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Are diversified football clubs better prepared for a crisis? First empirical evidence from the stock market

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ABSTRACT

Research question: In this short article, we explore whether highly diversified professional football clubs, from an investor perspective, are better prepared for an unpredictable global crisis such as the COVID-19 pandemic than undiversified clubs.

Research methods: We apply event study methodology to analyze stock returns of football clubs during the first wave of the COVID-19 pandemic.

Results: Analyzing a dataset comprising 5380 daily stock returns of 21 publicly listed football clubs in Europe during the season 2019–20, our results suggest that investors preferred stocks of clubs with high levels of product diversification during the COVID-19 shock period. Vice versa, we observe a moderate negative effect of geographic diversification, i.e. a club's internationalization efforts. Both effects are robust across various model specifications and after adding several control variables.

Implications: In the future, football executives may want to increasingly apply product diversification strategies to prepare for future crises better. In contrast, at least during a global health crisis, further expansion to international markets requires caution.

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COVID-19; football/soccer; diversification; public health; strategy

Introduction

The COVID-19 pandemic poses existential threats to professional team sports clubs (PTSCs) around the globe. The members of the European Club Association (ECA),[1] for instance, expect revenue drops of approximately 4 billion Euro (KPMG, 2020), primarily because, first, most competitions were interrupted for months or, even worse, ended prematurely (e.g. Reade et al., 2020), and, second, most games are likely to be played either behind closed doors or in stadiums with reduced capacity in the foreseeable future until widespread vaccination takes place.[2] The largest U.S. sports leagues face losses of a similar scale (Paine, 2020).

PTSCs were completely unprepared for a crisis of such severity. Already in the pre-pandemic era, most PTSCs failed to establish profitable business models since funds were directly reinvested into their squad (Cairns et al., 1986; García & Rodríguez, 2003; Szymanski & Smith, 1997). Hence, the risk of insolvency is an inherent issue for PTSCs,

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especially when sporting performance deteriorates (Scelles et al., 2018; Szymanski, 2012; Szymanski & Weimar, 2019). Even German Bundesliga clubs, despite holding a reputation for conservative business planning, could not earn an Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) margin above zero during each of the last three seasons prior to the outbreak of the COVID-19 pandemic (DFL, 2020b).

The sudden shock induced by COVID-19, then, revealed the fragility of business models in the global sports industry. Apart from fighting the short-term consequences, sports managers now face a pressing need to develop long-term strategies in order to survive in the post-pandemic era. In this context, practitioners initiated a heated debate around various regulatory actions such as rescue funds, salary caps, or stricter licensing conditions. Interestingly, the question is asked rarely what PTSCs can do by themselves to become more resilient against future unexpected crises events.

In this short manuscript, we argue that diversification may serve as one effective tool for PTSCs in general and for football clubs in particular to prepare against future crises more effectively. Diversification, one of the oldest fields in the management literature, is based on the idea that risk can be spread by diversifying business activities (Ansoff, 1957; Markowitz, 1952). In fact, more recent evidence from cross-industry studies in the U.S. suggests that diversified firms perform better during crises (Kuppuswamy & Villalonga, 2016; Liu et al., 2018; Volkov & Smith, 2015). According to Lewellen (1971), diversification strategies benefit from the coinsurance effect due to imperfectly correlated cash flows of different income streams.

The literature on diversification in the sports industry is still relatively scarce, although we observe an emerging debate around the potential benefits over the past years. In this context, Pritchard et al. (2020), developing a conceptual model supported by semi-structured interviews, for instance, argue that football clubs might benefit from strongly diversified brand portfolios. Holzmayer and Schmidt (2020b) find empirical evidence that related business diversification increases both revenue and profit of English Premier League clubs. Nowy and Breuer (2017) show that highly diversified football clubs are less prone to match-fixing, perhaps because they possess greater financial stability. On a more general note, diversification has proven to be beneficial for sports associations (De Bosscher et al., 2019; Knuepling & Broekel, 2020; Weber et al., 2018), leagues (Andrews & Harrington, 2016), and non-profit clubs (Doherty et al., 2014; Wicker et al., 2013), too. In contrast, our knowledge on whether diversified PTSCs are better prepared for crisis is limited at best.

Accordingly, here, we present the first empirical paper studying the potential effects of diversification strategies employed by PTSCs in the context of a global health crisis, i.e. during the first wave of the COVID-19 pandemic. More precisely, to answer the question of whether highly diversified professional football clubs, from an investor perspective, are better prepared for an unpredictable global crisis than their undiversified counterparts, we analyze a total of 5380 daily stock market observations from 21 publicly listed football clubs across Europe. In particular, we are interested in stock price changes during the first wave of COVID-19, representing the market's evaluation of the expected future firm performance (e.g. Woolridge & Snow, 1990), i.e. in our case, a football club's performance. In sum, applying event study methodology from the finance literature (e.g. MacKinlay, 1997), we present the empirical results from four different model specifications and two alternative dependent variables, both capturing abnormal stock

performance. In terms of diversification at professional football clubs, we distinguish between geographic diversification (GD), i.e. the expansion to new markets outside the home country, and product diversification (PD), i.e. the introduction of new product or service offerings beyond the traditional revenue streams resulting from media rights, sponsoring, and gate receipts, in line with the conceptual framework developed by Schmidt and Holzmayer (2018).

The remainder of our article is structured as follows: First, we examine the related diversification literature to develop an initial understanding of how diversification efforts typically affect a firm's performance in the sports industry and beyond. Second, we present our event study methodology taking the first wave of the COVID-19 pandemic as a research ground to investigate stock returns of professional football clubs. In the Results and Discussion section, we, third, present our findings, summarizing whether investors prefer increasingly diversified football clubs during the event window. Finally, we, fourth, discuss potential implications for sports managers and, fifth, suggest future research avenues.

