Moneyball in the Turkish Football League: A Stock Behavior Analysis of Galatasaray and Fenerbahce Based on Information Salience

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Abstract

Football clubs listed on Istanbul Stock Exchange suggests an interesting way of testing stock price behaviors to different types of news about both sportive success related and non-sports related events. Strong football club stock price reactions to surprising game results and the lack of reaction to betting odds is related with the dominated structure of Turkish Football League by the big four; Galatasaray (GS), Fenerbahce (FB), Besiktas (BJK) and Trabzonspor (TS). Coherent with this idea we conclude that GS and FB stocks react strongly to unexpected game results and derby matches. Other local league match wins do not have such an impact on stock prices. Moreover especially for FB related news rather than game results such as match-fixing case explain most of the price volatilities of the sport stocks. There is also some limited support for the notion that GS and FB stock prices are more affected by the bad news compared to good news.

1 Introduction

Football's, so called Soccer in the USA, recent commercialization is producing an important research field that is not so even at the level that counts-the clubs that create the talent and dazzle the crowds introduced the modern gladiators of our age to us.
Football is a global language and the sponsors want to speak to people in a language they understand. The existence of the private television contracts in 1980s brought a major flush of money to the football. In 1995 after the Bosman ruling which guaranteed the free

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movement of all footballers within European Union and removed transfer fees for player no longer under contract, big clubs had the chance to swap up high profile foreign players rather than local talent and players moved to wealthy leagues from poorer ones.

The money penetrating the game has driven a wedge between the players and the fans. Although the players earned more than the average workers in the old days to the gap was not as huge as especially after 1990s when the industrial football began to rise and created its own superstars, commercials, computer games. The affect of these economics based developments on the game was felt deeply. The football fans are more demanding than filmgoers, they argue that their sport is more a way of life than an entertainment and many ot them think money is killing it. However with the IPOs of football clubs, after they are listed in the exchanges of their countries gave the fans chance for both supporting and investing in their team in terms of money.

Football has developed an increasing economic importance over the past two decades demonstrated by an increasing capital markets presence and the growth 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.

Arsene Wenger, a well educated economist[3] and the legendary manager of English Premier League side Arsenal is a real statistics addict as mentioned in the best seller book of Simon and Kuper and Stefan Szymanski, Soccernomics. Moreover AC Milan has a football laboratory in Milano analyzing the statistical data of the players which enabled the doctors of the club to reduce the injuries seventy percentages.

As a result of limited analysis ability and time requiring processes investors usually focus on their time and interest to easily available, easy to understand and easy to use information. In this context it is found that the higher the information salience the faster the public information is processed by investors and the results of their actions are reflected to share prices.

The main purpose of this paper is not to establish a trading strategy on sports stocks or guide to betting game by offering sophisticated econometrical models but to analyze the effect of investor behavior, information salience and announced news including both game results and odds.

Football results are good type of information to study as with games played in the evening and at weekends stock markets are closed when the information arrives. This means that the market should open at a new price that incorporates the information content of game result. The information salience is very fast and; results are available the moment the final whistle blows and are widely publicized via the media.

Betting odds are publicly available but are only posted ob bookmarkers websites and in betting shops. In contrast game results are usually omnipresent; they are extremely discussed in all newspapers.

The betting system in Turkish Football League is a fixed odds betting system in which the odds represent the bookmakers' opinions. The investors are informed weekly about the bookmakers' belief and analysis about the game results through the odds published in sports newspapers. Although the odds include latest data set of the teams they offer short-

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lived information since after two or three trading days the game result is known and the information value contained by the betting odds has outdated.

Odds include the analysis, latest events such as transfers, injuries, conditions of the players etc. so the markets need to be fast in processing this information. While football results are not cash flows, they are expected to affect the stock price of football clubs because winning games is likely to increase the club's subsequent cash flows and value via a number of routes[4] (Bell et. all 2009).

The word fan is an abbreviation of fanatic. In Italy fans are known as tifesi as in people in the grip of typhus induced delirium. In this context investing in football club stocks is both a financial decision and a fanaticism induced behavior which should be deeply analyzed by behavioral finance researchers. Although institutional investors can react in a more rational way in investing football club stocks individual investors will act due to their emotions for their own team.

