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The value of winning: endorsement returns in individual sports

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Abstract Using the results of 1068 different golf, tennis, and track and field (in particular: running) events, this paper examines the relation between athlete performance and stock returns of firms endorsed by athletes. We find that a tournament victory is associated with significant and positive market-adjusted stock returns for the endorsed clothing brand. Regression analysis reveals that winning is associated with a more positive price reaction than finishing as runner-up. In addition, we find that returns after a victory are significantly higher for endorsed clothing brands than for equipment brands. We did not detect return differences between superstars and regular athletes, nor between frequently endorsed brands and less commonly endorsed brands.

1 Introduction

In this paper, we study the relationship between athlete performance and the stock returns of firms endorsed by these athletes. Athlete endorsements constitute one form of celebrity endorsements (Agrawal and Kamakura 1995). Celebrity endorsement is "an agreement between an individual who enjoys public recognition (a celebrity) and an entity (e.g., a brand) to use the celebrity for the purpose of promoting the entity" (Bergkvist and Zhou, 2016: 3). Amis et al. (1999) argued that athlete endorsement is a valuable resource that can create a competitive advantage for the endorsed firm.

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Consequently, considerable amounts are invested in endorsements. Nike, for example, spends on average one tenth of its revenues on so-called demand creation costs (Stock 2014), which consist of advertising expenses and endorsement deals.[1]

The effectiveness of endorsements is usually studied by using the endorsed firm's share price performance, both around the athlete's sign date and the athlete's performance. The rationale is that exposure through endorsements leads to increased brand associations. These can trigger sales, which in turn leads to a higher profitability and ditto firm value, which should be reflected in higher share prices shortly after the athlete performance. Evidence is mixed for stock returns in the trading days after an endorser is enlisted. While Agrawal and Kamakura (1995), Clark et al. (2005), and Elberse and Verleun (2012) found significant share price gains, Fizel et al. (2008) and Ding et al. (2011) did not find a statistically significant impact on share prices. Ding et al. (2011) attributed their findings to the shortfall of endorsement benefits as compared to their costs. In other words, a potential reason why the effect of the announcement of endorsement deals is not clear-cut, could be the fact that brand awareness and brand associations only increase after the signed athlete lives up to the expectations, e.g., wins events.

The aspect of increased sales due to an athlete's performance is often stressed in the popular press. Kim (2014) reported on "big marketing victories for sponsors" following Kei Nishikori's wins during the US Open tennis tournament in 2014. While sales at the endorsed clothing brand Fast Retailing indeed increased, Nissin Food Holdings saw little immediate impact on its sales (Kim 2014). Elberse and Verleun (2012) were among the first to study the impact of endorsement on corporate sales directly. They found an increase in sales following an enlisted athlete's major achievement. More often, though, firm performance is studied by inspecting share price behavior surrounding victories. Nicolau (2011) studied the relationship between the performance of Real Madrid and the stock returns of the club's CEO's firm and found a significant impact of performance on returns. Farrell et al. (2000) focused on golf and analyzed the relationship between the performance of Tiger Woods and the stock returns of the firms he endorsed (i.e., Nike, American Express, and Fortune Brands). Farrell et al. (2000) found significant positive abnormal returns for Nike only, which was attributed to the visibility of the brand during golf tournaments. Nicolau and Santa-María (2013) focused on tennis. They studied the performance of Rafael Nadal alongside the stock returns of the endorsed firms. They found that victories by Rafael Nadal have significantly positive effects on the returns of the firms he endorsed. In addition, they found evidence for a diminishing sensitivity of returns to consecutive wins. To conclude, Elberse and Verleun (2012) analyzed the impact on stock returns of many different athletes winning major events. They concluded that the market value of the endorsed firms increased as a result of athletes winning an event.

Although rigorously executed, previous research on the share price effects of victories by endorsing players could be biased due to a number of reasons. Farrell et al. (2000) and Nicolau and Santa-María (2013), for example, studied only one athlete in relation to the brands endorsed. Results of these studies can thus not per se be generalized. In addition, although Elberse and Verleun (2012) collected a large dataset and included many endorsed brands and events from many different sports, it remains

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[1] As a further illustration, Nike pays Tiger Woods, Roger Federer, and Rafael Nadal on an annual basis about $20 million, $12 million, and $10 million, respectively (Totalsportek 2016).

