

Sponsors' stock price reaction during the UEFA Champions League games: An investigation of teams in England prior and after the financial crisis

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Topic: Football and Finance

December 2014

School of Economics and Management – TiSEM



Abstract

The purpose of this study is to provide further evidence of the relationship between football clubs' performance and stock price returns of their sponsors. The empirical analysis uses the event study methodology to investigate the stock price reactions of the top five English football teams' sponsors during the UEFA Champions League games in seasons 2004/2005 to 2012/2013. The sponsors' data sample was composed of 39 publicly listed companies. The results confirmed positive abnormal returns following victories and negative ones following defeats. The effect during the knockout games does not reflect higher abnormal returns than during group stages. Also, main sponsors face higher abnormal returns with a pronounced impact during the knockout stages. When controlling for the ex-ante probabilities the effect is more significant and higher the less expected the outcome. In addition, congruent companies face stronger increases in stock price returns. The abnormal returns revealed a significant and descending effect for defeats from before to during the crisis, with a comeback after the crisis.

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1. Introduction

Football and its' associated clubs have evolved a lot in the past decade to a point where it gradually occupied an important role in financial markets given by the influence of undertaking different actions such as the clubs decision to go public (since the first initial public offering of a European football club in 1983, more than forty other clubs have experienced a venture in the stock market), with the clubs orientation towards making profit and with the increasing number of publicly traded companies that were sponsoring the clubs. Thus, we can say that football has developed a significant economic importance over the past two decades demonstrated by an increasing capital markets presence and the growth of betting on match outcomes. Since the money invested in football sector increased significantly, empirical sciences such as finance, economics and even psychology became important tools for the sports environment and related investors.

The increased popularity and rapid expansion of the sports' financial status attracted more and more companies as investors to big sport competitions and correspondingly to the participating football clubs. This way, football clubs had broaden their spectrum of investors past the companies that have their business profile congruent to the sponsored sport and expanded their portfolio of investors (sponsors) to delivery and logistics companies (DHL is the Manchester United's official logistics partner), automotive companies (Chevrolet is the official sponsor of Chelsea) and even telecom companies (Saudi Telecom is one of Manchester United's official sponsor). Consequently, as sponsorship deals' magnitude has reached sizeable amounts, one could naturally question the profitability and particularly the benefits that undergo these investments.

Sponsorship in general and precisely sports sponsorship developed into an essential part of every company's marketing strategy. Experts in the field of marketing have recognized sponsorships as an important tool on par with traditional tools such as advertising, public relations, sales promotions, and personal selling for building brand equity and corporate image, especially in times of increased media fragmentation. The purpose of sponsoring, as any advertisement, is to enhance the image that customers or investors have of a brand by developing an efficient channel of communication with current and prospective markets, in order to reach its' ultimate goal of increased customer demand.

This way, companies have used sponsorship deals as new opportunities to compete with one another in the partnerships they close with sporting entities, each expecting financial outcomes as favorable as possible for the involved parties. In addition to the already mentioned benefits that sponsorship deals bring to the company, they can also have a significant influence over the company's stock price through various ways. As several studies showed, sponsorship announcements can affect the share price of the company in a favorable or unfavorable manner depending on whether the markets perceive the deals as positive or negative news. This implies a positive impact on the sponsors' stock price following the announcement as markets associate the company with a valuable event and transmits a signal of good financial health for getting involved in a contract that infer significant costs. Another way the share price can be affected is through the sport performance of the sponsored football clubs. The intuition behind this statement lies in the association of the company with a well performing football club leading to a

positive imagine transfer which in turn, can affect positively the mood of the investors that trade the company's stock price.

Thus, the companies that sponsor the football clubs always expect a favorable outcome quantified in terms of profit increase, higher stock returns and positive marketing. However, mixed results regarding sponsors' stock price reaction to football clubs performance and its' effects on shareholders' wealth contributed to the motivation of this study. Further, as football sponsorship has evolved together with the financial development of football clubs, the complexity of the deals and the variety of sponsors has also increased. Now, football clubs have different categories of sponsors classified mainly as global sponsors, regional partners, media partners or financial partners and whose significance is established by the size of the sponsorship contract. The different breakdown of clubs' sponsors and the different level of significance between them represented a second motivation for my research. Intuitively, the stock price returns of more important sponsors (main sponsors) should be affected with higher intensity, whilst less important sponsors (partners) are expected to face lower impact on their stock price returns. Moreover, this study documents the effect on the sponsor's abnormal returns when the pre-game probabilities of a certain outcome are accounted for, as a lower effect is expected the more anticipated the outcome is. In line with the efficient market hypothesis, rational investors should incorporate the information regarding the expected economic effect of football results before the game, therefore unanticipated victories and defeats are expected to affect the stock price returns with stronger intensity. The analysis also includes various tests that research whether a significant difference in returns is registered for victories and defeats during knockout stages than during group and tries to demonstrate a higher effect of football results on congruent company's stock price returns. Lastly, we observe the evolution of the three outcomes' effect on sponsors' returns from before to during and after the financial crisis.

The current study has its main focus on the relationship between football results during the UEFA Champions League games and the stock price of participants' (teams) sponsors. The analysis will be centered on the top five football teams in England as it represents a country with a consistent presence in the tournament over the past ten championship seasons and has the highest revenue of all top five European teams throughout the years (Figure 2).

We found positive abnormal returns following victories and negative ones following defeats. Second, the effect during the knockout games does not confirm higher abnormal returns than during group stages. Third, main sponsors face higher abnormal returns with a pronounced effect during the knockout stages. When controlling for the ex-ante probabilities, the effect is more significant and higher the less expected the outcome. In addition, congruent companies face stronger increases in stock price returns. The abnormal returns revealed a significant and descending effect for defeats from before to during the crisis, with a comeback after the crisis.

The paper is structured as follows. Section 2 describes the relevance and purpose of the selected research topic. Section 3 is represented by the literature review of past studies. Section 4 includes the data sample description, whilst Section 5 presents a description of methods used in the research and the research questions. Section 6 is reserved to the interpretation of the empirical results and finally Section 7 displays the conclusions of the study.

2. Relevance and purpose

Despite improving qualitative key success factors like image, awareness and purchase intention (Gwinner, 1997; Keller, 1993), sport sponsorship also has the ultimate goal to show bottom line impact by increasing future sales and profits. However, all the direct costs in form of sponsorship fees and indirect costs that take the shape of activation and of agency costs inferred by the company are expected to be offset by future benefits in terms of increased media exposure and brand awareness, positive image building, and ultimately higher profits (Farrell & Frame, 1997). According to Mishra et. al (1997) public announcements of sponsoring deals enclose current and unexpected information about the sponsoring firm. Investors incorporate the news and might adjust expectations for the sponsor's future cash flow and a correspondent share price reaction is expected in line with the Efficient Market Hypothesis (EMH) (Fama (1970)).

The global spending on sport sponsorships engagements which increased from \$27 billion in 2006 to \$31,5 billion in 2009 and is expected to further increase to \$45,6 billion by 2014 ("PricewaterhouseCoopers (PWC) Outlook for the global sports market to 2015") are only reinforcing the increased importance sport sponsorship has reached in the company's mix of marketing. The sizeable amounts earned by sports every year through sponsorship display the significant marketing investments that sponsoring companies make¹.

Thus football has rapidly become one of the largest entertainment industries in the world with its main economic platform placed in Europe, due to the multimillion euro sponsorship deals the European football clubs close with multinationals. The latest edition of the Deloitte Football Money League (2013) states that Real Madrid is the first club (in any sport) that exceeds revenues of 500 million euro in a single year maintaining this position for nine consecutive years. As this report incorporates only the top 20 most valuable clubs (amongst which, the five football English clubs: Arsenal, Chelsea, Liverpool, Manchester United and Tottenham Hotspur that will be analyzed in this paper), total benefits show a value of 5,4 billion euro in last year's season (Figure 1)². Consequently, the football clubs in this list are all highly active in the European leagues and attract the highest paying contracts, mostly driven by the team's competitive achievements.

¹ For example, the telecom company T-Mobile has recently renewed in 2012 their sponsorship contract with the Bayern Munich football team for a total contract value of \$40 million per year.

² E.g. According to Thompson Reuters, Chevrolet supports Manchester United with \$560 million for a seven-year shirt sponsorship deal starting with 2014. Another example is Arsenal, who will receive £30 million per year for five years from a sponsorship deal with Puma from the end of 2013-14 according to Daily Mail newspaper

Total Revenues 2012/13 (€m)

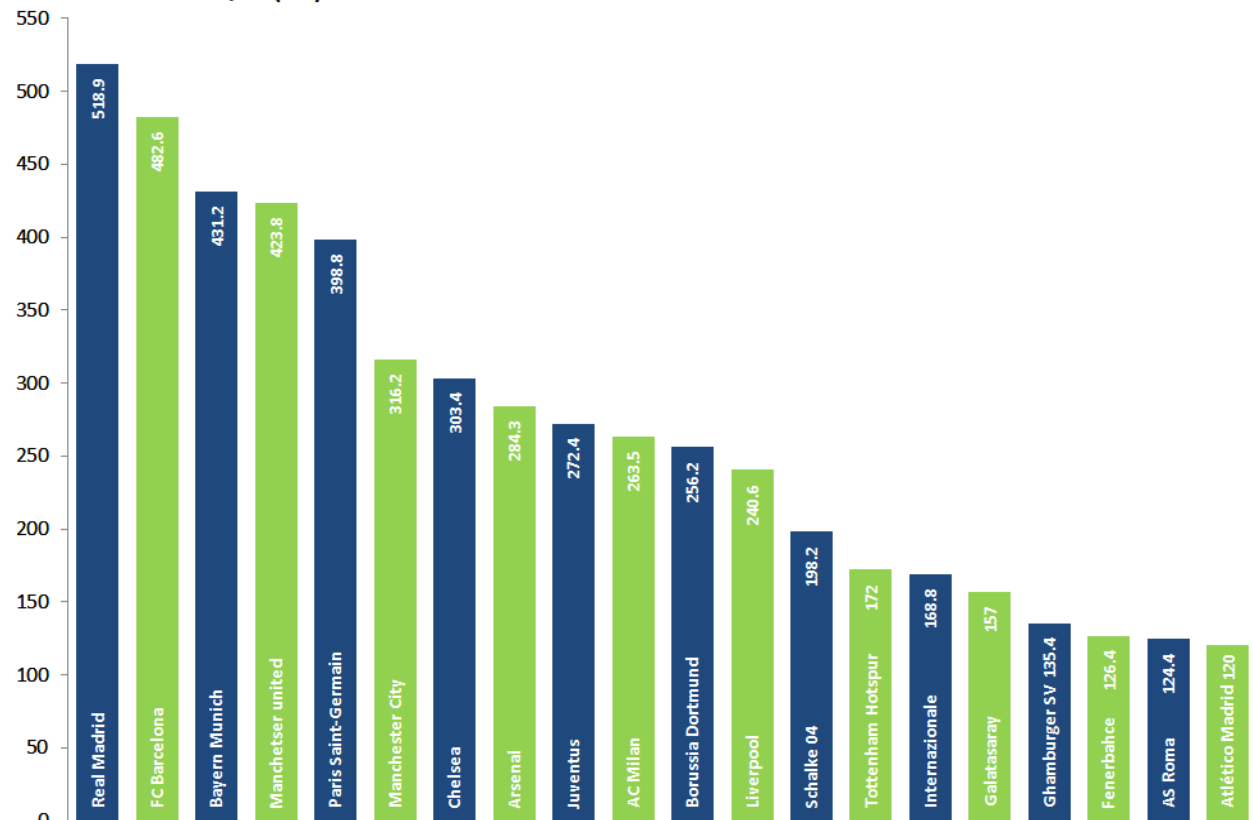


Figure 1. Top 20 total € million revenues of football clubs in 2012/2013 season

Source: Deloitte analysis

The financial power of the biggest clubs and their influence on sponsors during the global financial crisis

Before the widespread of the financial crisis, the top twenty Premier League teams were carrying a combined net debt of around €3,15 billion, amount that decreased to €2 billion with the removal of soft-loans from club owners or shareholders. The English clubs' debt reached a reported €3 billion level in late 2008, and faced tougher future credit arrangements with banks (*Daily Mail*, 29 May 2008)³.

In a liberalized economy, such high levels of indebtedness during the financial crisis represent a strong potential risk for the football finances. As the financial crisis escalated, further concerns of its effects on the football finance were addressed as many club owners faced large financial losses and their investments became more vulnerable. The biggest consequence lied in the effects of the credit crunch upon banks, sponsors, stock-markets, consumers and football clubs finances. Football clubs faced times of financial distress as the stock price of listed clubs was dropping and main sponsors of some teams were going bankrupt. The collapse in property prices closed off the option of selling land to secure extra revenue during hard times and made companies less likely to spend freely on sponsoring football clubs.