If all the investors are assumed to be rational an investor who is a Galatasaray fan must invest in Fenerbahce stocks if he/she thinks that he/she will benefit from this investment in near future. However this is not the case for individual investors.

2 Literature Survey

Scherr, Abbot and Thompson (1993) made one of the earliest studies of the effects of game results on the stock prices was for the American basketball team Boston Celtics. Brown and Hartzell (2001) continued their approach by using point spread betting odds to control for market expectations before the game.

In recent years the literature of football economics and industrial football expanded significantly as the research field about related subjects captured academicians attention more and more. The effect of odds and wins of the teams on their stock returns have been investigated by many researchers especially in English Premiere Football League. Twenty UK football clubs are listed on the LSE: 12 clubs on the official market, 8 clubs on the Alternative Investment Market (AIM). In addition the stocks of 4 clubs are traded on the OFEX[5] but they were not included in to the study of Palomino (2008). According to their study the stock markets react strongly to news about game results generating significant abnormal returns and trading volumes. They generated probdiff variable which formulated as below:

$$\Pr obdiff = \Pr obwin_i - \Pr obloss_i \qquad (1)$$

This equation refers to the difference between the probability of winning the *ith* game and the probability of losing it. By this variable they tried to capture the experts' expectations about the game uncertainty and their impact on returns. The larger the probdiff the more a win is expected relative to a loss. When probdif decreases and approaches to 0 outcome becomes more uncertain. In our paper we also generated such a variable based on home team's win odds.

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[4]Bigger attendances at games, higher ticket prices, higher prices for leasing stadium boxes, increased advertising revenue, greater sponsorship income and merchandise sales higher revenue.
[5]OFEX is an unregulated trading facility in which JP Jenkins Ltd. is the main market maker. The following clubs were traded on 2008 on OFEX: Arsenal, Bradford City, Manchester City and Gillingham.

Zuber et all (2005) considered 10 English Premiership football clubs for the seasons in their study and they found that cup games had a positive effect on stock prices, with no significant effects for the unexpected wins and loss variables.

However Scholtens and Peenstra (2008) who analyzed eight football clubs from five countries found that expected and unexpected wins resulted in a stock price rise while expected and unexpected losses led to a stock price fall.

Since Turkish Football League is dominated by the Big Four Galatasaray, Fenerbahce, Besiktas and Trabzonspor stock prices are not so sensitive to game wins. In our models when the ODDSDIFF variable decreases we expect a positive effect on returns as unexpected good game results will affect the stock returns positively. We will explain this mechanism with more details in the methodology part.

In Turkey, to the public and media alike, football is the most important sport. However there are not many studies in the literature covering Turkish Football Leagues football club stocks' behavior. In their paper Berument et. all (2009) tested the hypothesis whether returns on GS, FB and BJK can be associated with the wins of teams and the strength of the emotional ties that fans who happen to be broker/traders have to their teams. Their results are in line with the proposition that wins are associated with higher returns. Moreover their findings show that stock market returns increased following BJK's whose fans have a high rate of fanaticism wins against foreign rivals. No similar effect is reported for FB and GS.

The crucial difference of our study is that we test the effect of game results, betting odds to and specific announced news about the teams rather than testing a general news effect on the GS, FB and BJK stocks as Berument et. all (2009) did. So we provide one of the first detailed examples in this research area about stock behaviors of Turkish Football League clubs listed in ISE.

3 Data

We used the price and trading volume data for the period between 03.01.2011 and 05.10.2012 imported from Bloomberg Terminal and IDDAA website.

