ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Master Thesis [programme Financial Economics]

The impact of unexpected match outcomes, transfers and controversies on European football stock prices.

Name student: Sam Roelen

Student ID number: 529736

Supervisor: R. Kouwenberg

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Abstract

This research investigates the industry-specific factors driving the stock performance of football clubs. Through event studies, this study reveals a significant positive relationship between the unexpected outcomes of national league matches and the club's stock price. This suggests that surprising match results serve as a signal to investors, potentially influencing sentiment, and the valuation of the club. Contrarily, the study does not show any statistically significant relationship between football clubs' stock performances and the unexpected cashflow after signing or selling a player. Furthermore, it was observed that in general, controversial news articles surrounding a football club do not have any significant impact on the club's stock performance. However, the results show that in some cases the stock price reacts strongly to a controversial news event. This can be either a positive shock or a negative shock. The findings of this research advance our understanding of the interplay between matches, player transfers, controversies, and their effects on the stock performance of European football clubs. The findings show that investors should keep an eye on match programmes, win probabilities, country indices and cases around controversial news.

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Introduction

Manchester United's share price rose sharply due to takeover rumours, Juventus' share price dropped because of an accounting probe, Ajax's share price increased strongly during their successful Champions League campaign in 2018-2019 and both Juventus and Manchester United's share prices were affected by superstar Cristiano Ronaldo's transfer between the two clubs. This made me wonder what the most important determinants of the share prices of listed football clubs are. In the past there has been some research that investigated the effect of sportive performance on a club's share price (Demir and Danis, 2011), (Bell et al., 2012), (Godinho and Cerquiera, 2018), (Edmans et al., 2007), (Benkraiem et al., 2009). There has also been some research on the relationship between player transfers and football clubs' stock returns (Fűrész and Rappai, 2022), (Fotaki et al., 2007), (De Bakker, 2016). I want to extend the existing literature by looking into more football clubs and a longer time period. In addition, I will analyse the effect of controversial news events surrounding the club. The insights of this paper will help investors because the results will show what the most important determinants of football clubs' share prices are. Investors will learn which factors they need to investigate and what news they need to follow when they consider investing in football clubs.

More specifically, I will analyse the relationship between different factors and the stock prices of football clubs. I will focus on the influence of unexpected match outcomes, unexpected cash flows due to transfers, and controversial news events around the club. This research contributes to the literature by giving insights into the most important determinants of football clubs' stock returns and by informing investors what factors and news events to monitor when they consider investing in stocks of football clubs. The findings could lead to investments based on match expectations and transfer rumours as those might influence a club's stock returns.

Related Literature

There have been a few researchers that investigated the determinants of football clubs' stock prices. Gimet and Montchaud (2016) are among those researchers as they performed a panel-

data study to investigate the determinants of European football clubs' stock performances. Their research shows that stock returns mainly depend on traditional financial elements underlined in the general literature. More specifically, a series of internal variables of a financial type such as profit and capitalization and reputation, measured by stadium attendance, play an important role. Hagen and Cunha (2019) show that investing in stocks of football clubs historically led to low returns while taking a lot of risk. However, they show that the attractiveness of investing in football stocks has increased in recent years. They find it difficult to predict which off-field factors affect football clubs' stock prices. According to them, match results is the best factor to explain the stock price. In addition, there are some indications that revenue and book value of equity growth have a positive impact on the stock price. Player transfers have also led to abnormal returns and losses to the clubs' market values in the past. Maci et al. (2020) investigate the impacts of sporting and financial performances on stock prices of European football clubs over the period from 2012 until 2017. They find that match results have a significant impact on a club's stock price. However, they highlight that not only competitive results but also balance sheet variables clearly influence the stock price. The economic performance and the total assets show a positive relationship on the stock prices. They point out that for a football club to perform well on the stock market, it is necessary to perform well on the field but also compromise the managerial balance.

There have been some researchers that focussed on the effects of sportive performances on the clubs' stock prices. To control expectations, betting odds are often included in such analyses. Demir and Danis (2011) find that national match results affect abnormal returns of Turkish football clubs and that there is an asymmetric stock market reaction to both wins and losses. Their results also indicate that a win in a European cup does not affect the stock price. Bell et al. (2012) examine the impact of league point surprises and goal surprises on the stock prices of English football clubs. Their main finding is that unexpected results affect the stock price, but the impact is modest compared to the impact of other variables like the market index. Godinho and Cerquiera (2018) also find a significant relationship between match results and the stock performance when analysing the national league matches of thirteen European football clubs. Benkraiem et al. (2009) reveal the presence of abnormal returns around match dates by performing an event study. Their findings show that wins do not influence the stock price, but losses and draws do, especially when playing at home. They

explain their findings by referring to the allegiance bias (Edmans et al., 2007) which means that a significant proportion of investors are also supporters who expect their team to win. When this does not happen, the market punishes the club for a loss by selling their shares on the next day.

Some other studies focussed on the effect of player transfers on the football clubs' stock price. Fotaki et al. (2007) investigated football transfers in the UK from a human resource perspective. Their results show that player and manager transfers have a significant but varying impact on the stock price. De Bakker (2016) finds that stock prices react positively to both acquiring and selling players. The strength of the relationship between transfers and the stock price increases with the amount of money the club receives for selling a player. In addition, he finds that buying a younger or older player instead of a middle-aged player is followed by a decreasing stock price. No effects were found concerning loan deals, neither for players joining nor leaving the club temporarily. In addition, De Bakker (2016) finds that the effect is different when a player is bought from a team playing in the biggest five leagues or from a team that became champions the year before. Fűrész and Rappai (2022) analysed the effect of 272 player purchases between 2015 and 2019 on the clubs' stock price. In most cases, the stock price reacted to the transfer announcement. Moreover, in about two-thirds of the transactions, the stock price reacted before the official announcement, which shows that there was information leakage in the football transfer market.

