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The effect of success and failure at the FIFA World Cup on the
stock market performance of team sponsors

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Abstract

In this paper, I use an event study to analyse the effect of a success or failure at the World Cup on the stock prices of the team's sponsor. The brands in this analysis are Nike, Adidas and Puma. I include a naive analysis only evaluating the best teams. The second analysis includes games I define as "unexpected" for investors which I calculate based on betting odds. The last analysis investigates if there is a weekly effect during the weeks of the World Cup on the different sponsors. I find that there is no effect of an unexpected success/failure at the World Cup for a team's sponsor in terms of stock prices. The effects in the first two analyses are both insignificant. This shows that while sponsoring teams in general may positively affect brand recognition, recall and purchase, the outcome of a game does not influence stock prices. The third analysis shows some significant effect, however, no positive trend. This means the outcome of a World Cup game does not significantly affect the teams' sponsors' stock market price.

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1. Introduction

Every four years the football World Cup takes place. Within Europe, football is the most popular sport and sparks a lot of excitement. A Dutch study shows that success at an international competition fosters national pride, international prestige and social cohesion (Elling, Van Hilvoorde & Van Den Dool, 2014). However, unexpected failure can result in a huge disappointment. The sports industry and the World Cup show high revenues not only for the organiser through broadcasting rights. An example is Nike's kit deal with the French national team valued at over €50 million. ("Inside World Football", 2017).

Each team has a kit supplier which provides, amongst other things, the jerseys and shoes. The players constantly present their sponsors on the field and through advertisements. Following this, the megaevent of the World Cup results in big revenues for its sponsors (Chiaruáin, 2018). Potential customers watch the event and support their team by buying the same jerseys. This way they identify well with their nation (Wann & Branscombe, 1993). While the pre-game revenues can be estimated more precisely by the market, the post-tournament behaviour is ambiguous.

The stock market reflects the present value of expected future earnings (Pinsent, 2020). Additionally, to the post-tournament effects of a team's success such as winning the World Cup, it is also interesting to consider whether a team's unexpected success shows any correlation with the sponsor's share. This results in the following research question:

"To what extent does the success/failure at the World Cup affect the stock market price of a team's sponsor?"

This research supports existing literature on the effect of sport sponsoring by providing new empirical data analysis and results. To my knowledge no existing research focuses on this topic using event studies. The results of this study must be regarded with caution. While there is a high involvement with football in Europe, other sports and continents may face less attention. Following this, the results are only valid for the sample and time period I investigate.

This research has societal relevance as companies spend a lot of money on sponsorship and it shows great marketing effects. In 2017, a total of \$62.7billion was contributed to sponsorship expenses followed by \$65.8billion in 2018. In 2016, \$16billion of these expenses were spent in Europe. In the same year, the sports sector accounts for 70% (\$15.7billion) of North America's total sponsorship expenses (Statista, 2020). This shows that the sport sponsorship market generates a lot of cash flows. Reasons for sponsors to invest in teams and athletes

include the purchase intent (Cornwell, 2013), the brand loyalty (Mazodier & Merunka, 2012), brand awareness and the brand image (Lardinoit, & Derbaix, 2001). Sports, including the World Cup, can have positive externalities. This includes social inclusion, public health and education through the excitement and emotions it brings along (Allender, Cowburn & Foster, 2006).

The paper introduces new insights into the importance of sport kit sponsoring for a firm's marketing strategy. It can help firms adjust their strategic objectives and goals. Firms which sponsor teams at the World Cup can benefit from this research as it sheds light on how important results of sport events are for their share prices. In addition, other sports industries can also use and interpret this analysis. It investigates how the outcome during such a megaevent translates into firm performance for the company.

In order to analyse the research question, this thesis first investigates some background information. This includes discussions about how the World Cup works and some information about the main sponsors of the competition. Following this, the paper examines and reviews the existing scientific literature. Next, I calculate winning probabilities based on betting odds showing which events are 'surprises' and contrary to investors' expectations. Using an event study, I investigate the stock behaviour in order to accept or reject the hypotheses. Afterwards, I present and discuss the results. In the end, I state the finding of this and formulate a conclusion.

2. Industry Background and Sponsoring Brands

In order to investigate the research question, it is important to first understand how the World Cup works. Then, I introduce the main sponsoring companies. Furthermore, this section compares firms past performances. It links each firm to the teams it supplies with a kit. At the end, it shows which teams are the best performing teams in the world based on a set of criteria.

2.1 The World Cup

The football World Cup takes place every four years in a different host country. 32 national men's football teams take part in the competition. From 2026 onwards, 48 teams will participate. The World Cup, organized by the International Federation of Association Football (FIFA), uses an ordinary point system in the group stage to eliminate the weakest teams. In

total there are eight groups of four teams each playing a round-robin tournament. The two best performing teams out of four teams qualify to move on to a knock-out elimination system. For this, the different national teams play against each other and the winner moves on to the next round, while the loser is eliminated from the tournament. In the very end, the two most successful teams play against each other in the final to find the World Cup winner.

2.2 The brands

This paper investigates Nike, Adidas and Puma, the top apparel sponsoring brands of the World Cup. I define these as companies operating in the sporting goods industry that supplies more than two teams in the World Cup with their kits. To understand the research question, it is important to define what a company's stock price is. A company's stock price reflects the current price at which a company's assets trade at the stock market (CFI, 2020).

Nike originates in the US. In 2019 it had 76.700 employees worldwide and generated revenues of \$39.10billion. It is a widespread company with 1,152 own stores all over the world. The company is the biggest sports apparel supplier worldwide including jerseys, shoes and equipment. Its brand value in 2019 is \$32,40 billion while its net income was \$4,03billion. Nikes brand value is \$38,40billion at the stock market in 2020 which presents an increase from 2019 of over two billion US dollars. (O'Connell, 2020).

Nike was founded in 1964 by Bill Bowerman in Oregon, USA. After it opened its first retail store in 1966, Nike introduced its first shoes in 1972. Its name changed from Blue Ribbon Sports to Nike. It went public in 1980 with an IPO share offering worth \$178million. The brand grew further introducing new marketing slogans such as "Just Do It" in 1988. It has several sub brands and endorsement deals with athletes such as Michael Jordan, Tiger Woods and Roger Federer. Nike improved its workplace conditions in 1991 after the company was accused of poor working conditions and low wages. The brand expanded and has retail stores in over 170 countries. Nike covers both the general sports market and extreme sports equipment. It is the official apparel supplier for the NBA and the NFL (Nike, 2020; Meyer, 2019).

