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Football Championships and Jersey Sponsors' Stock Prices: An Empirical Investigation

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Abstract

Corporate sports sponsorship is an important part of many companies' corporate communication strategy. We take the example of major football tournaments to show that sponsorship indeed affects the sponsor's (stock) market value. We find a statistically significant impact of football results (at an individual game level) of the seven most important football nations at European and World Championships on the stock prices of jersey sponsors. In general, the more important a match and the less expected its result, the higher its impact. In addition, we find a form of "mere exposure"-effect which contradicts the efficient markets hypothesis.

JEL classification: G14

Keywords: Sports sponsorship, Advertising, Stock market efficiency.

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1 Introduction

Corporate sports sponsorship is an integral part of many companies' corporate communication strategy. Some of them spend enormous sums for sponsoring teams and/or individuals: According to "The Economist", Adidas supports the German national football team with USD 298 million[1] although its rival Nike even placed offers of up to USD 778 million for an eight year contract.[2] After a failed bid for the German national team, Nike signed a 7.5-year contract with the French national football team (MSNBC, 2008). The US-based company will invest USD 506 million to be the French team's jersey supplier for 2011–2018.[3]

Reasons for pursuing sponsorship-linked marketing programs are discussed, e.g., in Cornwell et al. (2001, pp. 18f.). Apart from some distinctive features, such as hospitality at sports events, sponsorships share many goals of traditional advertising campaigns, first and foremost an increasing media exposure leading to an increase in corporate sales. This is particularly true for sports events watched by a large number of viewers in many countries, which makes major football tournaments an ideal field to assess the impact of sports sponsorships on the sponsoring companies' stock prices.

While many previous studies tried to measure the impact of sponsorships on constructs like brand awareness or corporate image (see, e.g. Quester, 1997), Cornwell et al. (2001) were the first to attempt measuring the value of winning at sports events for the sponsor via the impact of sports results on the sponsors' stock price. They examine results in the Indianapolis 500 mile race and find abnormal returns for the sponsors of winners which, however,

[1] `http://www.economist.com/specialreports/displaystory.dfm?story\_id=11825607`

[2] `http://www.sportsbusinessdaily.com/article/109198` This offer amounts to approximately 30% of Nike's 2008 EBITDA (Source: Capital IQ).

[3] `http://www.msnbc.msn.com/id/23295580/`

depend on a number of race- and sponsorship-related variables. Among those, variables related to the ex ante probability of winning played a major role. A second important finding relates to the degree of matching between sponsor and event: Companies whose products are somewhat related to the automotive industry faced larger stock price increases after wins of "their" drivers than those with relatively low racing congruence. Third, they find a form of "mere exposure"-effect: The number of laps leading is positively related to the sponsor's stock return. The explanation is simple: The more laps a car leads, the more TV time for the sponsor.

Related work includes, e.g., Edmans et al. (2007) who study the impact of football results on major stock indices of teams' home countries. They argue that sudden changes in investor sentiment caused by football results show up in the country's stock market's performance on the next trading day, e.g., an abnormal decline in the DAX following a defeat of the German national football team. In particular, they find (i) an asymmetric effect on the stock market index after wins/defeats of the national team (there is no abnormal positive return after victories), (ii) stronger effects for knockout games, and (iii) the strongest effects for unanticipated losses. They attribute asymmetry to an *allegiance bias*, stating that those who are psychologically invested in a desired outcome generate biased predictions. To the extent that fans overestimate the true pre-game probability of their team winning, stock price impacts of winning will be dampened, while those of losing the match will be amplified. As the defeat of a country's football team can be deemed irrelevant for its economy as a whole, these results are in contrast to the semi-strong form of the efficient market hypothesis (see Fama (1970)) and can only be attributed to investor sentiment.