Table 1: Data descriptions

Variable	Definiton	Source
GSPRICE	Galatasaray Sports Club daily closing values	Bloomberg LP
FBPRICE	Fenerbahçe Sports Club daily closing values	Bloomberg LP
ISE100PRICE	ISE 100 Index daily closing values	Bloomberg LP
LNISE100V	Logarithm of 100 Price Index trading volume	Bloomberg LP
LNGSVOLUME	Logarithm of GS Sports Club trading volume	Bloomberg LP
LNFBVOLUME	Logarithm of FB Sports Club trading volume	Bloomberg LP
WIN	Dummy variable for game wings, equals 1 if the team wins	IDDAA
FOREIGN	Dummy variable for foreign teams, equals 1 if the team plays with a foreign country team	IDDAA
GSNEWS	Extraordinary news announced excluding game results and financial results for Galatasaray	KAP
FBNEWS	Extraordinary news announced excluding game results and financial results for Fenerbahçe	KAP
ODDSDIFF	Win and Loose odds differences due to the home team	IDDAA

In the data set we assumed the effect of the game results to span till next game result. Following this idea we generated WIN dummy variable which gets value of "1" when the team wins a game and "0" if it losses. The important point here is that if the team wins a

game in the related week all the days between the match that results with a win and the day of the next week's match gets "1" or "0" if the match results in a defeat.

We also generated ODDSDIFF variable to measure the magnitude of the critical matches on the teams' stock returns. ODDSDIFF is calculated as the difference between odds rate of winning the game and odds rate of losing the game for the home team.

Coherent with this if ODDSDIFF is positive and increases we conclude that winning the game is not such an important result for the home team as it is assessed as the favorite by the bookmarkers. Coherently if the ODDSDIFF value is negative we expect the result of the game to affect the stock prices of the teams positively since winning the game is a victory. ODDSDIFF can be formulated as below:

$$ODDSDIFF = ODDSWIN_{HOME} - ODDSLOOSE_{HOME} \tag{2}$$

Finally, we generated GSNEWS and FBNEWS dummy variables according to the announcements exhibited in Table 3. The dummy variable gets the value of "1" on the dates of announcement and "0" on the other days.

4 Methodology

To study the effect of information salience on football club stock returns, the following hypothesis are tested:

H1: Odds effect on Galatasaray stock returns.
H2: Odds effect on Fenerbahce stock returns.
H3: The game wins effect on Galatasaray stock returns.
H4: The game wins effect on Fenerbahce stock returns.
H5: The effect of non-sportive news on Galatasaray and Fenerbahce stock returns.

We employed Augmented Dickey-Fuller (ADF) test to examine stationary of series by comparing ADF t- statistics with critical vales. If ADF test statistics is greater than critical values, time series are stationary (Dickey and Fuller, 1981).

After stationary test, we used AR, MA and ARMA models to test appropriate estimation models of Galatasaray and Fenerbahçe stock price returns. Time series is called an AR process if they can be defined by observation values concerning to any time, t and error term, εt or linear combination of lagged values and error term.

We used ARCH/GARCH instruments to model the volatility behavior of football club stock prices. Major advantage of the model is that, instead of considering heteroskedasticity as a problem to be corrected, ARCH and GARCH models treat it as a variance to be modeled. Usually financial data suggests that some time periods are riskier than others; that is, the expected value of the magnitude of error terms at some times is greater than at others. The goal of such models is to provide a volatility measure, like a standard deviation, than can be used in financial decisions related with risk analysis, portfolio selection and derivative pricing (Engel 2001).

ARCH model assumes that the variance of t u_t in period t, σ_t^2 depends on the square of the error term in t-1 period, u_{t-1}.

In this context, ARCH(q) and GARCH(q) models are as follows:
$\alpha_0 > 0$, $\alpha_i > 0$

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^{\ 2} + \alpha_2 \varepsilon_{t-2}^{\ 2} + ... + \alpha_q \varepsilon_{t-q}^{\ 2} + \nu_t \tag{3}$$

GARCH models which express the generalized form of ARCH models were developed by Engle (1982) and Bollerslev (1986) to provide reliable estimations and predictions. GARCH models consist of conditional variance, in equation (2) in addition to conditional mean in equation (1).

$$h_t = \alpha_0 + \sum_{i=1}^{q} \alpha_i r^2_{\ t-i} + \sum_{i=!}^{p} \beta_j h_{t-j} \tag{4}$$

In this context, restrictions of variance model are as follows:

$\alpha_i \geq 0$
$\beta_i \geq 0$
$\alpha_i + \beta_i < 1$

If $\alpha_i + \beta_i \geq 1$ it is termed as non-stationary in variance. For non-stationarity in variance, the conditional variance forecasts will not converge on their unconditional value as the horizon increases (Brooks 2008).

