

The Relationship between National Football Teams' Performance and Stock Markets

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DOI: 10.6007/IJARBSS/v6-i12/2520 URL: http://dx.doi.org/10.6007/IJARBSS/v6-i12/2520

Abstract

Investors may sometimes go out of rational behavior in markets depending on their moods. It is stated in the literature that one of the factors affecting the investors' mood is the results of football matches. In this research, the effect of match results of national football teams on stock markets is examined. In this context, England, Italy, France, Spain and Turkey, where football is very popular, are included in the sample. Event study method, which is frequently used in the literature, is used. Findings show that the results of the matches in different countries cause different reactions in the markets; no common result for all countries is obtained.

Keywords: National Teams' Performance, Football Matches, Sports Economics, Cumulative Abnormal Return (CAR)

1. Introduction

The idea that individuals are not rational in taking investment decisions is claimed and supported by many researchers especially after the emergence of behavioral finance. Individuals may show irrationality or limited rationality in their investment decisions due to psychological reasons. These behaviors can cause unexpected movements in the markets. It is thought that one of the factors affecting the behavior of individuals in the markets is international football (soccer) games. Investors with strong national feelings can behave in a different way in the markets depending on the results of the football games. Therefore, these behaviors can affect the markets. In an efficient market, participants react to any new information received by the market. The match results of football teams may be perceived



as new information or news by these participants. In this context, this study aims to observe the effects of the national football matches played in countries where football is very popular like England, Spain, France, Italy and Turkey on their stock markets. Studies in the literature have generally examined the relationship between achievements of football clubs and stock returns. This study is different in terms of focusing on national team performances rather than clubs' achievements.

There are two possible reasons why stock markets are affected by national team performances. Firstly the success of the national team creates a sense of confidence about the future. The second is the expectations of potential economic benefits in an efficient stock market to be derived from the successes of national teams as international tournaments gains importance (Ashton et al., 2003).

The economy of sports is a rapidly growing field of study within the applied economy (Gerrard, 2006, Floros, 2014). Football is accepted as the most popular sport in the world (Bell et al., 2012). In recent years, the football industry has shown considerable improvements in terms of economic conditions. According to Deloitte Football Money League, the 20 clubs with the highest income in Europe accounted for 6.6 billion Euros for 2014/15 season. These revenues consist of match revenues, broadcast revenues and commercial revenues (Deloitte, 2016). These figures show how big the football industry is and that it can be effective for the economies of the countries.

Similar to financial successes of companies traded on the stock exchange, sportive success and losses of the football clubs, traded on the stock exchange, may affect their stock returns. Even transferring a famous football player may also affect the stock market returns of that team (Çam, 2015). Dobson and Goddard (2001) stated that several million people watch soccer games every season, and millions of people follow the matches on television. For this reason, stock prices vary in response to a number of events depending on the mood of the investors and fans (e.g. positive/negative result, buy/sell a player etc.). Wins (loses) of a team will have a positive (negative) impact on the consumer demand and the financial behavior of investor (Floros, 2014).

2. Literature

The effects of professional sports teams on the economy began to attract the attention of academics towards the mid-1950s. Since then, many books and articles have been published on the effects of sports on economy. These publications usually used the USA as a sample (Dobson and Goddard, 2001).

In the studies measuring the economic effects of football matches, generally the relationship between the match results of the football clubs and the stock returns are examined. Tottenham Hotspurs became the first football club to trade on the stock exchange in 1983. Later, many teams were opened to the stock markets in several different countries (Scholtens and Peenstra, 2009).

Beside studies examining the relationship between the successes of football clubs from different countries and stock returns in the literature, there are also studies that take a single club as a sample and study the football matches of that club. Stadtmann (2007) studied the 97 games of the Borussia Dortmund football team in the German League between 2000 and 2002. He concluded that the unexpected results of both national and international matches have an effect on the stock of the club. Renneboog and Vanbrabant (2000), who examined the 17 English teams' matches between 1995 and 1998, pointed out that the win has a positive impact on the stock market, while loss or draw has a negative



effect. It is also observed in the research results that the effect of losses is greater than the effect of wins. No difference is found between national matches and European matches. Scholtens and Peenstra (2009), who studied 1,274 national and European matches of eight football clubs from five different countries, observed that stock markets respond positively to wins and negatively to losses. The negative reaction given to the losses has been asymmetrically stronger than the positive response given to the wins. Among findings is that the reaction to the European matches is more than the reaction to matches in the national leagues.