Another related strand of research is the rather neoclassically oriented

part of the sponsorship event study literature. Examples include sponsorship announcements, as in Cornwell et al. (2005); Clark et al. (2009) and corporate event sponsorships, as in Mishra et al. (1997).[4] Clark et al. (2009) analyze the impact of title event sponsorship announcements on shareholder wealth of the sponsors. Their sample includes title sponsorships in tennis, golf, NASCAR-racing, and college bowl games. In the overall sample they find that sponsorship deals are signed at market clearing prices, as there is no reaction in the stock prices of the company. After splitting the sample they find a positive relationship between sports discipline and sponsor's closeness to this discipline. Mishra et al. (1997) study the impact of sponsorship announcements of major events, like the Olympics, international football tournaments, tennis tournaments, the naming of stadiums used by major league professional teams, etc. on the sponsors' stock prices. They find a positive stock price reaction after the announcement for the sponsoring companies, indicating that the market views the sponsorship deals as positive investments (from a shareholder value perspective).

We follow the ideas of Cornwell et al. (2001) and Edmans et al. (2007) and study whether changes in jersey sponsors' stock prices can be detected after matches of sponsored teams. In addition, we test for a "mere exposure"-effect related to that described in Cornwell et al. (2001). For reasons of media coverage and spectator numbers, we focus on those football events with the largest TV audience: the World Cup and the European Championships. According to a FIFA report on the World Cup 2006 in Germany, the cumulative TV audience for all games was estimated at around 26 billion, and the final alone was watched by 715 million viewers.[5] More (less) TV time

[4]Clark et al. (2009) provide a very good overview of the literature on the impact of sponsorship announcements.

[5]See `http://www.fifa.com/mm/document/fifafacts/ffprojects/ip-401\_06e\_tv\_2658.pdf`.

should lead to higher (lower) expected turnover and profits due to increased (decreased) sales for the sponsors. Consequently, wins (defeats) should yield positive (negative) stock price reactions. The size of this effect is to be expected to depend on the relevance of matches (group vs. knockout matches) and should be most pronounced for the most popular teams. According to standard finance theory (efficient markets hypothesis), such effects should only be expected to the extent the result is not anticipated by the market: The less expected the result, the higher its impact should be.

In particular, we study effects of football matches of national teams on returns of jersey sponsors' stock prices. Due to a different setting (many events over extended periods of time), our methodology differs from the rather classical event study methodology followed by many of the papers cited above. Using data from seven tournaments between 1996 and 2008, we document a form of "mere exposure"-effect contradicting the efficient markets hypothesis: There are significantly positive returns after matches where both teams sponsored by the same company play each other. Second, we find a statistically and economically significant negative effect of defeats. Differentiating according to the importance of matches, we find a higher impact of matches in the knockout phase compared to those in the group phase as third major finding. This makes good economic sense since winning or losing in the knockout phase has more direct consequences for a team and hence for a sponsor compared to the group phase. Fourth, the effects of defeats in total and in knockout matches become more significant when we account for the ex ante probability of winning/losing the match.

The paper is organized as follows: Section 2 presents our data. In Section 3, we describe our research questions and method. Section 4 presents the results, which are then discussed in Section 5.

2 Data

2.1 Data on Football Matches

We collect football results from the most important tournaments, the World Cup and the European Championships, for the time period 1996 to 2008.[6] All relevant variables for each match such as the result, the local kick-off and ending times (including overtime of 30 minutes and penalty shoot-out where applicable) were taken from `http://www.rdasilva.demon.co.uk` and `http://www.kicker.de`.

Taking the 2006 World Cup in Germany as an example, 32 nations that qualified in the preceding two years in regional qualification groups ("qualification matches") play in a four weeks tournament for the World Cup. The World Cup tournament itself starts with round-robin groups of four nations each. The best two teams from each group advance to the round of sixteen. At this stage, the mode of play changes to knockout: The winner advances to the next round, whereas the losing nation is out of the tournament. This is relevant for the importance of the results: Whereas in "group matches" losing a match may be irrelevant (e.g., when the team has already collected enough points to ensure a top-two place within the group), in "knockout matches" the consequences are more serious: the losing team is eliminated from the tournament.

In general, the mode of qualifying for the European Championships is very similar to that of the World Cup. Until 1992 the European Championships were played with eight teams in two groups. Since 1996, the number of participating nations is 16, with knockout matches beginning in the quarter finals.

