
| RESEARCH ARTICLE

Impact of Player Acquisitions on European Soccer Stocks: An Event Study

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| ABSTRACT

This study analyzes the effect of soccer players on the stock prices of publicly traded European top-flight soccer teams. Using an event study methodology, it analyzes the abnormal returns of the soccer team's stock price during the event window which comprises two significant dates: the day journalists report the transfer to the broad public and the day the club officially announces the transfer. Five transfers from the 2024 summer transfer window were analyzed, using both single-factor and two-factor models to measure the previously mentioned abnormal returns while controlling for broad market and economic trends. The study's findings indicate that the semi-strong form of the Efficient Market Hypothesis (EMH) holds, as no abnormal returns were statistically significant at the 5% level. The results are not robust enough to reject the Efficient Market Hypothesis or signaling theory. Ultimately, the results from this analysis advise against incorporating player transfer events into investment strategies.

| KEYWORDS

Abnormal returns, event study, semi-strong form, player transfers, efficient market hypothesis, event dates, event windows, transfer windows, estimation period

| ARTICLE INFORMATION

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1. Introduction

In the modern age of digital media, people receive information faster than ever before. Events such as soccer player transfers can drastically shift the sentiment around a team's future performance over the space of hours. Social media has a significant influence on the decisions of investors (Vasquez and Cross, 2024); quick-moving events related to a soccer team could potentially influence its stock price. Such events can include a team's performance in a game and more.

The impact of non-financial indicators on a soccer team's financial value has been historically proven (Botoc et al., 2019). When looking at how soccer games have impacted the prices of the stocks of soccer teams, it is evident that certain events can influence the price at which a stock is traded (Edmans et al., 2005). While these inquiries into this central question have been insightful, more nuance is needed when considering what day these transfer events became publicly known. The quick access to information that most investors have can impact how these transfer events are announced to the public. With the rise of social networks over the past two decades, a new niche of football transfer reporting has been carved out. Popular reporters share news on these social networks before these updates are officially given in newspapers and news networks. The process of a player transfer announcement can have two significant days instead of just one: the report by journalists and the official club announcement.

Event Studies. Events studies are statistical tools with which the effect of a specific event on a business can be evaluated. The purpose of these tools is to measure any abnormal returns in the stock price during a given event period (Kumar et al., 2012). The most common events that are analyzed are dividend announcements, but stock splits, regulatory policies, company acquisitions, and other financial events can also be analyzed.

Dual Event Dates. Unlike other studies, this study aims to consider both of these dates in an event window methodology, to truly understand how markets react to player transfers in real time. As a result, this study provides an opportunity not only to see how markets react to player transfers but to see at which point markets react to them. In this study, both the day that the transfer is announced by journalists and the day the club officially confirms the transfer can be considered the declaration date of the event.

Abnormal returns. An abnormal return on a stock during an event window is the difference between the real returns and the expected returns (Levy and Gunthorpe 1992, Strong 1992). Actual returns refer to observed stock returns, while expected returns represent the projected returns of the firm during the event period without the impact of the event itself.

Explaining the process of these transfers is necessary to provide insight into which point along this course of action impacts markets. Firstly, clubs scout and identify potential candidates from youth academies, other clubs, and international leagues. This process can start years in advance, and the general public rarely knows who the club is scouting. In addition to this, these clubs scout hundreds of players and rarely take action to buy these players. As a result, even if the public knows who a club scouts, there generally will not be much excitement from fans or investors. Next, a club would decide whether or not to hold negotiations with the player's current club regarding a transfer fee and its structure. At this point, public knowledge of a club's actions on social media is likely to occur. While this is the case, the majority of negotiations on transfers between clubs do not end with a transfer taking place. Once both personal terms and a transfer fee are agreed, the player will conduct a medical assessment with the club planning on buying the player. By this part of the process, online journalists will likely say that the transfer deal is done barring a few more minor requirements. Once this medical examination is passed, the club fills out the required paperwork with their national leagues and governing bodies. Due to work permits and other regulations, transfers within or outside the European Union can have additional steps. After this, the club officially announces the player transfer. As shown, the many steps in a player transfer make setting the date of the event in an event window methodology difficult.