The studies focused on football clubs, which there are many examples, generally conclude that wins in these matches has a positive effect on returns while losses or draws have a negative effect. However, as it is mentioned in the introduction, a limited number of studies have been carried out in the literature that explores the effects of national team achievements on the stock markets.

Ashton et al. (2003) examined the relationship between match results of the UK national team and the stock price changes in the London Stock Exchange between January 6, 1984 and July 3, 2002. Findings showed that there is a significant relationship between match results and stock returns. Analysis show that good (bad) performances in matches result in good (bad) market returns. Moreover, analysis results show that as the importance of the matches increases, such as tournament matches compared to friendly matches, so does their influence on the market. Examining the international football matches (World Cup, European Championship, Copa America, and Asian Cup) between January 1973 and December 2004, Edmands et al. (2007) studied the effect of national football scores on stock markets. They noted that losses of national team have a strong negative effect on markets. Also one the findings is that, there is a significant but low degree of loss effect in in international cricket, rugby, and basketball games. No statistically significant effect of wins in any sports field on the markets is found as a result of the analysis.

3. Methodology

We used event study methodology to study the impact of match scores of national football team on the stock market. Event study is a frequently used method in the literature to examine the effect of a given event day on stock returns (Benkraiem et al., 2009; Scholtens and Peenstra, 2009; Renneboog and Vanbrabant, 2002). The main difference between the event study methodologies is realized in determining the expected returns. The most common used methods are the market model which is calculated with ordinary least square (OLS) and constant mean returns model. Brown and Warner (1980) emphasized that more complicated methodologies do not provide additional benefits to researchers and that it would be useful to use simpler methods. In this context, constant mean returns methods are used in this study to calculate expected returns. The abnormal returns are the difference between the realized returns and the expected returns;

$$AR_{i,t} = R_{i,t} - \overline{R}_i \tag{1}$$

 $R_{i,t}$ represents market return and is calculated with the help of $R_{i,t} = LN(P_{i,t} / P_{i,(t-1)})*100$ formula. \overline{R}_i represents constant mean returns and is calculated with $\overline{R}_i = \frac{1}{100} \sum_{t=-110}^{-11} R_{i,t}$ formula. As can be understood from the formula estimation window is determined as (-100;-11) and event window as (-10;10). Average abnormal returns are calculated as;



$$AAR_{i,t} = \frac{1}{N} \sum_{i=1}^{N} AR_{i,t}$$
 (2)

Cumulative abnormal returns are calculated as;

$$CAR(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{i,t}$$
(3)

Cross-sectional cumulative average abnormal returns are calculated as;

$$CAAR(t_1, t_2) = \frac{1}{N} \sum_{i=1}^{N} CAR_{i,(t_1, t_2)}$$
(4)

In order to test whether the calculated CAAR values differ statistically from zero (0) Standardized Residual Test, developed by Patell (1976), is used. Patell (1976) recommended that $AR_{i,t}$ should be standardized with forecast error corrected standard deviation before calculating the test statistic;¹

$$SAR_{i,t} = \frac{AR_{i,t}}{S_{AR_{i,t}}}$$
(5)

As the event-window abnormal returns are out-of-sample predictions, Patell adjusts the standard error by the forecast-error;

$$S_{AR_{i,t}}^{2} = S_{AR_{i}}^{2} \left(1 + \frac{1}{M_{i}} + \frac{(R_{m,t} - \overline{R}_{m})^{2}}{\sum_{t=-11}^{-110} (R_{m,t} - \overline{R}_{m})^{2}} \right)$$
(6)

Test statistic for testing H₀:CAAR=0 is given by;

$$z_{Patell} = \frac{1}{\sqrt{N}} \sum_{i=1}^{N} \frac{CSAR_i}{S_{CSAR_i}}$$
(7)

 $CSAR_i$ represents the cumulative standardized abnormal returns and calculated as $CSAR_i = \sum_{i=1}^{10} SAR_{i,i}$