In this context ARCH and GARCH models have become very popular as they enable the econometrician to estimate the variance of a series at a particular point in time. Clearly asset pricing models indicate that the risk premium will depend on the expected return and the variance of that return (Enders 2004).

In our paper our main concern is to test the relationship between football news and football club stock prices since any news about football is followed by millions of people in the country which is quite much more than any investor following company news listed on Istanbul Stock Exchange. Coherent with that GARCH models allow us to test the effect of news on stock volatility quantitatively and help us to understand if the markets absorb these closely tracked data by people. According to the results we found out that the football club stock investors and betting game players are different communities and do not interact. However betting companies provide a huge statistical data about football clubs which can be used by equity analysts and investors about the future performances of the clubs and forecasting the stock price fluctuations.

Therefore, the following GARCH models are performed. Equations 5, 7, 9 and 11 represent the GARCH models composed for explaining the behavior of GS stock returns and other models are composed for explaining the behavior of FB stock returns.

$$RGSPRICE = \alpha_1 + \alpha_2 RGSPRICE_{t-1} + \alpha_3 RGSPRICE_{t-2} + \alpha_4 \varepsilon_{t-1} + \alpha_5 \varepsilon_{t-2} +$$
$$\alpha_6 ODDSDIFF + \alpha_7 RISE100; \tag{5}$$
$$h_t = \beta_0 + \beta_1 \varepsilon_{t-1}^2 + \beta_2 h_{t-1} + \beta_3 MON + \beta_4 TUE + \beta_5 THRS + \beta_6 \ln(GSVOLUME)$$

In this firs model we used ARMA(2,2) structure and included betting odds differences and returns of ISE 100 index to the mean equation. Moreover we embedded dummy variables of days such as Monday, Tuesday and Thursday as well as the logarithm of GS stock trading volumes to the variance equation of the GARCH model.

$$RFBPRICE = \alpha_1 + \alpha_2 WIN + \alpha_3 ODDSDIFF + \alpha_4 RISE100 + \alpha_5 FRI +$$
$$\alpha_6 FOREIGN \ ;$$
$$h_t = \beta_0 + \beta_1 \varepsilon_{t-1}^2 + \beta_2 h_{t-1} + \beta_3 MON + \beta_4 TUE + \beta_5 THRS + \beta_6 FRI +$$
$$\beta_7 FBNEWS + \beta_8 \ln(ISE100VOLUME)$$

(6)

In the second model represented in equation 6, we included game winning dummies, betting odds differences, return of ISE100 index, Friday day dummy and match with a foreign team dummy to the mean equation of the GARCH and we again included dummy variables of the day Friday. Furthermore we included FB news which we represented in Table 3 and ISE 100 index trading volume, dummy variables of days such as Monday, Tuesday, Thursday and Friday in to the variance equation of the model.

$$RGSPRICE = \alpha_1 + \alpha_2 RISE100 + \alpha_3 RFBPRICE + \alpha_4 ODDSDIFF$$
$$h_t = \beta_0 + \beta_1 \varepsilon_{t-1}^2 + \beta_2 h_{t-1} + \beta_3 MON + \beta_4 TUE + \beta_5 THRS + \beta_6 FRI +$$
$$\beta_7 \ln(GSVOLUME) + \beta_8 \ln(ISE100VOLUME)$$

(7)

In this model we just included return of ISE100 index, return of FB stocks and betting odds differences of the teams to the mean equation while we embedded dummy variables of days such as Monday, Tuesday, Thursday and Friday, logarithm of GS stocks' trading volume and logarithm of ISE100 index trading volume in to the variance equation.

$$RFBPRICE = \alpha_1 + \alpha_2 RISE100 + \alpha_3 WIN + \alpha_4 ODDSDIFF + \alpha_5 FRI +$$
$$\alpha_6 FOREIGN \ ;$$
$$h_t = \beta_0 + \beta_1 \varepsilon_{t-1}^2 + \beta_2 h_{t-1} + + \beta_3 MON + \beta_4 TUE + \beta_5 THRS + \beta_6 FRI +$$
$$\beta_7 \ln(FBVOLUME) + \beta_8 \ln(ISE100VOLUME)$$