With reference to our data set, we do not include the "qualification

[6] Both events take place every four years.

matches" for both the World Cup and the European Championships. Instead, we only focus on "group matches" and "knockout matches" of the tournaments. Similar to Edmans et al. (2007), we focus only on matches of the "Big 7" football nations ARG, BRA, ENG, ESP, FRA, GER, and ITA. We exclude ENG from our sample due to a relatively short observation period for England's jersey supplier UMBRO and due to quite illiquid trading after UMBRO's IPO. UMBRO went public in May 2004 (i.e., there are no stock price data before this date) and was taken over by Nike at the end of 2007.

In total, our data set consists of 161 matches, with 87 World Cup matches and 74 matches at the European Championships. We count 124 matches of national teams that played with Adidas jerseys, 19 matches of national teams sponsored by Nike and 18 matches of national teams wearing Puma jerseys. Compared to previous event studies on sport sponsorship our data sample is large; to our knowledge, the sponsorship study of Clark et al. (2009) is the largest one with 114 observations.

2.2 Stock Market Data

We obtain daily stock market data adjusted for stock splits and dividends from Thomson Datastream from January 2, 1996 until December 31, 2008.[7] We focus solely on Adidas, Nike and Puma as they are the only quoted jersey sponsors of national football teams (apart from UMBRO as discussed at the end of the previous section). As a benchmark index for each stock, we use the (total return variant of the) relevant market index, which is the DAX30 for Adidas, the S&P 500 for Nike and the CDAX for Puma. The indices are also obtained from Thomson Datastream.

[7] We restrict our sample to this time span as Adidas went public in November 1995.

2.3 Matching Stock Prices and Competition Days

To measure the impact of international football results on the stock price of the relevant jersey sponsor, we mainly use the companies' continuously compounded return on the first trading day following the match day. In most of the observations the match ended after the close of trading at the relevant stock markets (i.e., Deutsche Börse for Adidas and Puma, and NYSE for Nike). For these matches, the first chance for new information on victories/defeats of sponsored national teams to be reflected in the companies' stock prices is the day following the match day. In some other cases, matches end a few hours before the final bell of relevant stock markets due to time zone differences.[8] For instance, all matches in the 2002 World Cup in Japan and South Korea ended before 11:30 p.m. local time. Due to the difference of 13 hours between Japanese Standard Time and Eastern Standard Time the relevant information arrives in New York before noon and thus should be reflected in Nike's stock price already on the match day. As a convention, we use the sponsor's stock return of the match day if the match ended before 1 p.m. stock market time. In all other cases the company's return of the following trading day was used. Thus, the company's return of the next trading day was used in 94% of all observations, while the match day was relevant in the remaining 6%. This is in contrast to Edmans et al. (2007) who use the next trading day throughout. However, we believe that our convention better accounts for the effects of matches ending a considerable amount of time before the relevant markets close.

[8] This is only relevant for some matches on weekdays during World Cup tournaments.

3 Research Questions and Method

Our research questions are mainly inspired by the studies cited in the introduction. In addition, we investigate a possible "mere exposure"-effect of the company's name appearing on TV separately from any (additional) impact of winning or losing: Exposure to the company's name may not only entice consumers to buy a company's products, but also trigger additional interest in the company by investors, leading to increased demand for the company's stocks reflected in positive abnormal returns. This effect may even be more pronounced when both teams competing are sponsored by the same company. Thus, effects of winning/losing and mere exposure on the sponsor's stock price are the two main topics around which our research questions are centered. The first research question is inspired by Cornwell et al. (2001):

1. Does winning and/or losing at major football tournaments affect the jersey sponsor's stock price? If the answer is positive:

   (a) Do the results depend on game importance (group vs. knockout games)? As reported above, Edmans et al. (2007) find a more pronounced effect of losing in knockout matches at international tournaments.

