Exploring Event-driven Opportunities of the Beijing Winter Olympics based on Event Study

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Abstract

Olympic Games are mega sports event capturing global attention that serves as the core discussion to measure the economic impacts. This paper focuses on the 2022 Beijing winter Olympics by applying event study to 9 local partners of the game. According to the analysis, while no significant abnormal return can be found during the sponsorship announcement, stock prices around the opening ceremony are positively affected by high significance. Although the significant abnormal return appears during post-event periods, the validity of the market efficiency is proved somewhat invalid. Overall, these results shed light on the event-driven investment decisions.

Keywords-event-driven; event study; Olympics

1. INTRODUCTION

As the Olympics are mega events and arguably the most prestigious of all sporting events, the Games are held on a scale that can produce a high performance in tourism, media coverage and economic impact for the host community or destination [1]. According to the results, not until the 1984 Olympic Game, the meaning and marketing importance ascribed to the term 'official sponsor' had ever been put forth. The interests in investigating the relationship of sponsorship-related announcements and shareholder value never dwindle [2].

Numerous scholars have tested market reaction and market efficiency (stock prices correctly and quickly incorporate all publicly available information) in previous Olympics by adopting event study, which was firstly rigorously done by Fama, Fisher, Jensen and Roll in 1969, but has been widely adopted in marketing fields since 2017 [3]. However, barley no consensus was reached among those studies, as not just conditions varied in different Games and sponsorship systems, but also the parameters and samples selected influenced the results [4].

Sponsorship system in 2022 Beijing winter Olympics can be classified into five levels. Specifically, the highest level is The Olympic Partner (TOP), in which, sponsors directly sign contracts with the International Olympic Committee, and the sponsorship period tends to be long-term; then, comes to the Organizing Committees for the Olympic Games (OCOGs), which allow local sponsors to contract with other companies. In this Olympic Games,

according to the different sponsorship benchmark prices, local sponsorship was compiled by four tiers, with a total of 33 firms: 10 Official Partners, 10 Official Sponsors, 7 Official Exclusive Suppliers and 6 Official Suppliers.

The summary of previous is presented in Table. 1. Following the footprints, this article investigates the first tier of the local sponsors (Official Partner) and tries to address two key problems: 1) Can significant abnormal returns be detected among Official Partners? 2) Whether semi-efficiency is valid or not in this Game?

In terms of the controversial results in previous studies, this one will focus on the latest mega sports event, 2022 Beijing winter Olympics by applying event study methodology, bears the motivation to verify the effects on the stocks market exerted from the Olympics.

The study innovation lies in combining theoretical research and parallel industrial comparison. As most existing literature penetrate through one of these angles, the study tries to grasp more comprehensive insight. On this basis it could not only renew the result on the topic of the Olympics impacts on financial markets, but also make assessment in terms of the unique condition in this Game. The rest part of the paper is organized as follows. The Sec. II will lay introduction of the data resources and method. The Sec. III will offer detailed results of the event study and deep discussion on them. The Sec. VI will provide parallel comparison of stock performance between partners and their counterparts. The last section will be conclusion to summarize the study.