Theoretical framework and hypotheses

The main research question that I tried to answer with this study is as follows:

By which factors are the stock prices of European football clubs influenced during the 21st century?

To answer this research question, I formulated several hypotheses. Winning matches is expected to increase the stock price of a football club because winning leads to more prize money. That is the direct effect. Indirectly, winning contributes to more media attention and

increased tickets and merchandise sales. Therefore, winning matches usually increases earnings and therefore the value of the club. The opposite is expected to be true for losing matches.

Fama (1970) defines an efficient market as a market that always fully reflects all available information. Markets with semi-strong efficiency reflect all publicly available information and markets with strong-form efficiency reflect all information, including private information. This suggests that only new information will impact the share price. With new information, we mean information that is different from prior expectations. Expectations of match outcomes are already incorporated into the market price. I will control for expected match outcomes by incorporating betting odds into my research.

Single league matches do not decide how high a club will end in that season's league, instead, a club's final position is decided by all league matches the club plays within that season. The outcome of one single league match is not tied directly to earnings. However, all results together influence the prize money the club will earn. Winning a cup match, international match, or promotion/relegation match directly earns the club prize money whereas winning a regular league match has way less influence on the club's earnings. It is interesting to research whether the match outcome of a national league game has any significant impact on a football club's stock price despite the small contribution to the club's success and final league position. To analyse whether a match result's effect on the stock price is larger when a win comes unexpectedly, I incorporate betting odds and winning probabilities into my research to measure the unexpected performance of a football club. I will analyse how the club's stock price reacts to the club obtaining more or less points than expected during a match. The first hypothesis is as follows:

Hypothesis 1: The number of unexpected match points is expected to have a significant positive impact on a European football club's stock price in the period from 2000 until 2023.

When a club buys a new player, it needs to pay a transfer fee in return for the player rights. Player transfer values are estimated by experts and these player value estimates are available since 2004/2005. When comparing the estimated value of the transferred player to the actual

transfer fee, it is expected that the stock price is influenced by the difference between the two values. If a club pays more than the player is worth, the stock price is expected to decrease whereas if a club pays less than the player value, the stock price is expected to increase. The opposite is expected to be true when a club sells a player. In this case it would make sense that the club's stock price increases after they receive a transfer fee that is higher than the player's estimated market value.

Hypothesis 2: The unexpected cash flow due to transfers is expected to have a significant positive impact on a European football club's stock price in the period from 2004 until 2023.

Share prices of football clubs are expected to react to controversial news events about the club. Scandals and controversial events like corruption or match-fixing are expected to harm the share price because such events cause bad publicity and possibly monetary or sportive sanctions. It can even have consequences such as being excluded from European football or being relegated to a lower league.

Hypothesis 3: Controversial news events surrounding a football club are expected to have a significant negative impact on a European football club's stock price in the period from 2000 until 2023.

Stocks tend to move in the same direction as their respective market indices, since this reflects the influence of macroeconomic and market-wide factors. When the market crashes due to a crisis, it is expected that the stock price of the football club falls as well. To capture this market risk factor, I will also analyse the relationship between the country index returns and the club's returns.

Hypothesis 4: Country index returns are expected to have a significant positive impact on a European football club's stock price in the period from 2000 until 2023.

Data

Currently, 23 European football clubs are listed on a public stock exchange. These are the following: Ajax, Manchester United, Juventus, S.S. Lazio, Borussia Dortmund, Celtic, SL Benfica, Sporting Lisbon, FC Porto, Sporting Braga, Olympique Lyonnais, Fenerbahçe, Galatasaray, Besiktas, Trabzonspor, Silkeborg, Brondby, FC Copenhagen, Aalborg, Aarhus GF, AIK Football, Ruch Chorzow, and Teteks ad Tetovo. Of these football clubs 5 are Danish, 4 are Turkish, 4 are Portuguese, 2 are Italian, 1 is English, 1 is French, 1 is Dutch, 1 is Scottish, 1 is German, 1 is Swedish, 1 is Polish and 1 is Macedonian.

Some other football clubs were traded on a public stock exchange but were later delisted. AS Roma and Rangers FC are examples of this. Several English football clubs were delisted as well. Incorporating delisted stocks into my research would have enriched the depth and validity of my analysis. Regrettably, the information about these formerly traded stocks was often inaccurate or unavailable. Trying to include such stocks in my research would have made the results less reliable and therefore I have chosen to focus on currently traded stocks only.

To test the different hypotheses, different types of data were needed. Most importantly, I needed daily returns of the stocks of the listed football clubs. I downloaded the percentage changes of the closing prices from the Refinitiv Eikon Datastream database. This is the most important data since the total daily stock returns form the basis of my analysis since they are the dependent variable in all analyses.

Additionally, daily index returns were collected to serve as control variables. The indices represent the stock market of the clubs' respective countries. For Ajax I used the AEX, for Borussia Dortmund the DAX, for Olympique Lyonnais the CAC 40, for Manchester United and Celtic I used the FTSE 100, for Juventus and S.S. Lazio I chose the FTSE MIB, for the Danish clubs I chose the OMX Copenhagen 20, for the Portuguese teams the PSI 20, for AIK Football the OMX Stockholm 30 and for the Turkish clubs I chose the BIST 100.