While Adidas has German roots, nowadays it has over 59,000 employees around the world. In 2019 they sold 1,10billion sports products and generated sales of €23,64billion. It has a total of 1333 retail stores and the net income of 2019 is \$1,98billion. Adidas has a brand value of \$16,67billion in 2019, presenting an increase of almost \$10billion from 2016. Core brands of the Adidas AG are Adidas and Reebok (O'Connell, 2020).

Adolf Dassler establishes Adidas in 1949 in Bavaria, Germany after going separate ways from his brother Rudolf, founder of the brand Puma. The German success in 1954 in Bern, playing in screw-in studs shoes by Adidas, kick-started their success and made the news all around the world. Since 1970 Adidas provides the official ball for the World Cup. In 1986, Adidas transformed from an only sports equipment brand to a one which could also be worn everywhere on the streets. The company grows further and continues to increase its international reach. Its focus is on strong marketing and innovation (Adidas, 2020).

Puma comes from the same small town called Herzogenaurach in Germany as Adidas. In 2019, the company had a total of about 14,000 employees and worldwide sales of over €5,50billion. The total gross profit in 2019 equalled €2,69billion (O'Connell, 2020).

In 1948 Rudolf Dassler starts up his own business Puma in Bavaria, Germany after going separate ways from his brother Adolf, founder of Adidas. Following the separation of the brothers, Puma had to start from scratch. It became a strong brand associated with football after supplying a lot of West Germany's national football team players. Following this success, Puma released several shoes for other sports leading to a strong growth of the company. Puma made its way to a globally recognized and successful brand sponsoring some of the strongest athletes such as Boris Becker, Lothar Matthäus, Serena Williams and Usain Bolt. It is not only known for its football apparel supply but also for being a general sportswear brand for men and women alike ("PUMA's History", 2020).

2.2.1 The brands' overall past performance

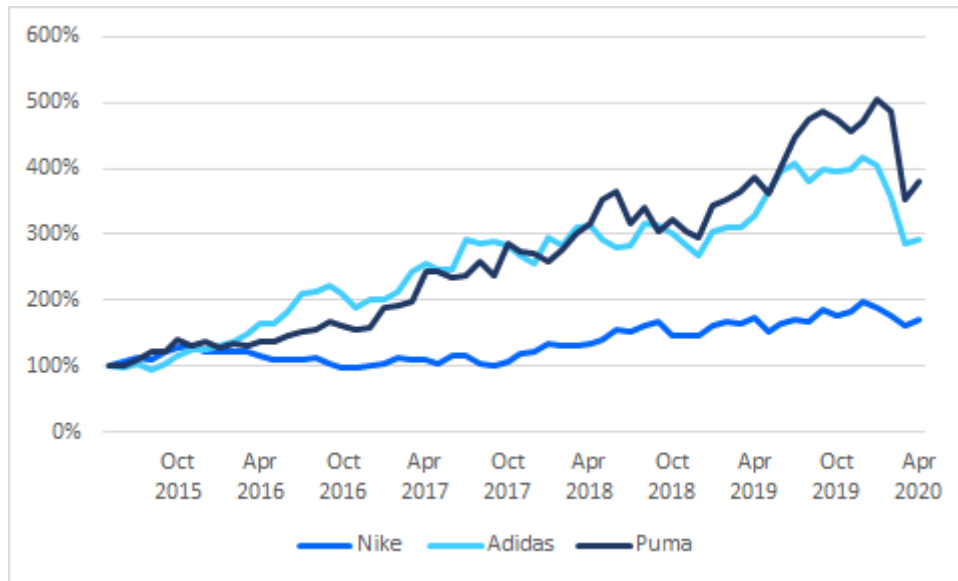


Figure 1. Stock performance main sponsoring brands in the past five years
Data Source. Investing.com

Figure 1 shows the stock performance of Nike, Puma and Adidas in the past five years. This provides an overview of the overall performance of the companies in the market. I determined the rates by dividing the average stock price of a share of the brand for each month by the average stock price of the base month being May 2015. Puma had a share split of 1:10 in June 2019. In order to be able to compare the brands better, I use adjusted Puma's share prices in the years prior to the split for this graph. All three companies see a constant increase of firm valuation throughout the years. Adidas and Puma are closer to each other while Nike is growing a bit slower but still steadily. For all three brands, the figure displays a recent fall starting from January 2020. This results from the corona crisis that affects all stock markets across the globe.

2.3 The teams

In order to conduct the analysis, this section connects the teams participating in the World Cup to the brands that supply them with kit. In addition, it provides an overview of the best performing teams.

2.3.1 Teams supplied by each brand

Table 1. Brands with the teams they sponsor

Brand	Teams		
Nike (N)	Brazil Netherlands Poland Saudi Arabia USA Slovenia	France Croatia Australia South Korea New Zealand Mexico (06)	England Portugal Nigeria (18) Greece (14) Serbia
Adidas (A)	Argentina Spain Colombia Morocco Bosnia Greece South Africa	Germany Sweden Russia Japan Nigeria Paraguay Trinidad	Belgium Iran Mexico Egypt Denmark Slovakia Tobago
Puma (P)	Italy Senegal Cameroon Ivory Coast Angola Poland (06)	Switzerland Serbia Chile Iran (06) Togo Tunisia	Uruguay Algeria Ghana Paraguay (06) Czech Republic Saudi Arabia

Source. Soccer365.com Note. Years teams supplied by new sponsor given in parentheses.

The table above shows the teams of the past four World Cups and the brands they associate with. In 2018, Adidas supplied 12 national teams, Nike sponsored 10 teams and Puma 4 teams. Using the three brands, I analyse 26 of the 32 competing teams. The main teams that Nike is sponsoring are Brazil, France, England, Netherlands and the USA. Adidas provides the teams of Germany, Argentina, Belgium, Spain and Sweden with kit. Teams which Puma sponsors include Italy, Switzerland, Uruguay and Ghana. In the following tables the sponsor's first letter behind each national team represents who their sponsor is.