Related literature on diversification and firm performance

Despite being one of the most discussed topics in management research, the overall effect of diversification on firm performance remains controversial. In fact, there seems to exist evidence for a so-called diversification discount, suggesting that stocks of diversified firms trade at a discount compared to non-diversified firms (Berger & Ofek, 1995; Denis et al., 2002; Lang & Stulz, 1994; Servaes, 1996). Usually, this phenomenon is attributed to higher coordination costs (Michel & Shaked, 1986) and agency problems (Jensen, 1986; Rajan et al., 2000). In contrast, more recent studies tend to find consistent support that this diversification discount may ultimately turn into a premium in times of crisis (Kuppuswamy & Villalonga, 2016; Liu et al., 2018; Rudolph & Schwetzler, 2013; Volkov & Smith, 2015). Here, the underlying rationale is that diversification allows companies to compensate losses in one business segment with proceeds from other business segments via imperfectly correlated cash flows (Lewellen, 1971). In line with this notion, several authors have reported that diversified firms are less likely to go bankrupt (Coad & Guenther, 2013; Grass, 2012; Singhal & Zhu, 2013) and face lower systematic market risk (Fatemi, 1984; Hann et al., 2013; Jafarinejad et al., 2018). Other authors even question the diversification discount per se arguing that it is caused by endogeneity (Campa & Kedia, 2002; Graham et al., 2002; Villalonga, 2004). In addition, there is an increasing debate whether the diversification-performance link takes a non-linear shape. For example, there is consistent evidence that related diversification outperforms unrelated diversification since firms can exploit synergies more effectively (Lubatkin, 1983; Montgomery, 1985; Palepu, 1985).[3] However, there is also criticism, arguing that the performance gap arises from ex ante performance differences rather than the relatedness of diversification (Park, 2002). In summary, any empirical diversification study must carefully consider the individual context in terms of industry, geography, and economic cycle to draw implications.

In the sport management literature, the discussion around diversification is surprisingly new but initial findings point towards a performance-increasing effect of PD. For example, Holzmayer and Schmidt (2020b), exploring English Premier League data over a period of 15 years, find that related business diversification, such as investments

into professional sports teams outside of football, is positively associated with revenues. Somewhat similarly, Storm (2009), analyzing the corporate strategy of the Danish Football Club Copenhagen, argues that diversification into related business areas, such as hosting concerts and events in the club-owned stadium, contributed to the club's exceptional financial success since entering the stock exchange in 1997. One potential explanation arises from dynamic managerial capabilities as the antecedents for related business diversification (Holzmayer & Schmidt, 2020a). Further studies offer mostly qualitative narratives reflecting upon the recent surge in diversification activities of PTSCs (e.g. Andrews & Harrington, 2016; Huth, 2011; Teichmann, 2007).[4]

With regards to a club's internationalization efforts, several authors present qualitative arguments emphasizing the opportunity of geographic expansion given that home markets are increasingly saturated (e.g. Fleischmann & Fleischmann, 2019; Post & Druker, 2018; Teichmann, 2007), in some respect even declining (e.g. Schreyer, 2019). It is, therefore, not surprising that there already exist first case studies, portraying successful internationalization efforts from football clubs rooted in Barcelona (Ginesta et al., 2020), Munich (Baena, 2019), Liverpool (Sondaal, 2013), or Turin (Ferrari, 2019).

In a somewhat broader context, diversification efforts at PTSCs are also related to the extensive discussion around organizational motives; or, in other words, to the long-standing question whether a football club is (or, perhaps, should be) a profit or utility maximizer (e.g. Sloane, 1971). That is, if a club's organizational motives are not primarily financially driven, then diversification efforts may not be relevant at first. In fact, in professional sports, the emerging prestige from sporting success on the pitch in the short-term is repeatedly prioritized over generating profits. In line with this, PTSCs often fail to demonstrate sustainable financial success in the long-term (e.g. Guzmán, 2006). On top, other non-financial motives, such as establishing an identity or pursuing a societal mission, are considered important to clubs and their stakeholders (Gammelsæter, 2011, 2020). As such, we must acknowledge the multifaceted nature of organizational motives in the sports industry, which, then, may ultimately provide an explanation of whether PTSCs choose to diversify.

One potential reason for the lack of empirical studies in the sports industry arises from the complexity of measuring diversification. In management research, PD is typically captured via segment level data of two-digit or four-digit SIC codes which enable the calculation of the commonly used Herfindahl index and Entropy measure (Jacquemin & Berry, 1979). Here, most scholars use *Compustat* to obtain the respective data, especially for the U.S. market (Aivazian et al., 2019; Hann et al., 2013). Common proxies for GD include foreign sales ratio or foreign asset ratio (Hill et al., 2019; Sullivan, 1994). In sports, however, such granular data is hardly available. Thus empirical diversification studies in the sports environment often require exhaustive, tailor-made methodologies.

On a more practical note, we observe that most PTSCs are currently focusing on related diversification.[5] Examples include investments into other sports teams, for example, Fenway Group holding shares of a baseball team, a football team, and a motorsports team (Fenway Sports Management, 2020), or offering travel services, for example, Borussia Dortmund founding a travel agency as a fully owned subsidiary (besttravel dortmund GmbH, 2020). Even internationalization activities of PTSCs, such as FC Bayern Munich opening an office location in the U.S. (FC Bayern Munich, 2016), can be interpreted as related diversification as long as cultural proximity among two countries is high (Vachani, 1991).

Methodology, data, and empirical model

To answer the research question at hand, we borrow event study methodology from the finance literature. Event studies investigate the adjustment of stock prices to new information from an investor perspective (Fama et al., 1969). This new information may arise from a wide variety of firm-specific or economy-wide events (MacKinlay, 1997). Scholars typically use cumulative abnormal returns (CAR) to analyze stock market reactions to new information (Agrawal et al., 1992; Woolridge & Snow, 1990). Notable applications of event studies include merger announcements (e.g. Rosen, 2006), earnings announcement (e.g. Kross & Schroeder, 1984), capital expenditure decisions (e.g. Chung et al., 1998), calendar anomalies (e.g. Seyhun, 1988), or crises periods (e.g. Miyajima & Yafeh, 2007). Recently, several authors have also begun to analyze stock market reactions in the context of the COVID-19 pandemic (Albuquerque et al., 2020; Ambros et al., 2020; He et al., 2020).

There are also several examples for event studies in sport management literature. The majority of those focus on the impact of game outcomes (Benkraiem et al., 2009; Brown & Hartzell, 2001; Mao et al., 2020; Palomino, 2009; Scholtens, 2009). Other examples include announcements of mega-event hosting (Berman et al., 2000; Veraros et al., 2004), announcements of celebrity endorsement deals (Agrawal & Kamakura, 1995), transfer market information leakage (Fűrész & Rappai, 2020), or the impact of sport franchises on the local economy (Lertwachara & Cochran, 2007).