To test the relationship between sportive performance and stock returns, I acquired data on match results and betting odds. I used the data from Football-data.co.uk for this. I focussed on national league matches because they have a consistent sportive impact. National league matches have a universal weight as each win is worth three points for the seasonal championship. This uniform importance of a match result allows for a more insightful comparison between expected and unexpected results. On the other hand, cups and international tournaments use a knock-out system where football clubs earn prize money for each round they advance in the tournament. International matches and cup matches are less interesting to analyse because winning a Champions League (main European tournament) match for example directly influences the club's value because of the earned prize money. In addition, players become worth more when performing well in European games due to increased media attention. Furthermore, supporters buy more of the club's merchandise and ticket sales might increase. These consequences make the effect on the club's stock price quite straightforward since this increase in club value is reflected in the stock price. For this reason, I decided to prioritize the analysis of national league games as the data is more consistent and the effects less straightforward.

To test the relationship between player transfers and stock returns, I needed data on transfer fees and transfer dates. To give more meaningful insights I included players' estimated values on the day of the transfer announcement. The primary data source for transfer information is Transfermarkt.nl, so this is where I found transfer fees, estimated player values and most transfer dates. Transfermarket.nl uses contract dates as the transfer date, but transfers are often announced before the transfer market officially opens. Contracts therefore often start at 1st January or 1st July as these are usually the first dates that the transfer market is officially open. To analyse the effect of transfers on the stock returns, it is essential to have access to the date on which the transfer was first officially announced by the selling or buying club. If the reported transfer date on Transfermarkt.nl is either the first or last day of a month, this is often the case because the contract starts or expires on that date. If this was the case, I used the dates that were reported by the football clubs themselves or by the main sports pages such as Sky Sports, Eurosport and UEFA.

If the transfer announcement date was not entirely clear, I excluded the transfer from the dataset. I excluded loan signings since these are no permanent transfers of players and the transfer rights of the player do not change when being loaned to a different club. I decided to focus on player transfers with clear deal structures. Sometimes clubs share the transfer rights of a player with another club. If this was the case, the transfer was excluded from the dataset as well. Lastly, clubs regularly loan a player with an option or obligation to buy the player for a specific amount of money. If it is not entirely clear when the loan deal was converted into a permanent deal, the transfer was excluded from the dataset as well.

When a listed football club dealt with an outgoing transfer, only transfers with a transfer fee of more than 1 million euros were included because I noticed that for players with a transfer fee between 0 and 1 million euros, the transfer announcement dates are less accurate due to less media attention and lower importance. When a player leaves the club on a free transfer the buying club does not pay a transfer fee to the selling club. This usually means that the player's contract ran out and that it was already obvious that the player's contract was going to run out and that the player was going to leave the club. For this reason, it is not interesting to include these transfers into my dataset. On the other hand, when a listed football club signed a new player on a permanent deal, these transfers were included in the dataset, also the ones that were signed on a free transfer because the fact that a player's contract was running out did not tell anything about the player's new destination.

For the analysis about the relationship between controversial news events and the stock price performance, I searched several databases on the internet and searched for the club's name together with certain search terms such as "controversy", "scandal", "court case", "drug", "resign" and "protest". When I found negative articles about the club, I did some further research on the topic and noted when the news was first published. This date was then used as the event date.

Unfortunately, there was very little to no data available about Silkeborg, Ruch Chorzow and Teteks ad Tetovo, so therefore these three clubs are excluded. This leaves me with 20 European football clubs that are listed on a public stock market and have enough data available for the analysis about sportive performance. Due to data availability and accuracy, I

only included ten football clubs in the analysis about transfers and scandals. The required data was available for Ajax, Manchester United, Borussia Dortmund, Olympique Lyonnais, Juventus, S.S. Lazio, Celtic, FC Porto, SL Benfica and Sporting Lisbon.

Methodology

If a football club is expected to win a match and it does so, I do not expect that the stock price of the football club is heavily influenced by the match result. However, when a club wins or loses unexpectedly, the stock price might be influenced by the match outcome. To measure the effect of sportive performance on a club's stock price performance, I calculated the club's unexpected result of the match. First, the expected result was calculated. I did this by first dividing 1 by the decimal betting odds of winning, losing and drawing. This gave me the implied probabilities. Then I divided the implied probabilities by the sum of the three implied probabilities in order to get to the actual probabilities of winning, losing or drawing the match. Lastly, I multiplied the probability of winning by 3 for the number of points a win earns a club and added the probability of drawing to this since a draw earns a club 1 point. To get to the unexpected number of points, the number of expected points is subtracted from the obtained number of points.

So, for example if a club played at home and the betting odds for home, draw and away are 1.60, 4 and 6 respectively, the implied probabilities are 1/1.60 = 0.625, 1/4 = 0.25 and 1/6 = 0.167. The sum of implied probabilities is then 1.042. The winning probabilities are then 0.625/1.042 = 0.6, 0.25/1.042 = 0.24 and 0.167/1.042 = 0.16. The expected number of points is then 0.6 x 3 + 0.24 x 1 = 2.04. So if the team wins, the unexpected outcome equals 3 – 2.04 = 0.96, if the team draws the unexpected outcome equals 1 – 2.04 = -1.04 and if the team loses the unexpected outcome equals 0 – 2.04 = -2.04.

To analyse the effect of the unexpected result on the stock price, I used an event study methodology. I analysed the first day following a football match. If no match was played the unexpected outcome for the next trading day is set to 0.

My regression equation looks as follows:

$$R_{i,t}^{0} = \alpha_i + \beta_1 UR_{i,t} + \beta_2 R_{cmi,t} + \beta_3 M_{i,t} + \beta_4 D1_t + \beta_5 D2_t + \beta_6 D3_t + \beta_7 D4_t + \varepsilon_{i,t}$$

$R_{i,t}^{0}$ = The daily return of football club i at time t in percentages

α_i = The constant

β = The regression coefficient / slope of the respective variable

$UR_{i,t}$ = Unexpected result in number of points

$R_{cmi,t}$ = The daily return of club i's country market index at time t in percentages

M_t = Dummy variable that equals 1 if this is the first trading day after club i played a match.

