compared to the competitors for three years prior to the event year. The number of competitor countries becomes 71 with multiple biddings. Preparations for the Summer Olympics positively affect employment and trade caused by activity or infrastructure (Hotchkiss et al. [7]; Rose and Spiegel [8]). This effect, however, rapidly diminishes without sustainable growth in the subsequent years after hosting the event. Moreover, we observe insignificant differences in the GDP growth rates of the host country and the rest of the world for the Winter Olympics and the FIFA World Cup.

Table 6. Long term univariate test for comparison of GDP growth rates.

Year	Panel A. Between the Host Countries and the Rest of the World								
	Mega Sporting Event								
	Summer Olympics			Winter Olympics			FIFA World Cup		
	Diff.	*t*-Test	Wilcoxon	Diff.	*t*-Test	Wilcoxon	Diff.	*t*-Test	Wilcoxon
Announcement	1.09	0.14	0.23	−0.27	0.74	0.41	−0.10	0.93	0.68
t − 5	1.77	0.13	0.16	−1.03	0.05 **	0.05 **	−0.28	0.60	0.66
t − 4	1.14	0.28	0.24	−0.08	0.92	0.87	−2.03	0.12	0.21
t − 3	2.02	0.05 **	0.03 **	0.39	0.47	0.29	−1.33	0.25	0.05 **
t − 2	1.65	0.22	0.04 **	0.55	0.56	0.89	−0.32	0.69	0.41
t − 1	2.09	0.09 *	0.05 **	−0.79	0.24	0.22	−0.09	0.88	0.66
t	1.86	0.09*	0.06 *	−0.19	0.86	0.70	−1.26	0.28	0.22
t + 1	0.54	0.33	0.04 **	−0.30	0.74	0.39	−0.25	0.78	0.15
t + 2	0.59	0.32	0.71	−2.02	0.04 **	0.02 **	0.32	0.66	0.85
t + 3	0.82	0.20	0.11	−0.20	0.83	0.95	−0.68	0.57	0.98
t + 4	0.56	0.23	0.39	−0.42	0.48	0.25	−0.39	0.70	0.78
	Panel B. Between the Host Countries and Their Competitors								
Year	**Mega Sporting Event**								
	Summer Olympics			**Winter Olympics**			**World Cup**		
	Diff.	***t*-Test**	**Wilcoxon**	**Diff.**	***t*-Test**	**Wilcoxon**	**Diff.**	***t*-Test**	**Wilcoxon**
Announcement	1.71	0.22	0.03 **	−0.04	0.95	0.78	0.14	0.93	0.79
t − 5	2.02	0.08 *	0.07 **	−0.67	0.39	0.34	0.62	0.61	0.60
t − 4	0.58	0.36	0.30	−0.78	0.43	0.83	−1.65	0.33	0.54
t − 3	1.64	0.16	0.10 *	0.59	0.53	0.45	−0.81	0.66	0.37
t − 2	2.19	0.10 *	0.09 *	1.78	0.14	0.16	−1.31	0.41	0.26
t − 1	2.33	0.03 **	0.04 **	1.10	0.37	0.74	−0.42	0.75	0.72
t	1.33	0.22	0.27	1.01	0.44	0.61	−3.33	0.08 *	0.05 **
t + 1	0.09	0.94	1.00	0.65	0.49	0.76	2.27	0.27	0.77
t + 2	−0.22	0.83	0.56	−1.66	0.04 **	0.08 *	1.53	0.60	0.49
t + 3	0.09	0.93	0.62	−0.04	0.95	0.63	1.98	0.44	0.76
t + 4	−0.11	0.87	0.93	0.68	0.64	0.95	2.74	0.38	0.44

Note: Statistical significance at the 5 and 10 percent levels is indicated by ** and *, respectively.

In Table 7, we provide a multivariate analysis of GDP growth rates by estimating a model consistent with Barro and Sala-I-Martin [32], Barro and Lee [33], and Sterken [5]. Modifying the Sterken model to reflect a current sample period, we used the 1970 level of real GDP (log(GDP70)), growth rate of the gross real fixed capital formation as a percentage of real GDP Δ(log(GFC)), the log of the trade share of GDP log(TRA), and the inflation rate (INF) as control variables. We also controlled for the year and country fixed effects in all regressions. This initial model is presented as the base case in Table 7. We then included a number of dummy variables to capture the time effects of the event on GDP. Our dummy structure ranged from five years before a mega sporting (t − 5) event to three years after (t + 3). We estimated separate regression models for the Summer Olympics, Winter Olympics, and the FIFA World Cup.

Table 7. Multivariate analysis of mega sporting events.