In this paper, we apply event study methodology to the shock period triggered by the first wave of the COVID-19 pandemic. As we are interested in the question of whether investors prefer stocks of highly diversified football clubs during a global crisis, we collect daily data for the entire season 2019–20 which includes the first wave of COVID-19 as a subset. Thus we can distinguish effects in the shock period versus the non-shock period within one full season. As the starting point of the season 2019–20, we use the date of the first league match in the respective country. Most of these dates fall into the period between July 2019 and August 2019. Further, we choose the date of the Champions League final on August 23, 2020, as the ending point of the season 2019–20 since it marks the day at which all clubs have certainty on all relevant income streams including the distribution of future income from media rights. Altogether, our data set comprises 21 publicly listed European football clubs from nine different countries.[6]

In Table 1, we present the summary statistics for all variables used in our empirical model. With regard to the dependent variable, we define two alternative specifications following the mean-adjusted returns model and the market model as suggested by the financial literature (MacKinlay, 1997; Strong, 1992). In both cases, we use logarithmic returns over discrete returns as they conform better to standard assumptions used in empirical models and are more appropriate when adding up returns over multiple time periods, which is standard in event studies (Strong, 1992).[7] The main difference between the two dependent variables arises from the respective calculation of expected returns. The first alternative uses mean-adjusted returns:

$$E(r_{j,t}) = c_j \text{ for all } t \tag{1a}$$

where $E(r_{j,t})$ is the expected logarithmic return for club j on day t. Here, a constant return c_j is expected for each day in the respective time span. It is calculated based on the average

Table 1. Summary statistics for all variables (n = 5380).

Variables	Explanation	Source	Mean	SD	# of clubs[a]
Dependent					
CAR_MEAN	10-day logarithmic abnormal return calculated based on mean adjusted returns	Eikon, calculation	0.00	0.06	
CAR_MM	10-day logarithmic abnormal return calculated based on market model	Eikon, calculation	0.00	0.05	
Shock period					
COVID	Time period between first case and peak level in respective country (yes = 1; 0)	ourworldindata.org	0.14	0.35	
Geographic diversification					
INDEXGD	Index for degree of geographic diversification of respective club using continuous scale between 0 (low diversification) and 1 (high diversification)	Calculation	0.39	0.30	
IOF	# of international office presences	Web research	0.24	0.53	5
OMT	Overseas marketing tour in 2019–2020 season (yes = 1; 0)	Web research	0.33	0.47	7
TWI	# of languages of club's Twitter page	Web research	2.28	1.97	12
ISP	% of sponsors with headquarter abroad among first category sponsors	Web research	0.37	0.35	14
Product diversification					
INDEXPD	Index for degree of product diversification of respective club using continuous scale between 0 (low diversification) and 1 (high diversification)	Calculation	0.52	0.31	
ESP	Own eSports team under club brand (yes = 1; 0)	Web research	0.86	0.35	18
OSP	# of professional sports teams apart from men's football	Web research	1.37	1.22	16
STA	Club-owned stadium used for events such as concerts, stadium tours, etc. (yes = 1; 0)	Web research	0.71	0.46	15
MUS	Club-owned museum (yes = 1; 0)	Web research	0.65	0.48	14
TRA	Offering travel services such as hotels, restaurants, organized game trips, etc. (yes = 1; 0)	Web research	0.28	0.45	6
FIS	Offering financial services products such as club-branded credit card (yes = 1; 0)	Web research	0.43	0.50	9
Controls					
ADHOC	Ad-hoc stock announcements published on respective day (yes = 1; 0)	Eikon	0.02	0.15	
WIN	Game win on respective day (yes = 1; 0)	Transfermarkt	0.10	0.30	
DRAW	Game draw on respective day (yes = 1; 0)	Transfermarkt	0.03	0.18	
LOSS	Game loss on respective day (yes = 1; 0)	Transfermarkt	0.05	0.21	
SALES	Sales in season 2018–19 (in mEuro)	Eikon	172	180	
EBIT	EBIT in season 2018–19 (in mEuro)	Eikon	11	24	
LONGTERM	# of years in which club reported a negative EBIT since 2009	Eikon	4.64	2.87	

[a]Number of clubs that conduct any level of diversification in the respective category (e.g. at least one international office; at least one foreign language on Twitter page; at least one foreign sponsor, etc.)

daily logarithmic return over the entire time span of the observation period. In contrast, the market model applies a more granular approach to derive expected logarithmic returns:

$$E(r_{j,t}) = \propto_j + \beta_j r_{m,t} + \varepsilon_j \tag{1b}$$

In the above formula, the expected return for each club is estimated based on the correlation between a club's stock return and the market return. We use *STOXX Europe Football* to operationalize $r_{m,t}$ as market returns. Club-specific ordinary least squares (OLS) regressions are conducted to estimate the coefficients for $\propto_j$ and β_j while ε_j

serves as a disturbance term with mean zero. As a next step, we calculate abnormal returns as the difference between actual returns and expected returns:

$$AR_{j,t} = r_{j,t} - E(r_{j,t}) \tag{2}$$

where $AR_{j,t}$ is the abnormal return of club j on day t. As the last step in the process, we calculate cumulative abnormal returns (CAR) as the sum over several trading days:

$$CAR_{j,t} = \sum_{t}^{T} AR_{j,t} \tag{3}$$

where $CAR_{j,t}$ is the cumulative abnormal return of club j from day t to T. The accumulation of returns over several time periods is required to capture the full effect of an event on share prices (Strong, 1992). This is particularly relevant in our case since trading volume of football clubs is relatively low compared to stocks of, for example, larger enterprises. Hence, investors may react to new information with a time lag.

In line with previous studies (e.g. Strong & Meyer, 1987; Trueman et al., 2003), we choose a window of 10 days which reflects 2 trading weeks in full. Further, we note that employing such a 10-day window appears particularly appropriate in the context of unforeseen shock events, such as the sudden change of key regulatory positions (Acemoglu et al., 2016), the leakage of sensitive political information (Hillier & Loncan, 2019), or unexpected election results (Wagner et al., 2018). However, we also conduct robustness checks employing other time spans and obtain similar results.[8]

To operationalize the shock period triggered by the first wave of COVID-19, we use country-specific time intervals. In Figure 1, we illustrate our definition of the event window based on the example of Italy. The beginning of the shock period is represented by the first confirmed COVID-19 case in the respective country. This first case is likely to cause large press coverage, thus representing a salient piece of information which is crucial for event studies (Palomino, 2009). It follows a period of elevated uncertainty where market observers are concerned about the exponential spread of the disease. In this phase, most countries enforce measures of historic scale, including lockdowns and bans for public gatherings. The shock period, then, lasts to the day at which the peak level of newly confirmed cases is reached. After this inflection point, we presume that investors leave the immediate shock period triggered by the pandemic. In addition, in Table 2, we give an overview on all clubs in the final sample revealing substantial differences between the full observation period, which includes 5380 daily stock market returns, and the shock period, which is a subset of the full observation period and includes 767 daily returns. As can be seen from the descriptive data, the average CARs are lower during the shock period while standard deviations are higher. We will explore this further in the results section.