$D1_t$ = Dummy variable that equals 1 if it is a Monday, and 0 otherwise

$D2_t$ = Dummy variable that equals 1 if it is a Tuesday, and 0 otherwise

$D3_t$ = Dummy variable that equals 1 if it is a Wednesday, and 0 otherwise

$D4_t$ = Dummy variable that equals 1 if it is a Thursday, and 0 otherwise

$\varepsilon_{i,t}$ = Error term

Dummy variables are used to eliminate day-of-the-week effects (Edmans et al. 2007). This helps to mitigate potential confounding effects. The use of robust standard errors accounts for potential heteroscedasticity in the data. The index returns of the club's country index are incorporated into the regression model to control for the local market trends. I performed this regression analysis for each of the 20 clubs separately. In addition, I did a regression for all clubs together. For that last regression I added dummy variables for each club to account for the different effects between the clubs.

For the second part of my analysis, I focussed on the 10 clubs with enough data about transfers and controversial news events.

To calculate the unexpected cash flow due to transfers I used the player's estimated transfer value at the time of transferring and the actual transfer fee. If a club transferred a player in (bought the player), the player's estimated value is seen as cash inflow, and the actual transfer

fee is seen as cash outflow. If a club sells a player, it is the other way around, meaning that the transfer fee is seen as cash inflow and the estimated player value is seen as the cash outflow. The club's unexpected cash flow is calculated by subtracting the cash outflow from the cash inflow.

For example, if a club pays a transfer fee of 70 million euros to buy a player with an estimated transfer value of 50 million euros, the cash inflow is 50 million euros, the cash outflow is 70 million euros, and the unexpected cash flow is 50 - 70 = -20 million euros. In another scenario, where the club sells one of its players whose estimated transfer value is 50 million euros and they receive a transfer fee of 70 million euros for him, the cash inflow is 70 million euros, the cash outflow is 50 million euros, and the unexpected cash flow is 70 – 50 = 20 million euros.

To analyse the effect of transfers on the stock price, I incorporated unexpected cash flows due to transfers into the regression model. This is measured in millions of euros. If several transfers were announced on the same day, the sum of unexpected cash flows was used for the analysis. A dummy variable which equals 1 if it is the first trading day after a transfer and 0 otherwise was added to the regression model as well.

It could be the case that transfer rumours already influence the stock price before the transfer is officially announced. To see whether this is the case, I added two other variables to the model. One includes the unexpected cash flow of the next trading day and the other includes the unexpected cash flow of the next five trading days. For those two variables I also added dummy variables that equal 1 if a transfer was announced on the following day or during the following five days.

Moreover, I added a dummy variable which equals 1 if it is the first trading day after a controversial article was published concerning a scandal, protest, court case, etc., and 0 otherwise.

If the news is announced while the market is open, the dummy would be one day late. Therefore, the lag of this variable was added to the model as well.

The regression model looks the following for the second part of my analysis:

$$R_{i,t}^{0} = \alpha_i + \beta_1 UR_{i,t} + \beta_2 R_{cmi,t} + \beta_3 UCF_{i,t} + \beta_4 UCF1_{i,t} + \beta_5 UCF5_{i,t} + \beta_6 CN_{i,t} + \beta_7 CN1_{i,t} + \beta_8 M_{i,t} + \beta_9 TR_{i,t} + \beta_{10} TR1_{i,t} + \beta_{11} TR5_{i,t} + \beta_{12} D1_t + \beta_{13} D2_t + \beta_{14} D3_t + \beta_{15} D4_t + \varepsilon_{i,t}$$

$UCF_{i,t}$ = Club i's unexpected cash flow, recorded on the first trading day following its announcement, measured in millions of euros

$UCF1_{i,t}$ = The unexpected cash flow that is recorded on the following trading day

$UCF5_{i,t}$ = The sum of the unexpected cash flows that are recorded during the following five trading days

$CN_{i,t}$ = Dummy variable that equals 1 if this is the first trading day after a controversial news article was published about club i, and 0 otherwise

$CN1_{i,t}$ = Dummy variable that equals 1 if the next trading day is the first trading day after a controversial news article was published about club i, and 0 otherwise

$TR_{i,t}$ = Dummy variable that equals 1 if today was the first trading day after a transfer announcement, and 0 otherwise

$TR1_{i,t}$ = Dummy variable that equals 1 if the next trading day was the first trading day after a transfer announcement, and 0 otherwise

$TR5_{i,t}$ = Dummy variable that equals 1 if one of the next five trading days was the first trading day after a transfer announcement, and 0 otherwise

Results

Unexpected results

Table 1: Regression unexpected results

The table below presents the results of the regression analysis examining the relationship between unexpected match results and country index returns and the stock market performance of football clubs. The analysis is based on data from 20 football clubs over the period 2000 to 2023.