³ 'Stars in tripe football on the road to England ruin', *Daily Mail*

However, contrary to the economic crisis that has seized the global financial system since 2008 and the high amounts of debt, club revenues grew almost 7% year on year between 2011 and 2012, to €8.1 billion (Figure 2). According to the 2010 Deloitte Annual Review of Football Finance report, the top 20 teams recorded an 8% increase in revenue compared to the previous season generating revenue of €4.3 billion (\$5.9 billion) in the 2009/10 season.

This situation proves that companies have not stepped back from big sponsorship deals during the financial crisis. Although AIG suffered a collapse in 2008 whilst being the main sponsor of Manchester United, sponsoring a sports team is unlikely to bring a company down on its own⁴ because “if you look at the overall marketing spend of the companies involved, the shirt sponsorship is tiny”⁵. Thus, despite the financial market’s meltdown companies were still keen on sponsoring sports team as their status before the crisis was not extremely fragile to cause their collapse and the deal brought more exposure to the brand. Nevertheless, evidences showed that most sports were still able to set attendance record (Klayman, 2008). According to Zimbalist, “the evidence from past recession is indeed that sports are one of the last things people cut back on as they need their distractions and they need their obsessions” (cited in Klayman, 2008⁶). As people still watch football games during periods of financial distress which translates in screening time and visibility for the sponsor and game attendance revenue has not dropped as expected during these times, companies still gain from the sponsorship deals. Moreover, companies get a reputation of financial stability as they still close high worth deals during the crisis.

It can be seen as a paradoxical situation the fact that the top 20 football clubs includes teams that are heavily indebted and have financial difficulty and their revenue is amongst the highest in the world (Dan Jones, *Deloitte*), but precisely because they are the richest clubs with the largest turnover they are able and allowed to sustain such high level of debt. They are relatively advantaged simply by their scale and importance of the game in attracting more sponsors and thus high worth of sponsorship deals. These clubs are likely to continue to dominate European and domestic competitions and therefore to sustain and indeed increase their popular appeal and public profile. Given their large and loyal supporter base and the ability to drive broadcast audiences, football clubs managed to continue attracting corporate sponsors which gave them a well-placed position to successfully meet these economic challenges. Thus, when looking at the ease of football clubs to still attract sponsorship deals regardless of the global economic situation and of their indebtedness, we can only conclude that companies still faced great benefits from sports sponsorship during the financial crisis.

⁴ Time.com, “A Casualty of the Financial Crisis: Sports Sponsorships”

⁵ Rob Mason, managing director of SBI, a British sponsorship consultancy

⁶ <http://www.reuters.com/article/2008/06/30/us-economy-usa-sports-idUSN2439252820080630>

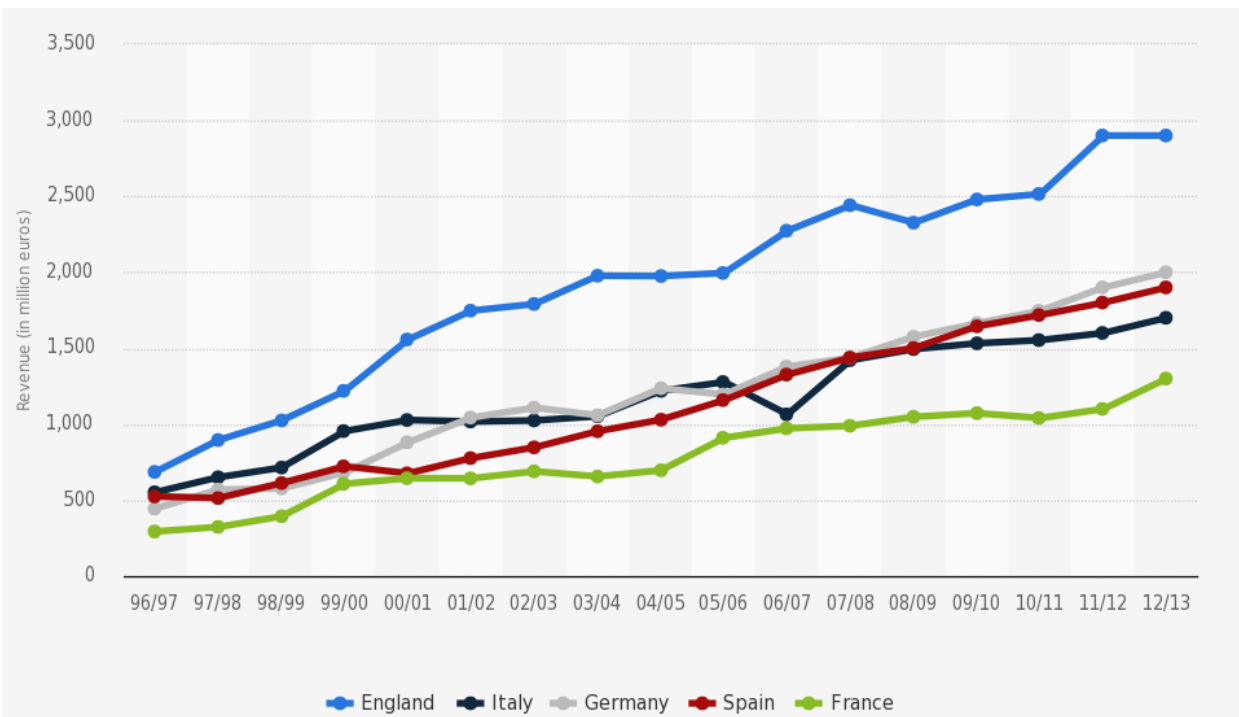


Figure 2. The revenue of the top five European football league for seasons 1996/1997 to 2012/2013

Source: Statista 2014 using the figures of Deloitte Annual Football Report

This paper aims to extend the current research on how the returns of team sponsors' stock prices are influenced by football games outcomes and how the sponsors' returns are affected during the recession, thus providing some further explanation on the reasons companies choose to close sponsorship deals of such high values, even during times of financial distress. In order to examine that, the event study methodology will be used. The dataset covers the stock price of sponsors in period 2004 – 2013 of the top five football teams in England: Arsenal, Chelsea, Liverpool, Manchester United and Tottenham Hotspur. To my knowledge there are only three other relevant papers that study a similar topic. One of them is the paper from Cornwell et al. (2001), the first that attempted to measure the value of winning at sports events for the sponsor via the impact of sports results on their stock price, the second of them is the paper from Edmans et. al (2007) that studies the impact of football results of teams' home countries on major stock indices and Hanke and Kirchler (2013) that investigated the impact of football results on the stock market prices of jersey sponsors.

3. Literature review

Until early 2000s, when Renneboog and Van Brabant (2000) and Ribeiro (2001), published their results, there was no literature on the topic. Once football clubs decided to become publicly listed companies, this topic started to attract more attention, creating good opportunities for new empirical studies and thus alternative explanations on stock price movements, other than the already addressed finance-related information. Until then, the research was focused only on other sports than football and was analyzing other dependent variables than stock price returns. At that point in time, the total revenue of football clubs was still composed of mainly game attendance revenue according to a study of Dobson and Goddard (2001). The situation had changed over the years when the ratio of revenues from

advertising and sponsorships to total football clubs' revenue has increased significantly. A potential explanation could be attributed to the growth of a more professional culture in football during this period.

3.1 Research studies on football teams' returns

Among the sports events, football has attracted more interest in sports economics and finance literature due to its reputation as one of the most popular games in the world (Bell et al. 2012). The effects of football matches' results has been researched from different perspectives and several studies have demonstrated that football matches can have an economic effect as addressed in the paper of Bell et al. (2012), but also a mood effect as mentioned by Boido and Fasano (2007).

Bell et al. (2012) studies the impact of match results on English football clubs' stock return. They proceed to measure the magnitude of the effect by differentiating between match importance and consider in their measurement two criteria: the close rivalry between the clubs as matches between teams that compete for similar league positions are more competitive and the stage of the competitions' season as matches approaching the final become more tense. Using a fairly large data set comprising of 19 clubs, they found that a small proportion of the variation in share prices is explained by match outcomes and concludes that the stock market displays a semi-strong form of efficiency. The two analyzed criteria reflect modest impact on returns.

Renneboog and Vanbrabant (2000) were among the first researchers to specifically investigate whether the sporting results had direct impact on football share price returns. Analysing the clubs quoted on the London Stock Exchange (LSE), and on the Alternative Investment Market (AIM), the authors found positive abnormal returns of almost 1% in case of victories and negative abnormal returns in case of a defeat or a draw of 1.4% and 0.6% respectively, always on the first trading day following the match for football clubs listed on LSE and AIM.

Another reference that analyzed stock price reaction to sporting performance was Ribeiro (2001). The author collected evidence from two Portuguese football clubs (Sporting and Porto) quoted on the domestic stock market and used the ordinary least squares (OLS) method to test whether football clubs' victories (defeats) translated into positive (negative) stock price returns. The author concluded that there was no relation between sporting performance and stock price returns within the period under analysis (two years). Also, victories, defeats and draws do not seem to have any explanatory power, unless teams end up winning the championship. The respective study had, however, severe shortcomings, namely the small sample size which could potentially explain the weak econometrical findings.

3.2 Research studies on stock market returns

One study related to the English football teams' results impact on stock market is the paper from Ashton et al. (2003) that studied the effect of success of England's national football team on the FTSE 100 index during the period January 1984 to July 2002. The research results indicate that good (bad) performance of England's national football team lead to good (bad) return of market. Similar results have been found

by Astika (2010) who studied the relationship between the football results and Dutch stock market. The data on the Amsterdam Stock Exchange Price Index (AEX) and football results of the Dutch national team in the World Cup and the Euro Cup in the period October 1986 to July 2010 have been documented. Her results showed football outcomes have no effect on the AEX Index return, thus concluding that the Dutch stock market is efficient.

Other related work includes the paper of Edmans et al. (2007) who study the impact of national teams' football results on major stock indices. They find an asymmetric effect on the stock market index after victories/defeats of the national teams when looking at changes in country's stock market performance on the next trading day after the game. The results showed stronger effects during the knockout phases whilst the strongest impact was registered for unanticipated losses. They state that the asymmetry is due to a submission bias, meaning 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 victories will be diminished, while those of defeats will be amplified. As the defeat of country's football team can be otherwise considered trivial for the overall economy, the 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, as mentioned in the paper. According to the hypothesis, wins (defeats) are expected to yield positive (negative) stock price reactions to the extent that the result is not anticipated by the market: the less expected the result, the higher its impact should be.

With one the most important finding on investors' mood in 2001 which demonstrated that the sunny weather had strong correlation with the market returns for that day (Hirshleifer & Shumway, 2003), a valid assumption is that sports results have a similar influence on stock market returns. Combining this evidence about the investors with the evidence that sponsor image is transferred to a sports event, a link can be made between the investors and the company sponsoring the event.

3.3 Research studies on sponsors' returns

While sponsorships only buy the right to use the name of the respective team or organization, they represent sizeable investments averaging to about one percent of total revenue of major sponsors (Pickett 2004) and one of the most important non-television revenue sources for major league sports associations, recent figures showing that it might cost up to €150 million to sponsor the UEFA Champions League, the club championship of European football, for three years, or as much as \$70m to back a Formula One (F1) team for a season. However, the sponsorship deals might end up multiplying the sponsor's budget significantly, to even two or three times over the initial investment, thus the importance and influence of official sponsorships on football clubs' financial status cannot be overlooked.

While many previous studies tried to measure the impact of sponsorships on elements 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 via the impact of sports results on the sponsors' stock price. Their study analyzed the abnormal returns of companies whose sponsored drivers were declared winners during the Indianapolis 500 mile Race and lead to three major findings. First, they find that the

ex-ante probability of winning is a variable that has a major role in explaining the sponsors' positive abnormal returns. The second important finding states that sponsoring companies whose businesses are related to the automotive industry have a record of larger increases in returns after victories. Third, they find a correlation between the number of laps when the driver is leading and the positive abnormal returns of its sponsor, called a "mere-exposure" effect. The reason lies in the TV screening time: the more laps a car leads, the more TV time for the sponsor.

Another related strand of research are the papers that refer to sponsorship announcements, as in Cornwell et al. (2005) and Clark et al. (2009) and corporate event sponsorships, as in Mishra et al. (1997). The study of Clark et al. (2009) analyzes the impact on sponsors' shareholder wealth by looking at title event sponsorships announcements in tennis, golf, NASCAR races, and college bowl games. They find a positive relationship between sports discipline and sponsors' closeness to the discipline after splitting the sample. The overall sample showed no sponsorship effect on the stock price returns because generally the sponsorship deals are signed at market-clearing prices. 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. The study reveals positive stock price reaction for sponsoring companies following the announcement, indicating that the market views the sponsorship deals as positive investments (from a shareholder value perspective).