unclear which factors determined their findings. Are they driven by a specific sports type (team versus individual) or a specific endorsement deal (clothing, equipment, or other)? Team sports events often take place during a league weekend, meaning many matches coincide. Attention for winning teams (and endorsed brands) is likely to be lower than for individual sports, for which there are usually just a couple of simultaneous events. Furthermore, highly visible brands (i.e., on clothing) may encounter different stock returns than less visible brands (e.g., Farrel et al. 2000). In response to these identified issues, we focused on popular individual sports, namely golf, tennis, and track and field (in particular: running).[2] These sports were selected as they employ high-paid athlete endorsers.[3] Rather than focusing on just top athletes, we gathered a unique dataset containing tennis, golf, and track and field tournaments during the period January 2001–July 2014, for which we hand-collected endorsed clothing and equipment brands for tournament winners and runners-up. For all endorsed firms, we studied the stock returns in the 5-day period after the end of a tournament. Using this methodology, we aimed to answer the following research questions:

1. Is a tournament victory associated with positive stock returns for the endorsed clothing brand? Previous research indicated that there is a positive effect, but these studies considered just one athlete (e.g., Farrell et al. 2000; Nicolau and Santa-María 2013) or they grouped different categories of endorsed brands (Elberse and Verleun 2012). In addition, we investigate which factors drive stock returns of brands endorsed by winners. By making a distinction between superstars and non-superstars, and between frequently endorsed brands and non-frequently endorsed brands, we attempt to shed light on the generalizability of our findings.
2. To what extent does a tournament victory affect the stock returns of endorsed equipment brands (i.e., brands of golf clubs and tennis rackets)? This question on a second endorsed brand is related to Farrell et al. (2000) and Nicolau and Santa-María (2013). However, they focused on just one player and on non-equipment endorsements. By using a large-scale event study, we contribute to this relatively untouched phenomenon.
3. What is the effect on stock returns for brands endorsed by runners-up? Nicolau and Santa-María (2013) found for Rafael Nadal's sponsors that a loss did not have an effect on their share price, which they attributed to the fact that, although undesirable, losing is "part of the game" (Nicolau and Santa-María, 2013: 147). By studying a large sample of runners-up across different sports, we show whether "being in the tournament" for a long time conveys any positive brand effects. Hence, we contribute to the scarce evidence on how coming in second affects an endorsed firm's share price.

This paper proceeds as follows. Section 2 describes the data and methodology. Our results are discussed in Sect. 3. Section 4 concludes this study.

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[2] Although beyond the scope of our research, an interesting alternative approach would be to focus on team sports. We touch upon this issue in our concluding remarks.

[3] According to Opendorse (http://opendorse.com/blog/top-100-highest-paid-athlete-endorsers-of-2013/), the top ten of the highest-paid athlete endorsers consisted of three tennis players (Roger Federer, Rafael Nadal, and Maria Sharapova), two golf players (Tiger Woods and Phil Mickelson), and one track and field athlete (Usain Bolt). The remaining athletes in this top ten all played team sports.

2 Data and methodology

2.1 Events, players, and endorsed brands

Our sample considered the time period January 2001 to July 2014. We focused on three different sports. First, we selected all tennis events from the Association of Tennis Professionals [ATP] tour (i.e., the male department of professional tennis) and we searched for both winners and runners-up of tournaments. Contrary to Nicolau and Santa-María (2013), we did not limit our research to Grand Slam tournaments, but we include ATP-500, ATP-1000, the Olympic Games, and the year-end World Tour Finals as well.[4] Second, we used the results of golf tournaments. As the PGA tour is characterized by the highest prize money and usually the better players, we focused on the events on this tour. Although there are usually no head-to-head finals at the end of a tournament (unless there is a playoff), players high on the leaderboard get more attention during play; hence, their endorsed brands are likely to get more exposure. We therefore collected both winners and runners-up for each PGA event. Third, we selected running events from major track and field events. To allow for diversity, we collected winners and runners-up from 100 and 10,000 m at the Olympic Games, World Championships (indoor and outdoor), and Diamond League meetings (previously known as Golden League). We hand-searched Web sources such as Getty Images for both clothing and equipment images. For golf, tennis, and track and field, we defined the endorsed clothing (equipment) brand as the clothing (equipment) brand the player is wearing (using) during the tournament. Note that we could collect equipment brands for golf and tennis only. We required that the endorsed firm, or its parent company, was stock market listed. In total, we could identify endorsed brands for 1068 events.[5] For all event winners, we additionally hand-collected their world ranking in the week prior to a tournament.[6]

   Table 1 describes the endorsed brands in our sample. In brackets, we displayed the number of observations we have for each subsample. For example, we have identified 236 cases where a tennis winner endorsed a stock market listed clothing brand. For brevity, we omitted (only in this table, not in our empirical analysis) the golf brands which occurred less than ten times. Among clothing brands, Nike and Adidas dominated the landscape across all three sports. In terms of equipment, Head and Wilson were most used in tennis, while Nike, TaylorMade, and Cleveland Golf provided the most widely used equipment for golf players.

