

The Effects of Sporting Success on Stock Returns: An Application in Istanbul Stock Exchange

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Abstract. The purpose of this study is to analyze the effects of the match results of open joint football clubs on stock returns. Through the purpose, the results which are obtained in Turkey Super League by Fenerbahçe, Galatasaray, Beşiktaş and Trabzonspor whose stocks are dealt in Istanbul Stock Exchange (BIST) and stock returns are analyzed in this study. The related teams' match results and beta coefficients are considered as independent variable whereas stock returns are regarded as dependent variable. The study incorporates 3-year period including 2012-2013, 2013-2014 and 2014-2015. In the conclusion of the study in which econometrical modeling is utilized, it is found out that losses have greater impacts on stock returns comparing to deuce and winning. Additionally, it is also established that all kinds of results obtained by Galatasaray club has impact on stock returns on the other hand only the losses results of Fenerbahçe and Trabzonspor have effects on stock returns.

Keywords. Stockreturns, Match results, Football industry, Stock market.

JEL. G14, C5, P45.

1. Introduction

Massive advancements in sport industry have been experienced in recent years. In particularly, the increase in rating in football division caused the increase in publishing earnings, advertising earnings, betting earnings and sponsorship earnings for the clubs. Adding new revenue items as aforementioned to the earnings through ticket selling, product selling and athlete selling makes clubs more active. Therefore in order to enjoy more shares on the market, clubs turn out to be publicly held companies as a result of the developments. This kind of transition put forward the importance of the fact that not only the sportive success is enough but also the clubs have to focus on the financial success. While clubs are dealing with these kinds of changes, clubs' public offerings bring out new decisions for the behalf of investors. The question that how and depending on which criteria the investors which we assume them to behave rationally, make investment on the club for which they personally support must be answered. On the other hand, for this point, sentimentalism in addition to rationalism is assumed as an important criterion for investment decisions. These kinds of behaviors also affect the clubs' real market values.

For all activity area of publicly held companies, financial performances affect stock returns. Likewise in publicly held football clubs' sportive successes and losses may affect their stock values. Furthermore, even transferring an international renowned football player to publicly held football club brings out turbulences in

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stocks in short run. Therefore, it is an important subject to research how investors react to match results.

Through this concept, the purpose of the study is to research the effects of match results obtained by four football clubs (Fenerbahçe, Galatasaray, Beşiktaş, Trabzonspor) whose stocks are dealt in Istanbul Stock Exchange on stock returns. In the study, totally 408 super league match results which belong to the season of 2012-2013, 2013-2014 and 2014-2015 are analyzed.

2. Theory and Literature

There is a close connection between firm activities and stock exchange values. Many studies show that stock values raise alongside with the firms increased sales through investors' expectations. However, this condition is slightly different in sport industry. Clubs' stock values are depended on rather obtained match results and transferred football players. As long as clubs become publicly held companies, researchers tried to indicate the relationship between stock values and match results in many studies.