The research of Cornwell, Pruitt and Clark (2005) primarily found in the conducted study a striking and unambiguous stock market affirmation of the sponsorships by looking at major league official sponsorship announcements. The 53 sponsors analyzed in this study experienced mean increases in shareholder wealth (economically and statistically significant) of between \$123 million and \$558 million, net of all of the costs expected to be associated with the sponsorships. Among others, they find a positive and statistically significant coefficient for the variable market share, suggesting that sponsoring companies may receive the largest financial returns from sponsorships involving less visible brands. Perhaps even more interesting is the fact that the correlation of the sponsoring product or service with the sport is a very positive indicator of perceived sponsorship success. Clearly, sponsorships which are reasonably linked to the sponsored event are substantially more effective than those unrelated, except for financial fee considerations.

Hanke and Kirchler (2013) also investigated the impact of football results on jersey sponsors' stock market prices. They used data which collected the results of important football games at European and World Championships during years 1996 to 2008. The research findings have shown that after competitions where teams sponsored by the same jersey supplier played against each other, positive returns are obtained. Also, their results indicate that teams' failure lead to negative returns. The paper studies the effects of sponsorship on the company by looking at the marketing programs part of the sponsorship and the reasons these companies prefer to pursue this kind of programs. Distinctly, the papers' findings state that apart from some distinctive features, such as hospitality at sports events, first and foremost increased media exposure lead to an increase in corporate sales. This finding holds true particularly for sports events watched by a large number of viewers from different countries, which makes major football tournaments ideal for assessments on the impact of sports sponsorships on the

sponsoring company's stock prices. Our study distinguishes itself from Hanke and Kirchler's (2013) paper by looking at only one competition, the UEFA Champions League games, and at a different sample period. Also we bring extra evidence compared to their research by investigating the impact on congruent sponsors' stock price in the full sample, but also comparing it with the effect during group and knockout stages. Moreover, we try to assess the evolution of abnormal returns in different sub-sample periods that capture the years before, during and after the financial crisis. Both studies analyze the effect on main sponsors' stock price (mentioned as jersey sponsors in Hanke and Kirchler (2013)), but Hanke and Kirchler's (2013) provides a more detailed evidence by also showing the effects on double sponsors' stock price returns.

Same results have been obtained by Ramezani et al. (2012) who gathered data on four football teams from Iran and conducted a study on the effect of Iran Football League games on sponsors' stock price, concluding that the favorable (unfavorable) game outcome had positive (negative) effects of different intensity on sponsors' stock price.

Váczí (2013) analyzes in his paper the effects of the global economic crisis on the attendance to the NBA games, on sponsorship deals and how this influenced the prices of the match tickets. He finds that, although the attendance to the games has decreased in the first two years after the crisis, the league was able to go through the hardest two years by adding new sponsors, moderating the costs and by undertaking credits from the banks.

Besides improving the football clubs image and satiate managerial egos, as Crimmins and Horn (1996) state in their paper, it can be concluded that, sport sponsorship can also add substantial value to the wealth of the average stock market investor.

4. Data

In this research, I looked at the reaction of the stock price of sponsors from the top five football teams in England - Arsenal, Chelsea, Liverpool, Manchester United and Tottenham Hotspur – during the UEFA Champions League games. The analysis was performed over the 2004 to 2013 championship seasons. The reason for choosing the UEFA Champions League as the competition on which to perform the analysis lies in its reputation as the most prestigious tournament worldwide and also the most prestigious club competition in European football. Strong evidence of its prestige is given by the final of the 2012/2013 season, which has drawn 360 million television viewers becoming so, the most watched UEFA Champions League final to date, as well as the most watched annual sporting event worldwide in 2013⁷. The popularity of the competition translates into high TV screening for the team sponsors and thus, benefits and more visibility for the sponsoring brand. Another reason to choose this tournament is given by the number of matches played throughout the competition. Unlike other competitions, the UEFA Champions League has a maximum number of 13 matches that can be played if the club advances to the final (e.g. during the World Cup a total number of 64 matches are being played) and thereby, the importance of a single game is higher.

⁷ Chishti, Faisal (30 May 2013), "Champions League final at Wembley drew TV audience of 360 million", Sportskeeda, Absolute Sports Private Limited. Retrieved on 31 December 2013

4.1 Data on football games

The football results for all games played by the five English teams in the seasons from 2004 to 2013 were collected from the official website of the UEFA Champions League⁸. The tournament starts with a group stage of 32 teams, divided into eight groups. Out of these, 10 enter the tournament through the qualifying round whilst the rest of 22 are qualified in advance being assigned automatically places in the competition according to UEFA Country Coefficient rankings. The 22 places are held currently by the following countries: England, Germany, and Spain each hold 3 spots, Italy, Portugal, and France - 2 spots, and Russia, Netherlands, Ukraine, Belgium, Turkey, Greece, Switzerland, Austria, and the Czech Republic each hold 1 spot in the group stage, but these may vary according to the UEFA Country Coefficient rankings.

The draw for the group stage is made through seeding⁹, with the restriction that teams from the same country may not be drawn into groups together. After the draw, the group stage games are played such as each team is meeting the other in matches played at home and away. The winning teams and the teams on second place from each group then progress to the next round. The third-placed team enters the UEFA Europa League.

The group stage is played through the autumn, whilst the knock-out stages start after a winter break. The knock-out ties are played in a two-legged format (i.e. the winner is the team with the highest aggregate score over the two matches) divided into three stages: round of 16 (with 8 group winners from the group stage and 8 group second placers from the group stage), the quarter-finals and the semi-finals.

The next round is called "round of 16" and in this stage the winning team from one group plays against the second place teams from another group, with the same restriction as in the group stage, that teams from the same association may not be drawn to play against each other. The draw is entirely random starting with quarter-finals onwards (no restriction to be taken into account). In case the aggregate score of a match end up in a tie, the away goals rule is applied: the team that scored most goals at their opponent's stadium reaches to the next stage¹⁰.

The final makes an exception of the two-legged format which is typically held in the final two weeks of May. The final cannot end in a draw, so, if after 90 minutes of game, the score is equal, additional extra-time is allocated (two extra sessions of 15 minutes). If, after the extra-time, the score is still equal, the teams shoot penalties until one of them can be declared a winner. It is important to mention that, in case a match is ending in a defeat or a tie, a team may still advance to the final.

⁸ <http://www.uefa.com/uefachampionsleague/index.html>

⁹ "A seed is a competitor or team in a sports or other tournament who is given a preliminary ranking for the purposes of the draw. Players/teams are "planted" into the bracket in a manner that is typically intended so that the best do not meet until later in the competition. The term was first used in tennis, and is based on the idea of laying out a tournament ladder by arranging slips of paper with the names of players on them the way seeds or seedlings are arranged in a garden: smaller plants up front, larger ones behind" (Beard, Robert. "seed"; AlphaDictionary.com, Lexiteria, Retrieved 18 March 2012.)

¹⁰ "Regulations of the UEFA Champions League 2011/12, pg 10", www.uefa.com

4.2 Data on teams and sponsors

Although teams participating in the competition change every season, there are several clubs which play in the Champions League consistently. In this study I will concentrate on these teams as they are more likely to have a bigger fan base, attract more interest from sponsors, investors and speculators and thus make a bigger impact on stock markets. The English football teams were selected based on their high performance in the Champions League and the above mentioned characteristics which are essential for any team to attract valuable sponsorship deals. The teams are: Arsenal which participated in all the seasons from 2004/2005 to 2012/2013, Chelsea which also participated in all the seasons throughout the analyzed period, Liverpool which participated in the seasons 2004/2005 to 2009/2010, Manchester United which participated in the seasons from 2004/2005 to 2012/2013 and Tottenham Hotspur that participated only in the season 2010/2011. Table 1 provides an overview of all the sponsors in each team and the seasons in which they had a sponsorship deal.

The sponsors' data will be divided into two categories: main sponsor and partners. The companies categorized as main sponsors of a football club are the ones that have the company's logo on the team's official kit whilst the sponsors considered as partners are companies that supply the football club with different services: from original sports kit (Nike, Adidas, Puma) to logistic services (DHL) and travel advices and arrangements services (Aeroflot). The information on each team's current sponsors was retrieved from the clubs' official websites whilst the information on the historical sponsors was collected from Wikipedia and the news archive of the official clubs' website.

Due to availability of data on sponsors and teams (as the clubs with high performance and with consistent participation are in limited number), the UEFA Champions League seasons from 2004/2005 to 2012/2013 will be considered for analysis. In order to conduct this analysis, the sponsoring company must be publicly listed and be a part of a market index (FTSE 100, S&P 500, etc.). As a benchmark index for each stock, the relevant market index was used. Table 1 also provides an overview of each index that was used per sponsor in the analysis.

Table 1. Overview of teams and sponsors used in sample period 2004 - 2013

Team	Sponsors	Stock Market Index	Country	Seasons
Arsenal FC	Bharti Airtel	ICRI500	Indonesia	2006/07 – 2012/13
	Carlsberg	DKKFIXIN	Denmark	2011/12 – 2012/13
	Indesit Company	FTSEMIB	Italy	2011/12 – 2012/13
	Ladbrokers	FTSE100	United Kingdom	2004/05 -2012/13
	Nike	S&P500	United States	2004/05 – 2012/13
	O2	CZPXIDX	Czech Republic	2004/05 – 2005/06
	Samsung Electronics	KORCOMP	South Korea	2004/05
Chelsea FC	Adidas	DAXINDX	Germany	2006/07 – 2012/13
	Audi	DAXINDX	Germany	2012/13
	Bank Negara	JAKCOMP	Indonesia	2012/13

	Indonesia			
	Delta Airlines	S&P500	United States	2012/13
	Gazprom	RSMICEX	Russia	2012/13
	Heineken	AEX	Netherlands	2007/08
	PepsiCo	S&P500	United States	2007/08 – 2010/11
	Samsung Electronics	KORCOMP	South Korea	2005/06 – 2012/13
	Thomas Cook Group	FTSE100	United Kingdom	2012/13
	Vientin Bank	MSVIETL	Vietnam	2012/13
Liverpool FC	Adidas	DAXINDX	Germany	2006/07 – 2012/10
	Carlsberg	DKKFXIN	Denmark	2004/05 – 2012/10
	MBNA	S&P500	United States	2004/05 – 2009/10
Manchester United FC	AIG	S&P500	United States	2006/07 – 2008/09 ¹¹
	Bharti Airtel	ICRI500	Indonesia	2009/10 – 2012/13
	AON	S&P500	United States	2010/11 – 2012/13
	B-Win	FTSE100	United Kingdom	2012/13
	Concha Y Toro	S&P500	United Kingdom	2012/13
	Kagome	TOKYOSE	Japan	2012/13
	Kansai Paint	TOKYOSE	Japan	Jan 2013 - May 2013
	Mamee Double Decker	FBMKLCI	Malaysia	2011/12 – 2012/13
	MBNA	S&P500	United States	2004/05 – 2012/13
	Nike	S&P500	United States	2004/05 – 2012/13
	Saudi Telecom	IFGDSBL	Saudi Arabia	2008/09 – 2012/13
	Seiko Epson	TOKYOSE	Japan	2010/11 – 2012/13
	Telekom Malaysia	FBMKLCI	Malaysia	2010/11 – 2012/13
	Thomas Cook Group	FTSE100	United Kingdom	2009/10 – 2012/13
	Turk Telekom	TRKISTB	Turkey	2012/13
	Vodafone	FTSE100	United Kingdom	2004/05 – 2005/06
Tottenham Hotspur FC	Investec	FTSE100	United Kingdom	2010/11
	Autonomy	FTSE100	United Kingdom	2010/11
	Puma	DAXINDX	Germany	2010/11

Source: Official clubs' website, Wikipedia, DataStream

The total sample consists of 1345 games (events) of which more than a half resulted in victories. There is just a slight difference between the number of draws and losses. Such a large difference between wins and other outcomes in the games can be explained by the fact that most of the teams in the sample are considered to be elite clubs and usually have no trouble advancing to subsequent stages in the Champions League. The sponsors sample is consisted of 39 publicly traded companies.

¹¹ The sponsorship deal was signed until the 2010, but due to the financial crisis and the collapse of AIG the company opted out of the sponsorship in 2009; <http://www.sponsorship.com/iegsr/2013/06/03/Rising-From-The-Ashes--AIG-To-Expand-Sponsorship-P.aspx>

4.3 Data collection on stock price and market index

The data is time series in nature. The stock returns and market index data are generated from DataStream. The data covers sponsors' historical daily stock prices from 15 September 2004 (day of the first group stage game played in the 2004/2005 UEFA Champions League seasons) to 25 May 2013 (the final game of the 2012/2013 UEFA Champions League season). The data used are daily data adjusted for dividends and stock splits. There are five trading days per week (Monday, Tuesday, Wednesday, Thursday and Friday). If, within a period of one week, there are days where no trading occurred due to holiday, returns on shares on that particular day will be considered zero. These days will not be included in the model. This is done in order to obtain a better description of returns. If one game is played outside the trading days, the return on the first trading day after the game will be considered.