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[4] We exclude lower tier tournaments (ATP-250, Challengers and Futures), as they do not attract as much attention. This could be caused by many things, among which (i) the ATP website often lacks a television schedule for lower tiered tournaments, and (ii) there are often several of these lower tier tournaments in the same week.

[5] To prevent our runner-up sample from confounding effects, we only considered endorsed brands by runners-up in our analyses when the brand could not celebrate a victory at the same event.

[6] For tennis and golf, we relied on the official world rankings as published by ATP and PGA, respectively. For track and field, we consulted the rankings as published by All-Athletics (http://www.all-athletics.com) given the absence of official world rankings. All-Athletics rankings start in 2001.

2.2 Share prices and returns

We used Thomson Reuters Datastream to download share prices including reinvested dividends (i.e., total returns) for all endorsed firms. While companies as Nike and Adidas are publicly listed themselves, some other brands are part of a larger entity. For example, Uniqlo is part of Fast Retailing, Oakley is part of Luxottica, and Topper is owned by Alpargatas. In these instances, we used the share price of the parent company. In addition, we retrieved the index values (also on a so-called total return basis) for the main stock market index of the country on which the endorsed firm is listed (e.g., S&P 500 for US-listed stocks, FTSE 100 for UK-listed stocks, DAX 30 for German-listed stocks, etc.). In total, firms in our sample originated from 15 different countries. Lastly, we downloaded the 1-year risk-free rates availing in these countries.

For each firm i and stock market M, we computed daily excess returns by comparing the price on day t with the price on the previous trading day $t-1$, after which we subtracted the risk-free rate of return; see Eqs. 1 and 2, respectively.

$$R_{i,t} = \frac{P_{i,t}-P_{i,t-1}}{P_{i,t-1}} - r_{f,t} \tag{1}$$

$$R_{M_i,t} = \frac{P_{M_i,t}-P_{M_i,t-1}}{P_{M_i,t-1}} - r_{f,t} \tag{2}$$

We computed two different types of abnormal returns (AR). First, we calculated the market-adjusted return (MAR) for each firm i and day t. We subtracted the excess return on the relevant market index from the firm's excess return, see Eq. 3.

$$MAR_{i,t} = R_{i,t} - R_{M_i,t} \tag{3}$$

Second, we computed risk-adjusted returns (RAR) for which we applied the capital asset pricing model (Sharpe 1964; Lintner 1965; Black 1972) see Eq. 4. As estimation period for our alpha and beta coefficients, we used the period [−270, −10] prior to the event day, where the event day is seen as the first trading day following the tournament's final. To arrive at the risk-adjusted return, we subtracted the expected excess return from the observed excess return, see Eq. 5.

$$E(R_{i,t}) = \alpha_{i,t} + \beta_{i,t}R_{M,t} \tag{4}$$

$$RAR_{i,t} = R_{i,t} - E(R_{i,t}) \tag{5}$$

For both our measures of abnormal return (e.g., market-adjusted return and risk-adjusted return), we computed cumulative returns for different event windows, see Eq. 6. Both the AR and the CAR were computed based on market-adjusted returns ($MAR_{i,t}$ and $CMAR_i$, respectively), and on risk-adjusted returns ($RAR_{i,t}$ and $CRAR_i$, respectively).

$$CAR_i = \sum_{t}^{T} AR_{i,t} \tag{6}$$

Table 1 Endorsed brands in our sample

Tennis				Golf[a]				Running	
Clothing		Equipment		Clothing		Equipment		Clothing	
Winner (236)	Runner-up (159)	Winner (184)	Runner-up (124)	Winner (318)	Runner-up (350)	Winner (424)	Runner-up (464)	Winner (135)	Runner-up (79)
Nike (153)	Adidas (63)	Head (86)	Wilson (52)	Nike (101)	Adidas (69)	Nike (105)	TaylorMade[e] (140)	Nike (55)	Nike (36)
Adidas (45)	Nike (55)	Wilson (79)	Head (59)	Adidas (54)	Nike (58)	TaylorMade[e] (99)	Cleveland Golf[d] (73)	Adidas (44)	Adidas (31)
Uniqlo (15)	Reebok[b] (10)	Yonex (14)	Yonex (16)	Callaway (34)	Callaway (40)	Cleveland Golf[d] (74)	Nike (59)	Puma (22)	Li-Ning (7)
Reebok[b] (13)	Yonex (7)	Dunlop[c] (4)	Dunlop[c] (7)	Hugo Boss (18)	Ralph Lauren (30)	Titleist[f] (52)	Callaway (61)	Xtep (9)	Puma (3)
Yonex (6)	K-Swiss (6)	Völkl (1)		Ralph Lauren (16)	Under Armour (25)	Callaway (47)	Srixon (44)	Li-Ning (4)	Mizuno (1)
Topper (2)	Uniqlo (6)			Under Armour (13)	Ashworth (18)	Srixon (18)	Titleist[f] (36)	Reebok (2)	Xtep (1)
Li-Ning (1)	Topper (4)				Hugo Boss (14)	Mizuno (14)	Mizuno (27)		
H&M (1)	Asics (3)				Puma (14)				
	Li-Ning (2)				Titleist[f] (14)				
	Puma (2)				TaylorMade[e] (10)				
	H&M (1)								