4. Data and Findings

The data used in the research covers the friendship and tournament matches of the national football teams of Turkey, England, France, Spain and Italy between 2002 and 2015. The data

¹ Information in this part is get from the web address;

http://www.eventstudytools.com/significance-tests Authors are grateful to Dr. Simon Müller for his contributions.



of matches are obtained from the official web pages² of the national football federation of the relevant countries. All matches played during the analysis period were examined and the games played on the days when the stock market is closed on the following day are not included in the analysis. The closing prices of the markets are obtained from investing.com web address. The closing price of the following indices are taken as basis; BIST 100 for Turkey, FTSE 100 for England, CAC 40 for France, IBEX 35 for Spain and FTSE MIB for Italy. The logarithmic return series are calculated with $R_{i,t} = LN(P_{i,t} / P_{i,(t-1)})*100$ formula. The descriptive statistics for the matches are shown in Table 1.

	England	France	Italy	Spain	Turkey	Total
Panel A: All						
Number of matches	110	117	116	117	121	581
Loss	20 (18%)	21 (18%)	22 (19%)	15 (13%)	30 (25%)	108 (19%)
Draw	25 (23%)	27 (23%)	35 (30%)	19 (16%)	31 (26%)	137 (24%)
Win	65 (59%)	69 (59%)	59 (51%)	83 (71%)	60 (50%)	336 (58%)
Goals scored	217	188	177	246	188	1016
Goals conceded	98	78	108	84	127	495
Average	119	110	69	162	61	521
Panel B: Home						
Number of matches	62	73	69	62	65	331
Loss	10 (16%)	15 (21%)	11 (16%)	7 (11%)	14 (22%)	57 (17%)
Draw	10 (16%)	15 (21%)	20 (29%)	7 (11%)	14 (22%)	66 (20%)
Win	42 (68%)	43 (59%)	38 (55%)	48 (77%)	37 (57%)	208 (63%)
Goals scored	133	122	116	142	111	624
Goals conceded	48	45	63	41	59	256
Average	85	77	53	101	52	368
Panel C: Away	_					
Number of matches	48	44	47	55	56	250
Loss	10 (21%)	6 (14%)	11 (23%)	8 (15%)	16 (29%)	51 (20%)
Draw	15 (31%)	12 (27%)	15 (32%)	12 (22%)	17 (30%)	71 (28%)
Win	23 (48%)	26 (59%)	21 (45%)	35 (64%)	23 (41%)	128 (51%)
Goals scored	84	66	61	104	77	392
Goals conceded	50	33	45	43	68	239
Average	34	33	16	61	9	153

Table 1. Descriptive Statistics of National Football Matches

As can be seen from Table 1, a total of 581 matches are included in the analysis. Of these matches, 108 are losses (19%), 137 are draws (24%), and 336 are wins (58%); 331 were

² The addresses for web pages of each national football federation are as follows; Turkey; <u>http://www.tff.org/</u>, France; <u>https://www.fff.fr</u>, Spain; <u>http://www.rfef.es</u>, Italy; <u>http://www.figc.it</u> and England; <u>http://www.thefa.com</u>



played in teams' own home (57%) and 250 (43%) away. While the win rate for games played at home is 63%, it drops 51% in games played away. The national team with the highest winning percentage is Spanish with 71%. Spain is followed by England and France with 59%, while the countries with lowest win rates are Italy (51%) and Turkey (50%). All countries, except France, have a higher winning percentage for games played at their home than away. The country with the highest winning percentage for both home and away matches is still Spain while the lowest winning percentage for home matches belongs to Italy (55%) and for away matches belongs to Turkey (41%). Examining the number of goals; the total number of goals scored for by the countries is 1016 and the number of goals scored against is 495. The majority of goal difference, which is 368 out of 521, is scored in home games. The team that scored most goals is Spanish with 246 goals, and the team with least scored is Italian with 177 goals. In terms of goal difference the most successful team is Spanish with 162 goals and the most unsuccessful team is Turkish with 61 goals.