	Base	Summer Olympics	Winter Olympics	FIFA World Cup	G7	Non-G7
log(GDP70)	−0.054	−0.096	−0.037	−0.029	−0.014	−0.063
	(0.401)	(0.141)	(0.576)	(0.701)	(0.845)	(0.339)
Δ(log(GFC))	0.091 ***	0.092 ***	0.091 ***	0.091 ***	0.091 ***	0.092 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(TRA)	0.700 ***	0.730 ***	0.685 ***	0.680 ***	0.662 ***	0.697 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INF	−0.002 ***	−0.002 ***	−0.003 ***	−0.002 ***	−0.002 ***	−0.002 ***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
t − 5		1.264	0.093	0.086	−0.527 **	1.537 ***
		(0.116)	(0.811)	(0.792)	(0.034)	(0.000)
t − 4		1.109	0.298	−1.555	−0.344	0.082
		(0.104)	(0.569)	(0.130)	(0.486)	(0.928)
t − 3		1.914 ***	0.159	−1.605	−0.313	0.400
		(0.001)	(0.612)	(0.207)	(0.437)	(0.719)
t − 2		2.008 **	−0.142	−0.603	−0.776 **	1.376
		(0.047)	(0.758)	(0.411)	(0.039)	(0.117)
t − 1		2.062 **	−0.723 *	−0.194	−0.780 *	1.571 *
		(0.021)	(0.057)	(0.806)	(0.073)	(0.074)
t		2.189 ***	−0.718	−1.300	−0.155	0.268
		(0.003)	(0.178)	(0.256)	(0.739)	(0.808)
t + 1		1.355 **	−0.475	0.038	−0.078	1.033
		(0.011)	(0.354)	(0.973)	(0.846)	(0.349)
t + 2		0.815	−1.696 *	0.012	−0.925	0.306
		(0.111)	(0.053)	(0.986)	(0.112)	(0.668)
t + 3		0.547	−0.499	−0.934	−1.031 **	0.190
		(0.365)	(0.495)	(0.288)	(0.014)	(0.824)
R-square	0.30	0.31	0.31	0.31	0.31	0.31
Year	1972–2008	1972–2008	1972–2008	1972–2008	1972–2008	1972–2008
Countries	35	35	35	35	35	35
Firm-year Obs	1254	1254	1254	1254	1254	1254

Note: The number in parenthesis is the *p*-value. Statistical significance at the 1, 5, and 10 percent levels is indicated by ***, **, and *, respectively.

Our results in Table 7 show that the dummy variables for t − 3, t − 2, t − 1, t, and t + 1 have statistically significant negative coefficients on the host country's annual average GDP growth rates for the Summer Olympics. Our findings indicate that the Summer Olympics positively affect the host country's growth in GDP, whereas there is no enduring economic effect once the event finishes. Thus, a stimulant to GDP growth appears to be concentrated in a three-year period preceding the Summer Olympics. Additionally, the results show that the coefficients on t − 1 and t − 2 are statistically negatively significant in G7 countries and positively significant for non-G7 countries. This implies that hosting a mega sporting event decreases the average GDP growth rates in G7 countries or increases it in the case of non-G7 countries.

6. Discussion

Our results are broadly consistent with the signaling theory proposed by Rose and Spiegel [8]. Non-G7 countries appear to use the hosting of mega sporting events as a signaling device to boost the growth of their economy. Rose and Spiegel [8] show the importance of hosting mega sporting events for signaling liberal trade policies in developing host countries. Interestingly, the non-G7 countries including China, Korea, Russia, and Qatar are mostly export-driven economies largely depending on international trade. On the other hand, given the known characteristics of G7 countries and the characteristics of non-G7

countries that are considered in our study, we can conjecture reasons why non-G7 countries are more influenced by mega sporting events.

First, it is quite intuitive that potential revenue that can be generated from construction of infrastructure and tourism is going to have greater effect on national GDP and stock market performance. This is because, all else being equal, revenue generated from construction of infrastructure and tourism is going to be a larger share of GDP for emerging economies hence having a greater marginal effect on the growth of national GDP. In addition, such an announcement may be able to provide an additional momentum effect, especially for rapidly growing developing countries. Dick and Wang [27] and Mohamed et al. [29], in their studies of the effect of mega sporting events on economic performance, show that the positive economic impacts of hosting summer Olympics is greater for emerging economies.

Second, hosting such mega sporting events could be a sign of institutional improvement. The committee that grants such events to a nation considers many factors before making decisions, including social, political, and economic institutional quality. Granting the hosting of such events demonstrates that the country already has high-quality institutions or there is evidence of improvement of these institutional qualities. It is reasonable to believe that non-G7 countries have relatively weaker institutions than G7 countries. However, hosting such events is a strong signal of past and future improvement of this institutional quality for non-G7 countries. Countless studies in economic development literature show that social, political, and economic institutional qualities are critical determinants of economic growth (Acemoglu, Johnson and Robinson [34], Alesian and Rodrik [35], and Persson and Tabellini [36]).