TABLE 1. SUMMARY OF PREVIOUS EVENT STUDIES ON OLYMPICS

study	Olympics	findings
Farrell and Frame (1997) [5]	1996 Atlanta Olympic games	Significant negative abnormal returns for the two days following an announcement can be detected, but no significant effects on the announcement day (day 0). The negative effect was mitigated for firms with substantial institutional ownership, indicating a potential agency issue.
Miyazaki and Morgan (2001) [6]	1996 Atlanta Olympic games	During the announcement windows no significant negative abnormal returns occurred. Found a significant positive abnormal return for one window.
Deitz et al. (2013) [7]	1996 Atlanta Olympic games	Contrary conclusion to that of Miyazaki and Morgan (2001) that the sponsorship is almost universally negative, with the exception of the individual date of $t = -4$, and the event window of [-4,0]. A further examination of the 3 different levels of Olympic sponsorship finds that those sponsors who invested in the highest level of Olympic sponsorship, The Olympic Partner program (TOP), experienced the greatest losses to shareholder value.
Spais and Filis (2006) [8]	2004 Athens Olympic Games	Compared stock performance of three Greek companies during a 41 day event window to the performance over a 200 day pre-event and a 200 day post-event window. They found significantly positive abnormal returns for one Grand National Sponsor, but insignificant abnormal returns for the other two. Changes in volatility and increased trading volume for two of the companies were noted.
Samitas, Kenourgios, Zounis (2008) [9]	2004 Athens Olympic Games	Used bootstrap techniques to study the impact on stock prices on dates surrounding 21 sponsorship announcements, as well as the opening ceremony. The paper found positive abnormal returns for three windows surrounding the announcements, but failed to find significant results neither on announcement day, nor surrounding the opening ceremony.
Tsiotsou (2011) [10]	2004 Athens Olympic Games	The paper found insignificant price reactions over every window and on announcement day for five sponsors of the Athens Games, but found small significant offsetting effects two days and one day before the official announcement date.
Molchanov, Stork, Zeng (2010) [11]	2008 Beijing Olympic games	In contrast to Samitas et al. (2008), no significant abnormal returns around announcement dates were noted, but did find significant positive abnormal returns for international sponsors surrounding the opening ceremony. The authors suggested that international sponsors may focused on stock returns while domestic firms may be driven by national pride instead of shareholder wealth maximization.
Dean V. Baim, Levon Goukasian, , Marilyn B. Misch (2014) [12]	2012 London Olympics	The study found that London 2012 Olympic sponsorship was associated with statistically significant increased share values for Official Partners as well as for British companies and British sponsors, had significantly higher than average trading volume on announcement dates, even significantly greater than that of non-British firms.

Abril et al. (2018) [13]	2004,2008,2012 Olympics	For the three Olympic Games, the sponsorship announcement triggered significant positive abnormal returns, but showed a positive but decreasing trend over the year of the announcement.
Leshek , Frank (2019) [14]	2012 London Olympics	Evidence showed an increase in risk-adjusted returns for the sample in the lead up to the announcement date (day 0), but then staying constant for the duration of the Games.
Frank, Joshua (2020) [15]	2008, 2012, 2016 Summer Olympics	Results for all 3 summer Olympic games and the combined global sample showed positive gains to their risk-adjusted rates of return of stock prices leading to the ceremony. With small gains following the opening ceremony.

2. METHODOLOGY

To evaluate the impact of Sports Sponsorship on the sponsorship's financial performance in stock market as well as test the semi-strong market efficiency, this study chooses standard risk adjusted event study methodology in the finance literature, basic premise of which is based on the fundamental view that capital markets reflect publicly available information on the firms' stock prices. If there is no new information in a market, stock market prices will follow a random walk, or stochastic process [16]. Event studies are designed to capture the influence of new information that is expected to influence stock price. The rationale is that the influence of information on stock prices will be immediate, but when promulgation is leaked or lagged the market reaction may change. Certainly, a degree of randomness exists, as ex-post values are unlikely to match the expected values. Referring to previous studies, the study takes average of the abnormal returns across the whole events window substantially reduced the bias, and inferences regarding event's economic value can be obtained.

In practice, the event study methodology has been applied for two main objectives. For the most common and original purpose, it has been used to measure the null hypothesis that the market efficiently integrates information. Second, extending from the original one, the methodology has always been applied to measure the influence of events on firm value with respect to publicly available information. The derivative orientation is to assess the extent to which investors earn excess or abnormal stock returns from an event that carries new informational content. where an abnormal return is the difference between the observed return and the return expected in the absence of the event, predicted by an appropriate benchmark asset pricing model.

The test is conducted by the following steps:

- Identifying the event: The study runs two tests whose events are respectively set to be the official sponsorship announcement and the opening ceremony of the Game.

- Selecting the sample: The sponsor companies selected are those with their own stocks, so ZGSX (a corporation with numbers of stocks) and GJDW (not a public company, has no information about stock price during the estimation period and the event) were removed from the sample. The final sample is listed in Table. 2 and all the stock data were retrieved from Yahoo Finance, while the announcement information was from Lexis Nexis and Factiva.

- Selecting the estimation, event, post-event window and setting the parameters: This study defines t=0 to represent the event day, which, as the Table. 3 shows, is different for each sponsor in the first test. But t0 is identical among the sponsors in test two. As it is important to ensure that the thorough period being tested having covered the entire event timeline (i.e., the estimation window, event window, and post-event window), and to minimize the number of confounding effects, the timeline is divided in the way as given in table 2.

