

**The 2008, 2012 and 2016 summer
Olympics Effect
On Its Sponsor Companies'
Stock Prices**

Proposal: Senior Thesis Research, Finance

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ABSTRACT

Corporate sponsorship is a form of advertising in which companies commit and pay to be associated with certain events. Corporate sponsorships of an event, such as the Olympic Games, may feel the need to evaluate the returns on their investment. In order to evaluate these investments, and how they pay off an event study has been completed. Using the risk-adjusted event study methodology to test the hypothesis that risk-adjusted return of the sponsor companies stock prices are positively affected by the type of information of the 45 sponsor companies is positive effected on the open ceremony. The event study tested the effect of the 2008 Beijing, 2012 London and 2016 Rio Summer Olympic games on the sponsor company's' stock prices. The opening ceremonies took place on August 8th, 2008, July 27th, 2012 and August 5th, 2016.

RESEARCH PROBLEM

When researching a topic, it is best to use an event study. An event study is the most common and efficient way to test market efficiency. In order to perform a proper test, the event chosen needs to be theoretically justified. The event this project will analyze is the 2008, 2012 and 2016 Summer Olympics. The opening ceremonies are August 8th, 2008, July 27th, 2012 and August 5th, 2016. This event can be theoretically justified because of the exposure of the sponsors of the Olympic Games would then generate popularity of the sponsor generating expected favorable returns to the respective sponsors. The two most popular and longest standing sponsors of the Olympics are McDonald's and Coca-Cola. To find out if this event provides new and relevant market information, there will be multiple statistical tests performed, using a regression analysis.

Stock prices can change for more than one event. The prices of the respective companies change rapidly daily, and while one event plays a small factor in the price there are a multitude of reasons why stock prices change. Evaluating stock prices for the company cannot be used as the only measure of how much impact an event had for three reasons First, while the event researched took place, other stock price changing events could have occurred within the firm. Second, the value of money cannot be used to provide a consistent measure of value and finally, events can occur that affect the entire market, therefore no single event may not be responsible for the entire effect. (Bacon, 2008 Olympics). I chose to analyze multiple events over time, in order to test the semi-strong form of market efficiency.

LITERATURE REVIEW

There are three forms of the market: weak form, semi-strong form and strong form. The Olympics would be considered public knowledge, meaning I am testing the semi-strong form of market efficiency. "An efficient capital market is one in which stock prices fully reflect all information available to investors" (Ross 11e). In an efficient market, information is reflected in prices immediately so investors should only expect to gain the normal rate of return (Ross 11e). Every form of market efficiency represents the amount of information obtained. If the market is weak form efficient, then stock price reacts so fast to all past information that no investor can earn an above normal return (Ross 11e) In semi-strong efficiency, the stock prices react to quickly to all public information that no investor can earn an above normal return by acting on this information (Ross 11e). Finally, in strong form efficiency, stock price reacts so fast to all information, both public and private, that no investor can earn an above normal return by acting on this type of information. In strong form efficiency, it is from the result of insider information

that is acted upon. (Ross 11e). In an efficient market, all past info (historical info) would be considered useless.

There are two types of event studies for an event at a point in time: expected and unexpected. In an unexpected event, such as 9/11 or hurricanes, there is no prior information and any new information is available that day (day 0) making it unpredictable. With an expected event, the investors can make decisions based on what is expected in that event. In a large event like the Olympics, investors have plenty of time to make educated choices based on the expected information. This event should demonstrate the effects of an expected event, because the date of the opening ceremony was announced earlier in the year.

METHODOLOGY:

The experimental tests in this study show how quickly the 45 firms reacted to the opening ceremony of the games. This study sample includes 45 companies who decided to make an investment in sponsorship of the 2008, 2012 and 2016 Summer Olympics. This study will use the standard risk adjusted event study methodology in the finance literature to test the stock market's response. The S&P 500 is used as a market indicator. By using the S&P 500, all prices are risk-adjusted, meaning any fluctuations in the economy or market are adjusted through the S&P.

In order to test a semi-strong market efficiency in recognition of the Olympic Games and to show effects of the event on stock returns on the opening ceremony date for the 2008, 2012 and 2016 summer Olympic, the null and alternate hypothesis are the following:

H1o: The risk adjusted return of the stock price of the sample of the 2008 summer Olympics is not significantly affected by this type of information on the event date.

H11: The risk adjusted return of the stock price of the sample of the 2008 summer Olympics is significantly positively affected by this type of information on the event date.

H2o: The risk adjusted return of the stock price of the sample of the 2008 summer Olympics is not significantly affected by this type of information around the event date as defined by the event period.

H21: The risk adjusted return of the stock price of the sample of the 2008 summer Olympics is significantly positively affected by this type of information around the event date as defined by the event period.

H3o: The risk adjusted return of the stock price of the sample of the 2012 summer Olympics is not significantly affected by this type of information on the event date.

H31: The risk adjusted return of the stock price of the sample of the 2012 summer Olympics is significantly positively affected by this type of information on the event date.

H4o: The risk adjusted return of the stock price of the sample of the 2012 summer Olympics is not significantly affected by this type of information around the event date as defined by the event period.

H41: The risk adjusted return of the stock price of the sample of the 2012 summer Olympics is significantly positively affected by this type of information around the event date as defined by the event period.

H5o: The risk adjusted return of the stock price of the sample of the 2016 summer Olympics is not significantly affected by this type of information on the event date.

H51: The risk adjusted return of the stock price of the sample of the 2016 summer Olympics is significantly positively affected by this type of information on the event date.