For all cumulative average abnormal returns, Main Event window is taken as {-10; 10}. Assuming the event day effect will take a short time, shorter sub windows are used. Symmetric sub windows are determined as {-5; 5} and {-3; 3}; asymmetric sub windows for pre-event are taken as {-5; -1} and {-3; 1}, and for post-event as {0; 3} and {0; 5}. The effect of the national games on returns in the stock exchange is discussed in two ways. Firstly, the abnormal returns according to the result of the match (win, draw, loss), as it is frequently discussed in the literature, is examined. In addition, as we think that the match results may have different effects on the emotional mood of the investors depending on whether they are played at home or away, we examined the results of the matches in three subgroups: all matches, matches played home, and matches played away.

The CAAR results for all matches are shown in Table 2. When the results in Table 2 are examined in general, the CAARs obtained for France seem not to be statistically significant. Although a 0.3% positive return on the {-3; -1} window for all matches of England and a 3.5% positive return for the main event window {-10; 10} of Italy's wins are statistically significant it is estimated that these findings may be unrelated to the matches. The stock exchange market in Spain, has an abnormal positive return of 1.7% for all matches and 2.5% for wins in the main event window of {-10; 10}. When the studies on the national football teams in the literature are examined, while the losses in matches have an abnormal negative return effect on the stock returns there is no evidence that the wins provide a positive abnormal return (Edmands et al., 2007). In this regard these findings are expected to contribute to the literature. In the Turkish stock market for all matches negative abnormal returns are observed. When matches of Turkish national team with wins are examined; for {-5; -1} subwindow 0.9% negative return, and for {0;5} sub-window 1% positive return is found statistically significant. In other words, negative abnormal returns in pre-win period are transformed to positive abnormal returns in post-win period. These findings resemble to the findings regarding Spain. In the Turkish stock market, negative abnormal returns are found statistically significant for both main-window and post-match sub-window regarding matches resulted in draw. This result overlaps with findings in the literature (Scholtens and 2013; Renneboog Peenstra 2009; Saraç and Zeren, and Vanbrabant, 2000).



Table 2. CAAR Results for All Football Matches

	England	France	Italy	Spain	Turkey
Panel A: All					
W {-10;10}	0.267	0.260	0.566	1.796**	-1.405**
W {-5;5}	-0.105	0.197	-0.206	0.759	-0.896**
W {-3;3}	0.266	0.635	0.207	0.552	-0.227
W {0;1}	-0.228	0.082	-0.034	-0.100	-0.267
W {0;3}	-0.065	0.339	-0.071	0.243	0.037
W {0;5}	-0.322	0.116	-0.251	0.440	-0.068
W {-5;-1}	0.216	0.081	0.045	0.318	-0.828***
W {-3;-1}	0.331*	0.296	0.277	0.309	-0.263
Panel B: Win					
W {-10;10}	0.486	0.606	-0.466	2.521***	-0.241
W {-5;5}	-0.138	0.323	-0.337	0.782	0.131
W {-3;3}	0.170	0.963	0.416	0.372	0.449
W {0;1}	-0.478	0.332	-0.281	-0.219	-0.047
W {0;3}	-0.137	0.582	-0.193	0.039	0.815
W {0;5}	-0.346	0.213	-0.785	0.391	1.048*
W {-5;-1}	0.209	0.110	0.448	0.391	-0.917*
W {-3;-1}	0.307	0.381	0.608	0.333	-0.366
Panel C: Draw	_				
W {-10;10}	0.087	-0.255	0.456	0.815	-3.985***
W {-5;5}	0.173	0.447	0.503	0.679	-2.274**
W {-3;3}	0.953	0.618	0.640	0.795	-1.695**
W {0;1}	0.241	0.039	0.504	0.315	-0.976**
W {0;3}	0.243	0.289	0.606	0.575	-1.602**
W {0;5}	-0.402	0.163	0.844	0.584	-2.133
W {-5;-1}	0.576	0.285	-0.342	0.095	-0.141
W {-3;-1}	0.710	0.329	0.034	0.221	-0.093
Panel D: Lose	_				
W {-10;10}	-0.221	-0.215	3.509***	-0.975	-1.068
W {-5;5}	-0.347	-0.540	-0.979	0.730	-1.523
W {-3;3}	-0.282	-0.418	-1.043	1.240	-0.060
W {0;1}	-0.001	-0.682	-0.227	0.030	0.027
W {0;3}	-0.219	-0.391	-0.820	0.956	0.174
W {0;5}	-0.140	-0.264	-0.560	0.532	-0.164
W {-5;-1}	-0.207	-0.276	-0.419	0.197	-1.360*
W {-3;-1}	-0.063	-0.027	-0.224	0.284	-0.234