Given the importance of high-quality social, political, and economic institutions on economic growth, the announcement of mega sporting events, which is a signal of institutional quality improvement for non-G7 countries, would have positive effects on the stock market performance for non-G7 countries. Again, for non-G7 countries that are in a path to rapid economic growth or institutional improvement, these announcements may be able to provide an additional momentum effect.

Our paper has some limitations in sports economics and finance. First, "soft" benefits associated with hosting these events such as greater international recognition, expansion of business and social networks, and exposure to progressive business and social ideas need to be further explored in the future. These soft benefits are not captured within the current study and warrant further study. Second, deeper analysis is needed with respect to which sectors that might benefit the most from these events. There might be delays in capturing the benefits from these events due to the contract negotiations and signing that occur after the event has ended. Finally, we did not address how a country's political and legal systems might affect the economic gains from an event. That is, how does corruption distort the gains from an event. This is an exciting area to explore in the future.

7. Conclusions

To date, this line of research on the effects of hosting mega sporting events has produced mixed findings. Baade and Matheson (2004) find that several mega sporting event host cities suffer financial losses resulting from their involvement and Hagn and Maennig (2008) argue that hosting such events does not generate the expected employment effects. In contrast, Hotchkiss et al., (2003) suggest that hosting a mega sporting event positively affects employment. Therefore, a better understanding of the short- and long-term effects of hosting mega sporting events is valuable. In addition, most previous studies have examined the effects of hosting a mega sporting event using a small sample and short-sample period, whereas our study investigates the issue by expanding the set of events and the sample period.

We show that hosting the Summer and Winter Olympics has a significant positive short-term effect on the host country's equity market. However, a significant positive effect on the stock market is only demonstrated in non-G7 countries, with an insignificant effect shown on the equity market in G7 countries. The results indicate that while hosting the

Olympic Games can provide additional momentum for developing or emerging economies, it does much less for developed countries. We also find that countries that host the Summer Olympics experience significant positive GDP growth. This effect, however, rapidly diminishes after the event without sustainable growth. Thus, GDP growth stimulation appears to be concentrated in the several years preceding the Summer Olympics.

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References

1. Zimbalist, A. *Circus Maximus: The Economic Gamble behind Hosting the Olympics and the World Cup*; Brookings Institution Press: Washington, DC, USA, 2015.
2. Baade, R.A.; Matheson, V.A. The Quest for the Cup: Assessing the Economic Impact of the World Cup. *Reg. Stud.* **2004**, *38*, 343–354. [CrossRef]
3. Hagn, F.; Maennig, W. Employment effects of the Football World Cup 1974 in Germany. *Labour Econ.* **2008**, *15*, 1062–1075. [CrossRef]
4. Gratton, C.; Preuss, H. Maximizing Olympic Impacts by Building Up Legacies. *Int. J. Hist. Sport* **2008**, *25*, 1922–1938. [CrossRef]
5. Sterken, E. Growth Impact of Major Sporting Events. *Eur. Sport Manag. Q.* **2006**, *6*, 375–389. [CrossRef]
6. Tien, C.; Lo, H.-C.; Lin, H.-W. The economic benefits of mega events: A myth or a reality? A longitudinal study on the Olympic games. *J. Sport Manag.* **2011**, *25*, 11–23. [CrossRef]
7. Hotchkiss, J.L.; Moore, R.E.; Zobay, S.M. Impact of the 1996 Summer Olympic Games on Employment and Wages in Georgia. *South. Econ. J.* **2003**, *69*, 691–704. [CrossRef]
8. Rose, A.K.; Spiegel, M.M. The Olympic Effect. *Econ. J.* **2011**, *121*, 652–677. [CrossRef]
9. Allmers, S.; Maennig, W. Economic impacts of the FIFA Soccer World Cups in France 1998, Germany 2006, and outlook for South Africa 2010. *East. Econ. J.* **2009**, *35*, 500–519. [CrossRef]
10. Brückner, M.; Pappa, E. News Shocks in the Data: Olympic Games and Their Macroeconomic Effects. *J. Money Credit Bank* **2015**, *47*, 1339–1367. [CrossRef]
11. Baade, R.A.; Baumann, R.; Matheson, V.A. Slippery slope? Assessing the economic impact of the 2002 Winter Olympic Games in Salt Lake City, Utah. *Rég. Dév.* **2020**, *31*, 79–89.
12. PricewaterhouseCoopers. The economic impact of the Olympic Games. In *European Economic Outlook*; PricewaterhouseCoopers: London, UK, 2004; pp. 18–25.
13. Brunet, F. An economic analysis of the Barcelona '92 Olympic Games: Resources financing and impact. In *The Keys to Success: The Social, Sporting, Economic and Communications Impact of Barcelona*; Autonomous University of Barcelona: Barcelona, Spain, 1995; pp. 203–237.
14. Song, C.; Ranelli, E. Reading the major economic indicators to examine the impact of the Olympic Games on Beijing economy. *J. Bus. Issues* **2008**, *1*, 37–54.
15. Blake, A. *The Economic Impact of the London 2012 Olympics*; Nottingham University Business School: Nottingham, UK, 2005.
16. Kasimati, E. Economic aspects and the Summer Olympics: A review of related research. *Int. J. Tour. Res.* **2003**, *5*, 433–444. [CrossRef]
17. Szymanski, S. The Economic Impact of the World Cup. In *Football Economics and Policy*; Palgrave Macmillan: London, UK, 2010; pp. 226–235.
18. Yamamura, E.; Tsutsui, Y. The Impact of Postponing 2020 Tokyo Olympics on the Happiness of O-MO-TE-NA-SHI Workers in Tourism: A Consequence of COVID-19. *Sustainability* **2020**, *12*, 8168. [CrossRef]
19. Baade, R.A. Professional Sports as Catalysts for Metropolitan Economic Development. *J. Urban Aff.* **1996**, *18*, 1–17. [CrossRef]
20. Golovnina, M.S.; Korean Tourism Sector in Blues Despite World Cup. Forbes, 19 June 2002. Available online: https://www.forbes.com/newswire/2002/06/19/rtr636036.html (accessed on 20 June 2002).
21. Brown, S.J.; Warner, J.B. Using daily stock returns: The case of event studies. *J. Financ. Econ.* **1985**, *14*, 3–31. [CrossRef]