Return	Coefficient	Robust Standard error	t	P > l t l
Unexpected result	0.7954083	0.284382	27.97	0.000***
Index return	0.3400129	0.0089791	37.87	0.000***
Match	-0.3771413	0.0461383	-8.17	0.000***
Ajax	0.0445327	0.0665661	0.67	0.503
Manchester United	0.071732	0.0723711	0.99	0.322
Borussia Dortmund	0.0358698	0.0675331	0.53	0.595
Olympique Lyonnais	0.0221224	0.0686818	0.32	0.747
Juventus	0.0303913	0.0690356	0.44	0.660
S.S. Lazio	0.0403793	0.0776996	0.52	0.603
Celtic	0.0181596	0.0630237	0.29	0.773
SL Benfica	0.0902549	0.0883124	1.02	0.307
FC Porto	0.0764223	0.0814818	0.94	0.348
Sporting Lisbon	0.1113493	0.0875999	1.27	0.204
Sporting Braga	0.2798989	0.1088599	2.57	0.010***
Galatasaray	0.0758544	0.0740031	1.03	0.305
Fenerbahce	0.0888751	0.0732034	1.21	0.225
Trabzonspor	0.0843992	0.0761214	1.11	0.268
Besiktas	0.132361	0.087557	1.51	0.131
FC Copenhagen	0.0158498	0.0667889	0.24	0.812
Aarhus	0.0363202	0.0836947	0.43	0.664
Brondby	0.002434	0.0773171	0.03	0.975
AIK	0.0478366	0.0869127	0.55	0.582
Monday	0.0084982	0.0438241	0.19	0.846
Tuesday	-0.2001699	0.0335499	-5.97	0.000***
Wednesday	-0.156807	0.0349978	-4.48	0.000***
Thursday	-0.1181877	0.0319441	-3.70	0.000***
Constant	0.108881	0.0626461	1.74	0.082*

The results in Table 1 show the impact of unexpected match outcomes and country index returns on the football clubs' returns. The regression includes all 20 clubs in the dataset and covers the period from 1-1-2000 until 30-6-2023.

From the regression results in Table 1, it is obvious that the stock price of the football clubs is strongly correlated with the unexpected match results and country index returns, since both variables have a p-value of 0.000 meaning that the null hypothesis of no relationship can be rejected even at the 1% significance level.

For every unexpected match point that a club obtains, the next trading day's stock return increases with an average of 0.80. percentage points. There is no single club that significantly influences the average return since none of the p-values of the clubs' dummy variables are significant. This is somewhat interesting since I also did the same regression analysis for each of the clubs separately. In those separate analyses the clubs showed very different coefficients for the unexpected result. Out of 20 clubs, 16 had p-values of less than 0.01 for the unexpected result, meaning that for those clubs the null hypothesis of no relationship between the unexpected result and the stock return can be rejected. For one club, FC Porto, the null hypothesis could not be rejected at the 1% level but could be rejected at the 5% level. FC Porto was the club where the coefficient for the unexpected result was the lowest, with an increased return of 0.28 percentage points per unexpected point. The unexpected coefficients of Manchester United, Celtic and SC Braga were not even significant at the 10% level. The coefficient for the unexpected result was highest for Brondby with an increased return of 1.68 percentage points per unexpected point.

For every percentage point that the country index return increases, the club's return increases with an average of 0.34 percentage points. When analysing the clubs separately, I found that only SC Braga's stock return does not have a significant relationship with its country index return. All other clubs show a significant relationship with their respective country index on a 1% significance level. This relationship is the weakest for Celtic which sees its stock return increase by only 0.05 percentage points when the FTSE 100's return increases by 1 percentage point. The strongest relationship is found at Besiktas who sees its stock return increase by 0.60 percentage points per percentage point that the BIST 100 increases.

Unexpected cash flows due to transfers

In the second part of the analysis unexpected cash flows due to transfers and controversial news articles were incorporated into the regression model. The regression results of this analysis are presented in Table 2.

Table 2: Regression controversies and unexpected cash flows due to transfers

The table below presents the results of the regression analysis examining the relationship between unexpected match outcomes, unexpected cashflows due to transfers, controversies and country index returns and the stock market performance of football clubs. The analysis is based on data from 10 football clubs over the period 2000 to 2023.

Return	Coefficient	Robust Standard error	t	P > I t I
Unexpected result	0.6463231	0.0350296	18.45	0.000***
Index return	0.2794554	0.0130081	21.48	0.000***
Unexpected cashflow	-0.0077996	0.0078762	-0.99	0.322
Unexpected cashflow t=1	0.0083995	0.0084656	0.99	0.321
Unexpected cashflow t=1-5	-0.0001562	0.0038031	-0.04	0.967
Controversial news	0.1399095	0.4504033	0.31	0.756
Controversial news t=1	0.0007895	0.4550607	0.00	0.999
Match	-0.1988333	0.0545891	-3.64	0.000***
Transfer	0.0059686	0.0786127	0.08	0.939
Transfer t=1	0.126037	0.09214	1.37	0.171
Transfer t=1-5	0.0104556	0.0506846	0.21	0.837
Manchester United	0.0232532	0.047667	0.49	0.626
Borussia Dortmund	-0.0097895	0.0400505	-0.24	0.807
Olympique Lyonnais	-0.0284091	0.0416664	-0.68	0.495
Juventus	-0.0177246	0.0423834	-0.42	0.676
S.S. Lazio	-0.0064599	0.0553632	-0.12	0.907
Celtic	-0.028066	0.0313915	-0.89	0.371
SL Benfica	0.0424528	0.069662	0.61	0.542
FC Porto	0.0328301	0.0605472	0.54	0.588
Sporting Lisbon	0.0664102	0.0685216	0.97	0.332
Monday	-0.0851578	0.0539391	-1.58	0.114
Tuesday	-0.1612983	0.044393	-3.63	0.000***
Wednesday	-0.1567756	0.0422582	-3.71	0.000***
Thursday	-0.0782679	0.0429376	-1.82	0.068*
Constant	0.1317714	0.0386007	3.41	0.001***

From the results in Table 2, it can be concluded that for the 10 clubs in the dataset, each unexpected point increases the next trading day's return by 0.65 percentage points. This is 0.15 percentage points lower than we saw in the earlier model that contained 20 clubs but did not include data about transfers or controversial news. The p-value of the unexpected result is 0.000 again meaning that the null hypothesis of no relationship can be rejected at the 1% significance level.