The CAAR findings of matches played by teams at home are shown in Table 3. As can be seen from the Table 3, none of the CAAR results for England, France and Italy are statistically



significant. In the Spanish stock exchange market positive abnormal returns are observed after all the home matches played by the Spanish national team. It shows that there is no difference in terms of win or loss. It can be concluded that the home matches of Spanish national football team -even with the loss - create a positive atmosphere for the investors. Negative abnormal returns are observed in the Turkish stock market, for the all matches played at home and for the matches that resulted in the draw and loss.

	England	France	Italy	Spain	Turkey
Panel A: All					
W {-10;10}	0.344	0.107	0.161	2.241***	-1.747**
W {-5;5}	0.186	0.346	-0.194	1.302**	-1.220**
W {-3;3}	0.340	0.714	0.329	0.341	-0.592
W {0;1}	0.243	0.042	0.019	-0.204	-0.566**
W {0;3}	0.104	0.303	0.053	0.023	-0.471
W {0;5}	0.083	0.255	-0.221	0.703*	-0.494
W {-5;-1}	0.104	0.091	0.028	0.599	-0.726**
W {-3;-1}	0.236	0.411	0.276	0.319	-0.121
Panel B: Win	_				
W {-10;10}	0.731	0.108	-0.181	2.643***	-0.428
W {-5;5}	0.185	0.147	-0.449	1.086	0.293
W {-3;3}	0.267	0.756	0.503	-0.142	0.463
W {0;1}	0.250	0.534	-0.213	-0.483	-0.102
W {0;3}	0.151	0.487	-0.125	-0.334	0.608
W {0;5}	0.149	0.298	-0.745	0.547	0.798
W {-5;-1}	0.035	-0.151	0.295	0.538	-0.505
W {-3;-1}	0.116	0.269	0.628	0.192	-0.145
Panel C: Draw	_				
W {-10;10}	0.670	-0.200	1.350	0.527	-5.750***
W {-5;5}	1.415	0.766	0.812	0.259	-4.406***
W {-3;3}	1.552	1.022	0.670	1.071	-2.518**
W {0;1}	0.387	-0.648	0.747	0.886	-1.908***
W {0;3}	0.274	0.142	0.922	0.491	-2.698***
W {0;5}	-0.174	0.189	1.129	0.503	-3.915***
W {-5;-1}	1.589	0.577	-0.316	-0.244	-0.491
W {-3;-1}	1.278	0.880	-0.252	0.581	0.180
Panel D: Lose	_				
W {-10;10}	-1.605	0.410	-0.818	1.197	-1.232
W {-5;5}	-1.035	0.496	-1.139	3.825*	-2.029*
W {-3;3}	-0.564	0.286	-0.894	2.921*	-1.453
W {0;1}	0.068	-0.677	-0.502	0.621	-0.451
W {0;3}	-0.265	-0.062	-0.912	1.997*	-1.095
W {0;5}	0.060	0.199	-0.868	1.971	-0.488
W {-5;-1}	-1.094	0.297	-0.271	1.855	-1.542*
W {-3;-1}	-0.299	0.348	0.018	0.924	-0.359

Table 3. CAAR Results for Home Matches



Table 4 shows the CAAR findings of the matches played away. The abnormal returns observed in the France stock market are again not statistically significant. It is observed that both all away matches of the English national team and their matches with wins are resulted in negative abnormal returns in the stock exchange of England. A similar situation is also witnessed in the Turkish market. For the Italian stock exchange, it is determined that all matches played away resulted 1% positive abnormal returns and matches with draw, resulted 0.7% negative abnormal returns. The Spanish stock exchange market has reacted with about 2% negative abnormal return to the away matches which resulted in loss.