   (b) Do the results change if only accounting for the "surprising part" of victories/defeats? Again, we relate this research question to Cornwell et al. (2001) and to Edmans et al. (2007). The former find a stronger effect of pre-race outsiders victories in contrast to pre-race favorites and the latter report the strongest effects for unanticipated losses.

   (c) Is there an asymmetric reaction between wins and defeats (attributed to an allegiance bias by Edmans et al. (2007)) also at

the individual stock level?

2. Does the jersey sponsor's stock price react positively to the mere exposure in matches at major football tournaments? Is this effect more pronounced if both teams competing share the same jersey sponsor? This exposure effect is inspired by the positive influence of the number of laps leading found in Cornwell et al. (2001).

To answer these research questions, we isolate in a first step the "abnormal" returns of the stocks in our sample by using the index model (standard OLS). In a second step we regress the residuals of step one against football-related independent variables in a panel regression model. The basic idea of this model is that stock prices generally reflect the fundamental value (NPV) of the company, and (significant) changes in the stock price are due to new information about the company. Contrary to many of the studies cited in the introduction, the structure of our data does not lend itself to the standard event study methodology: We do not have rather long "unaffected" time windows before and after our events (matches). Instead, during tournaments, there are usually several periods where at least one match is played every day.

3.1 Step 1: OLS Estimation

In a first step we calculate log returns from the respective stock prices after adjusting for stock splits and dividend payments. These log returns will be used as the dependent variable:

$$R_{i,t} = \ln(P_{i,t}) - \ln(P_{i,t-1}), \tag{1}$$

where $i \in \{\text{ADS, NKE, PUM}\}$ denotes the ticker symbol and $t = 2, \ldots, T$ the trading day. Returns of the relevant stock indices, which are used as explanatory variables, are computed analogously.

Equation (2) defines the OLS equation of step one with $\mathrm{R}^{\mathrm{m}}_{i,t}$ standing for the relevant market index return. To account for possible day-of-the-week effects, we also include weekday dummies $\sum_{d=2}^{5} \delta_d \mathrm{WEEKDAY}_d$ for each day except Monday. Possible autocorrelation is captured by first-order AR terms. Football-related dummy variables will be included later in the panel regression (step 2).

$$R_{i,t} = \alpha_i + \beta_1 \mathrm{R}^{\mathrm{m}}_{i,t} + \sum_{d=2}^{5} \delta_{i,d} \mathrm{WEEKDAY}_{d,t} + \beta_{\mathrm{AR},i} \mathrm{AR}(1)_i + \varepsilon_{i,t} \quad \forall i. \tag{2}$$

3.2 Step 2: Base-case Panel Regression

The residuals $\varepsilon_{i,t}$ of stock i of equation (2) serve as the dependent variable in the base-case panel regression model with i cross-sections and t observations over time:

$$\begin{aligned} \varepsilon_{i,t} \quad = \quad & \alpha + \beta_1 \mathrm{SPONSOR}_{i,t} + \beta_2 \mathrm{DOUBLE\_SPONSOR}_{i,t} + \beta_3 \mathrm{WIN}_{i,t} \\ & + \beta_4 \mathrm{DEFEAT}_{i,t} + \epsilon_{i,t}. \end{aligned} \tag{3}$$

Here, the dummy variable $\mathrm{SPONSOR}_{i,t}$ is set to 1 if at least one match with a team sponsored by company i was played at day t. The dummy $\mathrm{DOUBLE\_SPONSOR}_{i,t}$ equals 1 if at least one match with both teams sponsored by company i was played at day t. $\mathrm{WIN}_{i,t}$ equals 1 if the number of victories less the number of defeats of teams supplied by sponsor i at day t is positive, zero otherwise and $\mathrm{DEFEAT}_{i,t}$ equals 1 if the sum of wins less defeats of teams supplied by sponsor i at day t is negative, zero otherwise. Hence, equation (3) provides tests of research questions 1, 1(c) and 2. In

each panel regression in this paper we apply the White period coefficient covariance method (White, 1980) to account for heteroscedasticity and non-gaussianity in the residuals.