- Data cleaning and preparing: As the indices are measured in return in the form of percentage, the retrieved adjusted close prices are transformed into return ratio, which is calculated from using the previous day's price to divide the discrepancy between adjacent trade days.

- Estimating expected return and computing abnormal return: Expected return can be regressed from various models, including market model, market-adjusted model, CPAM Model, Fama-French 3 Factor model, Carhart four factor model; Fama-French 5 factor model. Fama-French models are latest upgraded ones with added factors based on the former models, however, since differences in market micro-structure between China and western countries, evidence

has proved that running Fama-French model in the Chinese market resulted in dissatisfaction caused by many pitfalls, and adding those factors in the models just presents slight improvements. So, in this study, to be consistent with the previous researches, the most frequently adapted model (market model) is applied and the following least squares OLS regression are performed for each stock separately:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (1)$$

where $R_{i,t}$ is the daily return for stock i on day t, $R_{m,t}$ is the is the daily return for market on day t.

After running the following least squares OLS regression for each stock separately, we can get the estimated coefficients and calculate the abnormal return by Eq. (2):

$$AR_{i,t} = R_{i,t} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{m,t} \right) \quad (2)$$

- Calculating Abnormal Returns (AR), Aggregate Abnormal Returns (CAR) and their average values (AAR, CAAR): Since $AR_{i,t}$ presents only stock i's abnormal return on day t, in order to study the impact of events on overall security pricing, the average return for each company (AAR_i) and average return on each event day (AAR_t) should to be calculated:

$$AAR_{id} = \frac{1}{(t1 - t2)} \sum_{t=t1}^{(t2-t1)} AR_{t,i} \quad (3)$$

$$AAR_{date} = \frac{1}{N} \sum_{i=1}^{N} AR_{t,i} \quad (4)$$

$$CAR_i = \sum_{t=t_1}^{t_2} AR_{i,t} \quad (5)$$

$$CAR_t = \sum_{i=1}^{N} AR_{i,t} \quad (6)$$

where t_1, t_2 are the left and right ends of the previously defined event window; N is the total number of the sample companies.

- Testing level of significance: In order to test whether the abnormal returns are significant for each sponsor, i.e., whether the event exert significant impacts on each firm's stock price, the null and alternate (H_1, H_2) are employed. Besides, the study also investigates the market reaction among partners on each day of the event window, by applying H_3 and H_4.

- H_{10}=abnormal return for each stock ≤ 0 around the announcement day; H_{11}= abnormal return for each stock > 0 around the announcement day; H_{20}= abnormal return for each stock ≤ 0 around the opening ceremony; H_{21}= abnormal return for each stock>0 around the opening ceremony; H_{30}= abnormal return for each day around the announcement date ≤ 0; H_{31}= abnormal return for each day around the announcement date > 0; H_{40}= abnormal return for each day around the opening ceremony ≤ 0; H_{41}= abnormal return for each day around the opening ceremony > 0.

- This paper assessed the impact of fit with variable t. Since all these hypotheses are unilateral ones, the t-test values are 1.96, 1.645, 1.28, respectively for the significance level of 99%, 95% and 90%.

$$t_{id} = \frac{CAR_i/T}{sd(AAR_{id})_t/\sqrt{T}} \quad (7)$$

$$t_{date} = \frac{CAR_t/N}{sd(AAR_{date})_t/\sqrt{N}} \quad (8)$$

where CAR_i/T represents the average level of calculate abnormal change for each company and $sd(AAR_{id})_t/\sqrt{T}$ represents standard deviation of the average CAR_i, under normal distribution. The same is true for equation 8.

TABLE 2. LIST FOR OFFICIAL PARTNERS SELECTED.

Company Name	Ticker	Announcement Date	Opening Ceremony Date	Sector / Industry	Benchmark Index	Market Cap	Beta
Bank of China Limited	601988.SS	13/7/2017	4/2/2022	Financial Services/ Banks Diversified	000001.SS	908.681B	0.53
Air China Limited	601111.SS	23/8/2017	4/2/2022	Industrials/ Airlines	000001.SS	119.882B	1.50
Inner Mongolia Yili Industrial Group Co.	600887.SS	30/8/2017	4/2/2022	Consumer Defensive/ Packaged Foods	000001.SS	238.981B	0.72
ANTA Sports Products Limited	2020.HK	28/9/2017	4/2/2022	Consumer Cyclical/ Leisure	HSI	263.034B	0.89
China United Network Communications Limited	600050.SS	26/12/2017	4/2/2022	Communication Services/ Telecom Services	000001.SS	110.937B	0.44
Beijing Shougang Co., Ltd.	000959.SZ	5/6/2018	4/2/2022	Basic Materials/ Steel	399001.SZ	35.102B	0.46