The numbers in brackets depict the frequency of occurrence of the brands

[a] Given the sheer number of different endorsed brands, we showed only the ones with ten appearances or more. Other included companies included, but are not limited to, Puma, Tommy Hilfiger, Burberry, Oxford Golf, and Wilson

[b] We acknowledge the acquisition of Reebok by Adidas in 2006. Hence, we use Reebok share prices until 2006, whereas we use Adidas share prices afterwards

[c] Dunlop was included as of the moment they were part of Sports Direct International in 2004

[d] Cleveland Golf fell under Quiksilver until October 2007, after which the brand was owned by SRI International. Accordingly, we include share prices of Quiksilver for the period until the acquisition and of SRI International for the period following the acquisition

[e] TaylorMade is part of Adidas, and we thus measure the share price impact by using Adidas share prices

[f] Titleist was part of Fortune Brands until May 2011, after which it became part of Fila. Accordingly, we use share prices from Fortune Brands or Fila, depending on the date of the athlete achievement

The cumulative market-adjusted return and the cumulative risk-adjusted return are summations of the respective daily returns over a time period of 2 to 5 days after the conclusion of a tournament. In our results, we refer to the simple-weighted averages of returns over the sample. The significance of *ARs* is computed by dividing the relevant return by its standard error (Brown and Warner 1985).

2.3 Regression models

Using regression analysis, we studied the determinants of the cumulative abnormal returns. We conducted a cross-sectional analysis in which we treated the cumulative 5-day abnormal return as the dependent variable. As we would like to test whether returns following a tournament win are different than those following a loss, we included "Winner" as our first independent variable. This variable is a dummy variable which is coded "1" in case the observation constitutes a tournament victory and "0" if not. In addition, we included dummy variables "Golf" and "Tennis" as control variables, given that we have included golf, tennis and track and field events in our dataset. As a result, we first estimated the following general OLS regression equation for each observation i:

$$CAR_i = \beta_0 + \beta_1 \text{Winner}_i + \beta_2 \text{Golf}_i + \beta_3 \text{Tennis}_i + \varepsilon_i \qquad (7)$$

In a second model, we studied the returns for firms endorsed by winners in more detail. We make a distinction between returns for endorsed clothing brands and equipment brands. Compared to previous research (e.g., Farrell et al. 2000; Nicolau and Santa-María 2013), one of our contributions is the inclusion of non-superstars. We defined a superstar based on the world ranking in the week previous to the start of the tournament. For tennis and track and field, superstars comprise players who were ranked either first or second on the world ranking, while for golf superstars comprised top-10 ranked players. Although this method is relatively arbitrary, following it leads to roughly 30–40% of events being won by superstars across all sports. Superstars were captured by a dummy "Superstar" which is coded "1" if a player is categorized as a superstar, and "0" otherwise. Lastly, we considered a potential difference across endorsed firms. As Nike and Adidas dominate clothing endorsements (as is illustrated in Table 1), tournament victories for these brands might be more expected and may, hence, be associated with smaller stock market gains. As a result, we included an additional dummy variable "EndorsedMost" which is coded "1" for clothing firms if the endorsed firm is Nike or Adidas, and "1" for equipment firms if the endorsed firm equals Head or Wilson in tennis, or Nike, TaylorMade, or Cleveland Golf in golf. Other observations are coded "0" for this dummy. Consequently, we estimated the following general OLS regression equation, Eq. 8.

$$CAR_i = \beta_0 + \beta_1 \text{Clothing}_i + \beta_2 \text{Golf}_i + \beta_3 \text{Tennis}_i + \beta_4 \text{EndorsedMost}_i$$
$$+ \beta_5 \text{Superstar}_i + \varepsilon_i \qquad (8)$$

In both regressions, we controlled for possible seasonal fixed effects by including year-dummies. In addition, all regressions were run with heteroskedasticity-consistent estimators of variance.