4.4 Ex-ante probabilities

As mentioned in previous sections, I will account in my analysis for the ex-ante probabilities in order to study the impact of victory/defeat on the sponsors' stock price when the market anticipated the outcome. To do so, the betting quotes of each game will be used to determine the probabilities of winning, drawing and losing a game. The betting quotes information is retrieved from <http://www.oddsportal.com/> website and they are provided in the European format which uses a decimal style. The figure quoted in case of decimal odds represents the amount that the bettor would be paid in case of a winning stake.

To explain the decimal style/European format I will take as example the game played on 18th of April 2012 where Chelsea played in the semi-finals against Barcelona. The odds for Chelsea to win were 4.98, 3.85 to draw and 1.69 to lose. This means that, for every euro one invests in a positive match outcome for Chelsea (to win against Barcelona) they will get €4.98 in return. In this case the bet on Chelsea's victory is a more risky bet as you get a higher return from investing in it. The most expected outcome was for Chelsea to lose, as you get only €1.69 in return in case you invest €1 on this outcome, but the bet is less risky and has a higher probability to occur. The probabilities of winning, drawing and losing will be extracted by performing the following calculations:

$$prob_{win} = \frac{1}{win_{quote}} = \frac{1}{4.98} = 0.2008 ; prob_{draw} = \frac{1}{draw_{quote}} = \frac{1}{3.85} = 0.2597; prob_{lose} = \frac{1}{lose_{quote}} = \frac{1}{1.69} = 0.5917$$

So, as explained above, the bettors expect that Barcelona will win the game as there are 59,17% chances that Chelsea will lose. After performing a check on the extracted probabilities, it can be noted that the probabilities do not add up to a total of 1 but to a total of $0.2008 + 0.2597 + 0.5917 = 1.0522$. This difference above 1 is the markup of the betting company of 5.22% as the bookmakers always price a game with the net outcome in their favor. The 5.22% excess is called overround and represents profit to the bookmaker in the event of a balanced/even book. To put it differently, in case you bet \$20 on the winning outcome, \$26 on the draw outcome and \$59 on the losing outcome you end up knowingly paying \$1.05 on all three deals that worth less (\$1). The probabilities of the three outcomes will be recalculated as follows:

$$prob_{win} = \frac{1}{win_{quote}*(1+markup)} = \frac{1}{4.98*(1+0.0522)} = 0.1908 \quad ; \quad prob_{draw} = \frac{1}{draw_{quote}*(1+markup)} = \frac{1}{3.85*(1+0.0522)} = 0.2468; prob_{lose} = \frac{1}{defeat_{quote}*markup} = \frac{1}{19*(1+markup)} = 0.5624$$

Performing the check on the total of the probabilities, the total is now $1 = 0.1908 + 0.2468 + 0.5624$.

5 Methodology

5.1 Event study

To answer the research questions and test the hypotheses described in next section 5.2, the event study methodology will be used. This method implies that the normal returns of the analyzed company at the event day, as well as during the event window (several days before and after the event), can be estimated based on a pre-defined estimation window (number of days before the event). After the normal returns are estimated, the abnormal returns at the event day can be determined by subtracting the normal returns from the actual returns. The event study method has been used in the majority of studies mentioned in the literature review section.

Event studies, however, may differ when it comes to the approach available to calculate the normal returns. The most common model used to determine the normal returns is the market model (MacKinlay 1997) which implies to use an estimation window (typically sized 120 days) prior to the event, based on which the relation between a company's stock price and a market index is determined through a regression analysis. The resulted regression coefficients are then used to determine the predicted normal returns and calculate the abnormal returns. Alternative models for the normal returns include the CAPM model, the market-adjusted returns that considers the normal returns or the expected returns to be equal to the market's index return or more simplistic approaches such as the mean-adjusted model (see MacKinlay 1997 for an overview). The method used in this research is the market-adjusted return which will be explained in the following paragraphs.

In this analysis, the day of the football game will be considered the event day $t=0$ and an event window of two days before and after the event $[-2, 2]$. Considering a longer event window would cause an overlap of some events as there are some games, usually during the knockout stages, which are played every week or every few days.

The abnormal returns are calculated using the following equation:

$$AR_{i,t} = R_{i,t} - E(R_{i,t}) \quad (1)$$

where $AR_{i,t}$ are the abnormal returns of company i at the end of day t , $R_{i,t}$ are the returns of company i at time t and $E(R_{i,t})$ are the expected returns or normal returns of company i at the end of day t .

The returns calculated as follows:

$$R_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) \quad (2)$$

where $P_{i,t}$ is the stock price of company i at the end of day t and $P_{i,t-1}$ is the stock price of company i at the end of day $t-1$, while the expected returns or normal returns are calculated using the market-adjusted return approach:

$$E(R_{i,t}) = R_{mt} \quad (3)$$

where R_{mt} is the market return (stock market index for each company: see Table 1 for information on indexes used for every sponsor). The returns of the market index were calculated similar to equation (2) used for the company's returns.

5.2 Hypotheses and methodology of testing

In order to determine if there is a reaction of the sponsors' stock price to the Champions League football games outcome, a more in depth analysis of the returns around the event dates (day of the football game) is needed. This analysis therefore will answer to the following research questions (hypotheses):

1. *Does the sponsors' stock price react positively to favorable football results and negatively to unfavorable ones?*

I will perform the research on the sponsors of the top five football teams in England that participate in the UEFA Champions League during the seasons 2004/05 to 2012/13. The research of Cornwell et al. (2001) represents the inspiration for the above hypothesis. As mentioned in the literature review, several studies have showed that clubs' match outcome can influence positively, in case of a victory, and negatively, in case of a defeat, its sponsors' stock price return. According to the research of Gwinner and Eaton (1999) regarding the image transfer between the sponsor and the football club, a positive image transfer is expected when the sponsored clubs have won a match. Thus, in this case it seems possible that sportive performance has a positive effect on the stock price performance of their sponsor. In addition, since nice weather has a positive influence on the mood of investors and thereby a positive influence on the stock market (Hirshleifer & Shumway, 2003), it is safe to assume that positive news about a club could lead to a positive image transfer and positively influence the mood of investors of the sponsoring company, which should in turn raise the stock price.

As a first step to test whether the sponsors' stock price reacts positively to favorable football results and negatively to unfavorable ones, the data sample will be divided between won and lost games and the regression equation (1) will be run:

$$AR_{i,t} = \alpha_t + \beta_{1,t} * win_i + \beta_{2,t} * defeat_i + \varepsilon_{i,t} \quad (4)$$

where win_i is a dummy variable which is assigned value 1 if the team supplied by sponsor i at day t has won, zero otherwise and $defeat_i$ is a dummy variable which equals 1 if the team supplied by sponsor i at day t has lost, zero otherwise. $\varepsilon_{i,t}$ is the error term, α_t is a constant and $\beta_{1,t}$ and $\beta_{2,t}$ are regression coefficients.

The regressions are run for the event days -2 to 2, i.e. $t \in [-2, 2]$. In order to measure the impact of the event over the whole or part of the event window, cumulative abnormal returns metric is used. It is calculated as a sum of abnormal returns for a certain security during the event window:

$$CAR_i(\sigma_1, \sigma_1) = \sum_{t=\sigma_1}^{\sigma_1} AR_{i,t} \quad (5)$$

where $CAR_i(\sigma_1, \sigma_2)$ is the cumulative abnormal return for an event i from time $\sigma_1 \geq -2$ to $\sigma_2 \leq 2$ and $AR_{i,t}$ is the abnormal return of the event i at the time t . Similarly to the previous step, cumulative abnormal returns will be regressed against the football related variables and the regression is defined by the following equation:

$$CAR_i(\sigma_1, \sigma_2) = \alpha + \beta_1 * win_i + \beta_2 * defeat_i + u_i \quad (5.1)$$

where the variables are the same as in the previous regression.

Additionally, if the answer to H1 is positive, the following hypotheses are going to be tested:

a) *Is the effect on the stock price dependent on game importance (group vs. knockout games)?*

The papers of Edmans et al. (2007) and Henke and Kirchler (2013) represent the source of inspiration for mentioned research question. It is found that stock returns have a stronger effect during the knockout stages than the group stages, as the competitiveness during this stage is higher (teams can now be eliminated in the race to the final). As the games become more intense and each game defines the next team that advances to the final, the number of viewers increases¹² during this stage which leads to more screening time for the sponsor (brand visibility). In order to test hypothesis H1a, the data sample will be divided between group and knockout games and the regression equations (1) and (2.1) will be run.

b) *Is the impact on the stock price higher for main sponsors and lower for partners? Is the effect amplified for main sponsors during the knockout phases?*

As mentioned in the introduction section, the clubs' sponsors differ in importance which is mainly based on the size of the deal. Sponsors that close deals of sizeable amounts will demand in return more visibility from the club, so usually the company logo will be printed on the players jersey's to offer more brand visibility to the company during the games and they will be considered as the main sponsors of the club, whilst companies that sponsor clubs by offering their products/services will have less brand visibility as they are usually mentioned in the in-between rounds commercial, on the clubs' official website or on their stadium and they will be considered as partners. Thus, a safe assumption would be that main sponsors should benefit more in terms of stock price return when the sponsored team has won and should be more affected when the team has lost. In order to test this hypothesis, the following regression equation will be used:

$$AR_{i,t} = \alpha_t + \beta_{1,t} mainsponsor_i + \beta_{2,t} mainsponsor_i * win_i + \beta_{3,t} mainsponsor_i * defeat_i + \beta_{4,t} win_i + \beta_{5,t} defeat_i + \varepsilon_{i,t} \quad (6)$$

where the variables are the same as in the previous regression, the difference being the $mainsponsor_i$ dummy which takes the value of 1 if the company is the main sponsor and 0 otherwise (for partners) and the interaction variables $mainsponsor_i * win_i$, $mainsponsor_i * defeat_i$ calculated by multiplying $mainsponsor_i$ the dummy with each game outcome dummy.

¹²E.g. According to the UEFA official website, the 2013 Champions League final between FC Bayern Munich and Borussia Dortmund had attracted an estimated average of 150 million viewers from over 200 countries

In order to test the main effect over the [-2, 2] event window, the following regression equation for cumulative abnormal returns is run:

$$CAR_i = \alpha + \beta_1 mainsponsor_i + \beta_2 mainsponsor_i * win_t + \beta_3 mainsponsor_i * defeat_t + \beta_4 win_i + \beta_5 defeat_i + u_i \quad (6.1)$$

As we expect a higher return for main sponsors in case of victories in the overall sample, during the knockout games the positive effect given by the importance of the games should be amplified. The effect on the main sponsors during the knockout phases compared to the group stages will be captured using regressions equation (4) and (4.1):

$$AR_{i,t} = \alpha + \beta_{1,t} mainsponsor_i * knockout_i + \beta_{2,t} mainsponsor_i * win_i + \beta_{3,t} mainsponsor_i * defeat_i + \beta_{4,t} win_i * knockout_i + \beta_{5,t} defeat_i * knockout_i + \varepsilon_{i,t} \quad (7)$$

$$CAR_i = \alpha + \beta_1 mainsponsor_i * knockout_i + \beta_2 mainsponsor_i * win_i + \beta_3 mainsponsor_i * defeat_i + \beta_4 win_i * knockout_i + \beta_5 defeat_i * knockout_i + u_i \quad (7.1)$$

c) *Is the effect amplified when the sponsors' business profile is close to the sports discipline?*

The research question has the inspiration roots in the paper of Cornwell et. al (2001) that find higher abnormal returns when the sponsoring company is congruent to the sponsored sport. We will test whether the companies that are congruent to football face higher abnormal returns after a victory and lower abnormal returns after a defeat and if any of these effects is amplified during the knockout stages. To answer this research question and confirm the expectations implied by the hypothesis, the regression equation (6) will be performed:

$$AR_{i,t} = \alpha_t + \beta_{1,t} * congruence_i + \beta_{2,t} congruence_i * win_i + \beta_{3,t} congruence_i * defeat_i + \beta_{4,t} * win_i + \beta_{5,t} * defeat_i + \varepsilon_{i,t} \quad (8)$$

where the variables are the same as in the previous regressions and variable *congruence_i* is a dummy which takes the value of 1 if the company is a congruent sponsor (its' products/company profile is close to the sports discipline – e.g. Nike, Adidas) and 0 otherwise.