(8)

In this forth model we included return of ISE100 index, game winning dummy, betting odds differences, Friday dummy and match with a foreign team dummy to the mean equation while we embedded dummy variables of days such as Monday, Tuesday, Thursday and Friday, logarithm of FB stocks' trading volume and logarithm of ISE100 index trading volume in to the variance equation.

$$RGSPRICE = \alpha_1 + \alpha_2 RGSPRICE_{t-1} + \alpha_3 RGSPRICE_{t-2} + \alpha_4 \varepsilon_{t-1} + \alpha_5 \varepsilon_{t-2}$$
$$+ \alpha_6 ODDSDIFF + \alpha_7 RISE100 \ ;$$
$$h_t = \beta_0 + \beta_1 \varepsilon_{t-1}^2 + \beta_2 h_{t-1} + \beta_3 MON + \beta_4 TUE + \beta_5 THRS + \beta_6 \ln(GSVOLUME)$$
$$+ \beta_7 GSNEWS$$

(9)

Equation 9 represents our fifth model in which we used ARMA(2,2) structure including betting odds difference and ISE100 index returns to the mean equation and we included dummy variables of days such as Monday, Tuesday, Thursday and Friday, logarithm of GS trading volumes and GS news dummy variable in to the variance equation of the model. The concept of GS news dummy variables is also exhibited in Table 3.

$$RFBPRICE = \alpha_1 + \alpha_2 RISE100 + \alpha_3 ODDSDIFF + \alpha_4 RGSPRICE \;;$$
$$h_t = \beta_0 + \beta_1 \varepsilon_{t-1}^2 + \beta_2 h_{t-1} + \beta_3 MON + \beta_4 TUE + \beta_5 THRS + \beta_6 FRI \qquad (10)$$
$$+ \beta_7 GSNEWS + \beta_8 FBNEWS$$

Equation 10 represents our sixth model. We included ISE100 index returns, betting odds difference and return of GS stocks to the mean equation and we included dummy variables of days such as Monday, Tuesday, Thursday and Friday, GS news and FB news dummy variable in to the variance equation of the model.

$$RGSPRICE = \alpha_1 + \alpha_2 RISE100 + \alpha_3 ODDSDIFF + \alpha_4 RFBPRICE \;;$$
$$h_t = \beta_0 + \beta_1 \varepsilon_{t-1}^2 + \beta_2 h_{t-1} + \beta_3 MON + \beta_4 TUE + \beta_5 THRS + \beta_6 FRI \qquad (11)$$
$$+ \beta_7 GSNEWS + \beta_8 FBNEWS + \beta_9 \ln(GSVOLUME)$$

Finally in our last model we included ISE 100 index returns, betting odds differences and return of FB stocks in to the mean equation while we embedded dummy variables of days such as Monday, Tuesday, Thursday and Friday, GS news and FB news and logarithm of GS stock trading volumes in to the variance equation.

5 Results

In this context according to the models we have exhibited in Table 2 through models 1, 3, 5 and 7 we have concluded that an unexpected victory (ODDSDIFF), return of ISE100 (RISE100) and returns of FB stocks (RFBPRICE) affect GS stocks returns (RGSPRICE) positively.

Table 2: GARCH Models for daily return series

| | | | | | | Mean Equation | | | | | | |
Models	C	AR(1)	AR(2)	MA(1)	MA(2)	WIN	ODDSDIFF	RGSPRICE	RFBPRICE	RISE100	FRI	FOREIGN	R2
RGSPRICE	-0.0014	1.5091	-0.9666	-1.5412	0.9871		0.0009			0.74615			0,1348
RFBPRICE	0.0021					0.0038	0.0006			0.3896	-0.0077	-0.0099	0,0315
RGSPRICE 2	3.26E-05						0.0010		0.2092	0.6687			0,1591
RFBPRICE2	-0.00134					0.0034	9.30E-05			0.3955	-0.0086	-0.0078	0,0388
RGSPRICE3	0.0001	0.5897	-0.9623	-0.6034	0.9517		0.0009			0.7723			0,1267
RFBPRICE3	0.0004						-0.0004	0.2474		0.2610			0,0846
RGSPRICE4	9.97E-05						0.00082		0.1939	0.7109			0,1594