Our key variables of interest pertain to a football club's level of diversification efforts. However, with regard to these clubs, it is impossible to capture diversification with common measures used in other industries such as the Herfindahl index for PD (Jacquemin & Berry, 1979) or foreign sales ratios for GD (Sullivan, 1994). Hence, we had to develop a tailor-made approach to measure diversification of these clubs.

To approximate diversification efforts by football clubs, we build on previous publications related to diversification strategies in professional sports. On the very first

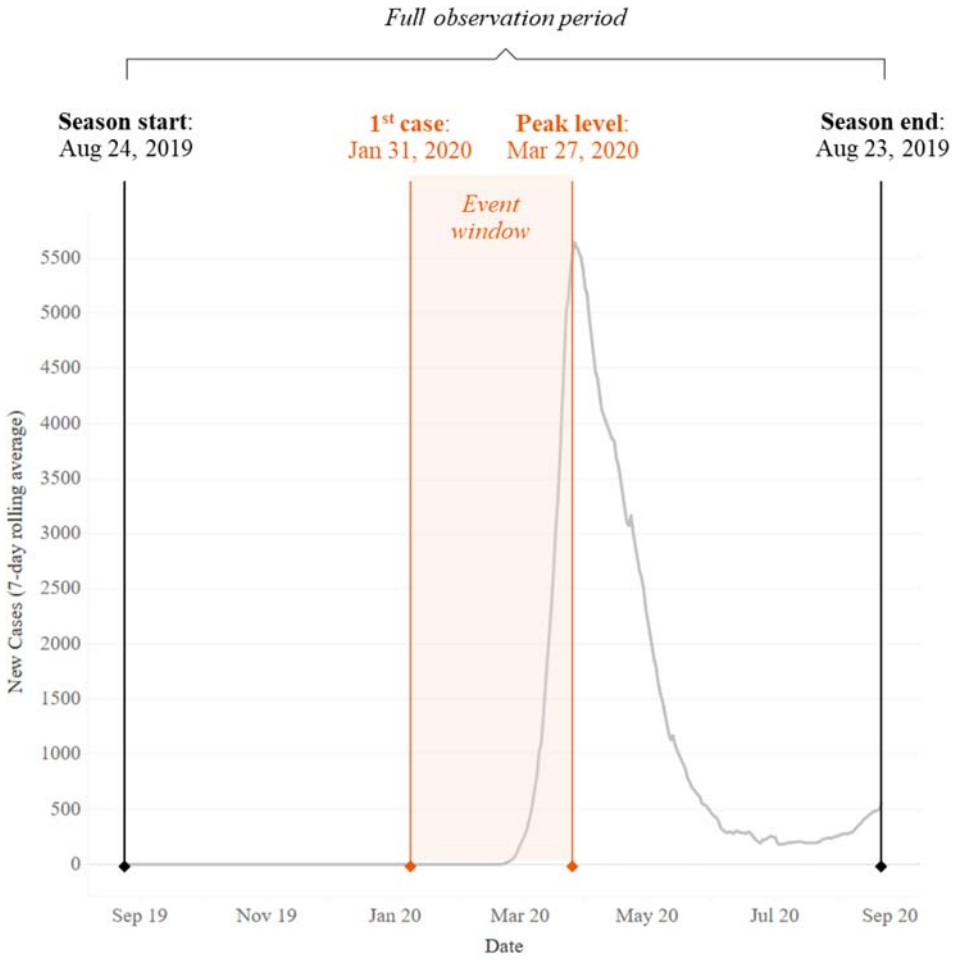

Figure 1. Definition of event window based on example for Italy.

level, we distinguish two dimensions for diversification in football according to the framework introduced by Schmidt and Holzmayer (2018). That is, a sporting club can either expand into close-by or global markets, i.e. GD, or invest in related or unrelated business activities outside the core business of football, i.e. PD. More specifically, we conducted a thorough web research of clubs' websites and press articles to collect multiple proxies for both GD and PD.[9]

To determine proxies for GD, we refer to the notion by Schmidt and Holzmayer (2018) who, among others, identify foreign offices, global marketing tours, social media communication, and international partnerships as the key characteristics of football clubs with emerging internationalization efforts. Hence, we choose four different proxies for GD. Our first variable reflects the ongoing debate among scholars around football clubs launching international office presences (IOF) to expand to new countries (e.g. Ginesta et al., 2020; Horbel et al., 2020). Next, we include overseas marketing tours (OMT) in light of the fact that football clubs use season breaks, either in summer or winter, to explore foreign markets, such as Juventus Turin in Indonesia (Ferrari, 2019)

Table 2. Summary statistics for dependent variable by club.