We test the regression equation for main sponsor to capture the effect of a win and a loss for main sponsors that are congruent to the sponsored sport:

$$AR_{i,t} = \alpha_t + \beta_{1,t} * mainsponsor_i * congruence_i + \beta_{2,t} * congruence_i * win_i + \beta_{3,t} * congruence_i * defeat_i + \beta_{4,t} * win_i + \beta_{5,t} * defeat_i + \beta_{6,t} mainsponsor_i * win_i + \beta_{7,t} mainsponsor_i * defeat_i + \varepsilon_{i,t} \quad (8.1)$$

2. *Is the impact on the sponsors' stock price lower when the market anticipates the match outcome?*

Some papers concluded that expected outcomes have a smaller effect than unexpected ones. To control for pre-game expectations, variables *probwin* and *probdefeat* (corresponding to probabilities of winning or losing a game) will be introduced in the regression and the probability of drawing a game

calculated as described in section 4.3 will be used as a base case scenario ($probdraw = 1 - probwin - probdefeat$). I relate this research question to the papers of Cornwell et al. (2001) that find a stronger effect in case of an unexpected victory, Edmans et al. (2007) that report stronger effects in case of unanticipated losses during knockout stages and Hanke and Kirchler (2013) that confirm the findings of the second mentioned paper.

$$AR_{i,t} = \alpha_t + \beta_{1,t} * win_i + \beta_{2,t} * defeat_i + \beta_{3,t} * probwin_i + \beta_{4,t} * probdefeat_i + \varepsilon_{i,t} \quad (9)$$

where win_i and $defeat_i$ are dummies for winning and losing a game, $probwin_i$ and $probdefeat_i \in [0,1]$ are probabilities of a certain outcome of a game explained in section 4.3.

To capture the effect of a surprise win and surprise loss the following regression will be used:

$$AR_{i,t} = \alpha_t + \beta_{1,t} * surprisewin_i + \beta_{2,t} * surprisedefeat_i + \varepsilon_{i,t} \quad (9.1)$$

where $surprisewin_i = (win_i - probwin_i)$ and $surprisedefeat_i = (defeat_i - probdefeat_i)$

We would like to test the effect for the main sponsors in case of a surprise victory and a surprise defeat by applying the following regression equations:

$$AR_{i,t} = \alpha_t + \beta_{1,t} * mainsponsor_i + \beta_{2,t} * win_i + \beta_{3,t} * defeat_i + \beta_{4,t} * probwin_i + \beta_{5,t} * probdefeat_i + \varepsilon_{i,t} \quad (10)$$

$$AR_{i,t} = \alpha_t + \beta_{1,t} * mainsponsor_i + \beta_{2,t} * surprisewin_i + \beta_{3,t} * surprisedefeat_i + \varepsilon_{i,t} \quad (10.1)$$

3. *Is there a difference in the stock price returns following the football clubs' performance before and after the global financial crisis?*

In order to test the above hypothesis, the three games' outcomes sample has been split further in three periods: before crisis defined as the period before 1st of January 2008, during crisis defined as the years 2008 and 2009 and after the crisis which includes the period after 1st of January 2010. The cumulative abnormal returns for the event windows [-2, 2] and [0, 1] have been then computed for each outcome and each mentioned period. Our economic intuition is that, during the deep financial crisis years, the abnormal returns will suffer a significant decrease compared to the period before the crisis and then register a recovery in the years after the financial crisis (after 2010 as the period is defined in the analysis).

6. Empirical results

Hypothesis 1: Does the sponsors' stock price react positively to favorable football results and negatively to unfavorable ones?

Table 2 shows a detailed overview of the abnormal returns and cumulative abnormal returns for each day in the event window. AARs and CAARs for victories yield a positive share price impact on the first and second day after the event (t=0) of 0.28% and 0.37% respectively. Both coefficients are significant at

the 1% level. Both AARs and CAARs in each day of the event show a negative effect in case of a defeat. The CAARs are significant at the 1% level. The results in case of a draw show both positive and negative AARs, with only the coefficient at day t=1 significant at the 10% level, yielding a 0.28% positive abnormal returns after a draw. CAARs in each day are negative with no significance in any of the days.

Table 2. Descriptive statistics of the average abnormal returns and cumulative average abnormal returns for the three match outcomes

*The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in three subsamples: victories, defeats and draws. The table reports average abnormal returns calculated using the market-adjusted return method and cumulative average abnormal returns for victories, defeats and drawn games, at each day of the event window. Statistical significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. T-statistics are reported between brackets. N represents number of games per each outcome.*

Event Day	t = -2	t = -1	t = 0	t = 1	t = 2
Win					
AAR	0.07% (1.02)	0.02% (0.24)	0.02% (0.26)	0.17% (2.47)**	0.05% (0.69)
CAAR	0.07% (1.02)	0.09% (0.91)	0.11% (0.92)	0.28% (2.03)**	0.37% (2.24)**
N	755	755	755	755	755
Defeat					
AAR	-0.22% (-2.37)**	-0.18% (-1.96)**	-0.04% (-0.39)	-0.06% (-0.70)	0.09% (0.70)
CAAR	-0.22% (-2.37)**	-0.40% (-3.19)***	-0.44% (-2.69)***	-0.50% (-2.93)***	-0.42% (-1.91)*
N	305	305	305	305	305
Draw					
AAR	-0.32% (-0.95)	0.04% (0.27)	-0.82% (-1.48)	0.28% (1.78)*	0.28% (1.25)
CAAR	-0.32% (-0.95)	-0.28% (-0.63)	-1.10% (-1.38)	-0.81% (-1.18)	-0.60% (-1.01)
N	285	285	285	285	285

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

The above results and signs for victories and defeats are in line with the findings of Edmans et. al (2007) whose results show positive average return on days after an international soccer win of 5.0 basis points, but negative and significantly lower on days following a loss (−18.4 basis points) for the European Championship in their data sample. Renneboog and Vanbrabant (2000) find positive abnormal returns of approximately 1% in the first day of trading after a victory and negative abnormal returns of 1.4% and 0.6% for defeats and draws respectively. Cumulatively over the week, defeats and draws trigger

abnormal losses of 2.5% and 1.7%. These findings for the European Championships (Champions League, European Cup and UEFA Cup) are consistent also across the English and Scottish National Cup.

Table 3. Abnormal returns at each day of the event window divided on wins and defeats

*The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in three subsamples: victories, defeats and draws. Abnormal returns are calculated using the market-adjusted return approach. The table reports the regression equation (4) estimates of β_{win} and β_{defeat} . The constant α reflects the abnormal returns for draws. Statistical significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.*

Event Day	t = -2	t = -1	t = 0	t = 1	t = 2
Win	0.39% (1.81)*	-0.02% (-0.15)	0.84% (2.61)***	-0.11% (-0.77)	-0.23% (-1.40)
Defeat	0.10% (-0.39)	-0.22% (-1.33)	0.78% (2.05)**	-0.35% (-2.06)**	-0.19% (-0.96)
α	-0.32% (-1.73)*	0.04% (0.33)	-0.82% (-2.99)***	0.28% (2.34)**	0.28% (1.98)**
<i>Test H_0:</i>					
$\beta_{win} = \beta_{defeat}$					
F – stat	1.87	2.11	0.03	2.92	0.07
Prob > F	0.1716	0.1466	0.8532	0.0876	0.7896
N	1345	1345	1345	1345	1345
R^2	0.0030	0.0018	0.0053	0.0034	0.0016

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Table 3 shows the results of regression equation (4). A positive abnormal return of 0.39% two days before the event and of 0.84% at the day of the event is found for the wins. The coefficients are significant at the 10% and 1% level, respectively. The variable of the lost games is positive at the day of the event (0.78%) and negative (-0.35%) one day after the event. These are significant at the 5% level of significance. The constant reflects the returns of the left out game outcome (draws) and shows negative abnormal returns of -0.32% two days before the event and of -0.82% at the day of the event (significant at the 10% and 1% level of significance, respectively) and positive abnormal returns of 0.28% on both two days following the event (significant at the 5% level).

The test of equality between coefficients reveals that the null hypothesis ($\beta_{win} = \beta_{defeat}$) can be rejected at the 10% level only for the coefficient at day t=1. The results are in line with the findings of Renneboog and Vanbrabant (2000) that find positive abnormal returns of approximately 1% in the first day of trading after a victory and negative abnormal returns of 1.4% and 0.6% for defeats and draw respectively and with the findings of Henke and Kirchler (2013) that find negative excess returns of 0.362 basis points when the sponsored team was defeated.

Table 4. Cumulative abnormal returns divided on wins and defeats

The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, victories and defeats. Cumulative average abnormal returns for the (-2, 2), (-1, 1), (0, 1) and (0, 2) event windows are listed for victories and defeats. The table reports the regression equation (5.1) estimates of β_{win} and β_{defeat} at each of the mentioned event windows. Statistical significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.

	CAR(-2,2)	CAR(-1,1)	CAR(0,1)	CAR(0,2)
Win	0.80% (4.73)***	0.90% (3.75)***	1.15% (3.54)***	1.10% (4.23)***
Defeat	0.26% (1.12)	0.285% (1.01)	0.49% (1.26)	0.39% (1.27)
A	-0.62% (-4.28)***	-0.73% (-3.61)***	-0.96% (-3.44)***	-0.84% (-3.82)**
<i>Test H_0:</i>				
$\beta_{win} = \beta_{defeat}$				
F – stat	12.07	6.85	4.37	7.80
Prob > F	0.0005	0.0089	0.0366	0.0052
N	1345	1345	1345	1345
R^2	0.0041	0.0041	0.0051	0.0052

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Testing the significance of CARs across multiple event windows, table 4 shows positive and statistically significant abnormal returns for the victories in all event windows. The defeat variable reflects a positive return for all the event windows with none of the coefficients significant. The constant (representing the coefficient of the draw dummy) is negative and significant at the 1% level for event windows [-2, 2], [-1, 1], [0, 1] and negative and significant at the 5% level for the [0, 2] event window. The test of equality between the win and defeat dummy coefficients can be rejected at the 1% level for the event windows [-2, 2], [-1, 1], [0, 2] and rejected at the 5% level for the [0, 1] event window. Similar results were found by Renneboog and Vanbrabant (2000) that find positive and significant cumulative abnormal returns of approximately 1% for victories in event window [1, 3] and significantly negative abnormal returns of 2.342% and 0.298% for defeats and draws, respectively, at event window [1, 3]. However, our results for defeats counter the papers' findings.

Thus, as the results so far have confirmed hypothesis H1 and support the semi-strong form of market efficiency (Fama (1970)) according to which stock prices reflect all relevant information and incorporate instantly all new available information as rational investors quickly adjust their expectations (information represented in our case by the match outcome), we can proceed to the next steps of our research.

Hypothesis 1a: Do the results depend on game importance (group vs. knockout games)?

In order to test hypothesis H1a, the sample is being split between group and knockout games. We would expect higher and positive abnormal return for victories during the knockout games and stronger decreases in case of defeats. Table 5 shows positive abnormal returns during the group and knockout stages, but contrary to the expectations, the returns are higher for group games at the event day (0.88% for group compared to 0.68% for knockout). The returns across the event window [-2, 2] reinforce these results (0.88% vs. 0.80%). The variable for lost games has a positive sign which is contrary to the hypothesis, except for the knockout games in event window [-2, 2] which reveals a stronger negative abnormal return, but not significant. The constant (the draw games coefficient) is negative and significant in all stages, but still does not reveal a stronger impact for the knockout games. Contrary to our results reported above, Edmans et al. (2007) found a decrease of 38 basis points on the national stock market index returns the next day following elimination from a major international soccer tournament. Smaller, but still economically and statistically significant results are found also after international cricket, rugby and basketball games.

Table 5. Abnormal returns and the cumulative abnormal returns in the full sample, group stage and knockout stage

*The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, group stage and knockout matches. Average abnormal returns are calculated using the market-adjusted return approach. The table reports estimates of β_{win} and β_{defeat} for the full sample, group stage games and knockout stage games. The constant α reflects the abnormal returns for draws. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) for the full sample and for each stage are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.*

	Abnormal returns at event day t = 0			CAR(-2,2)		
	Full sample	Group stage	Knockout	Full sample	Group stage	Knockout
Win	0.84% (2.61)***	0.88% (1.91)*	0.68% (2.34)**	0.80% (4.73)***	0.88% (3.73)***	0.60% (3.20)***
Defeat	0.78% (2.05)**	0.87% (1.43)	0.53% (1.72)*	0.26% (1.12)	0.44% (1.41)	-0.07% (-0.34)
α	-0.82% (-2.99)***	-0.91% (-2.36)**	-0.56% (-2.22)**	-0.62% (-4.28)***	-0.67% (-3.40)***	-0.47% (-2.82)***
<i>Test H_0: $\beta_{win} = \beta_{defeat}$</i>						
F – stat	0.03	0.00	0.45	12.07	2.65	21.92
Prob > F	0.8532	0.9823	0.5033	0.0005	0.1033	0.0000
N	1345	844	501	1345	844	501
R^2	0.0053	0.0046	0.0109	0.0041	0.0034	0.0104

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

As most of the games are played during the afternoon, some effects might not be captured by the stock market at the event day. Analyzing the returns the next day after the game in Table 6, the variable of lost games shows a more negative effect for knockout games than for group games (-0.03% for group vs. -0.22% for knockout), but neither of the coefficients is significant. The CARs for the event window [0,1] show no sign that could validate hypothesis H1a. Although the won games variable show positive and significant abnormal returns, the effect is still not higher for knockout games (1.29% for group vs. 0.79% for knockout). The results in the first day after the event provide evidence that knockout stages have a higher impact than the group stage games, although not significant similar to Edmans et. al (2007) that found for elimination games, positive abnormal returns estimates, but insignificant for both wins (2.6%) and losses (14.9%) for all the football competitions in the data sample (European Championships and World Cup) and contrary to Hanke and Kirchler (2013) that found a significant strong decrease in the stock returns following a defeat (-0.483 basis points). Our results are not in line with the Efficient Market Hypothesis (EMH), according to which, rational investors should naturally react to the negative economic consequences of losing or winning a game with stronger intensity during the knockout stages as these games are ranked higher in importance due to the greatest media coverage and implies teams' elimination or advancement within the competition.