3 Empirical results

3.1 General overview

For ease of interpretation, we start by discussing the market-adjusted returns surrounding the end of a tournament. We consider both winners and runners-up, and both endorsed clothing and equipment brands. Figure 1 displays these returns in a cumulative fashion for the period ranging from five trading days prior to the conclusion of an event to five trading days after the conclusion of the event. No specific return pattern could be detected prior to the end of the tournament. Interestingly, the clothing brands endorsed by tournament winners outperformed the market as of day 0 (i.e., the first trading day after the conclusion of the event). Unreported statistics revealed that this pattern holds for all sports. The cumulative return after tennis, golf, and track and field equaled 0.33, 0.70, and 0.45%, respectively. The returns for the other categories were more opaque: although they all showed positive cumulative market-adjusted returns, these returns are of a considerably smaller magnitude.

3.2 Empirical analysis

We start this section by discussing the results for clothing brands endorsed by winners, followed by a discussion of returns for clothing brands endorsed by runners-up, after which we turn to endorsed equipment brands for winners and runners-up, respectively. All results are given in Table 2.

Table 2 (A) depicts the returns for endorsed clothing brands by winners. Interestingly, the positive market-adjusted return on the trading day following the victory is followed by positive returns in the subsequent 4 days. Three of these individual days' returns exhibit statistical significance, and on top of that, they are statistically significant in a cumulative fashion, with a cumulative market-adjusted return (CMAR) of 0.53% after five trading days.[7] Although the risk-adjusted cumulative returns are positive as well, they lack statistical significance. It should be noted that the cumulative risk-adjusted return at $t = 4$ is positive and statistically significant at the 10% level. The findings—particularly those based on market-adjusted returns—support findings documented in previous literature.

Table 2 (B) illustrates the average returns for clothing brands endorsed by runners-up. Despite some likely exposure for runners-up during the event, as well as some media coverage ex post, the endorsed firm's shares did not exhibit significant returns, neither on a market-adjusted basis nor on a risk-adjusted basis. These findings are in line with those of Nicolau and Santa-María (2013). Ngan et al. (2011) experimentally studied purchase intentions for endorsed brands for sports teams and found that winning (as opposed to losing) an event leads to the strongest purchase intentions. This effect can explain the different returns we found for winners and runners-up.

Table 2 (C) considers the effects on the winners' endorsed equipment brands. The individual days' returns do not show a clear positive or negative pattern and this is

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[7] In addition, we considered the proportion of positive returns. On day 0, 51.7% of the market-adjusted returns were positive; 55.2% of the 5-day cumulative market-adjusted returns were greater than 0. This value is significant at the 1% level when judged by a Sign test.

reflected in non-significant cumulative returns, both on a market-adjusted basis and on a risk-adjusted basis. These findings loosely confirm the conclusions by Farrell et al. (2000) who used a case study approach of Tiger Woods' results. In their study, endorsed non-clothing brands did not experience statistically significant returns either. Apparently, through the eyes of stock market participants, non-clothing brands do not attract the awareness needed to significantly influence a firm's sales and earnings, due to which the share price remains relatively unaffected shortly after the event. It should be noted that we focus on equipment, while Farrell et al. (2000) focused on other non-clothing brands.

Finally, Table 2 (D) shows the returns for the equipment brands endorsed by runners-up. Surprisingly, the cumulative returns are somewhat higher than for the endorsed firms by winners. However, these returns are not statistically significant, except for the 5-day cumulative market-adjusted returns which is, however, only significant at the 10% level.

In general, we found evidence for positive cumulative returns for clothing brands endorsed by winners only. We explore the return differences between winners and runners-up, and between clothing and equipment brands more formally in the next section.

3.3 Determinants of returns for endorsed brands

So far, we established that winners' clothing sponsoring companies achieved significant and positive 5-day market-adjusted returns following a tournament victory. Since these 5-day returns were higher and more significant than both 1-day market-adjusted returns and 5-day risk-adjusted returns, we consider this estimate as measure for cumulative abnormal returns in our empirical analysis.[8] In this section, we use different regression models to quantify reported return differences between endorsements categories.

First, we focused on determinants of stock returns of endorsed clothing brands. The sample consists of 1277 observations. Table 3 shows the regression results. We estimated four different models as to show the robustness of our findings to changes in explanatory variables.

Model 1 shows that Winner positively affects the post-event CARs. Its coefficient equals 0.405, indicating that the CAR for brands is 0.405% higher when endorsed by winners instead of by runners-up. This finding is significant at the 10% level. Golf is positive and statistically significant as well, indicating higher post-event returns for golf clothing brands endorsed by either the winner or the runner-up. The model's F-statistic is significant, indicating that the coefficients are jointly unequal to zero. The R^2 is relatively low with a value 0.01. However, as our main focus is finding relationships rather than formulating predictions, we feel that the low R^2 is not an issue of concern.[9]

The endorsed clothing firms originate from 10 different countries. To acknowledge potential differences between countries, model 2 includes country dummies in addition to

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[8] We stick to 5-day—simply put: weekly—market-adjusted returns in the main discussions of our results. In follow-up footnotes, we will devote attention to the robustness of our results with respect to (i) other event windows, and (ii) using cumulative risk-adjusted returns.