PetroChina Company Limited	601857.SS	20/7/2018	4/2/2022	Energy / Oil & Gas Integrated	000001.SS	954.663B	0.76
China Petroleum & Chemical Corporation	600028.SS	20/7/2018	4/2/2022	Energy / Oil & Gas Integrated	000001.SS	499.972B	N/A
The People's Insurance Company of China Limited	601319.SS	5/12/2019	4/2/2022	Financial Services/Insurance Property & Casualty	000001.SS	183.164B	0.63

TABLE 3. TIMELINE FOR EACH COMPANY

Company Name	Ticker	Announcement Date	Estimation window [-200 , -11]	Event window [-5 , +5]	Opening Ceremony Date	Estimation window [-200,-11]	Event window [-5,+5]
Bank of China Limited	601988.SS	13/7/2017	29/8/2016 - 24/5/2018	6/7/2017 - 20/7/2017	4/2/2022	24/3/2021- 14/1/2022	24/1/2022- 11/2/2022
Air China Limited	601111.SS	23/8/2017	18/10/2016 - 5/7/2018	16/8/2017 - 30/8/2017	4/2/2022	24/3/2021- 14/1/2022	24/1/2022- 11/2/2022
Inner Mongolia Yili Industrial Group Co.	600887.SS	30/8/2017	25/10/2016 - 12/7/2018	23/8/2017 - 6/9/2017	4/2/2022	24/3/2021- 14/1/2022	24/1/2022- 11/2/2022
ANTA Sports Products Limited	2020.HK	28/9/2017	23/11/2016 - 8/8/2018	21/9/2017 - 9/10/2017	4/2/2022	24/3/2021- 14/1/2022	24/1/2022- 11/2/2022
China United Network Communications Limited	600050.SS	26/12/2017	22/2/2017 - 8/11/2018	19/12/2017 - 3/1/2018	4/2/2022	24/3/2021- 14/1/2022	24/1/2022- 11/2/2022
Beijing Shougang Co., Ltd.	000959.SZ	5/6/2018	7/25/2017 - 16/4/2019	29/5/2018 - 12/6/2018	4/2/2022	24/3/2021- 14/1/2022	24/1/2022- 11/2/2022
PetroChina Company Limited	601857.SS	20/7/2018	7/9/2017 - 6/6/2019	13/7/2018 - 27/7/2018	4/2/2022	24/3/2021- 14/1/2022	24/1/2022- 11/2/2022
China Petroleum & Chemical Corporation	600028.SS	20/7/2018	7/9/2017 - 6/6/2019	13/7/2018 - 27/7/2018	4/2/2022	24/3/2021- 14/1/2022	24/1/2022- 11/2/2022
The People's Insurance Company of China Limited	601319.SS	5/12/2019	21/1/2019 - 21/10/2020	28/11/2019 - 12/12/2019	4/2/2022	24/3/2021- 14/1/2022	24/1/2022- 11/2/2022

TABLE 4. RESULTS FOR H_1 AND H_2

Company Name	Ticker	Sponsorship Announcement				Opening Ceremony			
		AAR_{id}	CAR_i	Standard deviation	T test	AAR_{id}	CAR_t	Standard deviation	T test
Bank of China Limited	601988.SS	0.666%	7.33% ***	0.974%	2.27	0.250%	2.50%*	2.50%	1.30
Air China Limited	601111.SS	0.0519%	0.571%	1.54%	0.112	1.15%	11.5%*	2.68%	1.36
Inner Mongolia Yili Industrial Group Co.	600887.SS	-0.0668%	-0.734%	1.61%	-0.138	0.107 %	10.7%	1.12%	0.303
ANTA Sports Products Limited	2020.HK	0.261%	2.87%	2.41%	0.361	0.250%	8.36%**	1.49%	1.779
China United Network Communications Limited	600050.SS	-0.189%	-2.08%	1.81%	-0.347	0.125 %	1.25%	2.06%	0.192
Beijing Shougang Co., Ltd.	000959.SZ	0.0808%	0.889%	1.50%	0.178	0.420 %	4.20%	3.18%	0.398
Petrol China Company Limited	601857.SS	-0.259%	-2.84%	0.724%	-1.18	1.21%	12.1 %	3.39%	1.12
China Petroleum & Chemical Corporation	600028.SS	0.122%	1.34%	0.764%	0.530	0.581%	5.81% *	1.14%	1.61
The People's Insurance Company (Group) of China Limited	601319.SS	-0.0990%	-1.10%	0.711%	-0.462	0.563 %	5.63% **	0.911%	1.96
T-stata (t = 0) for CAR		0.68				4.25***			
T-stata (-5,5) for CAR		2.39 ***				12.6 ***			