In addition to the teams, Adidas is also the official partner of FIFA. This means that they provide not only the ball, but the Adidas logo is also present on every marketing material FIFA publishes (Change, 2019). In 2019, the total revenues generated by the global sports apparel market were \$181billion and in 2018, the total value of the sports market totalled up to \$471billion (Statistica, 2020).

2.3.2 The best performing teams

Throughout the years, different teams have won the World Cup. At the same time there is always some variation in which teams qualify for the World Cup and can participate. However, often similar teams make it to be one of the frontrunners and to compete for the top eight spots of the tournament.

Table 2. Rankings top teams

<u>Country</u>	<u>Times in the top 10 FIFA ranking (20yrs)</u>	<u>Number of times World Cup Winner</u>	<u>Number of times in WC Semi – Finals (20yrs)</u>	<u>Number of times in WC Quarterfinals (20yrs)</u>
Brazil	19	5	2	5
Argentina	19	2	1	3
Spain	18	1	1	1
Portugal	16	0	1	2
Germany	15	4	4	4
France	14	2	2	3
Netherlands	14	0	1	2
Italy	12	4	1	1
England	12	1	1	3
Belgium	7	0	1	2
Czech Republic	7	0	0	0

Source: Fifa.com; Eurosport.com

The table above shows the best 10 teams I evaluate based on how often they were within the top ten of the FIFA/Coca-Cola ranking in the past 20 years. In addition, it shows how often the teams won the World Cup and how often they reached the semi-finals and the quarter finals in the last 20 years. Brazil and Argentina are most often in the top ten of the world ranking. Brazil won the World Cup five times and Germany and Italy four times. Based on the above table, the most successful teams are Brazil, Argentina, Spain, Germany, France and Italy. These are the countries I investigate in the naive analysis.

3. Theoretical Framework

To answer the research question, it is important to first discuss previous literature which also contributes to this field of study.

Till & Shimp (1998) find that the endorsement process links celebrities to the brand they present. Not only endorsement but sponsoring alike creates an association between the brand and the national teams. In addition, celebrities enhance advertisement belief and message recall. The brand recognition rises, and the brand image improves. The effect of celebrity endorsement has a positive effect on stock returns. (Agrawal, Kamakura, 1995). Such as in the Tiger Woods endorsement, sales rise through the association between the brand and the celebrity (Chung, Derdenger & Srinivasan, 2013).

Van Everdingen, Hariharan & Stremersch (2019) investigate how gear manufacturers competing in sports contests affect branding and branding outcomes. They recognize that sponsoring in sports fosters brand recall, exposure, recognition, trust, loyalty and sales. Chung, Derdenger and Srinivasan (2013) show that there is a positive effect of sponsoring on the sales performance. They investigate the relation between a firm's participation, spending and performance within Formula One. The authors (Van Everdingen, Hariharan & Stremersch, 2019) differentiate between a firm competing as a contestant and a firm sponsoring team which participates in the competition. Contrary to contestants, firm sponsors have less responsibility and control of the team they supply. They do not compete at the contest against others within the same industry. In addition, they are not ranked on their teams performance. For gear manufacturers, the strong fit between the gear they develop and sell connects the sports market and the commercial market. A technology transfer may result from spillovers between the two markets. The authors find that there is a positive relation between a manufacturer competing in a sports contest and its sales performance.

This means, the sponsoring of the national teams of the World Cup aims at building stronger brand associations. The efficient market hypothesis in this case predicts that a rational investor expects this to happen. The investor knows that the games expose fans to the best performing teams for a long time. This entails high media coverage for the sponsors resulting in market reputation, brand awareness and sales (Hughes & Shank, 2005). However, if the expectations and outcomes do not match, this can result in a change in stock prices. Sponsorship in events is a common marketing tool for communications. Stock market price evidence shows that participation in event sponsorship is beneficial (Miyazaki & Morgan, 2001) and companies should participate in sport sponsorship activities (Spais & Filis, 2006).

In 2001, Cornwell, Pruitt & Van Ness investigate the motorsports market and the value that a win brings for the sponsor. They find that sponsors that have little to do with the automotive industry, see little change in their stock market values. In the meantime, sponsors that directly match with the industries, show economically significant share price increases. Sponsorship in the football sector shows that mega football events such as the European Football Championship in 1996 helps establish a positive brand image and brand awareness (Easton & Mackie, 1998).

It is however interesting to see Red Bull's success within the motorsports industry contradicting this finding. Red Bull's energy drink does not directly link to the motorsports industry, but their marketing strategy evidently works very well (Cole,2020).

In 2007, Edmans, Garcia and Norli show that losses in soccer matches result in significantly negative effects on the stock market of the losing country. They show that the economically negative effect is caused by a change in the investors mood. Hanke and Kirchler (2013) investigate how football sponsorship affects the jersey sponsors stock market prices. The paper investigates seven major national teams ('Big 7') at European and World Championship between 1996 and 2008. The study focuses on the same three brands Nike Adidas and Puma. Contrary to the event study approach I use, Hanke and Kichler use an OLS regression analysis. They first isolate the abnormal return. Furthermore, the authors use a panel regression model regressing the residual against independent variables relating to football. They decide against an event study due to the daily occurrence of games. In addition, they do not have 'unaffected' estimation periods before the event. While the study investigates the same field of study, it does not take the probabilities of winning into account. This means it does not look at the 'surprise matches' which is contrary to the investors expectation. They find that for matches for which the jersey supplier is the same, excessive positive returns follow. In addition, Hanke and Kichler show that negative excess returns follow a defeat. The effects for knockout games are stronger than those of group games. This follows as knockout games are more important. The defeat effect is more significant when they account for probability of defeat before the game. These findings however clash with the idea that investors expectations should already be incorporated in the stock market price.

This shows that the result of sporting events can play a significant role in the stock market prices of the sponsoring firms.

The efficient market hypothesis states that a company's share prices reflect all available information and the stock always trades at its fair value. Following this it is impossible to outperform the market through market timing or stock selection. The only way to obtain higher

results is by investing in riskier stocks (Malkiel, 1989). Following this, investing strategically in World Cup results should not yield higher profits. About 30-40% of share price changes are due to market variability. Security prices should adjust quickly to new information and should always reflect all the information available such as policy changes within the firm. Stock market prices are an indication of how well a company is doing and a reflection of the investors' expectations (Ball & Brown, 1968). Following this I define an unexpected success or failure as an outcome that comes as a surprise as it counteracts the expectations and betting odds. The monetary returns a person gets from betting on a team's win relates to the expectation of the team's probability of winning. Using the betting odds, I calculate the probabilities of winning the match. If a team that is expected to lose, wins, I count it as a success and vice versa for a loss.