[9] Other studies on endorsements and abnormal returns also report relatively low levels of explained variance, see for example Farrell et al. (2000).
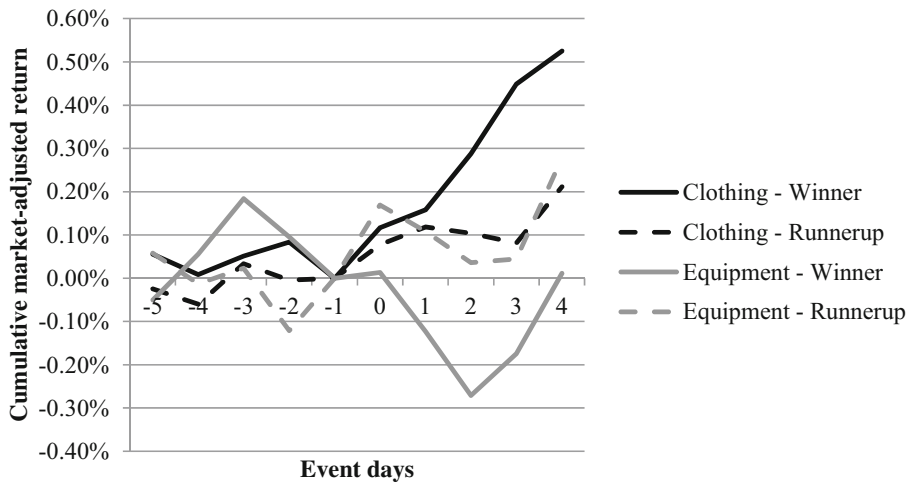
Fig. 1 Cumulative market-adjusted returns surrounding the conclusion of a tournament. This figure illustrates the average cumulative market-adjusted returns for the endorsed firms during the event period (−5, 5) surrounding the date of a tournament's final. Endorsed clothing brands are collected for golf, tennis, and track and field (more specifically: running), while endorsed equipment brands concern golf and tennis only. "Clothing–Winner" and "Clothing–Runner-up" depict average returns for the endorsed clothing brands by winners and runners-up, respectively. "Equipment–Winner" and "Equipment–Runner-up" show returns for endorsed equipment brands by winners and runners-up, respectively

the variables from model 1. Not only the economic significance of Winner increased (from 0.405 to 0.470) but also the statistical significance increased (from $p < 0.10$ to $p < 0.05$).

Our results from models 1 and 2 might be partially driven by confounding effects during our event window. In model 3, we control for the announcement of earnings per share during either the event window or the preceding 5-day period to take into account the possibility of so-called post-earnings-announcement-drifts (see Kothari (2001) for an overview of the literature on this topic). This dummy variable EPS (coded "1" when earnings were published and "0" otherwise) is insignificant and does not qualitatively affect the coefficient of Winner. In an unreported test, we excluded all observations where EPS equaled 1. This did not alter our findings. In our last model, model 4, we ran a regression for US firms only rather than including country dummies, given the importance of US capital markets in general. As a result of this additional selection criterion, the number of observations dropped to 700. While the coefficient of Winner rises to 0.672, its t-value decreases to 1.96 which translates to a p value of 0.05.[10]

We conclude from Table 3 that CARs for clothing brands endorsed by winners were significantly higher than for runners-up. This finding holds for a subsample of only US firms as well. We conducted a similar analysis for endorsed equipment firms (unreported). These tests did not reveal any statistically significant differences between brands endorsed by winners or runners-up.

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[10] Our results are robust to using an event window of 4 days. In fact, using a 4-day window would increase the statistical significance of "Winner." Shorter event windows are not associated with statistically significant results. With regard to cumulative risk-adjusted returns: "Winner" is significant at the 10% level in all models when applying a 5-day event window. Shortening the event window to 4 days increases the significance to the 5% level. CRARs for shorter windows are not statistically significant.