	Full season 2019–20 (full observation period)					COVID-19 shock period during first wave (event window)				
	CAR_MEAN		CAR_MM			CAR_MEAN		CAR_MM		
Club	Mean	SD	Mean	SD	n[a]	Mean	SD	Mean	SD	n[a]
AAL (DK)	0.003	0.041	−0.002	0.039	254	−0.027	0.029	−0.023	0.023	30
AAR (DK)	0.003	0.049	0.003	0.040	278	−0.043	0.097	−0.033	0.062	30
AIK (SE)	−0.003	0.033	0.004	0.029	288	−0.003	0.043	0.009	0.033	99
AJA (NL)	−0.002	0.031	−0.001	0.025	270	−0.020	0.064	−0.014	0.046	32
ASR (IT)	−0.003	0.063	−0.006	0.052	252	−0.038	0.091	−0.015	0.048	41
BEN (PT)	−0.005	0.056	0.001	0.053	264	−0.060	0.077	−0.047	0.062	27
BES (TR)	0.005	0.077	−0.001	0.061	251	0.041	0.042	0.016	0.031	25
BRO (DK)	−0.001	0.057	0.003	0.048	287	−0.047	0.102	−0.030	0.065	30
CEL (GB)	−0.002	0.039	0.005	0.034	267	−0.013	0.077	−0.001	0.066	59
COP (DK)	−0.006	0.039	0.004	0.026	278	−0.034	0.096	−0.010	0.055	30
DOR (DE)	−0.005	0.046	0.001	0.026	256	−0.028	0.095	0.003	0.043	49
FEN (TR)	0.004	0.085	0.002	0.063	251	0.033	0.026	0.011	0.019	25
GAL (TR)	0.001	0.097	−0.003	0.082	251	0.054	0.090	0.035	0.081	25
JUV (IT)	−0.005	0.051	0.003	0.033	252	−0.044	0.098	−0.003	0.057	41
LAZ (IT)	0.000	0.071	0.002	0.045	252	−0.052	0.154	−0.014	0.093	41
LYO (FR)	−0.004	0.023	0.004	0.018	265	−0.024	0.037	−0.007	0.025	49
MAN (GB)	−0.001	0.033	−0.003	0.021	260	−0.010	0.056	0.004	0.023	58
POR (PT)	0.002	0.042	0.003	0.042	216	0.005	0.101	0.007	0.096	15
SIL (DK)	−0.003	0.023	0.006	0.024	232	−0.015	0.041	−0.002	0.053	25
SPO (PT)	−0.001	0.037	−0.005	0.040	205	−0.009	0.036	0.019	0.036	11
TRA (TR)	0.009	0.134	−0.014	0.121	251	0.079	0.137	0.022	0.126	25
Total	0.000	0.060	0.001	0.049	5380	−0.015	0.086	−0.004	0.059	767

AAL, Aalborg BK; AAR, Aarhus GF; AIK, AIK Solna; AJA, Ajax Amsterdam; ASR, AS Roma; BEN, Benfica Lisbon; BES, Besiktas Istanbul; BRO, Brøndby IF; CEL, Celtic Glasgow; COP, FC Copenhagen; DOR, Borussia Dortmund; FEN, Fenerbahce Istanbul; GAL, Galatasaray Istanbul; JUV, Juventus Football Club; LAZ, SS Lazio Roma; LYO, Olympique Lyon; MAN, Manchester United; POR, Porto FC; SIL, Silkeborg IF; SPO, Sporting Lisbon; TRA, Trabzonspor; DK, Denmark; SE, Sweden; NL, Netherlands; IT, Italy; PT, Portugal; TR, Turkey; GB, Great Britain; DE, Germany; FR, France.

[a]n marks the number of trading days. In sum, our final sample includes 5380 trading days of which 767 days correspond to the shock period triggered by the first wave of the COVID-19 pandemic.

or Manchester United in Southeast Asia (Hill & Vincent, 2006). The third variable directly builds on Fleischmann and Fleischmann (2019) who use the number of languages of a club's Twitter page (TWI) as a proxy for internationalization.[10] Finally, to consider the rise of global partnerships in the sports industry (e.g. Dolles & Söderman, 2005; Maderer & Holtbrügge, 2019), we include the share of international sponsors (ISP) as our fourth variable.[11]

Using a similar approach as above, we define six variables for PD building on the work by Schmidt and Holzmayer (2018). The first variable relates to eSports (ESP) since many football clubs have launched own eSports teams over the past years to enter a rapidly growing market (e.g. Bertschy et al., 2020). In addition, for an even longer period of time, clubs have invested into other professional sports teams (OSP) outside of men's football such as Manchester City establishing a women's football team (James, 2020) or Galatasaray Istanbul operating a multi-sport portfolio including basketball, volleyball, and more (Battini, 2012). Finally, we include variables that reflect the ongoing research discussion around leveraging the stadium (STA) as a multi-purpose facility for events (e.g. Storm, 2009), operating museums (MUS) to reinforce a club's brand perception (e.g. Appel, 2015), selling travel services (TRA) related to sports events (e.g. Chadwick & Clowes, 1998), and offering financial services (FIS) via club-branded credit cards or other financial instruments (e.g. Shaw, 2007).

Next, out of the different proxies for GD and PD, we calculate an INDEXGD and INDEXPD based on a relative evaluation within the sample. Taking Manchester United as an example, in Figure 2 we illustrate our methodology via three main steps: First, we compute a club's relative rank of each proxy within the sample. Second, we derive the arithmetic mean across all proxies. Third, we normalize the values on a scale from 0, referring to the lowest diversification level within the sample, to 1, referring to the highest diversification level within the sample.

In Figure 3, we present an overview on the overall diversification levels of all clubs in the final sample. We observe that the two dimensions of diversification appear to be interrelated: a club with high levels of GD tends to have high levels of PD as well. However, there are notable exceptions of clubs scoring high in only one of the two dimensions, such as AS Roma with high GD but low PD or Celtic Glasgow with high PD but low GD. Moreover, we identify Juventus as the club with the highest GD while Fenerbahce shows highest PD.

Next, we introduce control variables for ad-hoc stock announcements,[12] sporting performance, and key financials. Ad-hoc stock announcements capture various types of price-sensitive information such as release of financial data, management changes, capital increases, player transfers, or new sponsorship deals and are likely to cause stock market reactions (e.g. Yermack, 1997). In terms of sporting performance, we collect match results from all official competitions.[13] We do so to account for previous research revealing a significant effect of game outcome on stock returns (Benkraiem et al., 2009; Brown & Hartzell, 2001; Palomino, 2009; Scholtens, 2009). Lastly, we incorporate controls for key financials. We include sales to account for a potential firm size effect (Banz, 1981). In addition, we consider a club's profitability since investors may view profitable clubs as better prepared to withstand the COVID-19 crisis. Here, we include both short term profitability in the season 2018–19 as well as long term financial stability since the financial crisis in 2008.