Van Ours & Van Tuijl (2016) investigate what effect a coach change has on the performance of a team within a season. For this, they also use betting odds to calculate the 'match surprise'. The difference between expectations and actual results is an indicator for an in-season head-coach change. Using bookmaker data, they find the 'cumulative surprise' as a sum of all 'match surprises'. This provides an indication of when a head-coach change might be imminent. According to Stadtmann (2006) only an 'expectation error' should influence the stock market and show a stock price fluctuation for the next trading day. This method allows me to investigate for which events a significant stock market price change is possible. Referring to the betting odds, in 2018 it was expected that France would defeat Belgium. However, it was highly unexpected that Germany would lose against South Korea. I expect stronger price changes after an event such as the game of Germany against South Korea with an 'expectation error'.

This shows that a firm's stock market prices on the next trading day should reflect unexpected outcome of the match.

Previous literature shows that sponsoring can be used as a viable and effective marketing tool by building a strong brand association and awareness enhancing sales. However, it only shows that a general positive association between sponsoring and a positive brand value. Findings show, using an OLS regression, that there are significant abnormal returns for the 'big 7' matches. It does not show how certain unexpected outcomes and surprises at the World Cup, affect the market prices investigated through an event study analysis. Thus, to further investigate the research question, the hypotheses are as follows:

H1: Due to a surprisingly good result in a World Cup match, the equivalent kit sponsors stock market prices rise significantly.

H2: Due to a surprisingly bad result in a World Cup match, the equivalent kit sponsors stock market prices fall significantly.

4. Methodology

4.1 Model

An event study helps to evaluate the research question as it measures the impact a specific event has on a company's stock performance. As I analyse several events it helps to predict how the stock prices react to an event of this kind. It is an event-history analysis which uses time as the dependent variable. It evaluates to what extent an event has an impact on a firm's financial performance. This method investigates whether abnormal returns occur after the event day. First an estimation window determines the normal behaviour of the market. This means, the model uses the following equation to determine what general trend the stock market factors follow.

$$R_{i,t} = \alpha + \beta_{i1}R_{m,t} \quad (1)$$

In this formula, $R_{i,t}$ represents the return for each individual firm in the market including the brands of Nike, Adidas and Puma. The α stands for a constant and the β_i is the firm's specific regression coefficient which represents the correlation of the market returns or industry returns with the returns of the firm. R_m presents the market returns. All of these are taken at time t . This formula makes sure that the event study also accounts for the overall market trend.

Following this, I calculate the abnormal returns. Abnormal returns present the difference between a firm's predicted returns, and its actual return on a specific day. The predicted returns are based on expectations and available information. Again, the equation below accounts for the industry and market trends in order to minimize the bias and to get more accurate results.

$$AR_{i,t} = r_{i,t} - (\alpha_i + \beta_{i1}r_{m,t}) \quad (2)$$

For the abnormal return I subtract the firm's individual stock market returns $r_{i,t}$ by the normal behavior trend. This incorporates as before the firm specific intercept α_i and the β_i s for the market return at date t which is estimated with the normal behaviour formula (1).

In order to check the reliability of the results I conduct a significance test using the following test statistic.

$$t = \frac{AR_{i,t}}{\text{Standard Error of predicted } Y \text{ value for each } X} \quad (3)$$

The t-statistic tests at a 1%, 5% and 10% significance level whether the abnormal return (AR) is significant.

In total, I conduct three different analyses. Each of these analyses I select different events on different criteria. First, I conduct a naive analysis solely based on whether the top teams Brazil, Argentina, Germany, France, Spain and Italy were eliminated before the quarterfinals. The analysis then regards this as a surprise in the naive analysis. The only exception is, if one of these teams was eliminated in the round of 16 by another top team. In addition, it analyses the final match of each World Cup. For Nike and Adidas, the naive analysis looks at eight different events and incorporates four events for Puma.

The second analysis I conduct is based on expectations. I use bookmaker data in order to check which event result is a surprise. This means transferring the betting odds for the World Cup games into probabilities. These probabilities give insight into the investors' expectations. The market should therefore incorporate these probabilities. The equation below shows how to transfer the data.

$$\text{Probability of team to win} = \frac{1}{\text{quote} \times \text{mark-up}} \quad (4)$$

Using the method Stadtman (2006) uses in his stock market analysis, I calculate the 'true probabilities'. If the quote for a game is 1,17 for a win of Germany, 8,12 for a draw and 19,06 for South Korea to win. Then the bettor would receive for every 1 Euro put on a win for South Korea 19,06 Euros. Comparing these quotes shows that Germany is the clear favourite. I determine the bookmaker mark-up as follows. The sum of the inverse of the quotes in this case ($1/1,17 + 1/8,12 + 1/19,06$) gives the mark-up of around 3%. Following this, I calculate the 'implicit probabilities of ($1 / (1,17 * 1.03)$) resulting in a probability of 83% for Germany showing that it was regarded as the favourite. The probability of a draw is ($1 / (8,12 * 1.03)$) 12% and for South Korea to win is ($1 / (19,06 * 1,03)$) 5% summing up to 100%.

A threshold is set at 15% for events to count as a surprise. This means the probability of a match needs to have a probability of maximally 15% for the worst team to win. If the team then wins, the analysis regards this as a surprise. If there are two games with the identical following stock market trading day, the analysis only includes one of them. It prioritises a clear match result to a draw. Furthermore, if both matches have a clear result as the goals scored by the teams differ, I evaluate the game with the better team based on the FIFA ranking. Based on the betting odds I analyse seven events for each brand in the expectation analysis.

Finally, I conduct a third analysis to evaluate the general effect the World Cup has on the sponsors' stock market prices. For this, the analysis uses the same method as for the previous two. However, for this analysis, I investigate the stock market prices on a weekly basis. This gives an indication of whether the sponsors benefit from the tournament in general. Here I only report significant abnormal returns which results in a total of ten events.