3.3 Step 2: Panel Regression: Importance of Games – Knockout Stage

Matches differ in importance. At the World Cup and the European Championships, teams start with round-robin matches in groups of four. Losing such a match need not mean the end of the tournament – the team may still advance to the knockout phase. In contrast, any knockout match lost means that the team is irrevocably out of the competition, with the consequences of massively reduced media coverage and declining merchandise sales. Therefore, it is reasonable to expect our effects to depend on the importance of the respective match.

$$\begin{aligned} \varepsilon_{i,t} &= \alpha + \beta_1 \text{DOUBLE\_SPONSOR}_{i,t} \cdot \text{KO}_t + \beta_2 \text{WIN}_{i,t} \cdot \text{KO}_t + \\ &\quad + \beta_3 \text{DEFEAT}_{i,t} \cdot \text{KO}_t + \epsilon_{i,t} \end{aligned} \tag{4}$$

Here and in all subsequent regressions, the SPONSOR-dummy, which turns out to be insignificant already in the base case (see Section 4.1), is dropped. Since group matches and knockout matches are never played on the same day (for any of the sponsors), KO_t only carries one subscript (t).

Equation (4) applies the base-case equation (3) only to knockout matches by interacting all dummy variables with the variable KO_t which is a binary dummy for all knockout matches. This enables us to answer research questions 1(a), 1(c) and 2 (tests on the latter two serve as robustness checks, since they can already be answered with equation (3)).

3.4 Step 2: Panel Regression: Pre-Game Win/Defeat Probability

From a neoclassical finance theory perspective, stock market reactions should be the larger the less anticipated certain news/events are. Hence, we incorporate a proxy for the pre-game win/defeat probability for each observation identical to Edmans et al. (2007) who use ELO ratings to measure the closeness in the pre-game ability of the opponents.[9] ELO ratings, developed by Arpad Elo, were originally used to rank chess players. The system has been modified to rank football teams by accounting for the type of game (from World Cup to friendly match), the goal difference, and the pre-game win probabilities of both teams. Hence, the current ELO rating is an indicator of the past performance of a team. The idea is similar to the FIFA-ranking[10] and there is evidence that this approach proxies (objective) pre-game probabilities quite accurately.[11]

Let ELO_A (ELO_B) be the pre-game ELO rating for a win of team A (B). The probability of team A winning the match is:

$$\text{P(WIN)}_{TEAM_A} = \frac{1}{10^{-\left(\frac{ELO_A - ELO_B}{400}\right)} + 1}, \tag{5}$$

with (1-P(WIN)$_{TEAM_A}$) the pre-game probability for a win of team B.[12]

[9] We use their modified proxy ignoring a home advantage, since there is no such effect in games at the World Cup and the European Championship. Even though a nation in our sample may be the organizer of a World Cup or a European Championship, the home advantage is much smaller compared to World cup qualifiers, since many tickets have to be sold to international spectators.

[10] `http://www.fifa.com/worldfootball/ranking/lastranking/gender=m/fullranking.html`

[11] Andersson et al. (2005, 2009) provide evidence for the high quality of football rankings, as a betting strategy following the FIFA-ranking has outperformed the predictions of experts (e.g., sports journalists, trainers) for the World Cups in 2002 and 2006.

[12] See www.eloratings.net for further information. E.g., assume the following pre-game ELO ratings of the following games: AUT (1562) vs. GER (1938) and ITA (2003) vs. GER (1938). Hence, P(WIN)$_{AUT}$=9.4% and P(WIN)$_{GER}$=90.6%, whereas P(WIN)$_{ITA}$=56.7% and P(WIN)$_{GER}$=43.3%.

As there is sometimes more than one match played by teams with a specific jersey supplier i on day t, we calculate P(WIN) as the average of all individual P(WIN) probabilities of all teams of sponsor i playing on day t.