Brown & Hartzell (2001) claimed that American basketball club's match results of especially derby matches affect the firm's stock values in their study covering the period of 1993-1998. Ashton et al. (2003) established that the positive results obtained by British National Team had positive effect on London Stock Exchange Market. Zuber et al. (2005) could not reach a meaningful relationship between match results and stock values in the study which Zuber tried to analyze the connection between stock values and ten football clubs' matches between the years of 1997 and 2000. Stadtmann (2006) illustrated that there is a close relationship between sportive success of Borussia Dortmund team in Germany and stock exchange market and this relationship is strengthen in especially European Championship matches in the study. Edmans et al. (2007) established that losses as a rate of over 7% in stock values could be experienced when football teams lost the match in the study of covering thirty-nine countries football clubs. Additionally, the study also indicated that the countries in which there found a connection between football match results and stock exchange market performance pay attention to football and the effect was experienced rather on small stock values. Ekeret et al. (2007) researched the relationship between exchange rates and match performances of Turkish football teams while playing against the foreign football teams in the study. According to research results, there is a meaningful relationship between decrease of exchange rate and the winning results of Turkish teams against foreign teams. Coates & Humphreys (2008) researched the relationship between stock values and baseball sport clubs' performances. According to study findings, there is a meaningful relationship between team performances and stock values indexes. Benkraiem, Louhichi & Marques (2009) brought out that abnormal earning and trading size expansion were experienced following the dates after matches in their study in which they researched the stock exchange market's reaction to the results of the football clubs which were quoted in European Stock Exchange Markets in the period of 2006-2007. Scholtens & Peenstra (2009) indicated as analyzing eight clubs' match which were held between theyears of 2000 and 2004 that winning matches had positive likewise losing matches had negative impacts on stock prices. Palomino, Renneboog & Zhang (2009) showed that there is a meaningful relationship between stock returns and the match results of sixteen football clubs whose stock were dealt in London Stock Exchange between the years of 1999 and 2002. Kaplanski & Levy (2010) established that there was a concrete relationship between FIFA World Championship match results and stock values revenues in their study. Beyaz & Bakırtaş (2010) tried to

analyze the possible effects of stocks which were belong to four clubs on revenue rates, direction and magnitude of these effects via using Least Square Method for the period of 2005 and 2008 years. Winning, loss and deuce were used as independent variables in the study. They pointed out that there could be found there is a meaningful positive relationship between winning, loss, and deuce scores and only one club's stock value revenue rates. Bell et al. (2012) established a meaningful relationship between stock values depending on the importance of the match in the study. It is found out that especially the match results related to level up and level down within the league and season closing match results had greater effects on stock values comparing to other matches' results. Gümüő & Zeren (2013) researched whether there were a relationship between stock exchange performances and match results in their own leagues obtained by the totally eight national and foreign teams (Beőiktaő, Galatasaray, Fenerbahçe, Trabzonspor, Roma, Borussia Dortmund, Olympique Lyon and Juventus) whose stocks were dealt in stock markets for the period of 2007 and 2011 in their studies. As a result of the study, they concluded that there is meaningful relationship between obtained winning and stock performance for one team on the other hand there is meaningful relationship between obtained losing and stock performance for four teams. Kaya & Gülhan (2013) researched whether the results obtained in championship and European matches by four teams whose stocks were dealt in Istanbul Stock Exchange Market caused abnormal earnings in the stock market in the period of 2009 and 2010 years in their study. Temizel, Özata & Esen (2013) researched if there is a connection between the match results obtained by the clubs whose stocks were dealt in Istanbul Stock Exchange and stock values. According to study conclusion, there is a meaningful positive relationship between winnings of Fenerbahçe, Galatasaray, and Beőiktaő and stock values on the other hand there is not a meaningful relationship between losses or deuce results. Parlak & Biőirici (2014), in the study which they tried to analyze the effects of match results obtained by two football clubs whose stocks were dealt in Istanbul Stock Exchange, illustrated that match results created cumulative abnormal earning one day after the match. Additionally, it is also found out that cumulative abnormal earning does not show differences depending on the result obtained by competitor club in the study. Floros (2014) researched whether there was a meaningful relationship between match results of Porto, Benfica, Juventus and Ajax football teams in Europe and stock value revenues in the study. According to study findings, deuce scores had positive effects on Benfica and Ajax teams' stock values revenue on the other hand loss and deuce scores had negative effects on Juventus team's stock values revenue.