Table 2 Returns after conclusion of events

Day	Market-adjusted returns (MAR, in %)				Risk-adjusted returns (RAR, in %)			
	MAR	*t*-value	*CMAR*	*t*-value	*RAR*	*t*-value	*CRAR*	*t*-value
(A) Clothing–Winners (*n* = 689)								
0	0.12%*	1.90			0.06%	0.93		
1	0.04%	0.66	0.16%*	1.95	−0.03%	−0.46	0.03%	0.34
2	0.13%*	1.95	0.29%**	2.96	0.08%	1.25	0.11%	1.13
3	0.16%**	2.20	0.45%**	3.70	0.09%	1.29	0.20%*	1.66
4	0.08%	1.20	0.53%**	3.74	0.03%	0.43	0.23%	1.64
(B) Clothing–Runners-up (*n* = 588)								
0	0.08%	1.16			0.01%	0.14		
1	0.04%	0.47	0.12%	1.14	−0.03%	−0.35	−0.02%	−0.20
2	−0.01%	−0.18	0.10%	0.77	−0.06%	−0.72	−0.08%	−0.59
3	−0.02%	−0.28	0.08%	0.53	−0.05%	−0.61	−0.12%	−0.85
4	0.13%	1.59	0.21%	1.23	0.05%	0.67	−0.07%	−0.42
(C) Equipment–Winners (*n* = 608)								
0	0.01%	0.16			−0.04%	−0.53		
1	−0.14%	−1.40	−0.12%	−0.91	−0.14%	−1.54	−0.18%	−1.39
2	−0.15%	−1.23	−0.27%	−1.35	−0.16%	−1.33	−0.34%*	−1.74
3	0.10%	0.66	−0.17%	−1.00	0.05%	0.30	−0.30%*	−1.76
4	0.19%*	1.77	0.01%	0.06	0.14%	1.38	−0.16%	−0.80
(D) Equipment–Runners-up (*n* = 588)								
0	0.17%**	2.14			0.04%	0.59		
1	−0.06%	−0.73	0.11%	0.98	−0.06%	−0.71	−0.01%	−0.13
2	−0.07%	−0.83	0.04%	0.25	−0.05%	−0.57	−0.06%	−0.43
3	0.01%	0.09	0.04%	0.26	0.02%	0.19	−0.04%	−0.27
4	0.23%**	2.56	0.28%	1.49	0.21%**	2.40	0.17%	0.94

This table depicts market-adjusted returns (MAR) and cumulative market-adjusted returns (CMAR) on the one hand, and risk-adjusted return (RAR) and cumulative risk-adjusted returns (CRAR) on the other hand for the five business days following the tournament. Panel A depicts the returns for endorsed clothing brands of tournament winners; panel B depicts the returns for endorsed clothing brands of runners-up; panel C depicts the returns for the endorsed equipment firms by winners; and panel D shows the returns of equipment manufacturers endorsed by runners-up. Alongside the returns, their *t*-values are given: *$p < 0.10$, **$p < 0.05$

Now that we have established that a tournament victory leads to a different return than a defeat, we study the determinants of endorsement returns after an athlete's victory. Table 4 displays our results.

We estimated three different models. In model 1, we found that "Clothing" is statistically significant with a coefficient of 0.609, indicating that endorsed clothing firms experience a 0.609% higher CAR after a victory than endorsed equipment firms, after controlling for the sports type. Athlete achievements thus seem to have a higher impact on endorsed clothing brands than on equipment brands. A possible reason that brand awareness and associations could be higher for clothing brands is that these brands more prominently feature on television broadcasts as well as on official winner's photographs distributed after events. As a result,

Table 3 Determinants of the 5-day CAR for endorsed clothing brands

	Model 1		Model 2		Model 3		Model 4	
	Coefficient	*t*-value	Coefficient	*t*-value	Coefficient	*t*-value	Coefficient	*t*-value
Winner	0.405*	1.77	0.470**	2.03	0.469**	2.03	0.672*	1.96
Golf	0.643**	2.38	0.369	1.43	0.356	1.39	0.400	1.06
Tennis	−0.064	−0.23	−0.266	−1.02	−0.275	−1.06	−0.424	−1.17
EPS					0.384	0.76		
Constant	−1.04*	−1.85	−1.67	−1.28	−1.65	−1.26	0.194	0.43
Year dummies	INCL.		INCL.		INCL.		INCL.	
Country dummies	EXCL.		INCL.		INCL.		EXCL.	
F-statistic	1.92**		1.78**		1.74**		1.26	
Adjusted R^2	0.01		0.02		0.02		−0.00	
n	1277		1277		1277		700	