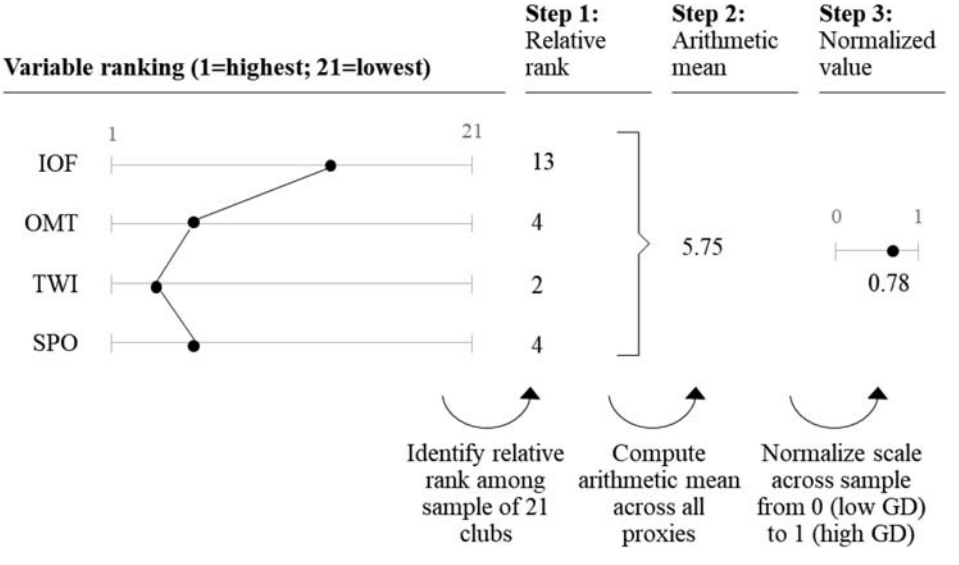

Figure 2. Calculation of INDEXGD based on example for Manchester United.

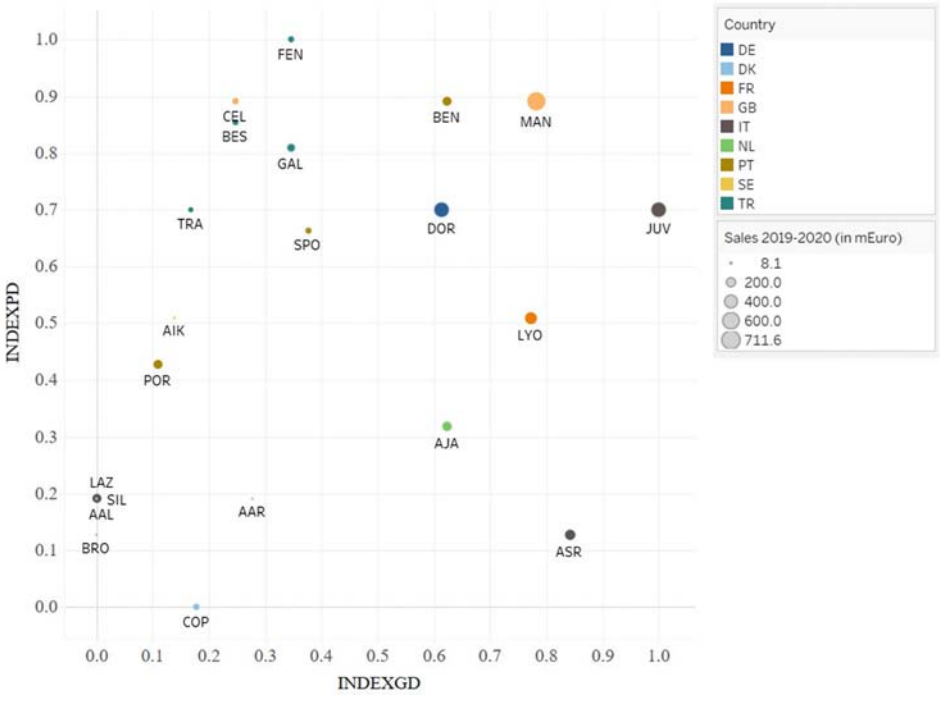

Figure 3. Diversification indices of clubs in sample.

Based on the above-mentioned variables, we establish a panel model using club-fixed effects. The fixed effect model is chosen based on a Hausman test. Hence, we use the following model equation:

$$Y_{j,t} = \propto_j + \beta_j X_{j,t} + u_{j,t} \tag{4}$$

where $Y_{j,t}$ is the CAR for club j on day t, $X_{j,t}$ is the vector for the set of independent variables, β_j is the coefficient for the respective variable, $\propto_j$ is the intercept, and $u_{j,t}$ is the error term.

We apply four model specifications to enable various robustness checks: (1) a first explanatory model using only a COVID-dummy as an independent variable; (2) an extended model investigating INDEXGD and INDEXPD as interaction terms with COVID; (3) a more granular model considering the individual proxies for GD and PD as interaction terms with COVID; (4) a modified version of model 3 by adding control variables. All models are calculated separately using the two alternative dependent variables.

Results and discussion

In Table 3, we provide the regression results. Not surprisingly and in line with the descriptive statistics presented earlier, we confirm a strong negative impact of the COVID-19 shock period on CARs across all model specifications. Further, diversification exerts significant impact in interaction with crisis.

Table 3. Club-fixed effect regression results.

	CAR_MEAN				CAR_MM			
Variables	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
COVID	−0.017***	−0.036***	−0.051***	−0.070***	−0.005***	−0.021***	−0.024***	−0.032***
	(0.002)	(0.005)	(0.010)	(0.012)	(0.002)	(0.004)	(0.009)	(0.010)
INDEXGD × COVID		−0.042***				−0.012*		
		(0.008)				(0.007)		
INDEXPD × COVID		0.069***				0.038***		
		(0.008)				(0.007)		
Proxies for GD								
IOF × COVID			0.004	0.022***			0.005	0.010
			(0.006)	(0.008)			(0.005)	(0.006)
OMT × COVID			−0.043***	−0.073***			−0.029***	−0.041***
			(0.009)	(0.013)			(0.007)	(0.011)
TWI × COVID			0.009***	0.020***			0.009***	0.012***
			(0.002)	(0.003)			(0.002)	(0.003)
ISP × COVID			−0.036***	−0.068***			−0.031***	−0.043***
			(0.011)	(0.014)			(0.009)	(0.012)
Proxies for PD								
ESP × COVID			0.004	0.012			−0.007	−0.002
			(0.009)	(0.011)			(0.008)	(0.009)
OSP × COVID			0.005	0.014***			0.005*	0.009**
			(0.003)	(0.004)			(0.003)	(0.004)
STA × COVID			0.008	0.020***			−0.003	0.001
			(0.007)	(0.007)			(0.006)	(0.006)
MUS × COVID			0.022***	0.029***			0.021***	0.021***
			(0.007)	(0.008)			(0.006)	(0.006)
TRA × COVID			−0.007	0.014			−0.007	0.014
			(0.007)	(0.009)			(0.007)	(0.009)
FIS × COVID			0.028***	0.008			0.011	0.003
			(0.009)	(0.010)			(0.007)	(0.008)
Controls								
ADHOC				0.003				0.000
				(0.005)				(0.004)
WIN				−0.006**				0.000
				(0.003)				(0.002)
DRAW				−0.022***				−0.015***
				(0.005)				(0.004)
LOSS				−0.019***				−0.015***
				(0.004)				(0.003)