Including the pre-game probability of win/defeat for each team, we modify equations (3) and (4) and arrive at an elaborated version of the base case,

$$\begin{aligned} \varepsilon_{i,t} &= \alpha + \beta_1 \text{DOUBLE\_SPONSOR}_{i,t} + \beta_2 \text{WIN}_{i,t} \cdot (1 - \text{P(WIN)}_{i,t}) + \\ &\quad + \beta_3 \text{DEFEAT}_{i,t} \cdot \text{P(WIN)}_{i,t} + \epsilon_{i,t}, \end{aligned} \tag{6}$$

and at the following equation, measuring unanticipated effects of wins/defeats in knockout matches:

$$\begin{aligned} \varepsilon_{i,t} &= \alpha + \beta_1 \text{DOUBLE\_SPONSOR}_{i,t} \cdot \text{KO}_t \\ &\quad + \beta_2 \text{WIN}_{i,t} \cdot \text{KO}_t \cdot (1 - \text{P(WIN)}_{i,t}) \\ &\quad + \beta_3 \text{DEFEAT}_{i,t} \cdot \text{KO}_t \cdot \text{P(WIN)}_{i,t} + \epsilon_{i,t}. \end{aligned} \tag{7}$$

It is evident in both equations that the larger P(WIN), the lower (higher) will be its impact on the independent variable $\text{WIN}_{i,t} \ldots$ ($\text{DEFEAT}_{i,t} \ldots$) and hence the more (less) expected and the less (more) relevant is this observation. With the specifications in equations (6) and (7) answers to the research questions 1(b), 1(a), 1(c), and 2 can be provided (tests on the latter three serve as robustness checks, since they can already be answered with equations (3) and (4)). Note that the values of β_2 and β_3 from equations (6) and (7) cannot be directly compared to β_2 and β_3 from equation (3) and (4): Since both $\text{P(WIN)} < 1$ and $(1 - \text{P(WIN)}) < 1$, the coefficients *must* increase in magnitude after accounting for P(WIN). However, an increase in statistical significance of β_2 and/or β_3 would be in line with standard finance theory.

Keep in mind, however, that we include a proxy for the *objective* pre-game win/defeat probabilities. As pointed out by Edmans et al. (2007, p. 5), an allegiance bias might be at work here: A number of studies have shown that people who are psychologically invested in a desired outcome generate biased predictions. To the extent that fans overestimate the true pre-game probability of their team winning, stock price impacts of winning will be dampened, while those of losing the match will be amplified. This would show up in our results as an asymmetry in the following sense: Even after adjusting for the objective pre-game win/defeat probabilities, effects of winning a match may still be smaller than those of defeats.

4 Results

First we run an OLS-regression (equation (2)) for each stock i to arrive at the residual series for our panel-regression model (to be used later in step 2). The results are shown in Table 1.

Table 1 about here

All alphas are insignificant, and there are no day-of-the-week effects. Magnitude and sign of AR coefficients are in line with previous empirical findings for equity returns (see, e.g., Taylor (2005)).

4.1 Panel Regression: Base Case

The regression results from equation (3) are shown in Table 2. They provide us with the following answers to our research questions:

1. Defeats show a significantly negative impact on the jersey suppliers' stock returns.

(a) Will be answered in Section 4.2.

(b) Will be answered in Section 4.2.

(c) While defeats have a negative impact on the sponsor's stock price, there is no corresponding positive effect of victories.

2. While there is no "mere exposure"-effect in the sense of positive abnormal returns for the sponsoring company's stocks after matches where *one* of the teams wears the sponsor's jerseys, there is a significantly positive impact after matches where *both* teams have the same jersey supplier. Although somewhat similar to the positive influence of the "number of laps leading" in Cornwell et al. (2001), this presents a puzzle for those who believe in informationally efficient markets: Unlike the former effect, where the number of laps leading is unknown in advance, the information that two teams sponsored by the same company will play each other is known well in advance of the time when the excess returns are actually observed. The efficient markets hypothesis (in its semi-strong form, see Fama (1970)) would predict that if this represents a positive value to the company, this value should already be reflected at the time the information becomes public. So even if sponsorship justifies a positive reaction of the sponsoring company's stock price, this should not be observed *after* the game, but well before.