Table 6. Abnormal returns and cumulative abnormal returns in the full sample, group stage and knockout stage

*The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, group stage and knockout matches. Average abnormal returns are calculated using the market-adjusted return approach. The table reports estimates of β_{win} and β_{defeat} for the full sample, group stage games and knockout stage games. The constant α reflects the abnormal returns for draws. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) for the full sample and for each stage are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.*

	Abnormal returns at event day t = 1			CAR(0,1)		
	Full sample	Group stage	Knockout	Full sample	Group stage	Knockout
Win	-0.11% (-0.77)	-0.03% (-0.15)	-0.22% (-1.11)	1.15% (3.54)***	1.29% (2.81)***	0.79% (2.38)**
Defeat	-0.35% (-2.06)**	-0.26% (-1.03)	-0.34% (-1.61)	0.49% (1.26)	0.73% (1.21)	0.073% (0.21)
α	0.28% (2.34)**	0.33% (2.06)**	0.16% (0.92)	-0.96% (-3.44)***	-1.06% (-2.75)***	-0.66% (-2.26)**
<i>Test H_0:</i>						
$\beta_{win} = \beta_{defeat}$						
F – stat	2.92	1.08	0.65	4.37	1.11	806
Prob > F	0.0876	0.2987	0.4193	0.0366	0.2921	0.0046
N	1345	844	501	1345	844	501
R^2	0.0034	0.0015	0.0052	0.0051	0.0047	0.0106

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Hypothesis 1b: Is the impact on the stock price higher for main sponsors and lower for partners?

Main sponsors usually contribute with substantial amounts to the clubs finances more than partners, so we would expect they will get a higher return in case of a victory and stronger decrease in returns in case of a defeat. Table 7 shows the results that test the hypothesis and reveal positive abnormal returns for the $[-2, 2]$ event window in case of a win, significant at the 10% level. The win dummy is positive and significant across both analyzed event windows $[-2, 2]$ and $[0, 1]$ at the 5% and 1% level respectively. The constant is negative and significant for all the event days/windows taken into consideration, except for the first day after the event when the coefficient is positive and significant at the 10% level. Performing the Fisher test to check the equality between the interaction terms $mainponsor_i * win_t$ and $mainponsor_i * defeat_t$, the null hypothesis ($\beta_{mainponsor*win} = \beta_{mainponsor*defeat}$) cannot be rejected for any of the analyzed event days/windows. Similar study is the paper of Hanke and Kirchler (2013) that analyzes the abnormal returns for jersey sponsors, which in our study are labeled as main sponsors. They find positive and insignificant abnormal returns of 0.089 basis points for the jersey sponsors of the seven most important football nations participant at European and World Championships, negative and insignificant abnormal returns in case of a victory (-0.130 basis points) and negative and significant at the 5% level in case of defeats (-0.362%).

Table 7. Abnormal returns and cumulative abnormal returns at each game outcome for main sponsors

The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, group stage and knockout matches. Average abnormal returns are calculated using the market-adjusted return approach. The table reports the β estimates of the regression equation (7) and (7.1) for the event day $t=0$ and $t=1$ are listed for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows. Statistical significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.

Full sample	Abnormal returns at event day $t = 0$	Abnormal returns at event day $t = 1$	CAR(-2,2)	CAR(0,1)
Main sponsor	-0.05% (-0.08)	0.04% (0.16)	-0.48% (-1.63)	-0.52% (-0.93)
Main sponsor*win	0.28% (0.43)	-0.07% (-0.23)	0.64% (1.87)*	0.82% (1.24)
Main sponsor*defeat	-0.08% (0.10)	-0.17% (-0.49)	0.33% (0.81)	0.29% (0.37)
Win	0.71% (1.64)*	-0.08% (-0.42)	0.52% (2.26)**	0.78% (1.79)*
Defeat	0.81% (1.60)	-0.27% (-1.21)	0.08% (0.29)	0.36% (0.70)
α	-0.80% (-2.18)**	0.27% (1.64)*	-0.41% (-2.12)**	-0.73% (-1.95)*
Test H_0 :				
$\beta_{\text{main sponsor*win}} = \beta_{\text{main sponsor*defeat}}$				
F - stat	0.31	0.13	0.85	0.68
Prob>F	0.5781	0.7192	0.3555	0.4094
N	1345	1345	1345	1345
R^2	0.0057	0.0037	0.0047	0.0058

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Taking the analysis further, we test whether the effect is higher for main sponsors during the knockout games than it is during the group stages. Table 8 shows positive abnormal returns of 1.71% and 2.63% if the sponsored team has won during a knockout stage in event windows $[-2, 2]$ and $[0, 1]$ respectively. Both coefficients are significant at the 1% level. The returns for the main sponsor during the knockout phases, regardless of the match outcome, are overall negative and significant for both the above mentioned event windows. The coefficients are significant at the 1% level. The Fisher test reveals that the null hypothesis ($\beta_{\text{main sponsor*win}} = \beta_{\text{main sponsor*loss}}$) can be rejected for the interaction variables during the $[-2, 2]$ and $[0, 1]$ event windows. Hanke and Kirchler (2013) find negative and significant abnormal returns following a defeat in the knockout stages of 0.483 basis points.

Table 8. Impact on the abnormal returns and cumulative abnormal returns of main sponsors during the knockout phases

The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, main sponsor and partners. Average abnormal returns are calculated using the market-adjusted return approach. The table reports the β estimates of the regression equation (7) and (7.1) for the knockout stages at the event day $t=0$ and $t=1$ for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows. Statistical significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients is reported and the probability to reject the null hypothesis.

Knockout phases (Knockout dummy=1)	Abnormal returns at event day $t = 0$	Abnormal returns at event day $t = 1$	CAR(-2,2)	CAR(0,1)
Main sponsor	-1.26% (-2.45)**	0.32% (0.90)	-1.025% (-3.06)***	-1.78% (-3.02)***
Main sponsor*win	1.48% (2.56)**	-0.31% (-0.78)	1.71% (4.52)***	2.63% (3.95)***
Main sponsor*defeat	1.00% (1.60)	-0.48% (-1.12)	0.062% (1.52)	1.15% (1.61)
Win	0.03% (0.07)	-0.09% (-0.35)	-0.18% (-0.72)	-0.39% (-0.91)
Defeat	0.11% (0.28)	-0.14% (-0.49)	-0.33% (-1.24)	-0.41% (-0.88)
α	-0.03% (-0.09)	0.03% (0.13)	-0.02% (-0.13)	0.10% (0.27)
Test H_0 :				
$\beta_{\text{main sponsor*win}} = \beta_{\text{main sponsor*defeat}}$				
F – stat	1.26	0.30	14.64	8.71
Prob>F	0.2627	0.5838	0.0001	0.0032
N	501	501	501	501
R^2	0.0245	0.0077	0.0213	0.0289

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Hypothesis 1c: Is the effect amplified when the sponsors' products are close to the sports discipline?

After testing hypothesis H1c, Table 9 reflects a positive effect in case the sponsors business profile is congruent to the sponsored sport for the $[0, 1]$ event window. The sponsors have registered negative abnormal returns for both victories and defeats, with a stronger impact in case of defeats. Both coefficients are significant at the 5% level. Performing the Fisher test for the interaction variables, the null hypothesis ($\beta_{\text{congruence*win}} = \beta_{\text{congruence*loss}}$) could not be rejected. Cornwell et al. (2005) express similar findings stating that congruent sponsorships are 11.48% more valuable than sponsorship involving unrelated products.

Table 9. Impact on the abnormal returns and cumulative abnormal returns of the congruent sponsors

The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The abnormal returns are calculated using the market-adjusted return. The table reports the β estimates of the regression equation (8) and (8.1) for the event day $t=0$ and $t=1$ for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows. Statistical significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.

Full sample	Abnormal returns at event day $t = 0$	Abnormal returns at event day $t = 1$	CAR(-2,2)	CAR(0,1)
Congruence	1.04% (1.58)	-0.10% (-0.35)	1.13% (1.31)	1.43% (2.28)**
Congruence*win	-0.99% (-1.29)	-0.01% (-0.02)	-1.31% (-1.31)	-1.51% (-2.05)**
Congruence*defeat	-1.39% (-1.53)	0.04% (0.10)	-1.45% (-1.22)	-1.77% (-2.03)**
Win	1.06% (2.89)***	-0.11% (-0.65)	1.26% (2.66)***	1.37% (3.92)***
Defeat	1.10% (2.52)**	-0.36% (-1.85)*	0.50% (0.89)	0.64% (1.56)
α	-1.05% (-3.38)***	0.31% (2.22)**	-0.85% (-2.11)**	-1.03% (-3.47)***
Test H_0 :				
$\beta_{congruence*win} = \beta_{congruence*defeat}$				
F – stat	0.30	0.02	0.02	0.14
Prob>F	0.5865	0.8901	0.8872	0.7076
N	1345	1345	1345	1345
R^2	0.0074	0.0038	0.0072	0.0076

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

When testing hypothesis H1c for the knockout phases, we find significance only for the win and defeat dummies. The win dummy shows positive (0.70%) and significant results at the event day $t=0$ and for the event windows $[-2, 2]$ and $[0, 1]$. The sponsors register an increase of 0.70% in returns following a victory in event window $[-2, 2]$ and an increase of 0.81% in the sponsors' returns following a victory in event window $[0, 1]$. Defeat dummy is positive (0.60%) and significant at the 10% level for $t=0$ and negative (-0.49%) and significant at the 5% level for $t=1$. The constant is negative and significant at the 10% level for $t=0$, negative and significant at the 5% level for the event window $[-2, 2]$ and negative and significant at the 10% level for event window $[0, 1]$. The Fisher test reveals that the null hypothesis for the interaction variables ($\beta_{congruence*win} = \beta_{congruence*defeat}$) could not be rejected. To my knowledge there is no existing study that analyzes the effect of congruent sponsors during the knockout stages.

Table 10. Impact on the abnormal returns and cumulative abnormal returns of the congruent sponsors during the knockout stages

The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The abnormal returns are calculated using the market-adjusted return. The table reports the β estimates of the regression equation (8) and (8.1) for the event day $t=0$ and $t=1$ for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows during the knockout stages. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients is reported and the probability to reject the null hypothesis.

Knockout phases (Knockout dummy=1)	Abnormal returns at event day $t = 0$	Abnormal returns at event day $t = 1$	CAR(-2,2)	CAR(0,1)
Congruence	-0.08% (-0.13)	-0.66% (-1.57)	0.03% (0.08)	-0.36% (-0.51)
Congruence*win	-0.20% (-0.29)	0.32% (0.69)	-0.53% (-1.18)	-0.21% (-0.27)
Congruence*defeat	-0.38% (-0.52)	0.65% (1.29)	-0.43% (-0.90)	-0.35% (-0.42)
Win	0.70% (2.15)**	-0.29% (-1.27)	0.70% (3.29)***	0.81% (2.15)**
Defeat	0.60% (1.71)*	-0.49% (-2.02)**	0.005% (0.02)	0.12% (0.30)
α	-0.52% (-1.82)*	0.31% (1.55)	-0.45% (-2.40)**	-0.54% (-1.64)*
Test H_0 :				
$\beta_{congruence*win} = \beta_{congruence*defeat}$				
F – stat	0.12	0.84	0.08	0.05
Prob>F	0.7247	0.3597	0.7741	0.8149
N	501	501	501	501
R^2	0.0144	0.0147	0.0134	0.0151

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Analyzing the effects of football results on stock price returns of main sponsors whose products involve sports/football related products, we notice in table 12, significant (at the 1% level) and high positive CARs for both $[-2, 2]$ and $[0, 1]$ event windows of 2.53% and 3.37%, respectively. The sponsors face positive and significant abnormal returns in case of both victory and defeat. The Fisher test reveals that the null hypothesis for the interaction variables ($\beta_{congruence*win} = \beta_{congruence*defeat}$) could not be rejected. To my knowledge there is no existing study that analyzes the effect of congruent sponsors as main sponsors.

Table 11. Impact on the abnormal returns and cumulative abnormal returns of the main sponsors that are congruent to the sports discipline

The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The abnormal returns are calculated using the market-adjusted return. The table reports the β estimates of the regression equation (8) and (8.1) for the event day $t=0$ and $t=1$ for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients is reported and the probability to reject the null hypothesis.