In addition, we see that neither unexpected cash flows due to transfers nor controversial news events significantly impact the club's next trading day's return. The p-values are 0.322 and 0.756 respectively.

There is no significant effect of the unexpected cash flow in the days before a transfer is officially announced either. The p-values of the unexpected cash flows are 0.321 and 0.967 for the one day and the 5 days before a transfer announcement.

When considering the regression results of the individual analyses for each club, some significant results are found. There are no clubs where the unexpected cash flow has a significant effect on the next day's stock return, but there are some clubs that see significant effects in the leadup to a transfer.

S.S. Lazio is the only club to see a significant effect of the unexpected cash flow that is recorded on the following trading day. The stock return increases by 0.10 percentage points per unexpected million euros in cash flow. This effect is significant on a 5% significance level but not on a 1% significance level.

There are 4 clubs to show a significant effect during the five-day-period before a transfer is announced. The effect is negative for Juventus and S.S. Lazio, with decreasing stock returns of 0.01 and 0.03 percentage points per million euros respectively. Celtic sees an increasing stock return of 0.05 percentage points per million euros. The effects for Juventus, S.S. Lazio and Celtic are only significant on a 10% significance level. The only club to show a significant effect on the 1% significance level is Borussia Dortmund, with an increased stock return of 0.02 percentage points per million euros of unexpected cash flow.

Controversial news events

Table 2 also tells that controversial news events do not have any significant effect on the following trading day's stock return. The p-value of the dummy variable that equals 1 if today is the first trading day after a controversial news event is 0.756. The p-value for the dummy variable that equals 1 if the next trading day is the first trading day after a controversial news event is 0.999.

If we look at the clubs individually again, there are some significant relationships between the stock returns and controversial news events. The regression results for Ajax show a decrease in stock return of 1.25 percentage points on the day after a news event was published. This relationship is significant on a 1% significance level. FC Porto shows an even stronger decrease on the day after a controversial event, namely a decrease of 1.93 percentage points, being significant on a 5% significance level. The only club that sees an increasing stock return after controversial news events is Manchester United. Its stock return increases by 2.08 percentage points with the relationship significant on a 10% level.

There are two clubs whose stock returns show a significant relationship with the dummy variable that equals 1 if the next trading day is the first day after a controversial article was published. These clubs are FC Porto and Borussia Dortmund. The first sees its stock return increase by 2.73 percentage points whereas the latter sees its stock return decrease by 4.13 percentage points in the leadup to a controversial event. Both relationships are significant only at a 10% significance level.

When looking into more depth into the types of controversies, I find that events such as fan protests, being fined by UEFA, and individual player issues, do not lead to strong reactions in the stock market. However, for other controversies, such as creating a new competition, board members leaving the club, point deductions and exclusion from European competitions, the club's stock price sometimes reacts strongly.

The announcement of the European Super League competition, a proposal which almost all football fans in Europe opposed, saw potential participants Manchester United and Juventus'

stock prices shoot up due to the increased money streams that would go hand in hand with the new competition. Juventus' stock price rose nearly 18% whereas that of Manchester United rose almost 7%.

Another controversial event that led to several price increases is the resignation of board members or presidents. Manchester United, SL Benfica and Sporting Lisbon saw relatively high increases in their stock price after the board left. On the other hand, Ajax saw its stock price decrease after the board left, so the reaction is not always in the same direction.

One of the most well-known football scandals is known as Calciopoli which took place in 2006. Juventus and S.S. Lazio were among other clubs involved. The clubs were penalized after they were found guilty of colliding and having connections with top officials and referees in the Italian Football Federation. There were many allegations around manipulation of match outcomes. Juventus' titles were taken away, and they were also relegated to the second division. During the period when this scandal took place, both Juventus and Lazio's stock prices went in all directions. Some days saw huge increases whereas others saw tremendous decreases in stock prices. When new news came out or a new court case was coming up or the verdict was coming out, investors started buying or dumping their stocks again which led to a very volatile period. In Figure 1 and Figure 2 the stock prices of both clubs are presented over the period from February 2006 until February 2007, and it can indeed be seen that there are several strong price increases and decreases because of the scandal.

