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Zawadzki, Krystian

Gdansk University of Technology

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# THE IMPACT OF MEGA SPORTS EVENTS ON THE STOCK MARKETS

*Krystian Zawadzki*

## **Abstract**

This study attempts to estimate the impact of mega sports events organization on the stock market. For this purpose, there were selected seven sporting events taking place in the World Cup and European Football Championships and summer and winter Olympic Games. Next their impact on national equity markets represented by the major stock indices was determined. The study was conducted in two periods of research, i.e. the date of publication decision to hold an event and during the event itself.

**Key words:** *mega sport event, stock market, stock indices, Olympic Games, World Cup, European Football Championship*

## **1. INTRODUCTION**

The implications of mega sports events for the organiser's economy remain virtually unexplored in Poland. The fact that our country was entrusted with organising the 2012 European Football Championship spurred interest in the issue. In the course of preparations to the event many doubts have arisen as to the actual cost-benefit balance affecting the hosting country. An attempt at arriving at the nagging question, i.e.: „Is organisation of such a large event profitable from the economic point of view?” is hindered by the specificity of events of the kind. This specificity is due not only to the huge scale of the projects pursued, but also to the long-term impact on the organiser's economy, stretching long beyond the several-year period of preparations.

The economic impact of mega sports events can be viewed from different perspectives. The most frequently indicated factors include changes in the GDP of the hosting country or region, changes in the labour market, development or upgrading of the infrastructure, and trends in the area of the tourist flow volumes.<sup>1</sup> The channels of impact from such huge events are,

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<sup>1</sup> R. Cashmann, *The bitter-sweet awakening. The legacy of the Sydney 2000 Olympic Games*, Sydney, Walla Press, 2005; J. Wasilczuk, *Wpływ dużych wydarzeń sportowych na gospodarkę – aspekty teoretyczne* [w:] N. Daszkiewicz, J. Wasilczuk, Euro 2012. Czy mała firma na Pomorzu może zyskać?, Wydawnictwo Politechniki Gdańskiej, Gdańsk 2010, s.10-12.

however, far more numerous and include: public, political, and cultural life, information, education, sport, and psychological aspects.<sup>2</sup> The research reported in this study focused on mutual relations between mega sports events and the capital, particularly equity, markets in the organising states. Hypothetically, the reaction of the financial markets is strictly linked to the business anticipated in the countries/cities preparing for holding a mega sports event.<sup>3</sup> Since impact in this case translates to development of the event venues, it should be positive in nature. Consequently, organisation of mega sports events should trigger an increase in the stock prices and the stock market indices in the host countries.

## **2. THE EXISTING RESEARCH ON THE IMPACT OF MEGA SPORTS EVENTS ON THE FINANCIAL MARKETS OF THE HOST COUNTRIES**

Few studies in the world literature on the topic tackle the issue of the mutual dependencies between organisation of a mega sports event and the financial market in the respective country. Only several authors have dealt with the issue so far, each proposing a slightly different study concept. Browsing through the available literature it is far easier to come across attempted assessment of the effects the announced selection of the event venue had on the financial markets than the impact of the event itself whilst it was staged. Moreover, one can notice a clear distinction between analyses of single events and those of a whole group of sports events. For instance, Veraros and others analysed the impact of the announced selection of the country to host the 2004 Summer Olympic Games on the equities markets in the candidate states.<sup>4</sup> Their research focused on Greece, ultimately selected the host country, and Italy, which lost in the competition. The authors confirmed a positive impact of the selection on the Greek market, especially the construction and industrial sectors. Meanwhile, they did not observe any major impact thereof on the Milan stock exchange.

Not always, however, does the selection of the host country trigger a positive response from the financial markets. Berman and others analysed the reaction of the Australian stock exchange to the results of the competition for the country to host the Summer Olympic Games in 2000.<sup>5</sup> Their research did not lead them to identifying any obvious impact of the verdict on

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<sup>2</sup> J. Wasileczuk, K. Zawadzki, Euro 2012. Czy ten mecz można wygrać?, Cedewu, Warszawa 2011, s.18-19.

<sup>3</sup> C.D.Dick, Q. Wang, The Economic Impact of Olympic Games: Evidence of Stock Markets, Centre for European Economic Research, Discussion Paper No 08-060, s.2.

<sup>4</sup> N. Veraros, E. Kasimati, P. Dawson, (2004). The 2004 Olympic Games announcement and its effect on the Athens and Milan stock exchanges. *Applied Economics Letters*, No 11, 749-753.

<sup>5</sup> G. Berman, R. Brooks, S. Davidson, (2000). The Sydney Olympic Games announcement and Australian stock market reaction. *Applied Economics Letters*, No. 7, 781-784.

the broad market index. A marginal positive reaction was limited to selected sectors of the economy, primarily construction and services.

Martins and Serra, on the other hand, conducted a comprehensive research comprising four mega sports events.<sup>6</sup> Apart from the Summer Olympics, they included the Winter Olympic Games, and the World and European Football Championships in the sphere of their interest. When studying the financial markets of the candidate countries competing for organisation of mega sports events they found that the latter's positive effects (in the case of the winner) and negative effects (in the case of the loser) intensified, if the actual selection (or failure) of the candidate was less predictable.