Main sponsor (Main sponsor dummy=1)	Abnormal returns at event day $t = 0$	Abnormal returns at event day $t = 1$	CAR(-2,2)	CAR(0,1)
Congruence	1.69% (2.84)***	-0.21% (-0.55)	2.53% (5.02)***	3.37% (3.60)***
Congruence*win	-1.86% (-2.69)	0.06% (0.14)	-2.67% (-4.55)***	-3.57% (-3.26)***
Congruence*defeat	-2.12% (-2.55)**	0.25% (0.49)	-2.60% (-3.70)***	-3.62% (-2.77)***
Win	1.94% (3.91)***	-0.18% (-0.56)	2.52% (6.00)***	3.41% (4.37)***
Defeat	1.82% (3.05)***	-0.57% (-1.51)	1.74% (3.43)	2.49% (2.65)
α	-1.70% (-4.02)***	0.41% (1.53)	-2.17% (-6.05)**	-2.96% (-4.43)***
Test H_0 :				
$\beta_{congruence*win} = \beta_{congruence*defeat}$				
F – stat	0.14	0.20	0.01	0.00
Prob>F	0.7103	0.6560	0.9045	0.9569
N	612	62	612	612
R^2	0.0273	0.0062	0.0142	0.0184

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Hypothesis 2: Is the impact on the sponsors' stock price lower when the market anticipates the match outcome?

We control for the ex-ante probability of winning/losing as the match outcome should have a higher impact the less expected is the result. In particular, market efficiency predicts that investors should price in the expected economic impact of soccer results before the game, thus a strong increase is relevant for unanticipated outcomes. It can be noticed in table 12 a positive effect on victories at the day of the event and a negative effect for the defeats one day after the game. Both probabilities of winning and losing are positive and significant. Our results revealed high coefficients for the probabilities of winning and losing compared to the win and defeat dummies which might be explained by the high variation in the implied probabilities that were extracted from the betting odds. This suggests that the more expected a certain game outcome is (the higher the probability) the lower the abnormal return, as the

market already anticipates the outcome. Edmans et al. (2007) find 16.2% decrease in stock price returns following a defeat and a 2% decrease in stock price returns following a victory when controlling for the ex-ante probability of each outcome.

Table 12. Impact on abnormal returns and cumulative abnormal returns when controlling for the ex-ante probabilities

*The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, main sponsor and partners. Average abnormal returns are calculated using the market-adjusted return approach. The table reports the β estimates of the regression equation (9) for the event day $t=0$ and $t=1$ for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.*

	Abnormal returns at event day $t = 0$	Abnormal returns at event day $t = 1$	CAR(-2,2)	CAR(0,1)
Win	0.80% (2.44)**	-0.14% (-0.95)	0.74% (4.25)***	1.06% (3.21)***
Defeat	0.78% (2.03)**	-0.35% (-2.06)**	0.22% (1.07)	0.47% (1.23)
Prob. Win	2.06% (0.81)	1.47% (1.32)	3.85% (2.88)***	4.77% (1.87)*
Prob. Defeat	2.86% (0.98)	1.97% (1.53)	5.45% (3.54)***	6.75% (2.30)**
α	-2.57% (-1.30)	-0.94% (-1.08)	-3.92% (-3.75)***	-5.04% (-2.53)***
N	1345	1345	1345	1345
R^2	0.0062	0.0055	0.0067	0.0078

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

In order to capture the effect of a surprise win and a surprise defeat, the regression equation (5.1) will be performed. Table 13 shows positive and higher abnormal returns in case of a surprise win (0.85%) and lower and negative abnormal returns (for the next day after the event) in case of a surprise loss (-0.38%). Performing the Fisher test, the null hypothesis ($\beta_{surprise\ win} = \beta_{surprise\ defeat}$) can be rejected at the 10% level for the abnormal returns for $t = 1$ and the 1% level for event windows $[-2, 2]$ and $[0, 1]$. As reported above, Edmans et al. (2007) research in their paper the topic of ex-ante probabilities of winning and losing and contrary to our results, they find the strongest effects for unanticipated losses.

Table 13. Impact on abnormal returns and cumulative abnormal returns when controlling for the ex-ante probabilities

The analysis is performed on 5 teams and 33 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, main sponsor and partners. Average abnormal returns are calculated using the market-adjusted return approach. The table reports the β estimates of the regression equation (9.1) for the event day $t=0$ and $t=1$ for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.

	Abnormal returns at event day $t = 0$	Abnormal returns at event day $t = 1$	CAR(-2,2)	CAR(0,1)
Surprise Win	0.85% (2.60)***	-0.12% (-0.85)	0.80% (4.63)***	1.14% (3.48)***
Surprise Defeat	0.70% (1.86)*	-0.38% (-2.29)**	0.11% (0.53)	0.33% (0.87)
α	-0.21% (-1.66)*	0.13% (2.36)**	-0.19% (-2.73)***	-0.29% (-2.21)**
Test H_0 :				
$\beta_{\text{surprise win}} = \beta_{\text{surprise defeat}}$				
F – stat	0.24	3.74	18.87	7.17
Prob>F	0.6268	0.0533	0.0000	0.0075
N	1345	1345	1345	1345
R^2	0.0051	0.0044	0.0047	0.0056

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Table 14 shows the effects of a knockout in case of a win and a loss when we control for the ex-ante probabilities. A victory during the knockout phases yields an increase of 0.60% in abnormal returns at the day of the event when investors expect the outcome. The coefficient is significant at the 5% level. On the next day following the match, only the coefficient of a defeat is significant at the 10% level and reflects a decrease of 0.37% in stock returns. Analyzing both CARs for $[-2, 2]$ and $[0, 1]$ event windows, we get to positive returns in case of a victory of 0.53% (significant at the 1% level) and 0.69% (significant at the 5% level), respectively. Henke and Kirchler (2013) find a stronger defeat-effect during knockout phases when accounting for the ex-ante probabilities.

Table 14. Impact on abnormal returns and cumulative abnormal returns when controlling for the ex-ante probabilities during the knockout stages

*The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, main sponsor and partners. Average abnormal returns are calculated using the market-adjusted return approach. The table reports the β estimates of the regression equation (9) for the event day $t=0$ and $t=1$ for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows during the knockout stages. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.*

Knockout phases (Knockout dummy=1)	Abnormal returns at event day $t = 0$	Abnormal returns at event day $t = 1$	CAR(-2,2)	CAR(0,1)
Win	0.60% (2.03)**	-0.21% (-1.06)	0.53% (2.78)***	0.69% (2.04)**
Loss	0.47% (1.49)	-0.37% (-1.70)*	-0.13% (-0.64)	-0.013% (-0.03)
Prob. Win	4.65% (1.72)*	-0.22% (-0.12)	4.36% (2.45)**	5.87% (1.88)*
Prob. Defeat	4.66% (1.41)	0.53% (0.23)	4.56% (2.09)**	6.09% (1.60)
α	-3.87% (-1.87)*	0.12% (0.09)	-3.62% (-2.65)***	-4.89% (-2.05)**
N	501	501	501	501
R^2	0.0183	0.0086	0.0132	0.0147

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Looking at the effects of a surprise victory and a surprise defeat during the knockout stages, we discover 0.58% increase in stock returns at the day the event when a surprise victory occurs (significant at the 5% level) and a 0.36% decrease in stock returns the next day after the event in case of a surprise defeat (significant at the 10% level). The CAR $[-2, 2]$ shows a 0.50% increase in stock returns in case of a surprise victory (significant at the 1% level) and an insignificant decrease of 0.096% in case of surprise defeat. The constant is negative and significant at the 1% level. The CARs in the event window $[0, 1]$ reveal a 0.66% increase in stock returns in case of a surprise victory and an insignificant increase of 0.038% in case of surprise defeat. The constant is negative and significant at the 5% level. Henke and Kirchler (2013) find a stronger defeat-effect during knockout phases when accounting for the ex-ante probabilities.

Table 15. Impact on abnormal returns and cumulative abnormal returns when controlling for the ex-ante probabilities during the knockout stages

The analysis is performed on 5 teams and 33 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, main sponsor and partners. Average abnormal returns are calculated using the market-adjusted return approach. The table reports the β estimates of the regression equation (9.1) for the event day $t=0$ and $t=1$ for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows during the knockout stages. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.

Knockout phases (Knockout dummy=1)	Abnormal returns at event day t = 0	Abnormal returns at event day t = 1	CAR(-2,2)	CAR(0,1)
Surprise Win	0.58% (2.00)**	-0.19% (-0.95)	0.50% (2.65)***	0.66% (1.98)**
Surprise Defeat	0.51% (1.63)	-0.36% (-1.69)*	-0.096% (-0.47)	0.038% (0.10)
α	-0.108% (-1.03)	-0.032% (-0.44)	-0.21% (-3.00)***	-0.27% (-2.26)**
Test H_0 :				
$\beta_{surprise\ win} = \beta_{surprise\ defeat}$				
F – stat	0.10	1.32	17.14	5.97
Prob>F	0.7468	0.2518	0.0000	0.0147
N	501	501	501	501
R^2	0.008	0.0061	0.0080	0.0077

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Table 16 shows the results of the regression equation (9) for main sponsors. Cumulative abnormal returns for both $[-2, 2]$ and $[0, 1]$ event windows show significant and higher positive coefficients of 1.16% and 1.58% respectively, in case of victories. The defeat variable is positive and insignificant during event windows $[-2, 2]$ and $[0, 1]$, positive and significant at the 10% level at day $t=0$ and negative and significant at day $t=1$. To my knowledge there is no existing study that analyzes the effect of football results on main sponsors' stock price returns when accounting for the ex-ante probabilities.

Table 16. Impact on abnormal returns and cumulative abnormal returns when controlling for the ex-ante probabilities for main sponsor

The analysis is performed on 5 teams and 33 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, main sponsor and partners. Average abnormal returns are calculated using the market-adjusted return approach. The table reports the β estimates of the regression equation (9) for the event day $t=0$ and $t=1$ for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows for main sponsors. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.

Main sponsor (Main sponsor dummy=1)	Abnormal returns at event day $t = 0$	Abnormal returns at event day $t = 1$	CAR(-2,2)	CAR(0,1)
Win	0.91% (2.55)**	-0.17% (-0.76)	1.16% (3.84)***	1.58% (2.80)***
Defeat	0.73% (1.76)*	-0.44% (-1.70)*	0.39% (1.10)	0.62% (0.94)
Prob. Win	4.41% (1.62)*	1.67% (0.98)	4.28% (1.86)*	5.81% (1.36)
Prob. Defeat	5.97% (1.92)*	2.34% (1.19)	7.32% (2.77)***	9.58% (1.95)*
α	-4.53% (-2.16)**	-1.11% (-0.85)	-4.93% (-2.76)***	-6.62% (-2.00)**
N	612	612	612	612
R^2	0.0203	0.0081	0.0119	0.0144

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Table 17 captures the effect of a surprise win a surprise defeat for the stock price returns of main sponsors. The cumulative abnormal returns reflect significant and higher positive values in case of a surprise win and positive and insignificant results in case of a surprise defeat for both $[-2, 2]$ and $[0, 1]$ event windows. The test of equality between the coefficients can be rejected at the 1% level for $[-2, 2]$ and $[0, 1]$ event windows and for day $t=1$ and rejected at the 5% level for day $t=0$. To my knowledge there is no existing study that analyzes the effect of a surprise win or defeat on main sponsors' stock price returns when accounting for the ex-ante probabilities.

Table 17. Impact on abnormal returns and cumulative abnormal returns when controlling for the ex-ante probabilities for main sponsor

The analysis is performed on 5 teams and 33 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, main sponsor and partners. Average abnormal returns are calculated using the market-adjusted return approach. The table reports the β estimates of the regression equation (9.1) for the event day $t=0$ and $t=1$ for victories and defeats, as well as the cumulative abnormal returns for the $(-2, 2)$ and $(0, 1)$ event windows for main sponsors. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets. Fisher test results for the equality between the coefficients and the probability to reject the null hypothesis are reported.

Main sponsor (Main sponsor dummy=1)	Abnormal returns at event day t = 0	Abnormal returns at event day t = 1	CAR(-2,2)	CAR(0,1)
Surprise Win	0.99% (2.79)***	-0.15% (-0.66)	1.27% (4.22)***	1.72% (3.08)***
Surprise Defeat	0.60% (1.47)	-0.48% (-1.89)*	0.167% (0.48)	0.35% (0.54)
α	-0.189% (-1.36)	0.111% (1.29)	-0.26% (-2.22)**	-0.34% (-1.61)
Test H_0 :				
$\beta_{surprisewin} = \beta_{surprisedefeat}$				
F – stat	1.45	2.61	15.61	7.05
Prob>F	0.2289	0.1069	0.0001	0.0080
N	612	612	612	612
R^2	0.0129	0.0066	0.0085	0.0104

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

Overall, results are aligned with rational asset pricing as they confirmed stronger impact for outcomes that are unexpected under objective probabilities and support the view that football results are price sensitive information and that the stock market is semi-strong form efficient.