| | | | | | | Variance Equation | | | | | | |
Models	C	$\varepsilon_{(t-1)}^2$	$h_{(t-1)}$	MON	TUE	WED	THRS	FRI	GSNEWS	FBNEWS	LOG(ISE100V)	LOG(GSVOLUME)	LOG(FBVOLUME)
RGSPRICE	0.0004	0.3348	0.1870	-0.0003	-0.0007		-0.0004					3.67E-05	
RFBPRICE	0.0019	0.3003	0.0043	-0.0007	-0.0006		-0.0005	0.0010		0.0065	-0.0002		0.0002
RGSPRICE 2	0.0041	0.2966	0.1392	-0.0006	-0.0007		-0.0005	-0.0002			-0.0002	0.0001	
RFBPRICE2	-0.0001	0.1650	0.6461	-0.0017	-0.0007		-0.00083	0.0008		7.82E-06			5.60E-05
RGSPRICE3	-0.0012	0.2954	0.1271	-0.0005	-0.0005		-0.0006		0.0029			0.0002	
RFBPRICE3	-0.0014	0.1127	0.4595	-0.0009	-0.0002		-0.0002	0.0017	0.0025	0.0029			0.0001
RGSPRICE4	-0.0011	0.2126	0.0869	-0.0004	-0.0005		-0.0005		0.0028	0.0008		0.0002	

Notes: The models are tested individually and we concluded that all models are stationary

Hence game wins (WIN) of GS do not have a significant effect on stock prices as well as the game results of the matches played with foreign country teams (FOREIGN). The results are complied with common football facts of Turkish Football League as GS is one of the dominant teams of league and performed a very successful season after a marvelous come back. FB and GS are the most successful clubs; both have won 18 titles, respectively, as of 2012. BJK won 13 titles and TS won 6 titles while no other club has won the title on more than five occasions; the most recent club other than FB and GS to win the league is Bursaspor in the 2009–10 season.

Since winning a game for a dominant team is very predictable only derby matches or such critical matches whose ODDSDIFF is very small have a significant effect on stock returns. Coherent with that for the data period we covered in our models, GS did not attend any international tournament which describes clearly why FOREIGN variable do not have a significant effect on stock returns of GS.

Furthermore according to the models we have exhibited in Table 2 through models 2, 4 and 6 for FB stocks we have concluded that, ODDSDIFF, RISE100 and RGSPRICE affect FB stocks returns (RFBPRICE) positively. In addition WIN of has a significant positive effect on RFBRPRICE while FOREIGN and Friday dummy variable (FRI) have a negative effect.

Most interesting explanatory variable NEWS is generated for both GS and FB which includes extraordinary news announced excluding game results and financial results for GS and FB. We have selected non-sportive[6] news related with GS and FB from Public Disclosure Platform announcement of the clubs and generated NEWS dummy variable. The selected news is exhibited in Table 3. When compared to GS news set, FB news set includes more catastrophic news such as CAS cases, arrests in match-fix probe such as Aziz Yıldırım-The president of FB and dramatic farewell of Alex De Souza-The Captain of FB football team. Hence GS new set includes of more optimistic announcements such as new player (Elmander, Melo, Burak Yilmaz, Selcuk Inan and Nordin Amrabat) transfers for the newly established team which will have a vision of European Football Tournament success in the 2012-2013 season.

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[6] By non-sportive we mean the news excluding game results. Player transfer news are also accepted as non-sportive news.

Table 3: Non-sportive news announced on Public Disclosure Platform

Date	Galatasaray	Fenerbahce
20.05.2011	Announcement of Johan Elmander's transfer	
26.05.2011	Announcement of Selcuk Inan's transfer	
22.07.2011	Announcement of Felipe Melo's transfer	
24.08.2011		Announcement of Fenerbahce SK's Champions League ban
29.08.2011	Galatasaray SK Dernegi share sales announcement	
09.08.2011	Announcement of Arda Turan's sale for 12Mil€	
10.09.2011		CAS case rejection
02.03.2012		Postponement of CAS case
13.03.2012		Duration of Aykut Kocaman's contract is increased
13.04.2012	Announcement of Nikon sponsorship agreement	
26.04.2012		Fenerbahce dropped CAS case
02.05.2012	Announcement of rights issue	
03.06.2012		Announcement of Dirk Kuyt's transfer
19.06.2012	Galatasaray SK Dernegi share sales announcement	
19.07.2012	Announcement of Burak Yılmaz's transfer	
19.07.2012	Announcement of Nordin Amrabat's transfer	
13.09.2012	Announcement of rights issue	
01.10.2012		Alex De Souza captain of the team left Fenerbahce