4.2 Data

The data consists of several parts. First, I retrieve the betting odds from an online betting portal called oddsportal.com (Oddsportal, 2020). This research examines the World Cup years of 2006 to 2018 including 4 competitions. The research examines stock market information from YahooFinance.com and Investing.com. Both give information about the stock market prices for each firm for each day the stock market opens. The estimation period for the analysis consists of the 10 months prior to each year of competition. This predicts the normal behaviour of the stock market. For the event period, I use the two consecutive months of June and July in which the World Cup takes place. For Nike the information comes from the New York stock exchange while for Adidas and Puma, the Xetra presents the stock market information. Both are trading venues.

For the market returns, the analysis uses the S&P 500 as an index for Nike. It incorporates the stock performance of the 500 largest companies which are listed on the US stock exchange. It provides a good representation of the overall market trend in the United States. The DAX 30 is an index which measures the stock performance of the 30 largest listed German companies.

5. Results

5.1 Sample description

First, for the naive analysis four events fall under the criteria that a team won a final before. In addition, I analyse seven for which one of the best teams was eliminated before the quarterfinals. The last event that the analysis includes is the game in 2014 in which Brazil played against Germany in the semi-finals. Germany defeated Brazil 7:1 in Brazil. The analysis includes this event due to the size of the defeat. This results in a total of twelve events for the naive analysis (see Appendix A1.1).

Table 3. Events analysed based on betting odds

<u>Date</u>	<u>Game (Sponsor)</u>	<u>Outcome</u>	<u>Probabilities (W(x)/D/W(y))</u>
18th of June 2006	France (N) - South Korea (N)	1 : 1	0,62 / 0,25 / 0,13
12th of June 2010	England (x) - USA (N)	1 : 1	0,63 / 0,23 / 0,14
15th of June 2010	Slovakia (N) - New Zealand (N)	1 : 1	0,63 / 0,24 / 0,12
16th of June 2010	Spain (A) - Switzerland (P)	0 : 1	0,75 / 0,18 / 0,07
20th of June 2010	Italy (P) - New Zealand (N)	1 : 1	0,78 / 0,16 / 0,06
24th of June 2010	Italy (P) - Slovakia (N)	2 : 3	0,61 / 0,25 / 0,14
25th of June 2010	Switzerland (P) - Honduras (x)	0 : 0	0,62 / 0,24 / 0,14
14th of June 2014	Uruguay (P) - Costa Rica (x)	1 : 3	0,67 / 0,23 / 0,11
17th of June 2014	Brazil (N)- Mexico (A)	0 : 0	0,71 / 0,18 / 0,10
18th of June 2014	Spain (A) - Chile (P)	0 : 2	0,60 / 0,22 / 0,18
21st of June 2014	Germany (A) - Ghana (P)	2 : 2	0,72 / 0,17 / 0,11
17th of June 2018	Germany (A) - Mexico (A)	0 : 1	0,65 / 0,22 / 0,13
25th of June 2018	Spain (A) - Morocco (A)	2 : 2	0,71 / 0,19 / 0,10
27th of June 2018	Germany (A) - South Korea (N)	0 : 2	0,83 / 0,12 / 0,05

Source. oddsportal.com.

The table above (Table 3) shows the events I analyse based on the calculated betting odds. It shows the date of the game, which teams played against each other with their relating sponsors and the outcome of the match. In addition, the team written in bold is the one that won the match. This indicates whether each game is a win or a loss for the equivalent sponsor. The table displays the probabilities for each of the teams to win based on the betting odds. It does not analyse all events that are contrary to the expectations. Using the threshold of 15%, I analyse a total of 14 games. A win is seen as an event in which the team that had the lower probability of winning succeeds or if the game results in a draw between the two teams and vice versa for a loss.

For Nike, I analyse seven events of which the analysis defines four as unexpected wins and one as a loss. Nike supplied both teams with kits for two games. Based on the betting odds, the analysis investigates seven events for Adidas of which four are losses and one is a win and for two matches, Adidas supplied both teams playing against each other. For Puma, the analysis shows seven events to investigate of which three are defined as wins and four as losses.

5.2 Analysis results

For all events, I estimate the normal behaviour using the stock market. Following this, the events in the same year and the same sponsor have the same slope (beta) and the same R-squared.

Table 4. Slope and R-squared for the event study

<u>Sponsor</u>	<u>Year</u>	<u>Slope</u>	<u>Standard Error</u>	<u>R-squared</u>
<u>Nike (1)</u>	2018	1,03	0,01	0,32
	2014	0,99	0,01	0,27
	2010	0,73	0,01	0,27
	2006	0,65	0,01	0,12
<u>Adidas (2)</u>	2018	1,03	0,01	0,29
	2014	0,91	0,01	0,32
	2010	0,92	0,02	0,38
	2006	0,77	0,01	0,19
<u>Puma (3)</u>	2018	0,96	0,01	0,12
	2014	0,55	0,01	0,15
	2010	1,11	0,02	0,37
	2006	1,16	0,01	0,26

Table 4 shows the slope for each year and each sponsor. It represents the y-values per unit in x-values which is based on the normal behaviour. As all values are positive, there is always a positive relationship between the sponsors market return and the market index return. For a large value, such as 1,16 in 2006 for Puma, the slope is steeper than for other years with small

values for the slope such as 0,55 in 2014 for Puma. This means that with every rise in the market index the return for Puma rises by more than for the small values. A value of the slope above one indicates that the sponsor has more than average market risk. The R-squared is the coefficient of determination and shows how closely the data is to the fitted regression line. If the value is larger, the model is a better representation of the actual behaviour. With a value of 0,38 for Adidas in 2010, the index return explains 38% of the return Adidas' return. On the other hand, for Nike in 2006, the index return explains only 12% of variation.