SALES × COVID				−0.000**				0.000
				(0.000)				(0.000)
EBIT × COVID				0.001***				0.000
				(0.000)				(0.000)
LONGTERM × COVID				−0.002				−0.001
				(0.002)				(0.002)
Constant	0.002*	0.002*	0.002*	0.004***	0.001	0.001	0.001	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
n	5,380	5,380	5,380	5,380	5,380	5,380	5,380	5,380
R^2 within	0.010	0.024	0.031	0.044	0.001	0.007	0.013	0.021
R^2 between	0.129	0.209	0.413	0.405	0.057	0.012	0.149	0.182
R^2 overall	0.010	0.024	0.033	0.045	0.001	0.006	0.009	0.017
Number of clubs	21	21	21	21	21	21	21	21

*, **, and *** indicate statistical significance at 10% ($p < 0.10$), 5% ($p < 0.05$), and 1% ($p < 0.01$) level, respectively.

Most notably, from an investor perspective, clubs with high levels of PD are better prepared against the impact of the first wave of the COVID-19 pandemic. Consequently, we observe a highly significant effect of INDEXPD in interaction with COVID. When looking at the individual proxies for PD, we notice several peculiarities. Out of all proxies, the most significant effect arises from operating a museum (MUS), potentially because these museums are likely to generate a relatively stable income even when games are played behind closed doors. Further, other professional sports teams (OSP), for example a women's football team or a basketball team, exert somewhat positive effects. Since competitions in practically all sports were cancelled during the pandemic, this finding seems surprising at first sight. However, operating a variety of PTSCs may send a positive signal to investors that not all resources are bound to only one sport. Finally, there is weak support that even clubs offering financial services (FIS) and using their stadium for events (STA) outperform their peers during the first wave of COVID-19. Overall, these findings are, therefore, mostly in line with previous studies emphasizing the opportunities of diversification strategies in sports (e.g. Holzmayer & Schmidt, 2020b, 2020a; Storm, 2009).

In contrast, perhaps not surprising, offering travel services (TRA) does not exert a positive significant impact in times of a pandemic as the travel industry is one of the sectors which suffered the most from COVID-19 (McKinsey & Company, 2020). However, we note that this effect might differ in future crisis in which the travel industry could be affected in a less devastating manner.

Interestingly, some counterintuitive findings arise from the lack of significant effects through eSports (ESP) despite surging interest during the pandemic-induced lockdown. Several new events were initiated, including, for example, the *Bundesliga Home Challenge* where professional football players competed alongside eSports professionals in a four-week tournament consisting of 116 virtual games (DFL, 2020a). Nonetheless, clubs with own eSports teams do not achieve abnormal stock performance during the shock period. A potential explanation arises from the perception of eSports as a strongly growing but not yet profitable business segment (KPMG, 2019). Further, football clubs possibly do not link the core business close enough to eSports and are therefore not able to leverage synergies effectively (Bertschy et al., 2020). Hence, we argue that PD via eSports may turn into positive stock market reactions during future crises once PTSCs have established a more mature business model for eSports. Here, the next development stage could evolve by extending eSports activities beyond football simulations, as other games (e.g. Counter-Strike: Global Offensive, Dota, League of Legends) usually attract much larger interest among international audiences (eSports Earnings, 2020).

Regarding GD, we observe a moderately negative effect during the first wave of the COVID-19 pandemic. Ergo, the interaction term between INDEXGD and COVID is negatively associated with CARs. Again, we observe notable differences among the individual proxies for GD. Two activities seem to drive the overall negative effect, namely relying on a large share of international sponsors (ISP) and conducting an overseas marketing tour (OMT). Regarding ISP, investors may fear that international partnerships are less stable in times of crisis, thus posing substantial risk on future sponsorship income. Regarding OMT, investors potentially perceive such trips as sunk investment costs that cannot generate adequate returns during a pandemic. Overall, these findings seem to somewhat contradict prior research suggesting a beneficial role of internationalization

strategies in football (Baena, 2019; Fleischmann & Fleischmann, 2019; Post & Druker, 2018). Here, however, we must note that our results relate to the context of a global pandemic when many countries introduced international travel bans and thus restricted global economic networks in unprecedented severity (IATA, 2020). Future crises may exhibit characteristics affecting the role of internationalization in different ways.

Despite the overall negative effect of GD, we find evidence that some internationalization activities may in fact be beneficial. Most strikingly, the number of languages of a club's Twitter page (TWI) has a significant positive effect on CARs across all model specifications. Given that the pandemic has led to an acceleration of digital technologies (e.g. Soto-Acosta, 2020), investors seem to appreciate that football clubs communicate with their global audiences in different languages via social media. There is consistent evidence that social media, such as Twitter, help PTSCs to enhance fan engagement (e.g. Filo et al., 2015). Further, one model specification shows evidence that international office presences (IOF) are positively associated with CARs. We hypothesize that investors may perceive international offices as a long-term commitment to international markets being only partially affected by the immediate economic downturn caused by the pandemic. Altogether, the impact of GD remains less clear compared to PD though there is currently some support for a moderate negative effect during the first wave of COVID-19.

When adding control variables in model (4), we discover that especially poor sporting performance exerts significant negative impact on CARs. This is consistent with previous empirical studies discussing the effect of game outcome (Benkraiem et al., 2009; Brown & Hartzell, 2001; Palomino, 2009; Scholtens, 2009). Interestingly, there is little empirical support for either a firm size or a profitability effect. Hence, more established clubs are not necessarily better positioned to manage the crisis more effectively. Lastly, there is no clear direction following ad-hoc stock announcements. A potential explanation emerges from the fact that we do not distinguish between positive and negative news. Hence, investors may react in opposite directions depending on the type of news released in ad-hoc stock announcements.