*, **, *** for p<0.1, p<0.05, p< 0.01

TABLE 5.   Results for H_3 and H_4

DAY	Sponsorship Announcement			Opening Ceremony		
	AAR_date	CAR	T test	AAR_date	CAR	T test
-5	-0.118%	-1.07%	-0.407	-0.256%	-2.30%	-0.525
-4	-0.288%	-2.59%	-0.642	-0.277%	-2.49%	-0.363
-3	-0.643%	-5.79%**	-1.71	-0.0508%	-0.458%	-0.101
-2	-0.243%	-2.19%	-0.547	0.0616%	0.554%	0.168
-1	0.515%	4.63%	0.713	-0.139%	-1.25%	-0.225
0	-0.338%	-3.04%	-0.692	-	-	-
1	0.188%	1.70%	0.406	2.95%	26.6% ***	2.46
2	0.333%	2.99%	0.651	1.50%	13.5% ***	2.62
3	-0.544%	-4.90%*	-1.53	0.483%	4.34%	0.811
4	0.940%	8.46% ***	4.19	0.681%	6.13% ***	2.04
5	0.895%	8.06% **	1.66	0.870%	7.83% *	1.29

*, **, *** for p<0.1, p<0.05, p< 0.01

3. RESULTS & DISCUSSION

Table. 4 provides the results for the hypothesis H_1 and H_2 for both event studies. As can be seen from the reported numbers in left part of the table, except the Bank of China Limited being probed with 99% significant positive abnormal return of 0.666% on average and 7.331% in total, no another firm's stock value was positively influenced by the announcement with high significance. What also worth noticing is that, about half of the partners are shown to be negatively impacted, which are respectively Inner Mongolia Yili Industrial Group Co., China United Network Communications Limited, Petrol China Company Limited and The People's Insurance Company (Group) of China Limited, although the numbers are not statistically significant.

The right three lines writes the results of the event test, the event of which is the opening ceremony of the winter Olympics. As indicated by the statistics, the overall impacts are all positive, much better than that in the first study, with the individual cumulative abnormal return ranging from about 2.5% to 12%. While two firms (Air China Limited and China Petroleum & Chemical Corporation) reject H_{20} with a 90% significant positive abnormal return, the People's Insurance Company (Group) of China Limited resulted in 5.63137% cumulative abnormal return and reject H_{20} in 95% significance. The brighter results for partners on the opening ceremony compared to announcement may cause by the greater exposure and more attention from the public afforded to partners on the ceremony. Nevertheless, the t variable on t = 0 in these two studies are 0.68 and 4.65, which means that significant positive impacts are exerted on partners one the opening ceremony can be safely reached in a 99% significance level, but no obvious effects can be witnessed on the announcement day.

TABLE 6.   List of post-event data

DAY	Sponsorship Announcement			Opening Ceremony		
	AAR_date	CAR	T test	AAR_date	CAR	T test
6	0.0436%	0.393%	0.0875	-0.546%	-4.92%	-1.13
7	1.18%	10.6%***	2.05	-1.65%	-14.9%***	-2.81
8	1.04%	9.37%	1.08	0.391%	3.52%**	1.73
9	-0.167%	-1.50%	-0.424	-0.373%	-3.36%	-1.06
10	0.962%	8.66%	0.848	0.144%	1.29%	0.262
11	0.478%	4.30%	1.110	0.105%	0.951%	0.253
12	0.780%	7.02%	1.17	0.159%	1.43%	0.252
13	-0.306%	-2.76%	-0.512	-1.41%	-0.127%***	-4.30
14	-0.459%	-4.13%	-0.845	0.265%	2.39%	0.354
15	0.767%	6.90%	0.988	-0.0582%	-0.524%	-0.0798
16	-0.372%	-3.35%	-1.24	-0.289%	-2.60%	-1.17
17	0.337%	3.04%	1.25	0.709%	6.38%	1.03
18	0.191%	1.72%	0.416	0.146%	1.32%	0.428
19	-0.592%	-5.33%*	-1.89	0.997%	8.97%***	3.62
20	0.397%	3.58%	-.0533	-0.276%	-2.49%	-0.581