The observation was confirmed by Mirman and Sharma, who assessed the reaction of the financial markets to the selection or rejection of the candidate country competing for organisation of the Summer and Winter Olympic Games held in the years 1996-2010.<sup>7</sup> Moreover, they proved a negative impact of the Winter Olympics organisation on the stock market of the organising state, while the scale of impact for the summer event was negligible.

### 3. DESCRIPTION OF THE RESEARCH CONCEPT

Planning the research we selected events of global scale, particularly:

- Summer Olympic Games (SOG),
- Winter Olympic Games (WOG),
- World Football Championships (FIFA),
- European Football Championships (EURO).

The analyses comprised seven mega sports events organised over the years 2004-2010 in eight countries of Asia, Europe, and Northern America. In each case the most recognised stock market index in the country was selected as our basis (table 1).

Table 1. The key parameters of the analysed sports events

Place and year of the event	Organiser selection date (d)	Event date (I)	Selected SM index
Summer Olympic Games			
Athens 2004	5 September 1997	13-29 August 2004	ATH
Beijing 2008	13 July 2001	8-24 August 2008	SSE

<sup>6</sup> A.M. Martins, A.P. Serra,(2007). Market impact of international sporting and cultural events, Working Papers 0720, International Association of Sports Economists, [http://www.holycross.edu/departments/economics/RePEc/spe/SerraMartins\\_MarketImpact.pdf](http://www.holycross.edu/departments/economics/RePEc/spe/SerraMartins_MarketImpact.pdf) of 10 September 2009.

<sup>7</sup> M. Mirman, and R. Sharma, (2008), Stock market reaction to Olympic Games announcement, Applied Economics Letters No 17(5): 463-466.

Winter Olympic Games			
Turin 2006	19 June 1999	10-26 February 2006	MIB
Vancouver 2010	2 July 2003	12-28 February 2010	S&P/TSX
World Football Championships			
Germany 2006	7 July 2000	9 June - 9 July 2006	DAX
European Football Championships			
Portugal 2004	12 October 1999	12 June - 4 July 2004	PSI
Austria/Switzerland 2008	12 December 2002	7-29 June 2008	ATX (Austria) SMI (Switzerland)

Source: Author's own study.

The research was conducted for two key periods:

- the day the selected organiser was announced, plus five session days preceding the moment and four session days following it (5+d+4),
- the duration of the event itself, plus five session days preceding it and five session days following it (5+I+5).

As apparent from the above, the research focused on brief time spans, extending slightly beyond the date the hosting venue was selected, and the time of the event itself. This is because based on the effective financial market hypothesis one should assume that the prices instantaneously reflect the information on the selected organiser, or the developments during the event.<sup>8</sup>

The following three types of measurements were taken within the above-indicated time spans:

- the percent change in the index against its level on the previous session day,
- the deviation of the index value from its weekly moving average,
- the deviation gauged as the difference in the percent changes in the specific index and the major global stock market indices, the latter represented by the German DAX in 50% and the American S&P 500 in the other 50%. In the case of the World Championships held in Germany in 2006 the German stock exchange index was replaced with the French CAC 40.

The purpose of such a methodological approach was to eliminate any misleading signals from the trends in the global capital markets (the comparisons based on the mean values of the major world indices) and speculative one-off index fluctuations (application of the moving average).

The percent change in the index value against the level of the previous session day was calculated from the following formula:

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<sup>8</sup> X. Li, *The Impact of Mega-Sporting Events on Stock Markets*, Auckland University of Technology, School of Business, Auckland 2007, s.22-23.

$$\vartheta = \frac{(a_1 - a_2)}{a_2} \cdot 100\%$$

where:

$\vartheta$  - percent change in the index value,

$a_1$  – index value at the close of the day,

$a_2$  – index value at the close of the previous day.

The method of calculating the deviation of the index value from the weekly moving average was similar and based on the following formula:

$$\bar{\omega} = \frac{\sum_{i=1}^5 \omega_i}{5}$$

where:

$\bar{\omega}$  - arithmetic moving average for the session week (five days),

$\omega_i$  - the index values at the close of the consecutive five session days preceding the specific session day.

Gauging of the deviation of the stock market index in the organising state from the selected two global indices served the purpose of comparing the situation in the capital market in the country organising the mega sports event versus the situation in the global market. To that aim the following relation was employed:

$$\delta = \vartheta - \mu$$

where:

$\delta$  - deviation in percent points between the index of the organising country and the global indices,

$\vartheta$  - percent change in the index value in the organising state,

$\mu$  – percent change in the values of the two selected global indices, their shares adopted at 50% each.