As a result we concluded that when GSNEWS and FBNEWS dummy variables are included in to the variance equations in stock return GARCH models β_2 coefficient decreases significantly which claims that the news effect volatility of the stock returns arises of the announced news in Table 3. In model 1 $\beta_2 = 0.1870$ whereas $\beta_2 = 0.1277$ in model 5 which includes GSNEWS in the variance equation.

Moreover the results show that FBNEWS's effect on RFBPRICE volatility is more than GSNEWS's effect on RGSPRICE volatility which suggests that bad news effect on stock returns is more newsworthy than good news. In Model 4 $\beta_2 = 0.6461$ whereas in Model 2 $\beta_2 = 0.0043$ which includes GSNEWS in the variance equation.

6 Conclusion

In this paper we examined how football success and odds affect the stock returns of GS and FB. We found evidence that unexpected wins have a significant effect on stock returns. Moreover we have shown that non-sportive news such as match fixing case of FB and player transfer news of GS have a more significant effect on stock returns where bad news have a higher impact compared to good news. Catastrophic events always create a more emotional cycle in the financial markets.

Furthermore what is more important is that football and football club stock behaviors should de analyzed more carefully since there is a huge statistics data available for the academics. In Table 4 the betting odds for the goal scorer of Manchester United and Manchester City derby match which was played on 9th of Dec 2012 is exhibited. Only that example is enough to show the quality of available data for the sport clubs powered by IDDAA portal.

Table 4: Goal scorer betting odds of the players for Manchester City vs Manchester United derby match

Manchester Cit	First Goal Scor	Last Goal Scor	Goal Score	Manchester Cit	First Goal Scor	Last Goal Scor	Goal Score
Aguero	6,00	6,00	2,25	Carrick	20,00	20,00	5,50
Balotelli	7,00	7,00	2,50	Evans	25,00	25,00	7,00
Barry	20,00	20,00	5,50	Evra	25,00	25,00	7,00
David Silva	10,00	10,00	3,25	Ferdinand	25,00	25,00	7,00
Dzeko	7,00	7,00	2,50	Fletcher	20,00	20,00	5,50
Kompany	25,00	25,00	7,00	Hernandez	8,00	8,00	2,75
Maicon	20,00	20,00	5,50	Jones	20,00	20,00	5,50
Nasri	12,00	12,00	3,75	Rooney	7,00	7,00	2,50
Nastasic	25,00	25,00	7,00	Van Persie	6,00	6,00	2,25
Tevez	7,00	7,00	2,50	Welbeck	9,00	9,00	3,00
Toure Y.	10,00	10,00	3,25	Young	12,00	12,00	3,75
Other	9,00	9,00	3,00	Other	9,00	9,00	3,00

Source: IDDAA

Although Berument et al. (2009) considered the game results from the trader/broker perspective we built our models on the investor side. The critical point here is that betting odds include and reflect important information about the recent performance and form of the teams not only for betting game players but also for the investors. Investors also may use this information set to assess the future sportive success of the teams and the cash inflows. Hence especially in Turkish Football League and financial markets investor approach is very emotional and a reflection of being a football team fan. A fanatic investment approach is adopted.

In this context the equity analysts may use these non-financial indicators while assessing the sports club stock prices differing from the industrial companies or banks more commonly traded in ISE and have a significant effect on the ISE100 Index. Compared to industrial companies, retail companies or bank; sports club teams financials of football sector as a whole is a small sized business so alternative decision making KPIs are necessary. This is because investing in football team stocks in our country is not just a way of investment but also a way of supporting the team as a fan. Still there are so many unreasonable cases in this research are that behavioral finance academics and financial econometricians should study on.

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