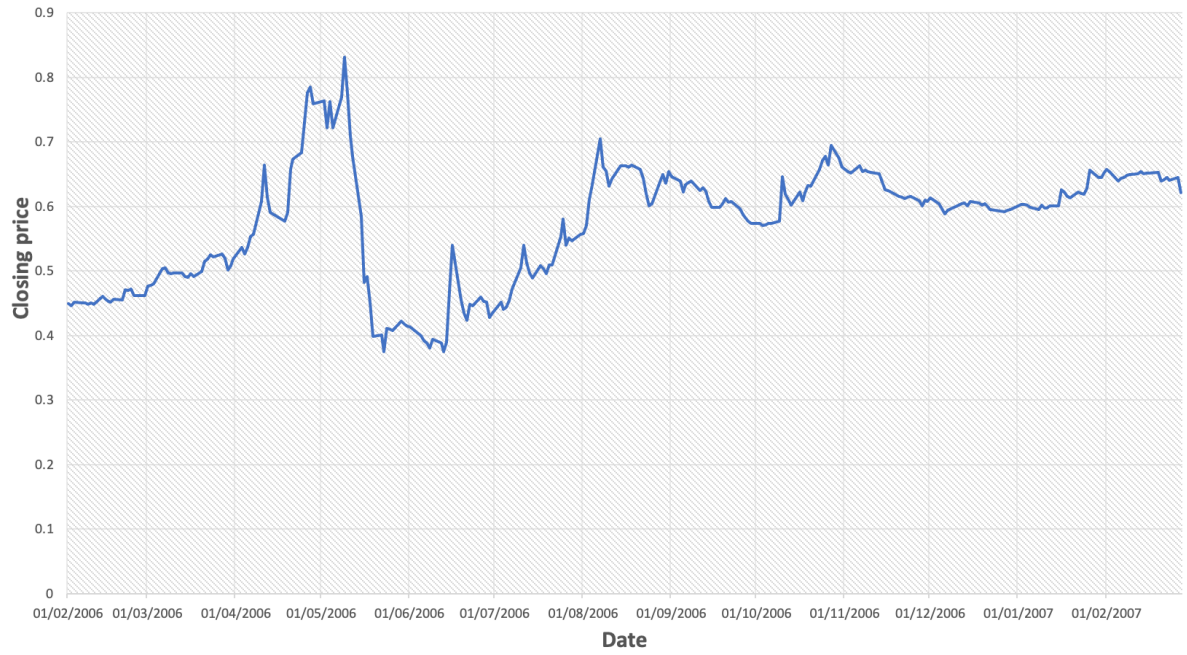

Figure 1: Juventus' stock price during Calciopoli

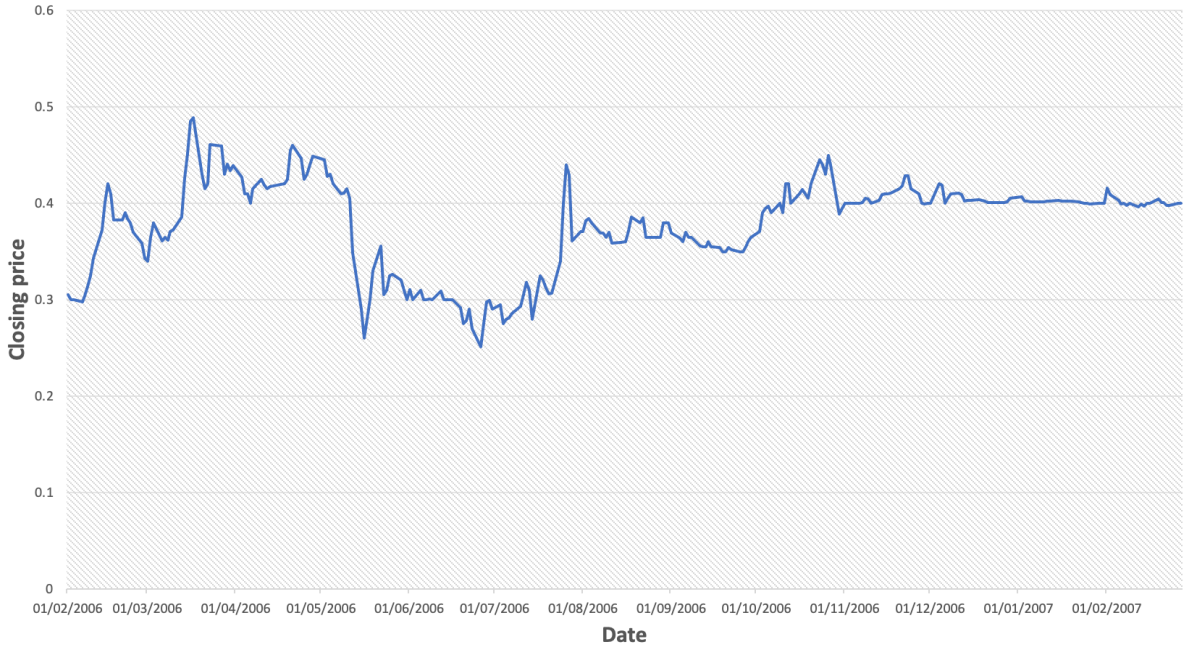

Figure 2: S.S. Lazio's stock price during Calciopoli

Discussion

Unexpected results

A possible explanation for the insignificant relationship between unexpected results and stock returns at SC Braga and Celtic are the low trading volumes at those clubs. For most football clubs in the dataset, the trading volumes are relatively low compared to other stocks, but this is especially the case for SC Braga and Celtic. For those clubs there are many trading days when the stock price does not even change and thus the stock return equals 0.

For Manchester United, being the biggest football club in the world, low trading volumes are not the reason why unexpected points do not influence the club's stock price. On the contrary, it is perhaps the case that so much more is happening at the club than league matches. Manchester United play in European competitions like the Champions League almost every year. Investors might consider Champions League matches as more important because of the available prize money in that tournament. Moreover, Manchester United have sponsorship deals with companies like Adidas, Teamviewer and Tezos that earn the club billions of pounds. In addition, merchandise sales play a very important role for the club.

Unexpected cash flows due to transfers

In the world of football, it is usually the case that insiders or transfer market experts already communicate that there is a transfer coming up and that two clubs are working on a deal. During the days before the transfer is announced, there are often rumours about the sum of the deal as well. This could explain why there is no significant relationship between the unexpected cash flow and the following day's stock return. However, we also saw that there is no significant effect of the unexpected cash flow in the days before a transfer is officially announced. The p-values of the unexpected cash flows are 0.321 and 0.967 respectively for the day and the 5 days before a transfer announcement. It might be the case that investors do not believe the player values are estimated correctly. Another possible explanation is that investors believe that transfers are just a part of the business, players come and go. The idea might be that the arrival or departure of an individual player generally does not have too much impact on the club's performances, prize money, media attention and sales. It could

also be the case that unexpected cash flows due to transfers do not influence the club's stock returns because other factors are just more important for the club's value.