#### 4. THE FINDINGS

The findings are summed up in tables 2 and 3. Even though the announcement of the selected event organiser should be anticipated to have a positive impact on the capital market of the

country, the results obtained are diverse. Out of the eight analysed markets positive changes in the indices on the announcement day were recorded in four cases, the largest amounting to 1.45% in Germany. The most advantageous change in the stock market index in the period following the announcement date took place in Athens, where the average of the four session dates was 1.66 % and the deviation from the average index level of the preceding week shot up to 5.27%. Quite interesting conclusions ensue from the comparison of the deviations recorded for individual stock market indices against the overall market situation. The seemingly well responding indices look bleak against the global market, and vice versa. Here, Germany can serve as an example. Their index, despite very high positive deviations recorded on the verdict announcement date, stood 0.18 p.p. lower than the average of the S&P500 and CAC40 indices. On the other hand, the Swiss market, whose index reacted negatively to the selection of the country to share in hosting the Euro 2008, placed itself relatively well against the global indices.

**Table 2. An overview of the changes in the value and deviations of the indices in the countries organising mega sports events at the time the host country selection was announced**

country/city event year	$\mu$			$\bar{\omega}$			$\delta$		
	<d-5;d> AVG	d	(d;d+4) AVG	<d-5;d> AVG	d	(d;d+4) AVG	<d-5;d> AVG	d	(d;d+4) AVG
Athens 2004	-0.09	0.28	1.66	-0.4	0.16	5.27	-0.89	0.62	2.44
Beijing 2008	-0.15	-0.19	-0.13	-0.73	-0.53	-0.72	0.12	-0.83	0.08
Vancouver 2010	-0.09	0.1	0.35	-0.67	0.11	0.67	-0.13	-1.2	-0.22
Germany 2006	0.22	1.45	0.51	-0.3	1.57	1.18	0.04	-0.18	0.36
Switzerland 2008	-0.42	-0.53	-0.38	-1.85	-0.67	-0.39	0.08	0.98	0.1
Austria 2008	0.13	0.02	0.05	0.76	0.56	0.38	0.63	-1.52	0.53
Portugal 2004	b.d.	-0.12	-0.82	b.d.	b.d.	b.d.	b.d.	1.23	0.23
Turin 2006	0.2	b.d.	-0.19	-0.11	b.d.	0.21	-0.49	b.d.	0.3

Source: Author's own study based on the data published on the following sites: [www.stooq.pl](http://www.stooq.pl), [www.forexpros.pl](http://www.forexpros.pl), and [www.bolsapt.com](http://www.bolsapt.com).

A similar lack of a clear change orientation is reported for the holding of the selected events. One can find markets, which responded negatively to the event, and others, which reported a growing trend. Standing out in the former group are the indices of the Chinese and Austrian stock exchanges, which experienced an evidently falling trend, also against the situation in the world markets. Remarkable in the latter group is the response of the Toronto stock exchange, though the increase recorded there was comparable to the changes observed in the stock markets in the United States and Germany.

**Table 3. An overview of the changes in the value and deviations of the indices in the countries organising mega sports events at the time of holding the event in the host country**

country/city	$\theta$			$\omega$			$\delta$		
	<I-5;I> AVG	I AVG	(I;I+5)> AVG	<I-5;I> AVG	I AVG	(I;I+5)> AVG	<I-5;I> AVG	I AVG	(I;I+5)> AVG
Athens 2004	-0.37	0.29	0.12	-0.85	0.29	0.93	0.24	-0.17	0.02
Beijing 2008	-0.34	-1.08	-0.05	-2.24	-3.14	-1.33	-0.44	-1.03	-0.11
Vancouver 2010	0.55	0.17	0.59	0.16	0.76	1.44	0.45	-0.04	-0.21
Germany 2006	-1.15	0.26	-0.93	-2.09	0.47	-1.53	-0.4	0.11	-0.34
Switzerland 2008	-0.33	-0.49	-0.25	0.08	-1.47	-1.15	0.37	-0.09	0.1
Austria 2008	-0.56	-0.57	-0.95	-0.87	-1.66	-2.48	0.14	-0.18	-0.6
Portugal 2004	0.21	-0.02	-0.17	0.8	0.07	-0.98	-0.05	0.02	0.13
Turin 2006	0.32	0.26	-0.38	0.21	0.86	-0.67	0.21	0.07	-0.11

Source: Author's own study based on the data published on the following sites: [www.stooq.pl](http://www.stooq.pl), [www.forexpros.pl](http://www.forexpros.pl), and [www.bolsapt.com](http://www.bolsapt.com).

## 5. SUMMARY

The results of the conducted research do not enable confirming a positive relationship between organisation of a mega sports event and the level of prices in the national financial markets. The same is true of both the moment the host of the event is selected, and the time the event is held. Hence, we arrive at the same observations as those made by other world authors who concluded it was highly likely for a positive effect to be recorded in the case of the countries whose markets did not anticipate the selection. On the other hand, selection of the country being a favoured candidate had a minor impact on the financial markets, because their choice had already been accounted for in the exchange rates.

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**Contact**

Dr. Krystian Zawadzki, Ph.D.

Gdańsk University of Technology, Faculty of Management and Economics, Narutowicza 11/12, 80-233 Gdańsk

email: kza@zie.pg.gda.pl