Hypothesis 3: Is there a difference in the stock price returns before and after the global financial crisis for the three match outcomes?

Table 18 analyzed the evolution of the stock price reactions to football results from before to after the financial crisis. The summary statistics showed for defeats a significant effect at the 1% level during all three periods and a descending evolution of the abnormal returns during the crisis with a comeback after the crisis for both event windows $[-2, 2]$ and $[0, 1]$. The draws revealed the same evolution with negative and significant effects only during and after the crisis for event window $[-2, 2]$ starting at the -0.008% before crisis (although insignificant), then continuing to drop to -1.40% during the crisis (significant at the 5% level) and reaching -0.62% after the crisis (significant at the 5% level). The effect of draws in the event window $[0, 1]$ starts with positive but insignificant abnormal returns before crisis (0.021%), continues with a strong decrease to negative levels but insignificant during the crisis (-1.85%) and slightly increases after the crisis but still remains at negative levels (-0.96%) and significant at the

10% level. The victories show positive and significant coefficients during the crisis and after the crisis when analyzing the CARs [-2, 2] and positive and significant coefficients only after the crisis when analyzing the CARs [0, 1]. Although there is significance for victories, the evolution of the returns is not as expected, as they actually increase during the crisis and drop again after the crisis. To my knowledge there is no existing study that analyzes the evolution of the sponsors' stock price returns as an effect of football performance from before to after the crisis.

Table 18. Cumulative abnormal returns before, during and after the financial crisis for the three match outcomes in the event windows [-2, 2] and [0, 1]

*The analysis is performed on 5 teams and 39 sponsoring companies, during 2003 – 2013 Champions League seasons. The matches are divided in two subsamples, main sponsor and partners. The cumulative abnormal returns for the (-2, 2) and (0, 1) event windows are reported for the three games outcomes and during each period. The period before crisis is defined as the period before 1 January 2008, the period during the crisis counts the years 2008 and 2009 and the period after the crisis starts with 1 January 2010. Statistically significance at the 1%, 5% and 10% level is indicated by respectively ***, **, *. The R^2 as well as the total number of observations (total number of matches played in the 2003-2013 Champions League seasons) are also reported. T-statistics are reported between brackets.*

		CAR(-2,2)	CAR(0,1)
Win			
	Before crisis	0.06% (1.06)	0.018% (0.20)
	During crisis	0.28% (1.78)*	0.37% (1.42)
	After crisis	0.183% (3.36)***	0.196% (2.15)**
Loss			
	Before crisis	-0.33% (-4.48)***	-0.42% (-3.31)***
	During crisis	-1.43% (-6.54)***	-1.69% (-4.52)***
	After crisis	-0.40% (-5.56)***	-0.47% (-3.98)***
Draw			
	Before crisis	-0.008% (-0.09)	0.021% (0.13)
	During crisis	-1.40% (-2.10)**	-1.85% (-1.47)
	After crisis	-0.62% (-2.31)**	-0.96% (-1.78)*

***1% significance level; **5% significance level; *10% significance level

Source: own calculations

7. Conclusions

This paper investigated whether the successful performance of the top five football clubs in England have a favorable effect (positive) and unsuccessful performance has an unfavorable (negative) on their sponsors' stock price returns. The results of the football teams during the UEFA Champions League competition were used in the analysis during the 2004/2005 to 2012/2013 seasons. The event study methodology was applied to test the results for days in the event windows $[-2, 2]$ and $[0, 1]$. The short event window was chosen to avoid overlapping as a consequence of small intervals of days between the football matches.

The results first confirmed the hypothesis according to which victories of the football clubs lead to positive abnormal returns for the clubs' sponsors and negative abnormal returns for defeats. The evidence is statistically significant in the first two days after the games for victories and negative in each day of the event window, with stronger statistical and negative effect in the next two days after the match. The abnormal returns following a game that resulted in a draw show negative effect with no significance throughout the days in the analyzed event window. The fact that the effect is captured in the next days following the game is explained by the time when the games are played, as some are played during the afternoon so the information is integrated in the next day's stock price.

Secondly, contrary to the Efficient Market Hypothesis (EMH), the results do not confirm a stronger effect during the knockout phases. The coefficients reflect significant and positive abnormal returns for victories although not higher than the returns during the group stage games and insignificant and positive abnormal returns for defeats in the overall sample. One possible explanation could be that more games between top teams are played during the group games than during the knockout phases and thus causing, contrary to our expectations, a higher effect during the group games. However, our hypothesis on main sponsors returns is confirmed by the positive and significant abnormal returns during event window $[-2, 2]$ with an amplified effect during the knockout stages.

A third finding relates to the congruence of the sponsor with the sports discipline and shows positive and higher abnormal returns for these companies in the event window $[0, 1]$. Further analysis reflects accentuated effects for these sponsors during the knockout stages and even stronger results when the congruent sponsor is also the main sponsor of the football club.

The second main topic researched in this paper is the effect of the football results on the stock price returns when the pre-game outcome expectation is controlled for and the effects of a surprise victory and a surprise loss. The victory-effect is significant in total sample and also for the knockout games. The effect is higher the less expected is the outcome. Our results revealed high coefficients for the probabilities of winning and losing compared to the win and defeat dummies which might be explained by the high variation in the implied probabilities extracted from the betting odds. Lastly, when analyzing the evolution of the effect of the three outcomes on sponsors' returns before, during and after the financial crisis, only the defeats showed a significant effect and a descending evolution of the abnormal returns until during the crisis, with a comeback after the crisis. The draws revealed the same evolution with negative and significant effects only during and after the crisis.

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Appendix

Table 19. Overview of match outcomes per sponsor

Sponsor	Team	Obs	Win	Loss	Draw	Win%	Loss%	Draw %
AIRTEL	ARSENAL	8	3	4	1	37.50%	50.00%	12.50%
CARLSBERG	ARSENAL	18	8	7	3	44.44%	38.89%	16.67%
INDESIT	ARSENAL	18	8	7	3	44.44%	38.89%	16.67%
LADBROKERS	ARSENAL	95	55	24	16	57.89%	25.26%	16.84%
NIKE	ARSENAL	95	55	24	16	57.89%	25.26%	16.84%
O2 (BT CELLNET)	ARSENAL	21	13	3	5	61.90%	14.29%	23.81%
SAMSUNG ELECTRONICS	ARSENAL	8	2	2	4	25.00%	25.00%	50.00%
ADIDAS	CHELSEA	74	43	15	16	58.11%	20.27%	21.62%
AUDI	CHELSEA	7	4	2	1	57.14%	28.57%	14.29%
BNI	CHELSEA	12	9	2	1	75.00%	16.67%	8.33%
DELTA AIRLINES	CHELSEA	6	3	2	1	50.00%	33.33%	16.67%
GAZPROM	CHELSEA	74	43	15	16	58.11%	20.27%	21.62%
HEINEKEN	CHELSEA	13	6	2	5	46.15%	15.38%	38.46%
PEPSI	CHELSEA	55	30	11	14	54.55%	20.00%	25.45%
SAMSUNG ELECTRONICS	CHELSEA	82	46	18	18	56.10%	21.95%	21.95%
THOMAS COOK GROUP	CHELSEA	6	3	2	1	50.00%	33.33%	16.67%
VIENTIN BANK	CHELSEA	3	2	1	0	66.67%	33.33%	0.00%
ADIDAS	LIVERPOOL	45	26	11	8	57.78%	24.44%	17.78%
CARLSBERG	LIVERPOOL	69	41	15	13	59.42%	21.74%	18.84%
MBNA	LIVERPOOL	69	41	15	13	59.42%	21.74%	18.84%
AIG	MANCHESTER UNITED	48	30	8	10	62.50%	16.67%	20.83%
AIRTEL	MANCHESTER UNITED	40	23	9	8	57.50%	22.50%	20.00%
AON	MANCHESTER UNITED	31	17	7	7	54.84%	22.58%	22.58%
BWIN	MANCHESTER UNITED	8	4	3	1	50.00%	37.50%	12.50%
CONCHA Y TORO	MANCHESTER UNITED	27	15	5	7	55.56%	18.52%	25.93%
KAGOME	MANCHESTER UNITED	6	2	3	1	33.33%	50.00%	16.67%
KANSAI PAINT	MANCHESTER UNITED	2	0	1	1	0.00%	50.00%	50.00%
MAMEE	MANCHESTER UNITED	14	6	4	4	42.86%	28.57%	28.57%
MBNA	MANCHESTER UNITED	93	54	17	22	58.06%	18.28%	23.66%

NIKE	MANCHESTER UNITED	93	54	17	22	58.06%	18.28%	23.66%
SAUDI TELECOM	MANCHESTER UNITED	50	27	9	14	54.00%	18.00%	28.00%
SEIKO EPSON	MANCHESTER UNITED	24	13	5	6	54.17%	20.83%	25.00%
TELEKOM MALAYSIA	MANCHESTER UNITED	31	17	7	7	54.84%	22.58%	22.58%
THOMAS COOK GROUP	MANCHESTER UNITED	38	21	9	8	55.26%	23.68%	21.05%
TURK TELEKOM	MANCHESTER UNITED	8	4	3	1	50.00%	37.50%	12.50%
VODAFONE	MANCHESTER UNITED	18	9	4	5	50.00%	22.22%	27.78%
AUTONOMY	TOTTENHAM	12	6	4	2	50.00%	33.33%	16.67%
INVESTEC	TOTTENHAM	12	6	4	2	50.00%	33.33%	16.67%
PUMA	TOTTENHAM	12	6	4	2	50.00%	33.33%	16.67%
TOTAL		1345	755	305	285	51.76%	27.09%	21.04%

Source: own analysis

Table 20. Summary of main research papers on the topic

Source	Main findings	Location	Period of Study	Events
Clark et al. (2002)	Negative relationship between brand size and abnormal returns around sponsorship announcement	US	1985/2000	Corporate stadium sponsorships in the NFL, the NBA, the NHL and the MLB
Pruitt et al. (2004)	- Negative effect of cash flows on abnormal returns around sponsorship announcements - No significant effect between brand size and abnormal returns	US	1995/2000	NASCAR
Cornwell et al. (2005)	- Major league official sponsorship announcements were accompanied by economically and statistically significant increases in shareholder wealth - Companies that are congruent with the sponsored sport faced positive stock returns after the sponsorship announcement - High tech companies were associated with stronger stock price reactions	US	1990/2003	Official product sponsorship: NFL, MLB, NHL, NBA, PGA

Clark et al. (2009)	- Evidence of increases in share prices after the title sponsorship announcement (for NASCAR races) - Positive share price reactions are correlated with sponsorships offered by congruent companies, high tech companies and large companies	US	1990/2004	Title sponsorships in the PGA, LPGA, tennis tournaments, NASCAR races and NCAA bowl games
Renneboog and Vanbrabant (2000)	- Positive abnormal returns for the football clubs listed on LSE and AIM on the first trading day after a victory of the football clubs - Negative abnormal returns for the football clubs listed on the LSE and AIM on the first trading day after a defeat and a draw of the football club	UK	1992/1997	English, Scottish, Cup and European Competitions
Riberiro (2001)	No relation between football teams' performance on the Portugal's stock market index	Portugal	Not available	Not available
Cornwell et al. (2001)	The drivers' sponsors that have products closely linked to the automotive industry registered increases in their stock price return around the drivers' victory time	US	1962/1998	Indianapolis 500 mile races
Mishra et al. (1997)	Positive impact on the stock market as a result of corporate sponsorship announcement	Not available	1986/1995	Not available
Ashton et al. (2003)	Good (bad) performances by national teams are followed by good (bad) FTSE100 index returns	UK	1984/2002	Not available
Ramezani et al. (2012)	Positive stock price reactions after a good performance of the four Iranian teams and negative reactions in case of bad performance. The results showed different intensity for each sponsor	Iran	2009/2012	UEFA Champions League Games
Hanke and Kirchler (2013)	- Positive abnormal returns after matches with both teams sponsored by the same company with stronger impact during the knockout games - Negative abnormal returns after defeats with stronger impact during the knockout games - Higher impact when an unexpected outcome occurs	Not available	1996/2008	European and World Championships
Astika et al. (2010)	Football results do not influence the Dutch stock market	Dutch Stock Market	1986/2010	World Cup and Europa Cup

Edmans et al. (2007)	- National teams' defeats translate into the country's national stock market index returns with an amplified effect during the elimination rounds - Smaller effect for rugby, cricket and basketball games but still significant - Demonstrate that the negative returns are due to football results by controlling for the pre-game expected outcome - Wins do not have an impact on stock returns	Not available	1973/2004	World Cup, European Championships, Copa America, Asian Cup
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Source: own summary