3. Data Set and Method

The purpose of this study is to analyze whether there is a relationship between match results obtained by Beőiktaő A.ő., Fenerbahçe A.ő., Galatasaray A.ő. and Trabzonspor A.ő. sport clubs which are quoted in Istanbul Stock Exchange (BIST) and carry matches within Sport Toto Super League under Turkey Football Federation and stock stock prices. In this study, Sport Toto Super League results are only taken into consideration whereas Turkey Championship and European matches' results of the related football teams are not considered. Financial data belong to clubs are obtained through Istanbul Stock Exchange official website for this study. Moreover, match results are acquired through Turkey Football Federation official website. Analysis is conducted via STATA 11.1 package program. Totally three year annual data is used as the period of 2012-2013, 2013-

2014 and 2014-2015 in the study. Totally twelve hypotheses are tested in the study. The hypotheses are set as follows:

- H1: Stock values revenue increases after Fenerbahçe's winning matches.
- H2: Stock values revenue decreases after Fenerbahçe's loss matches.
- H3: There is an effect of deuce matches of Fenerbahçe over stock values revenue.
- H4: Stock values revenue increases after Galatasaray's winning matches.
- H5: Stock values revenue decreases after Galatasaray's loss matches.
- H6: There is an effect of deuce matches of Galatasaray over stock values revenue.
- H7: Stock values revenue increases after Beşiktaş's winning matches.
- H8: Stock values revenue decreases after Beşiktaş's loss matches.
- H9: There is an effect of deuce matches of Beşiktaş over stock values revenue.
- H10: Stock values revenue increases after Trabzonspor's winning matches.
- H11: Stock values revenue decreases after Trabzonspor's loss matches.
- H12: There is an effect of deuce matches of Trabzonspor over stock values revenue.

Panel data analyses is used in order to specify whether there is a relationship between stock values revenue and clubs' match results, if found any in order to determine the direction through the before-mentioned study purpose. Panel data analyses is a method which combines cross-section and time series data, and incorporates data sets related to the same units (Wooldridge, 2009).

Stock value revenue is used as a dependent variable in the created economic model. Stock value revenue is calculated as determining the stock closing prices for pre-match and post-match (-1,+1) of the related sport clubs. Stock value revenue is calculated with the following formula:

$$E(R) = (P_1 - P_0) / P_0 \quad (1)$$

Here;

$E(R)$ indicates the occurred revenue, P_1 indicates the closing price for the one day after the match and P_0 indicates the closing price for the one day before the match.

Beta co-efficiency is used in order to specify the relationship between the occurred revenue and market revenue. Beta co-efficiency indicates systematic risk of a stock and indicates the related stock's sensitivity to index. In other words, it shows how degree the related stock moves according to the market. In the study, beta co-efficiencies of weekly revenues of the stocks of the clubs are calculated for stocks as depending on Istanbul Stock Exchange – IMKB-100 index weekly revenues for the three annual periods. Beta is calculated through the following formulas (Okka, 2013:402)

$$\beta_j = \frac{\text{Cov}(R_j, R_m)}{\text{Var}(R_m)} \quad (2)$$

$$\beta_j = \frac{\rho_{jm} \delta_j \delta_m}{\delta_m^2} \quad (3)$$

Here, β_j represents systematic risk of security value, $\text{Cov}(R_j, R_m)$ represents co-variation of stock depending on the market revenue and $\text{Var}(R_m)$ represents variation of the market.

The independent variables of the model are composed of clubs' β values and the scores obtained through the clubs matches. Match scores are classified into three categories as winning (1), deuce (0) and loss (2). As using these dependent and independent variables, four different models are set for each clubs.

$$\text{STRE}_F = \alpha_{it} + \beta_1 F + \beta_2 \text{WIN}_F + \beta_3 \text{DRAW}_F + \beta_4 \text{LOST}_F + \varepsilon_{it}$$

$$\text{STRE}_G = \alpha_{it} + \beta_1 G + \beta_2 \text{WIN}_F + \beta_3 \text{DRAW}_F + \beta_4 \text{LOST}_F + \varepsilon_{it}$$

$$STRE_B = \alpha_{it} + \beta_1 B + \beta_2 WIN_F + \beta_3 DRAW_F + \beta_4 LOST_F + \varepsilon_{it}$$

$$STRE_T = \alpha_{it} + \beta_1 T + \beta_2 WIN_F + \beta_3 DRAW_F + \beta_4 LOST_F + \varepsilon_{it}$$

Here, STRE indicates the related stock's revenue, β_1 indicates the related club's beta co-efficiency, WIN indicates the related club's winning matches, DRAW indicates the related club's deuce matches and LOST indicates the related club's loss matches.