*, **, *** for p<0.1, p<0.05, p< 0.01

Table. 5 reports the results of H_3 and H_4, that there is no positive abnormal return on each day during the event time. Yet, from the results, it can be observed that four of five days before the event date ([-5,-1]), there appear negative abnormal returns in both studies, despite their low significance. Therefore, the overall impact of the announcement is reasonable to be interpreted as spurious. On the third day before the announcement date, a 95% significant negative CAR of -5.79% even occurred. Moreover, on the announcement day, it is counter-intuitive that the promulgation failed to create value, and instead, deteriorated firm's value, which resonates with the reports of Ref. [10, 11] that no significant abnormal results can be concluded around the announcement day. The causation investors viewing recent sponsorship contracts unfavorably might be the doubt of benefits for sponsoring when considering the increasing costs of sponsorship rights, and intense scrutiny of marketing spending [13]. Investors do not foresee a short-term return on sponsoring the game. This perspective is support by other studies, which is also make sense to attribute the little concerns on preparation of an event which will take place 5 years later to the unsatisfactory performance on the announcement day.

As for the event date of the opening ceremony, there exists no data because the ritual took place at the middle of the spring festival when the stock market was not free for access. Although the first trading data was collected 3 days after the ceremony, CAR still upsurged to a record high of 20.7% on Feb.7th, and remained at a high level of 13.5% on the second trade date. Besides, while the third post-ceremony trade day being the only one with insignificant CAR under 5%, the number of other two days are respectively 6.13% in 99% significance and 7.83% in 90% significance. Apparently, either comparing with numbers on pre-ceremony dates, or that in the announcement test, the effects of the opening ceremony is comparatively much more detectable and significant among the partners. This can be partly explained by those theories emphasizing enhanced consumer awareness and corporate image, as well as prevalent public interest when the game is approaching [15].

Table. 6 exhibits the test results during the post event window, from which the market efficiency can be verified if the stock prices take on a random fluctuating trend without much abnormal returns. Numbers of the announcement event present an overall insignificant result, although t7 obtains a significant positive result. Thus, the market efficiency can somewhat be proved valid in this test and barely no people can arbitrage from the event. Whereas, market efficiency performs worse in the second test, which results in a total of 6 days with significant CAR as well as an intensive fluctuation. The trend in post-event window of the opening ceremony is highly related to the brand exposure and passion aroused from the competition. Nationwide enthusiasm and patriotism are expanding thanks to the outstanding performance of Chinese athletes,

which are almost the direct causes of the stock price changes.

Although much can be explored in this study, limitations should be mentioned. Primarily, the sample is bounded by publicly traded firms with an identifiable announcement date. Therefore, the sample might be too small to be sufficient and convincing to demonstrate the overall reaction of the sponsors, especially when laying the final conclusion. Besides, the regression model is the most original one without further adjustment, leading to an unsatisfactory R^2 when estimating the expected return around the event, which can directly influence the abnormal returns. Moreover, as the opening ceremony coincide with Chinese Spring festival, the immediate stock market reaction cannot be timely collected and some precise information can be missed with the blank records.

4. CONCLUSION

In summary, this paper investigates economic impacts of 2022 Beijing Winter Olympics exerted on 9 native official partners based on event study methodology put out forth by Ball & Brown (1968) and Fama et al. (1969). Cherishing the orientation to corroborate the previous findings and explore the unique results derived from this particular Game, this study targeted on 9 native official partners and run two individual tests whose event are respectively the sponsorship announcement and opening ceremony.