The effects described are not only statistically significant, but also economically relevant (daily excess returns on the order of 0.3 to 0.7 percentage points). It is interesting to see the asymmetric effects of wins/losses, first described by Edmans et al. (2007) in the form of negative excess index returns at the losing country's major stock exchange, also for the jersey suppliers. The explanations we can offer for this effect are essentially the same as those

provided by Edmans et al. (2007) and can be attributed to the allegiance bias. Another possible explanation is that the teams in our sample (six of the seven top football nations!) are expected to win most matches, so victories would be mostly expected, while defeats would be, on average, unexpected. We control for this effect in the following section.

Table 2 about here

4.2 Panel Regression: Game Importance and Pre-Game Win/Defeat Probability

Table 3 shows the results from equations (4), (6) and (7), accounting for both game importance (group vs. knockout games) and the (objective) pre-game probability of winning.

The first results column restricts the application of the base case regression equation to knockout games only (cf. equation (4)). Comparing this column to Table 2, we find that both the "mere exposure"-effect for both teams sponsored by the same company and the effect of a defeat increase, confirming the higher importance of knockout games relative to those at the group stage. This answers our Research Question 1.(a) and implies that game importance matters.

The second column controls for the (objective) pre-game probability of winning/losing. The defeat coefficient increases in magnitude since the probability of winning is strictly smaller than 1 by construction (cf. the discussion in Section 3.4). Both the coefficients for victories and defeats increase markedly in significance when including only the "unexpected part" of the results, thus supporting a positive answer to Research Question 1.(b) implying that unexpected results have the strongest impact.

The third column shows the increased significance of unanticipated losses

in knockout games in contrast to the sample of knockout games (column 1) and the impact of knockout games in contrast to the entire data sample when we control for the ex ante probabilities of winning/losing (column 2).

As a robustness check for DOUBLE_SPONSOR, we also added this variable in all three equations of Table 3 and find that the "mere exposure"-effect is very robust and yields even higher returns in all specifications than in the base case of Table 2.

At the end of the previous section, we offered as an alternative explanation for the insignificant impact of victories the high average pre-game probability of winning for the teams in our sample. If this were the only reason for the observed asymmetry between winning and losing, we would expect the victory coefficient to become significant after accounting for the ex ante result probability. However, despite the increased statistical significance of this coefficient (albeit still only at the 17% level), its economic significance remains negligible (note that the 0.18 are still to be multiplied with $(1 - \mathrm{P(WIN)}) \ll 1$).

Table 3 about here

5 Discussion and Conclusion

We investigated the impact of football results on jersey sponsors' stock prices and found abnormal returns following matches of the "Big 7" football nations at major football tournaments. Four main findings can be reported: First, matches where both teams share the same jersey supplier lead to positive excess returns. Second, defeats lead to negative excess returns. Third, both effects are larger for knockout games than for group games, reflecting the higher importance of the knockout stage in the tournaments. Fourth, the

defeat-effect in total and in knockout games is more significant when we account for the pre-game defeat-probability.

While the latter two points are perfectly in line with standard financial theory, the observed positive excess returns after games where both teams share the same jersey sponsor are difficult to reconcile with the semi-strong form of the Efficient Markets Hypothesis: According to the theory, these positive excess returns should occur at the time the information about this situation occurring is made public as opposed to only after the game has been played. From a marketing point of view, these positive returns can be best explained as a form of "mere exposure"-effect. The asymmetry between effects of wins and defeats can be explained by an allegiance bias. From a finance point of view, profitable trading strategies based on these results could have been followed during our observation period: Positive excess returns (before transaction costs) could be generated by going long on the day when two teams with the same jersey supplier played each other and selling the stocks at the end of the next trading day.

In principal, the documented stock price effects of sponsorship activities could be used to assist in pricing sponsorship agreements: The observed changes in market value can be interpreted as the stock market's assessment of the value of sponsorship activities (at the individual game level) to the company.

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Tables

Table 1: OLS-regression (step 1, equation (2)) for each stock i.