	England	France	Italy	Spain	Turkey
Panel A: All					
W {-10;10}	0.167	0.513	1.160***	1.294	-1.008
W {-5;5}	-0.482	-0.050	-0.223	0.147	-0.519
W {-3;3}	0.170	0.506	0.027	0.790	0.197
W {0;1}	-0.837***	0.149	-0.112	0.017	0.081
W {0;3}	-0.284	0.399	-0.252	0.492	0.626
W {0;5}	-0.844**	-0.115	-0.294	0.144	0.428
W {-5;-1}	0.362	0.065	0.071	0.003	-0.947*
W {-3;-1}	0.454	0.106	0.279	0.298	-0.429
Panel B: Win					
W {-10;10}	0.040	1.429	-0.983	2.354	0.059
W {-5;5}	-0.726	0.615	-0.134	0.366	-0.130
W {-3;3}	-0.007	1.306	0.257	1.077	0.426
W {0;1}	-1.809***	-0.002	-0.405	0.144	0.041
W {0;3}	-0.663	0.738	-0.316	0.549	1.148
W {0;5}	-1.252	0.074	-0.859	0.176	1.450
W {-5;-1}	0.525	0.541	0.724	0.190	-1.580*
W {-3;-1}	0.656	0.568	0.573	0.527	-0.722
Panel C: Draw	_				
W {-10;10}	-0.303	-0.325	-0.735***	0.983	-2.532
W {-5;5}	-0.655	0.049	0.090	0.924	-0.518
W {-3;3}	0.554	0.112	0.600	0.634	-1.018
W {0;1}	0.143	0.897	0.181	-0.018	-0.208
W {0;3}	0.223	0.472	0.186	0.624	-0.699
W {0;5}	-0.555	0.130	0.465	0.631	-0.666
W {-5;-1}	-0.100	-0.081	-0.376	0.293	0.148
W {-3;-1}	0.332	-0.360	0.415	0.010	-0.319
Panel D: Lose	_				
W {-10;10}	1.164	-1.294	7.835	-2.875	-0.924
W {-5;5}	0.341	-1.973	-0.819	-1.979**	-1.080
W {-3;3}	0.001	-1.185	-1.192	-0.230	1.159
W {0;1}	-0.070	0.192	0.047	-0.487	0.445
W {0;3}	-0.173	-0.291	-0.727	0.045	1.284
W {0;5}	-0.339	-0.925	-0.252	-0.727	0.120
W {-5;-1}	0.681	-1.048	-0.567	-1.253*	-1.200
W {-3;-1}	0.173	-0.894	-0.465	-0.275	-0.124

Table 4. CAAR Results for Away Matches



5. Conclusion

In recent years, a number of studies have been conducted that examine the relationship between the investor mood and the returns in in the stock markets. These studies argue that investors' mood changes with information and news, and this change is influential in investment decisions. These factors, which affect investors' mood, distract investors from rationality and result in irrational behavior. One of these factors is the matches of the national football teams where national feelings and sensitivities are more prominent. When the psychological effect of football on individuals is combined with national feelings, they intensely affect their daily lives. Therefore, it is anticipated that this effect may also play a role on the investment decision making process of the individuals. In this context, the effect of matches, played between 2002 and 2015, of national football teams of England, Italy, France, Spain and Turkey, where football is very popular, on stock markets is examined in this research. Event study methodology is used as the analysis method. The match results (wins, draws, losses) during analysis period are examined separately as all matches, matches played at home, and played away.

As a result of the study, it is observed that the abnormal returns in the French stock market for the matches examined during the analysis period are not statistically significant. A number of abnormal returns for the England stock market have also been found to be statistically significant, but these abnormal returns are realized in the opposite direction of the expectations. As a result of the away matches resulted in loss negative abnormal returns are observed in Italian stock market. The stock markets of Spain and Turkey are perceived to be more sensitive towards match results compare to other analyzed countries. It is found that the positive abnormal returns for all matches and all home matches (even with loss) and negative abnormal returns for away matches with losses in the Spanish stock market are statistically significant. Negative abnormal returns are found to be statistically significant in the Turkish stock market for matches that generally resulted in a draw and loss.

It is observed from the results of the analysis that the common results of the studies on the football clubs in the literature are not seen in this study which focused on the national teams. In different countries matches of national football teams have different effects on the stock market and the results prove that there is no common effect.

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