This table shows the outcome of our regression equations in which we explain the 5-day cumulative abnormal return, more specifically, the 5-day market-adjusted return. We estimated the models for clothing brands only. In all models, we used the dummy-variable "Winner" as the main independent variable. This variable takes on the value of 1 for a winner and 0 for a runner-up. We additionally control for sports-specific effects by adding the variables "Golf" and "Tennis" which are both dummy-variables. "Golf" and "Tennis" take on the value of 1 when the observation concerns a golf event or a tennis event, respectively. In addition, we control for potential seasonal effects by including year-dummies. In model 2, we additionally control for potential country effects by adding country dummies. Model 3 incorporates an additional dummy variable "EPS" which is equal to 1 if the endorsed firm has published their earnings per share during either the 5-day period following the event, or the preceding 5-day period (i.e., one business week). Model 4 is estimated for US firms only; hence, we excluded country dummies. All models are estimated using robust standard errors. Alongside the returns, the *t*-values are given: *$p < 0.10$, **$p < 0.05$

exposure for clothing brands is higher than for equipment brands. Model 2 additionally includes EndorsedMost and Superstar. Both variables have relatively low coefficients which are statistically insignificant. We conclude that we could not detect a dependence of the CAR on whether a superstar has won the tournament, or whether the player endorsed the Big-2 (in clothing for all sports, and tennis equipment) or the Big-3 (in golf equipment). Including these variables slightly increases the coefficient for Clothing. Finally, we estimated a model similar to model 1, but for US firms only. Model 3 shows that the number of observations drops to 618 as a result of this. While the magnitude of the coefficient of Clothing only slightly changes relative to our other models, the coefficient loses its statistical significance on the predefined levels for this subset.[11] A possible explanation for the reduced significance might be the large decrease of the sample size.[12]

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[11] Also for shorter event windows of up to 2 days, "Clothing" remains statistically significant at least the 5% level (significance even increases to the 1% level when using a 4-day event window). Based on cumulative risk-adjusted returns, "Clothing" is statistically significant at the 10% level for both 2- and 5-day event windows, at the 5% level for a 3-day event window, and at the 1% level for a 4-day event window.

[12] In unreported tests, we included a dummy variable EPS which captured potential effects of the announcement of EPS figures. This did not qualitatively influence our reported results.

Table 4 Determinants of 5-day CARs for firms endorsed by winners

	Model 1		Model 2		Model 3	
	Coefficient	*t*-value	Coefficient	*t*-value	Coefficient	*t*-value
Clothing	0.609**	2.22	0.624**	2.28	0.653	1.42
EndorsedMost			0.033	0.11	0.287	0.57
Superstar			−0.169	−0.68	−0.421	−1.21
Golf	0.399	1.19	0.399	1.20	0.778	1.62
Tennis	−0.272	−0.84	−0.264	−0.80	0.144	0.35
Constant	0.773	1.02	0.795	0.99	−0.598	−0.68
Year dummies	INCL.		INCL.		INCL.	
Country dummies	EXCL.		EXCL.		EXCL.	
F-statistic	1.92**		1.82**		0.82	
Adjusted R^2	0.01		0.01		0.00	
n	1297		1297		618	

We used the 5-day cumulative market-adjusted return as dependent variable. We estimated the models for winners only. In model 1, we include a dummy variable "Clothing" which equals 1 for endorsed clothing brands and 0 for equipment brands. "Golf" and "Tennis" are dummy variables; we treat track and field as the base scenario. The dummy variable "EndorsedMost" equals 1 when the endorsed firm has many sponsorship deals. "Superstar" is a dummy variable as well, coded as 1 when the athlete ranked high on the world ranking. The procedure for the latter two variables is explained in more detail in Sect. 2.3. In all models, we control for possible seasonal effects by including year dummies. Model 3 is estimated for US firms only. Alongside the returns, the *t*-values are given: *$p < 0.10$, **$p < 0.05$

4 Concluding remarks

For tennis, golf, and track and field (more specifically: running), players' performances were linked to stock returns of the firms they endorsed. We conclude that endorsed clothing brands exhibited statistically significant returns, as cumulative 5-day market-adjusted returns were positive after the enlisted athlete recorded a tournament victory. The fact that 5-day returns for the three different sports were individually positive as well, suggests the possibility for extrapolation of our results to other individual sports where athletes compete in multiple events throughout the year; however, future research in this area is needed. In contrast, we were unable to find significant returns for endorsed equipment brands after the end of a tournament. This discrepancy is possibly caused by a higher exposure to live coverage, press photographs, etc. for clothing brands relative to equipment brands. As such, brand associations seem to be strengthened for clothing brands only. For brands endorsed by runners-up, we failed to find evidence for significant abnormal returns. Hence, our findings can be attributed to a "winner-takes-all" effect (e.g., Ngan et al. 2011; Elberse and Verleun 2012). We could not find a return difference when an event was won by a superstar (such as Federer in tennis), or when the brand was commonly endorsed (such as Nike). Our results hold for a large dataset of events involving individual sports. With respect to future research, we encourage researchers to collect data for popular team sports as to conclude whether our findings can be generalized to team sports as well.

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