As for the test about sponsorship announcement, not only almost all companies present no statistically significant abnormal return around the event window, but a negative CAR even occurred on the announcement day, which provides evidence for investors judging the benefits that accrue to sponsoring companies to be incommensurate with the expenses and the results are consistent with previous studies. However, what the second test illustrates is that reactions are better on the opening ceremony, with all companies exhibiting positive numbers, 5 of which are statistically significant. Thus, there exists weak evidence of a positive effects on the announcement, but much more tenable proof for the optimistic impacts exerted on the opening ceremony. The results in the daily basis test enhance the conclusion and are highly consistent with previous researches.

Post-event statistics support the semi-strong form of market efficiency in the study of sponsorship announcement, but proved the theory invalid in the study of opening ceremony, which might be contributed by the nationwide passion and enthusiasm with the proceeding of the competitions. Overall, these results offer a guideline for future study focusing on the sports events investment decision.

REFERENCES

[1] T. Nishio, C. Lim and P. Downward, "Analysing the

Economic Impact of the Olympics Using Stock Market Indices of Host Countries", 18th World IMACS / MODSIM Congress, Cairns, Australia pp. 13-17, July 2009.

[2] J. M. Clark, T. B. Cornwell, and S. W. Pruitt, "The impact of title event sponsorship announcements on shareholder wealth", Marketing Letters, vol. 20 (2), 2009, pp. 169-182, October 2008.

[3] T.B. Cornwell, S.W. Pruitt, and J.M. Clark, "The relationship between major-league sports official sponsorship announcements and the stock prices of sponsoring firms", Journal of the Academy of Marketing Science, vol. 33 (4), 2005, pp. 401-412, October 2005.

[4] A. Sorescu, N. L. Warren, and L. Ertekin, "Event study methodology in the marketing literature: An overview", Journal of the Academy of Marketing Science, vol. 45 (2), 2017, pp. 186-207, Mar 2017.

[5] T. B. Cornwell, and Y. Kwon, "Sponsorship-linked marketing: Research surpluses and shortages", Journal of the Academy of Marketing Science, vol. 48 (4), 2019, pp. 607-629, May 2019.

[6] A. D. Miyazaki, and A. G. Morgan, "Assessing market value of event sponsoring: Corporate Olympic sponsorships", Journal of Advertising Research, 41(1), 2001, pp. 9-16, January 2001.

[7] K. A. Farrell, and W. S. Frame, "The value of Olympic sponsorships: Who is capturing the gold?", Journal of Market-Focused Management, vol. 2(2), 1997, pp. 171-182, November 1997.

[8] G. D. Deitz, R. D. Evans Jr, and J. D. Hansen, "Sponsorship and shareholder value: A re-examination and extension," Journal of Business Research, vol. 66(9), 2013, pp. 1427-1435, September 2013.

[9] A. Samitas, D. Kenourgios, and P. Zounis, "Athens' Olympic Games 2004 impact on sponsors' stock returns", Applied Financial Economics, vol. 18(19), 2008, pp. 1569-1580, October 2008.

[10] R. Tsiotsou, "A stakeholder approach to international and national sport sponsorship", Journal of Business & Industrial Marketing, vol. 26(8), 2011, pp. 557-565, October 2011.

[11] A. Molchanov, P. A. Stork, and V. Zeng, "The 2008 Beijing Olympic Sponsorships: Value for Money?". Available at SSRN: https://ssrn.com/abstract=1649132 or https://doi.org/10.2139/ssrn.1649132.

[12] D. V. Baim, L. Goukasian, and M. B. Misch, "Olympic sponsorships, stock prices, and trading activity", International Journal of Sport Finance, vol. 10(2), 2015, pp. 175-195, May 2015.

[13] C. Abril, J. Sanchez, and T. Recio, "How does wall street react to global sports sponsorship announcements?: An analysis of the effect on sponsoring companies' stock market prices", Journal of Advertising Research, vol. 58(3), 2018, pp. 297-310, September 2018.

[14] L. Frank, "The 2012 London Olympics and its effect on the sponsor companies' stock prices", Journal of Business and Behavioral Sciences, Volume 32, Number 2020, pp, 33-41, Fall 2020.

[15] J. Frank, "The 2008, 2012, and 2016 Summer Olympics: A Test Market Efficiency," Journal of Applied Business and Economics, vol. 22(10), 2022, pp, 13-25, April 2020.

[16] D. Easley, M. O'Hara and J. Paperman, "Financial analysts and information-based trade", Journal of Financial Markets, vol. 1, Issue 2, pp. 175-2011, August 1998.