Overall, our results are largely in line with prior studies suggesting a positive effect of diversification on performance at PTSCs (Holzmayer & Schmidt, 2020b; Pritchard et al., 2020). At the same time, we note that current diversification activities of PTSCs reflect only moderate levels of related diversification. Paris Saint-Germain exemplifies a potential pathway how PTSCs can exhaust diversification opportunities further, for example by turning into a fashion label and establishing a truly global fan base (Elberse & Vicente, 2020). In addition, the City Football Group is a forerunner in internationalization by acting as a shareholder of 24 football teams around the globe (City Football Group, 2020). As such, much is yet to be learned with regards to the role of diversification in sports.

Conclusion

Main findings

Our findings suggest that PD exerts strongly significant positive effects on abnormal stock performance during a global crisis, indicating that investors consider increasingly

diversified football clubs as better positioned to master the COVID-19 pandemic. On the contrary, we observe a moderate negative effect of GD. These results are robust across various model specifications including controls for ad-hoc stock announcements, sporting performance, and a club's key financials. Further, we note interesting differences with regards to the individual proxies used for GD and PD.

Practical implications

Long before the COVID-19 pandemic, PTSCs encountered the inherent risk that financial stability is closely tied to sporting success (Brown & Hartzell, 2001; Scholtens, 2009). Due to the volatility of match results, we observed multiple bankruptcy cases at PTSCs across different geographies over the past decades (Scelles et al., 2018; Szymanski, 2012; Szymanski & Weimar, 2019). We call this issue the match result trap, meaning that PTSCs face the dilemma of how to decouple financial stability from sporting performance. It is highly probable, that this dilemma will not simply disappear once the COVID-19 pandemic is overcome. There will be new crises for which PTSCs must prepare. In this context, we emphasize the notion by Rohrbeck and Kum (2018) arguing that future preparedness is a crucial driver for future firm performance.

In this article, we present some first empirical evidence that diversification, especially product diversification, may serve as an effective tool to address the match result trap. Further, we emphasize that such diversification efforts are not only relevant for large PTSCs. Quite to the contrary, our data shows no significant advantage resulting from size. To provide a practical example of a smaller club implementing diversification activities successfully, the German football club FC St. Pauli leverages its unique brand identity far beyond country borders and ranks third in the brand ranking among German football clubs despite not having played in the first division of the Bundesliga since the season 2010–11 (FC St. Pauli, 2019; Woisetschläger et al., 2019).

Of course, managers must consider that future crises in the sports industry will not exhibit the exact same characteristics as the COVID-19 pandemic. Nonetheless, looking for patterns in the past can help executives to enable informed strategic decision-making (Courtney et al., 1997). As such, we quote Bradley et al. (2018) stating that 'lack of certainty about the future is the very reason you need a strategy' (p. 1). Taking this mindset, we believe that the managers of PTSCs are well-advised to continuously sense market developments and decide which diversification strategy suits their individual club best.

Limitations and future research

Like most empirical research, our approach suffers from a few limitations that future research may want to address to increase our understanding of whether diversified PTSCs are better prepared for a global crisis. First, the most obvious limitation arises from the measurement of diversification since we deviate from established tools such as the Herfindahl index or the Entropy measure. Future research may validate our approach using different geographies and different sports apart from football. Second, the exact specifications of the COVID-19 shock period require some presumptions that might affect our results. Hence, a replication of our study in the context of

different crises events may help to verify our results. Third, our empirical model focuses mainly on the pre-crisis period while little attention is put on the post-crisis period. Here, a longitudinal setup is required to investigate whether the performance effects of diversification endure in the long-term. Fourth, the comparably low trading volume for stocks of publicly listed football clubs may distort the results. We mitigate this risk by choosing a 10-day time window for CARs and using two alternative specifications for our dependent variable. Fifth, stockholders of PTSCs may not always act rationally and rather behave like supporters (e.g. Buchholz & Lopatta, 2017; Fűrész & Rappai, 2020; Huth, 2020). Hence, the investors' reaction to the outbreak of the COVID-19 pandemic may reflect more benevolent trading behavior at stocks of PTSCs compared to other industries. We hypothesize that our results may show greater magnitude if investors behaved rationally. To test this hypothesis, a cross-industry analysis would be required.

Notes

1. The ECA is an advocacy group for professional football clubs in Europe and consists of 246 member clubs (ECA, 2020).
2. It is worth noting that on the field, due to COVID-19, PTSCs face a new reality, too (e.g., Bryson et al., 2020).
3. One must note that such relatedness may refer to both GD and PD (Vachani, 1991).
4. On a separate note, multiple authors have emphasized the crucial role of brands when it comes to diversification strategies of PTSCs. Pritchard et al. (2020), for instance, highlight how English football clubs establish brand portfolios including business clubs, comedy clubs, and restaurants. On a similar notion, Couvelaere and Richelieu (2005) discuss how French football clubs may benefit from their brand equity, for example by rendering their merchandise appealing to fashion fans. Overall, brand capabilities still represent a largely untapped potential in professional football (Manoli, 2020).
5. For a more detailed discussion of the categorization of diversification approaches in professional sports, see, for example, Schmidt and Holzmayer (2018).
6. To capture all publicly listed European football clubs, we started with the 22 components of the *STOXX Europe Football* using the database *Thomson Reuters Refinitiv Eikon*. Two clubs, namely FK Teteks Tetevo from Macedonia and Ruch Chorzow from Poland, were excluded due to a lack of price availability on more than 50% of the trading days. Next, we added Manchester United since it is listed on the New York Stock Exchange and thus not part of the STOXX Europe Football. Altogether, our final sample consists of 21 clubs.
7. It is, however, important to note that analyzing discrete rather than logarithmic returns does not alter the overall tone of the results presented below.
8. Additional results are available from the corresponding author upon request.
9. To mitigate concerns regarding subjectivity, we conducted an interrater agreement assessment by two independent raters (LeBreton & Senter, 2008). The results indicate 96% of consensus. The remaining divergences were resolved based on a joint review of the respective data points.
10. We chose only one of the variables suggested by Fleischmann and Fleischmann (2019) since we identified multicollinearity issues when considering multiple variables.
11. To operationalize the relative importance of international sponsors, we compute the percentage of international sponsors among first category sponsors. Each club typically lists three to five sponsors that belong to the first category (e.g., AS Roma, 2020).
12. Ad-hoc stock announcements are obtained from *Thomson Reuters Refinitiv Eikon*. No announcements are reported for four clubs, namely AIK, BES, FEN, and TRA.
13. Official competitions include all games in the league, the cup, the league cup, the super cup (match between current league champion and current cup champion), the Champions League, and the Europe League.

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