5.2.1 Naive analysis

Table 5. Naive event study analysis results Nike

<u>Event</u>	<u>Game</u>	<u>Abnormal return</u>	<u>t-statistic</u>
09.07.2006	France (N) – Italy (P)	- 0,0014	-0,12 (0,01)
17.06.2010	France (N) – Mexico (A)	0,0039	0,31 (0,01)
22.06.2010	France (N) – South Africa (A)	-0,0132	-1,04 (0,01)
02.07.2010	Brazil (N) - Netherlands (N)	-0,0011	-0,09 (0,01)
11.07.2010	Netherlands (N) – Spain (A)	-0,0082	-0,65 (0,01)
08.07.2014	Brazil (N) - Germany (A)	-0,0014	-0,14 (0,01)
27.06.2018	Germany (A) – South Korea (N)	-0,0070	-0,59 (0,01)
15.07.2018	Croatia (N) – France (N)	-0,0001	-0,01 (0,01)

Note. Standard error is in parentheses; * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 6. Naive event study analysis results Adidas

<u>Event</u>	<u>Game</u>	<u>Abnormal return</u>	<u>t-statistic</u>
17.06.2010	France (N) – Mexico (A)	-0,0016	-0,11 (0,02)
22.06.2010	France (N) – South Africa (A)	0,0055	0,36 (0,02)
24.06.2010	Italy (P) - Slovakia (A)	-0,0094	-0,62 (0,02)
11.07.2010	Netherlands (N) – Spain (A)	0,0165	1,08 (0,02)
18.06.2014	Spain (A) – Chile (P)	-0,0139	-1,23 (0,01)
08.07.2014	Brazil (N) - Germany (A)	0,0091	0,81 (0,01)
13.07.2014	Argentina (A) - Germany (A)	0,0077	0,68 (0,01)
27.06.2018	Germany (A) – South Korea (N)	-0,0020	-0,14 (0,01)

Note. Standard error is in parentheses; * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 7. Naive event study analysis results Puma

<u>Event</u>	<u>Game</u>	<u>Abnormal return</u>	<u>t-statistic</u>
09.07.2006	France (N) – Italy (P)	-0,0091	-0,52 (0,02)
24.06.2010	Italy (P) - Slovakia (A)	-0,0046	-0,25 (0,02)
18.06.2014	Spain (A) – Chile (P)	0,0010	0,09 (0,02)
20.06.2014	Italy (P) – Costa Rica (x)	-0,0003	-0,02 (0,02)

Note. Standard error is in parentheses; * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

The tables above (Table 5,6&7) show the naive analysis results for the three brands. None of the reported values is significant at a 10% level. However, the naive analysis is not a good measure. It does not take the expectations of sponsors into account and therefore, these events are not necessarily 'match surprises'. Following this, the stock market price already incorporates the outcome of the game and this rather serves as a proof that the efficient market hypothesis holds.

For Nike (Table 5.) the event which is closest to being significant is the game on the 22nd of June 2010 between France and South Africa. It has a t-statistics of -1,04. While this is not significant, it could indicate that France was eliminated from the tournament rather early (before the quarterfinals). As it is one of the best performing teams and the related enthusiasm is relatively high, such a loss can affect the stock prices, even though insignificantly. There is no clear trend observable of how a game affects the stock prices. On the 15th of July 2018, France won the World Cup. However, on the next trading day, abnormal returns are negative. In addition, when South Korea won against Germany on the 27th of June, the following abnormal returns were negative. This shows that these events do not have any effect.

In Table 6, naive analysis results for Adidas show the same irregularities as for Nike. Even though on the 17th of June 2010, Mexico defeated France, the table displays a negative abnormal return. For Adidas, the event closest to being significant shows a t-statistic of -1,23. This however follows the game of Chile winning against Spain. This change in stock prices cannot be associated with the game itself as a win would rather result in a rise in stock prices. It indicates that the investors already expected this result and therefore it does not affect the returns. In addition, other forces may have a stronger impact on the stock market prices than these games.

As for Puma (Table 7) none of the abnormal returns are close to being significant. In addition, the table does not display any trend.

These results are not surprising as the analysis is only concentrating on whether the top teams made it to the quarterfinals and the final of each World Cup. The outcomes do not release any new information so that the stock market price already incorporates everything, and no significant abnormal return follows.

5.2.2 Expectation analysis

This analysis is based on probabilities indicating which team the investors expect to win. For these events, the outcome does not match the expectation.

Table 8. Expectation event study analysis results Nike

<u>Event</u>	<u>Game</u>	<u>Abnormal return</u>	<u>t-statistic</u>
18.06.2006	France (N) – South Korea (N)	0,0122	1,10
12.06.2010	England (x) – USA (N)	0,0076	0,60
15.06.2010	Slovakia (N) – New Zealand (N)	-0,0011	-0,09
20.06.2010	Italy (P) – Slovakia (N)	0,0039	0,31
24.06.2010	Italy (P) – Slovakia (N)	0,0076	0,60
17.06.2014	Brazil (N) – Mexico (A)	0,0034	0,33
27.06.2018	Germany (A) – South Korea (N)	-0,0070	-0,59

Note. Standard error is in parentheses; * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 9. Expectation event study analysis results Adidas

<u>Event</u>	<u>Game</u>	<u>Abnormal return</u>	<u>t-statistic</u>
16.06.2010	Spain (A) – Switzerland (P)	-0,0147	-0,97
17.06.2014	Brazil (N) – Mexico (A)	-0,0036	-0,32
18.06.2014	Spain (A) – Chile (P)	-0,0139	-1,23
21.06.2014	Germany (A) – Ghana (P)	-0,0107	-0,95
17.06.2018	Germany (A) – Mexico (A)	0,0111	0,78
25.06.2018	Spain (A) – Morocco (A)	-0,0016	-0,11
27.06.2018	Germany (A) – South Korea (N)	-0,0020	-0,14

Note. Standard error is in parentheses; * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 10. Expectation event study analysis results Puma

<u>Event</u>	<u>Game</u>	<u>Abnormal return</u>	<u>t-statistic</u>
16.06.2010	Spain (A) – Switzerland (P)	-0,0073	-0,40 (0,02)
20.06.2010	Italy (P) – New Zealand (N)	-0,0269	-1,46 (0,02)
24.06.2010	Italy (P) – Slovakia (N)	-0,0046	-0,25 (0,02)
25.06.2010	Switzerland (P) – Honduras (x)	0,0115	0,62 (0,02)
14.06.2014	Uruguay (P) – Costa Rica (x)	-0,0028	-0,26 (0,01)
18.06.2014	Spain (A) – Chile (P)	0,0010	0,09 (0,01)
21.06.2014	Germany (A) – Ghana (P)	-0,0003	-0,02 (0,01)

Note: Standard error is in parentheses; * significant at 10% level; ** significant at 5% level; *** significant at 1% level

Table 8, Table 9 and Table 10 show the results for the event studies on the expectation analysis for the three brands. They are based on the betting odds I calculate beforehand. For none of the events I find a significant abnormal positive return. The stock market prices of the following trading day do not show a significant change at a significance level of 10%. This holds true for all positive (win) 'surprise matches'. Following this the first hypothesis can be rejected.