4. Findings

4.1. Basic Statistics Related to the Clubs

Table 1. Basic Statistics Related to Match Results

Period	Teams	Win and (%)	Draw and (%)	Lost and (%)	Ranking	Point
2012-2013	Fenerbahçe	18 (53)	7 (21)	9 (26)	2.	74
	Galatasaray	21 (62)	8 (24)	5 (14)	1.	77
	Beşiktaş	16 (47)	10 (29)	8 (24)	3.	69
	Trabzonspor	13 (38)	7 (21)	14 (41)	9.	57
2013-2014	Fenerbahçe	23 (68)	5 (14)	6 (18)	1.	74
	Galatasaray	18 (53)	11 (33)	5 (14)	2.	65
	Beşiktaş	17 (50)	11 (33)	6 (17)	3.	62
	Trabzonspor	14 (41)	11 (33)	9 (26)	4.	53
2014-2015	Fenerbahçe	22 (65)	8 (24)	4 (11)	2.	61
	Galatasaray	24 (70)	5 (15)	5 (15)	1.	71
	Beşiktaş	21 (61)	6 (18)	7 (21)	3.	58
	Trabzonspor	15 (44)	12 (35)	7 (21)	5.	46

Note: The numbers in parentheses are the percentage of wins, draws and losts

In Table 1, match statistics of the related clubs for the analyze period is shown. During the periods, Galatasaray and Fenerbahçe finished the season as champion twice and once as respectively. On the other hand Beşiktaş finished the season as third rank in all three periods. Furthermore, Trabzonspor had inconsistent successes comparing the other teams.

In Table 2, the beta co-efficiencies belong to firms which are calculated through the 2 and 3 numbered formulas are shown.

Table 2. β Values Belong to the Clubs

BetaCoefficients	Fenerbahçe	Galatasaray	Beşiktaş	Trabzon
	0,8778	1,3558	0,8497	0,7610

Beta co-efficiency indicates the sensitivity of stocks to market mobility. According to estimated beta co-efficiencies of the clubs in the related periods, Galatasaray B value is greater than 1 and other clubs' beta values are less than 1. Having big beta co-efficiency indicates high systemic risk which means a kind of risk occurred through the system and without firm's control (Fabozzi, & Modigliani, 1995). Depending on the description, the highest systemic risk is found for Galatasaray. On the other hand, the lowest systemic risk is found for Trabzonspor with the beta value 0,7610. Higher systemic risk has escalating effect or expected revenue rate.

4.2. Panel Data Results

Pesaran panel data unit root test (CDLM) is applied in order to analyze cross section dependency for the study. Accordingly, CDLM probability values are found less than 0.05 for all models and there are not unit roots. Hausman test is utilized in order to find out whether effects are fixed or random. The necessity to utilize random effects model for the models is determined since probability values are found as greater than 0.05.

Wald test is used in order to determine the variables are meaningful to explain the dependent variable and specified as meaningful. Additionally, Durbin Watson autocorrelation test is used to find out if there is autocorrelation or not. Accordingly, autocorrelation could not be found. The results belong to these tests and belong to main regression are presented in Table 3.