Controversial news events

While the regression results show that controversies have no significant impact on the stock price, we do see that big issues with more consequences can in fact cause strong price increases and decreases. It depends on the type of controversy whether the stock price is influenced by a controversial event. In addition, controversial events often take place during a longer period of time. First rumours come out, then people are going to speculate, then punishments start playing a role which can later still be overruled again. It is therefore hard to assign a specific event date for some controversial events which makes it somewhat difficult to analyse the effect of several controversial news events on a football club's stock price.

Contribution to the literature

Demir & Danis (2011), Bell et al. (2012) and Godinho & Cerquiera (2018) are among the researchers who analysed the relationship between share prices and match results. There has also been some research on the relationship between a football club's share price and its player transfers by Whitehead (2014) and de Bakker (2016) for example. Bjerking & Reisig (2016) analysed the effects of player transfers on the share prices of kit manufacturers.

This thesis contributes to the existing literature by combining sports economics with financial markets. To my knowledge, there has been no prior research that investigates both unexpected match results and transfer data. In addition, there has been no prior research that investigates the effects of scandals, and other controversial news events on the share prices of football clubs.

The findings in this research show that a football club's stock price reflects the unexpected match results of the team. This is an interesting finding since league matches do not directly influence the amount of prize money or the valuation of the club.

The research also adds valuable insights into the effect of player transfers, since it is concluded that the announcement of player transfers in general does not affect a football club's stock price. The absence of a significant relation between a club's stock price and the value change due to transfers challenges the idea that player acquisitions lead to stock price increases.

Finally, the research also looks how controversial news events about a club do not always cause the stock prices of the football club to go down. This suggests that investors are less sensitive to bad news than we thought or that the news is incorporated into the stock price at a different point in time.

The findings of this research inform which factors should be considered when investing in stocks of European football clubs and which factors are less important when investing in a European football club. We learn that market trends and unexpected match outcomes have a significant impact on the club's stock price, but transfer announcements and controversial news have less impact on the club's stock price. However, it must also be noted that large scandals that lead to point deductions, relegation or exclusion from European competitions can have a huge impact on the club's stock price. The findings can help investors to make more informed decisions when investing in football clubs.

Limitations of the research

While this research provides valuable insights into the relationship between the stock prices of European football clubs and important events in the world of football, it is also important to acknowledge that there are some limitations to this research.

Since there are only 10 football clubs that have enough data available about transfers and controversial news event, the sample size is relatively small. Therefore, the generalizability of the findings to all other football clubs is potentially limited. Also, percentage changes of closing prices were used as stock returns. Using these unadjusted returns makes the findings less accurate and reliable since they do not account for dividends and stock splits.

Another potential limitation is that by using a regression model with dummy variables, it is relatively difficult to detect when news is incorporated into the stock price. This is not really a problem when analysing the effect of unexpected results because league matches are usually played during the weekends or at night when the market is closed already. Therefore, the dummy variable for the following trading day should be the right one. However, transfers and controversial news can be released when the market is open. To account for this, three different dummies were used for transfers. The first dummy was for the first trading day after the event, like with the match results. The second dummy was for the day before that, meaning the event date or the day before the event date, depending on whether the market was open or not. The last dummy was for the five trading days before the first trading day after the event. For controversial news events only the first two types of dummies were used. My methodology made it somewhat difficult to detect when the news is incorporated into the price, but the different dummy variables give a good indication. However, using the traditional event study methodology instead could have made it easier to detect when the news is incorporated into the price because it allows you to estimate and compare the cumulative abnormal returns in different windows pre- and post the event.

Omitted variables form another potential limitation to this research. While this research investigated the effect of arriving and departing players, no attention was given to the effects of managerial changes. This could be an interesting topic for further research in this area since many football clubs are known for often sacking their manager. Adding such events would give more interesting insights into the influencers of a football club's stock prices.

What is also interesting to consider is that the football clubs in the dataset are mainly football clubs that are one of the best in their country. Clubs like Ajax, Manchester United, Juventus and Borussia Dortmund are all playing for the prizes almost every year. The fact that listed football clubs are mostly well-performing teams, makes it interesting as to whether the findings would be similar if smaller or less known clubs would be publicly traded. The clubs in the dataset are all one of the biggest clubs in their respective countries and it would be interesting to see if smaller clubs would see similar results when going public.

Conclusion

In this study, I examined some industry-specific influencers of European football clubs' stock prices. By using an event study methodology, I investigated the relationship between football clubs' stock returns and unexpected match results, value changes due to transfers, controversial events and the respective country indices. I found significant positive relationships between the club's stock price and the unexpected results as well as the country index returns. These findings are in line with my hypotheses. However, contrary to the hypotheses, I found that there are no significant relationships between football clubs' stock returns and the value change due to transfers or controversial news events. When looking at the controversies, I found that there is no significant effect on the stock price in general. This might be due to the limited impact that the scandal or the controversy has on the valuation of the club. However, it is important to note that board changes, point deductions, and exclusions from European competitions can lead to sharp price fluctuations, so this is something that investors need to be aware of.

While there are possibly some omitted variables such as managerial changes, there are still some interesting implications for investors. Even though the study focuses on a specific set of football clubs and the findings might not be generalizable to the broader sports market, it can be helpful for investors that consider investing in football clubs via the public stock market.

The findings of this research help investors to make more informed decisions when investing in football clubs. It tells them which factors should be considered before making the decision of investing. Investors should keep an eye on the upcoming matches and possibly the winning probabilities since they are found to influence the club's stock price. Also, the market trends play an important role since the stocks tend to move in the same direction as their respective country indices. Moreover, when there are court cases or verdicts around match-fixing or scandals, investors should also pay attention and might even consider selling their stock beforehand because these events can at times cause significant and large fluctuations even though small scandals usually do not have a significant impact on the stock price. Lastly, value changes due to transfers seem to have no significant impact on a club's stock price.

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