In addition, the tables show no abnormal negative return for the matches I categorize as negative (loss) 'surprise matches' at a 10% significance level. Following this, I also reject the second hypothesis.

For Nike, Table 8, does not display any trend. Even if a team sponsored by Nike loses such as on the 17th of June 2014 the following abnormal return is positive. With a t-statistic of only 0,33 this may indicate that a game in the group stage is not seen as too important. The teams might continue competing even if they lost one game in this stage. The event that is closest to being significant with an abnormal return of 0,0122 and a t-statistic of 1,10 is the game between France and South Korea. Here, Nike supplies both teams, however, France was the clear favourite. A significant negative abnormal return would then indicate, that an unexpected outcome for a top scoring team has a stronger effect than one by a low scoring team. While a negative abnormal return would be comprehensive, it shows a positive one, not supporting this idea. Looking at the game of Germany against South Korea on the 27th of June 2018, the table displays a small negative abnormal return of -0,0070 with a t-statistic of -0,59. If there was a significant positive abnormal return this could indicate that a big loss by a team sponsored by someone else might indirectly affect Nikes own stock prices. However, the results do not support this. Following this there seems to be no effect of the outcomes on stock prices.

Table 9 indicates the same irregularities for Adidas as before seen for Nike. On the 17th of June 2014, Mexico defeated Brazil. The abnormal return was -0,0036 with a t-statistic of -0,32. This does not support the first hypothesis. In addition, as for Nike, it may also indicate that the events in the group stage do not have a significant effect. The game which has an abnormal return of - 0,0139 and t-statistic of -1,23 was on the 18th of June 2014 between Spain and Chile. The analysis investigates the two events occurring on two consecutive days (17th & 18th of June 2014). An event study usually also calculates the cumulative abnormal return investigating the effect that the event has the days after. However, this is not possible for this analysis as the days occur right after each other in such a short time period. This results in the possibility that one event can still influence the stock prices another day or two later. It

shows that it is difficult to contribute an effect to a specific event within the time period of the World Cup.

As for Puma, Table 10, shows again no trend. The highest t-statistic and closest to being significant has a value of -1,46. It shows an abnormal return of -0,0269 following the game between Italy and New Zealand on the 20th of June 2010. As mentioned before, there are numerous reasons why this effect does not directly associate with the unexpected loss.

This indicates that the outcome at a World Cup match does not, even if it is contrary to the investor's expectation, affect the stock market prices of the kit sponsors. Here we can refer to the literature by Van Everdingen, Hariharan & Stremersch (2019). Nike, Adidas and Puma do not directly compete in the tournament against each other. Therefore, they are not as responsible for the team and are not directly linked to it. This means that the sponsors associate with the team, but the outcome does not affect them. In addition, they are not ranked against their competitors showing who is better or worse.

There is a general positive relationship between sponsoring and sales performance according to Chung, Dardenger and Srinivasan (2013). The results however indicate that the outcome of the game does not influence the stock market prices which indirectly relate to sales. They therefore suggest that while sponsoring fosters brand recall, exposure, recognition, trust, loyalty and sales (Van Everdingen, Hariharan & Stremersch, 2019) match results do not matter. The outcome of the match therefore only influences the stock market which is too small for it to be significant. A long list of factors influences the stock market price. This includes for example fundamental factors, technical factors and market sentiment (Harper, 2019). Following this, it is very difficult to determine what proportion of a stock market change a single factor such as the outcomes of the World Cup influences.

The results are contrary to the findings by Hanke and Kirchler (2013). They use an OLS regression and find significant abnormal returns. This shows that the results depend on the analysis method that the authors use. Their analysis does not use betting odds to calculate expectations. Following this, their results clash with the efficient market hypothesis. The authors try solving the problem of events on consecutive days by using OLS regression. However, other biases are present when using this method such as omitted variable bias.

5.2.3 General effect analysis

Table 11. General effect analysis

<u>Sponsor</u>	<u>Week</u>	<u>Abnormal return</u>	<u>t-statistic</u>
Nike	July 1 st , 2018 (4)	0,0754 (0,03)	2,80***
	June 27 th , 2010 (4)	-0,0492 (0,02)	-2,34**
	July 2 nd , 2006 (5)	-0,0515 (0,02)	-2,41**
Adidas	June 22 nd , 2014 (3)	-0,0324 (0,02)	-1,85*
	June 15 th , 2014 (2)	0,0322 (0,02)	1,84*
	June 20 th , 2010 (3)	-0,0581 (0,03)	-1,92*
	June 12 th , 2006 (2)	-0,0407 (0,02)	-1,67*
Puma	June 11 th , 2018 (1)	-0,0556 (0,03)	-1,82*
	June 21 th , 2010 (3)	-0,0656 (0,03)	-2,15**
	June 26 th , 2006 (4)	0,0607 (0,03)	1,99**

Note: Standard error is in parentheses; * significant at 10% level; ** significant at 5% level; *** significant at 1% level

Table 11 shows the general effect analysis of the World Cup on the sponsors. This analysis is based on a weekly data analysis. For each World Cup year, I either analyse six or seven weeks. The table only displays significant abnormal returns. The number behind the dates indicates which week of the World Cup the abnormal return occurs in. There is no clear positive trend observable. As the World Cup fosters sales and sports enthusiasm, a constant increase was expected. However again, this is expected by the investors and therefore the market price already includes these factors. Most of the sports gear relating to the World Cup, customers purchase prior to the World Cup. This means it is difficult to assess its effect just by looking at them on a weekly basis. While there are indeed significant abnormal returns even at a 1% significance level, a lot of them are negative. Following this, the World Cup does not solely contribute to them as other factors can play a strong role in this.