Table 3. Panel Data Results

Model 1 : $STRE_F = \alpha_{it} + \beta_1 F + \beta_2 WIN_F + \beta_3 DRAW_F + \beta_4 LOST_F + \varepsilon_{it}$					
Dependent Variable: Fenerbahce Stocks Return					
Number of Observations: 102					
Periods: (2012-2013)-(2013-2014)-(2014-2015)					
Model 2 : $STRE_G = \alpha_{it} + \beta_1 G + \beta_2 WIN_F + \beta_3 DRAW_F + \beta_4 LOST_F + \varepsilon_{it}$					
Dependent Variable: Galatasaray Stocks Return					
Number of Observations: 102					
Periods: (2012-2013)-(2013-2014)-(2014-2015)					
Model 3 : $STRE_B = \alpha_{it} + \beta_1 B + \beta_2 WIN_F + \beta_3 DRAW_F + \beta_4 LOST_F + \varepsilon_{it}$					
Dependent Variable: Beşiktaş Stocks Return					
Number of Observations: 102					
Periods: (2012-2013)-(2013-2014)-(2014-2015)					
Model 4 : $STRE_T = \alpha_{it} + \beta_1 T + \beta_2 WIN_F + \beta_3 DRAW_F + \beta_4 LOST_F + \varepsilon_{it}$					
Dependent Variable: Trabzon Stocks Return					
Number of Observations: 102					
Periods: (2012-2013)-(2013-2014)-(2014-2015)					
		MODEL 1	MODEL 2	MODEL 3	MODEL 4
β_1		1,3558*** (4,13)	0,8778*** (4,03)	0,8497*** (3,78)	0,7610*** (3,82)
β_2	WIN	0,147 (1,13)	0,0128*** (2,62)	0,0117*** (2,79)	0,168 (0,98)
β_3	DRAW	-0,086 (0,041)	-0,0215*** (-3,89)	0,167 (0,070)	0,192 (0,171)
β_4	LOST	-0,0486*** (-4,59)	-0,0405*** (-6,12)	-0,0410*** (-5,42)	-0,012*** (-3,19)
R^2		0,214	0,193	0,211	0,185
Adjusted R^2		0,193	0,175	0,190	0,164
Wald χ^2		13,52	14,56	14,21	15,22
Wald χ^2 (prob)		0.0029	0.0012	0.0001	0.0036
Durbin Watson		2,2446	2,2356	2,2135	2,2236

Note: *** 5% level of significance

A meaningful within 5% level and negative directed relationship is found between stock revenue and loss matches of the related football clubs by implementing the models. In other words, stock value revenues decline while they are losing the match. It is found out that all the match scores in the second model in which Galatasaray match scores are tested affect the team's stock revenues. Winning affects Galatasaray stock values positively (0,0128) on the other hand

deuce (-0,0215) and losses (-0,0405) affects negatively. Winnings of Beşiktaş team affects stock values positively (0,0117) and losses affects as negatively (-0,0410). The losses of Fenerbahçe and Trabzonspor teams affect stock values as negatively (-0,0486 and -0,012 respectively).

5. Conclusion

In this study, it is analyzed whether there is a relationship between match results in Spor Toto Super League obtained by Beşiktaş A.Ş., Fenerbahçe A.Ş., Galatasaray A.Ş. and Trabzonspor A.Ş. sport clubs whose stocks are dealt in Istanbul Stock Exchange (BIST). In this study, match results and stock values covering the seasons of 2012-2013, 2013-2014 and 2014-2015 are analyzed. Totally 12 hypotheses are tested in the study in which totally 804 data are used. As a result, it is found out that there is meaningful in 5% level and negative directed relationship between losses and stock value revenues. It is determined that there is only a meaningful relationship between stock value revenue and losses of Fenerbahçe and Trabzonspor whereas it is also established that not only winnings but also losses of Beşiktaş have effects on stock values. Additionally, Galatasaray match results are more dominant over stock values comparing to other related teams performances. It is found out that winnings have positive effects on stock values while deuce and losses have negative impacts on the values. According to these results, from the hypotheses H2, H4, H5, H6, H7, H8 and H11 are verified on the other hand H1, H3, H9, H10 and H12 are refused.

The mutually obtained results for competitor teams may affect the decisions. For example, whether both of the teams have loss in the same week or one team is losing and the other is winning conditions also have effects on investors to make decisions. Additionally, the results of the championships may much dominant effect over the stock values. The investment decisions made by the investors without having any psychological effects and being totally rational can also change the results.

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