22. de Carvalho, A.G.; Pennacchi, G.G. Can a stock exchange improve corporate behavior? Evidence from firms' migration to premium listings in Brazil. *J. Corp. Finance* **2012**, *18*, 883–903. [CrossRef]
23. Kim, H.H.-D.; Park, K. Impact of environmental disaster movies on corporate environmental and financial performance. *Sustainability* **2021**, *13*, 559. [CrossRef]
24. Becht, M.; Franks, J.; Mayer, C.; Rossi, S. Returns to Shareholder Activism: Evidence from a Clinical Study of the Hermes UK Focus Fund. *Rev. Financ. Stud.* **2010**, *23*, 3093–3129. [CrossRef]
25. Kim, Y.; Rhee, S.; Yu, J.; Koo, K.; Hong, J. *Impact of the Seoul Olympic Games on National Development*; Korea Development Institute: Seoul, Republic of Korea, 1989; pp. 38–66.
26. Humphreys, J.; Plummer, M. *The Economic Impact on the State of Georgia of Hosting the 1996 Olympic Games*; Selig Center for Economic Growth: Atlanta, GA, USA, 1995.
27. Dick, C.D.; Wang, Q. The economic impact of the Olympic Games: Evidence from stock markets. *Appl. Econ. Lett.* **2010**, *17*, 861–864. [CrossRef]
28. Vierhaus, C. The international tourism effect of hosting the Olympic Games and the FIFA World Cup. *Tour. Econ.* **2018**, *25*, 1009–1028. [CrossRef]
29. Mohamed, S.; Oettlé, T.; Stewart, S. Mega-sporting events: The impact on host stock markets and investment prospects. *Corp. Ownersh. Control* **2015**, *12*, 222–235. [CrossRef]
30. Veraros, N.; Kasimati, E.; Dawson, P. The 2004 Olympic Games announcement and its effect on the Athens and Milan stock exchanges. *Appl. Econ. Lett.* **2004**, *11*, 749–753. [CrossRef]
31. Martin, A.M.; Serra, A.P. Market impact of international sporting and cultural events. *J. Econ. Financ.* **2011**, *35*, 382–416. [CrossRef]
32. Barro, R.; Sala-i-Martin, X. *Economic Growth*; MIT Press: Cambridge, MA, USA, 1998.
33. Barro, R.; Lee, J. Source of economic growth. *Carnegie-Rochester Conf. Ser. Public Policy* **1994**, *40*, 1–46. [CrossRef]
34. Acemoglu, D.; Johnson, S.; Robinson, J.A. The Colonial Origins of Comparative Development: An Empirical Investigation. *Am. Econ. Rev.* **2001**, *91*, 1369–1401. [CrossRef]
35. Alesina, A.; Rodrik, D. Distributive Politics and Economic Growth. *Q. J. Econ.* **1994**, *109*, 465–490. [CrossRef]
36. Persson, T.; Tabellini, G. Does centralization increase the size of government? *Eur. Econ. Rev.* **1994**, *38*, 765–773. [CrossRef]