The results indicate that Nike had a “good” week measured by the abnormal return for the fourth week of the 2018 World Cup. In addition, it had a “bad” week for both the fourth week of the 2010 World Cup and the 5th week of the World Cup in 2006. The only week that is “good” for Adidas is the second week in 2014. In 2014 and 2010 the third week and in 2006 the second week show that Adidas had a “bad” week. The effect of the positive second week in 2014 is reversed by almost the same abnormal return in the third week with a similar absolute value of the t-statistic. For Puma both the first week of the 2018 World Cup and the third week of the 2010 World Cup are “bad” weeks. The fourth week of the 2006 World Cup is a “good” week. However, it is impossible to trace these abnormal weekly average returns to the games. No specific game with an unexpected outcome was played in these weeks which would make it possible to isolate the effect. It is interesting however to see, that both Puma and Adidas see an abnormal negative return in the third week of the World Cup in 2010. This can indicate another factor affecting the industries stock prices in Germany.

An example is the week of June 12th, 2006 for Adidas. Here the table displays a negative abnormal return with value -0,0407 and t-statistic of -1,67. A reversed stock split of 4:1 took place on the 6th of June 2006 for Adidas. This did not show any effect on the day after the stock. However, on June 8th the table records a significant negative abnormal return. Following this, the significant results can also be contributed to other factors happening during the period of the World Cup.

While this analysis cannot find a clear significant positive effect of the World Cup on the stock prices of the sponsors, it does not mean that such an effect does not exist. This method faces several setbacks. First, it uses weekly data and I do not separate the exact time period of the World Cup from other weeks surrounding the tournament. Secondly, it only investigates the six or seven weeks around the World Cup meaning that it does not account for any changes happening before the start of the World Cup. Thirdly, while the table shows no trend of positive abnormal returns, this does not mean that the World Cup does not influence the sponsor itself. In fact, it can still increase sales and foster brand awareness. These effects are then already anticipated by the investors and thus incorporated in the stock prices as they do not represent any news.

6. Conclusion & Discussion

In this paper, I analyse how a surprising success or failure affects the kit sponsors stock market prices. It explains that the World Cup works through a group-stage and later through a knockout stage to find the World Champion every four years. A central focus is set on the companies that sponsor the different national teams. I introduce the main sponsors of the World Cup namely Nike, Adidas and Puma with their historical backgrounds, financial numbers and current stage of operation. In addition, it links the firms to the national teams they supply with kits and which represent them on the field. Afterwards, it discusses previous literature to show that sports sponsoring is an important marketing tool for these firms. Following this, the paper examines whether the outcome of 'surprise matches' result in changes in the stock market price.

For the analysis, I conduct an event study to first examine the normal market behaviour. Then the analysis calculates the abnormal returns in stock market prices of the next trading day. First, I conduct a naive analysis just looking at the top teams and the expectation for them to reach the quarterfinals. This analysis does not yield any significant result. However, I already anticipated this as the analysis is not based on any investor expectation. Following this, the stock market prices do already incorporate these outcomes. For the next part of the analysis, I use betting odds in order to find adjusted probabilities of each team winning. The analysis uses, a threshold of 15% for the weaker team to win to select the events. In total this results in 13 events. I try to analyse the events as best as possible, taking several approaches, in order to find a clear effect. For all events and all sponsors the results are non-significant on a 10% level.

Following this, the success/failure of a team at a match in the World Cup measured by unexpected outcomes does not affect the kit sponsors stock market prices significantly.

While previous literature suggests that in general sport sponsorship is very important for companies, the team performance at a sporting contest does not influence these aspects. For the companies this means that while the team represents the sponsor on the field, there is no direct relation between them. My research adds to empirical literature and shows that the effect of the high amounts of resources spent on sponsoring is not altered by the team's performance.

Limitations of the research include that not all 'surprise matches are analysed but only ones above the threshold. As the events occur daily it is hard to see which change in stock market price contributes to a single event as other things may still play a role in this. Hanke and

Kirchler (2013) try solving this and use an OLS regression. They find significant abnormal returns. Following this, the results need to be regarded with caution. Each method yields its own results and faces its own setbacks. It would be better to investigate events which are further apart from each other so that the effect is clear and not biased. The research did not control for the overall sport industry effect. In addition, I do not account for time differences. The DAX30 and the S&P500 open at different times. Following this, the stock market prices may change already on the game day itself. While the data set is extensive, the results are only valid for this data set and this method of analysis.

Further research can investigate whether this finding can also be confirmed in other tournaments and other sports such as motorsports, basketball and American football. In addition, the effect of the news of an athlete doping in cycling sector is interesting to evaluate. When looking at the sales performance of the companies, geographical differences do exist. Further research could aim at investigating how these alter in case of an expectation error. This can give an indication in which geographical location brands have a better sales performance. When returns and sales alter more after an event it may indicate that countries are more involved with this sport. Another research can focus on whether there are differences in stock market price changes or sales performance changes depending on the host location of the World Cup. In addition, it is interesting to see whether sales performances correlate to the number of teams a company is sponsoring.

7. Appendix

Table A1.1 Events for naive analysis

<u>Date</u>	<u>Game</u>	<u>Outcome</u>	<u>Probabilities (W(x)/D/W(y))</u>
9th of July 2006	Italy (P) – France (N)	2 : 1	0.40 / 0.33
17th of June 2010	France (N) - Mexico (A)	0 : 2	0.48 / 0.26
22nd of June 2010	France (N) - South Africa (A)	1 : 2	0.48 / 0.29
24th of June 2010	Slovakia (A) - Italy (P)	3 : 2	0.14 / 0.65
2nd of July 2010	Netherlands (N) - Brazil (N)	2 : 1	0.24 / 0.51
11th of July 2010	Netherlands (N) - Spain (A)	0 : 1	0.26 / 0.50
18th of June 2014	Spain (A) – Chile (P)	0 : 2	0.63 / 0.18
20th of June 2014	Italy (P) – Costa Rica (x)	0 : 1	0.64 / 0.16
8th of July 2014	Germany (A) - Brazil (N)	7 : 1	0.34 / 0.38
13th of July 2014	Germany (A) - Argentina (A)	1 : 0	0.42 / 0.31
27th of June 2018	Germany (A) - South Korea (N)	0 : 2	0.85 / 0.05
15th of July 2018	France (N) - Croatia (N)	4 : 2	0.47 / 0.23

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