H60: The risk adjusted return of the stock price of the sample of the 2016 summer Olympics is not significantly affected by this type of information around the event date as defined by the event period.

H61: The risk adjusted return of the stock price of the sample of the 2016 summer Olympics is significantly positively affected by this type of information around the event date as defined by the event period

For this event study methodology, the following steps were taken:

- The events being studied is The 2008 Beijing, 2012 London and 2016 Rio Summer Olympics, which is a predicted event, which was this studies event.
- Date zero is identified as the opening ceremony date. The event period will be 30 trading days before the event along with 30 trading days after the event.
- The fifteen company's stocks must be chosen to be researched. After the companies were chosen, the adjusted close prices were obtained and downloaded from Yahoo! Finance onto Microsoft Excel.

Figure 1: The following are the 15 Chosen Sponsor Companies for the 2008 summer Olympics and their Market Cap (Yahoo! Finance)

Stock Symbol	Firm Name	Market Cap
KO	Coca-Cola Co.	208.016 B
MCD	McDonald's Corp.	141.763 B
BABA	Alibaba Group Holding Limited	401.247 B
INTC	Intel Corporation	216.562 B
BAC	Bank of America Corp.	270.479B
JNJ	Johnson and Johnson	358.728B
BBD	Banco Bradesco	70.781B
BP	BP P.I.C.	146.106B
DFS	Discover Financial Services	25.312B
MSFT	Microsoft	1.016 T
MFC	Manulife	34.854B
SNP	China Petroleum and Chemical Corp	82.913 B
BHP	BHP Group	209.642B
TM	Toyota Motor Corporation	175.918 B
V	Visa Inc.	299.987 B

Figure 2: The following are the 15 Chosen Sponsor Companies for the 2012 summer Olympics and their Market Cap (Yahoo! Finance)

Stock Symbol	Firm Name	Market Cap
KO	Coca-Cola Co.	208.016 B
GE	General Electric Co.	65.932 B
MCD	McDonald's Corp.	141.763 B
BABA	Alibaba Group Holding Limited	401.247 B
INTC	Intel Corporation	216.562 B
TM	Toyota Motor Corporation	175.918 B
V	Visa Inc.	299.987 B
PG	The Proctor and Gamble Company	229.06 B
NKE	NIKE, Inc.	115.471 B
K	Kellogg's Company	21.342 B
BAC	Bank of America Corp.	270.479B
BUD	Anheuser-Busch	172.675B
UPS	United Parcel Service Inc.	97.522B
NSANY	Nissan	26.93B
DFS	Discover Financial Services	25.312B

Figure 3: The following are the 15 Chosen Sponsor Companies for the 2016 summer Olympics and their Market Cap (Yahoo! Finance)

Stock Symbol	Firm Name	Market Cap
KO	Coca-Cola Co.	208.016 B
GE	General Electric Co.	65.932 B
MCD	McDonald's Corp.	141.763 B
BABA	Alibaba Group Holding Limited	401.247 B
INTC	Intel Corporation	216.562 B
TM	Toyota Motor Corporation	175.918 B
V	Visa Inc.	299.987 B
PG	The Proctor and Gamble Company	229.06 B
NKE	NIKE, Inc.	115.471 B
K	Kellogg's Company	21.342 B
BAC	Bank of America Corp.	270.479B
BUD	Anheuser-Busch	172.675B

UPS	United Parcel Service Inc.	97.522B
JNJ	Johnson and Johnson	358.728B
MFC	Manulife	34.854B

- For this study, -180 trading days before date zero to -31 trading days before date zero is known as the pre event period. This period was used to calculate the alphas along with the betas for the 45 chosen firms.
- HPR is to be calculated. HPR is calculated as: (Ending Price-Beginning Price)/Beginning Price. Next expected returns are calculated. Then expected returns are calculated as the respective firm's alpha + (firm's beta*market return). For this study, the market return is the HPR of the S&P 500 index.
 - **Current daily return** = $\frac{\text{current day close price} - \text{previous day close price}}{\text{previous day close price}}$
- To obtain the alphas and betas of a firm, a regression analysis must be conducted with the firm's HPR being the dependent variable while the S&P 500 HPR is the independent variable. The alpha's and beta's are shown in **Figure 1, Figure 2 and Figure 3**
- To find expected return the following formula is used $E(R) = \alpha + \beta(R_m)$
 - Where R_m is the return on the market (S&P 500)
 - The, the Excess return (ER) will be calculated as:
 - $ER = \text{the Actual Return (R)} - \text{Expected Return } E(R)$
- To test semi-strong Average Excess Returns (AER) for days +/- 30 need to be calculated. Excess returns are calculated by subtracting each firm's expected return from the firm's HPR. Next, take the sum all of the firm's excess returns and divide by 15 (number of sponsor companies) to calculate your Average Excess Return (AER).
- After AER was calculated, Cumulative Excess returns (CAER) are to be calculated. CAER calculated by adding up the AER's for each day from -30 to +30
- Lastly, the p-value is found by a regression analysis where the market return (HPR) was the dependent variable and the AERs were the independent variable.

Quantitative Analysis

Conclusion

REFERENCES

Thompson, Bryan T. and Bacon, Frank. “The 2008 Beijing Summer Olympics Effect On It’s Sponsor Companies’ Stock Prices”.

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Proposed Examining Committee:

- Justin Contat
- Paul Barrett
- Brad Watson

Timeline:

- Summer of 2019: Literature Review and Data Collection
- Fall of 2019: Continued data collection and Testing
- Spring 2020: Evaluate findings and drawing conclusions