Factor	ADS	NKE	PUM
α	0.029	0.003	-0.026
	(0.571)	(0.966)	(0.775)
R_i^m	61.823^{***}	78.706^{***}	57.923^{***}
	(0.000)	(0.000)	(0.000)
TUE	0.023	-0.036	0.054
	(0.824)	(0.744)	(0.682)
WED	-0.094	0.052	0.020
	(0.370)	(0.632)	(0.876)
THU	-0.008	0.008	0.155
	(0.940)	(0.944)	(0.222)
FRI	-0.036	0.045	0.113
	(0.725)	(0.682)	(0.387)
AR(1)	4.383^{**}	0.343	-5.900^{***}
	(0.012)	(0.842)	(0.001)
R^2	21.53	19.60	12.02
n	3306	3391	3239

Dependent variable: daily log returns. Coefficient values are given in percentage points and p-values of a double-sided test are provided in parentheses. ** and *** represent the 5% and 1% significance levels.

Table 2: Panel regression (step 2, equation (3)) measuring the impact of the "mere exposure"-effect and winning/losing on the stock market performance of the jersey suppliers.

Factor	Base-case	Base-case with SPONSOR
α	0.000	0.000
	(0.011)	(-1.173)
SPONSOR	–	0.089
		(0.618)
DOUBLE_SPONSOR	0.686^{***}	0.642^{***}
	(5.362)	(3.392)
WIN	-0.051	-0.130
	(-0.449)	(-0.791)
DEFEAT	-0.280^{***}	-0.362^{**}
	(-4.863)	(-1.966)
R^2	0.03	0.03
n	9939	9939

Dependent variable: $\varepsilon_{i,t}$, i.e. the residuals (for stock i) of equation 2. Coefficient values are given in percentage points and t-values are provided in parentheses. *** represents the 1% significance level for a double-sided test.

Table 3: Panel regression (step 2, equations (4), (6) and (7)) measuring the impact of the "mere exposure"-effect and winning/losing on the stock market performance of the jersey suppliers. Additional variables: (P(WIN)) – proxy for the (objective) pre-game probability of winning and KO_t – dummy for knockout games.

Factor	Knockout matches	Base-case with P(WIN)	Knockout matches with P(WIN)
α	0.000	0.000	0.000
	(0.100)	(-0.798)	(-0.477)
DOUBLE_SPONSOR	–	0.628^{***}	–
		(4.111)	
DOUBLE_SPONSOR $\cdot\, \mathrm{KO}_t$	1.169^{***}	–	1.095^{***}
	(3.725)		(3.093)
WIN $\cdot\, \mathrm{KO}_t$	0.094	–	–
	(0.288)		
DEFEAT $\cdot\, \mathrm{KO}_t$	-0.483^{***}	–	–
	(-4.444)		
WIN $\cdot\, (1 - \mathrm{P(WIN)})$	–	0.184	–
		(1.391)	
DEFEAT $\cdot\, \mathrm{P(WIN)}$	–	-0.682^{***}	–
		(-5.612)	
WIN $\cdot\, \mathrm{KO}_t \cdot (1 - \mathrm{P(WIN)})$	–	–	0.664
			(0.913)
DEFEAT $\cdot\, \mathrm{KO}_t \cdot \mathrm{P(WIN)}$	–	–	-1.103^{***}
			(-6.355)
R^2	0.03	0.03	0.03
n	9939	9939	9939

Dependent variable: $\varepsilon_{i,t}$, i.e. the residuals (for stock i) of equation 2. Coefficient values are given in percentage points and t-values are provided in parentheses. *** represents the 1% significance level for a double-sided test.

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Football Championships and Jersey Sponsors' Stock Prices: An Empirical Investigation

Abstract

Corporate sports sponsorship is an important part of many companies' corporate communication strategy. We take the example of major football tournaments to show that sponsorship indeed affects the sponsor's (stock) market value. We find a statistically significant impact of football results (at an individual game level) of the seven most important football nations at European and World Championships on the stock prices of jersey sponsors. In general, the more important a match and the less expected its result, the higher its impact. In addition, we find a form of "mere exposure"-effect which contradicts the efficient markets hypothesis.

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