Five particular player transfers were randomly sampled from the population of summer 2024 top-flight European transfers. The relatively small sample size in this methodology is a result of multiple methods to reduce confounding variables in the population. In this study, the reason why only transfers from the summer of 2024 were sampled was to minimize potential confounding variables. Since all of these transfers happened after the same season, market dynamics and social media coverage of player transfers will be much more similar than if data from other years was included. For example, the different relative sizes of online journalists' impact on social media in separate years could result in disparate stock price changes. In addition, this reduces the scope of the dataset into a more manageable one. This sample size of five transfers is also the maximum that would follow the rule of sampling a maximum of 10% of the population, allowing the ability to treat the trials as if they were independent. Cleaning and analyzing this data for all transfers in this population would be time-consuming and difficult given each country's different bank holidays, market dynamics, and economic situations, but could be done in the future. Since this study's concern is to find the impact of player transfers on short-term stock price fluctuations, a smaller event period was used. This period consists of the three trading days preceding the event dates and the three trading days after the event dates. An estimation period of 90 trading days preceding the event window was used.

1.2 The Efficient Market Hypothesis and Related Theories

Event studies assume the Efficient Market Hypothesis (EMH), which was introduced by Professor Eugene Fama in 1990. This hypothesis states that all available information is entirely reflected in the market price of a firm. As a result of this hypothesis, an investor cannot obtain any abnormal profit. Event studies test the Semi-Strong form of the Efficient Market Hypothesis. This hypothesis allows people to analyze the relationship between the market price of a stock and available information. In this case, the current value of the firm will not be affected by this event, because it will already be priced into the market price of the stock according to this conjecture. There are three forms of market efficiency.

The weak form of the Efficient Market Hypothesis. The weak form of market efficiency advocates the idea that all previous public information is priced into the value of a stock. Most agree that a stock price does not rely on technical analysis, as price changes are a result of new information.

The semi-strong form of the Efficient Market Hypothesis. This theory states that all publicly available information is priced into a given stock's valuation. This includes past publicly available information and current publicly available information. In this case, both fundamental and technical analysis are not relied upon because these methods don't generate additional information that is not public. As a result, investors would only be able to boost returns by using information that is not publicly available. This form of the EMH can be assessed by seeing the impact of a previously unknown event.

The strong form of the Efficient Market Hypothesis. In cases where all information, including information that would be usually private, would become public, the strong form of market efficiency would be used. In this case, no one can accrue abnormal returns because all public and private information is already priced into a stock. In situations where private information is not made public, this form of market efficiency is not possible. Such situations can include firms holding back information about a product, or the government requiring firms to hold a certain level of confidentiality regarding their operations.

Signaling theory. The idea that decisions made publicly by a firm work as indicators of information towards the market (Miller and Rock, 1979) is referred to as signaling theory. Buying a soccer player is a corporate action that could serve as a positive signal to public markets. This is because the team is indicating a plan of action to perform better, which could translate to higher revenues for the firm through ticket sales and licensing deals.

Irrelevancy theory. In contrast, the belief that stock prices do not react to dividend adjustments is referred to as irrelevant theory. In this case, whatever circumstances an investor deals with are not influenced by the dividend policy of a business. Modigliani and Miller emphasize that an investor can sell some of their portfolio to meet whatever deficit is in place, so dividends are not relevant. In this theory, the value of a business is only adjusted in response to riskless earnings and not those in the future. The stock price of a firm will only increase in response to increases in earnings and response to dividend announcements.

This analysis was undertaken to examine the reaction of a stock price to player transfers. Corporations, investors, and the general public need to know about the impact of these player transfers to make the best available financial decisions. Despite its importance, very few studies have analyzed the reaction of stock prices to player transfer announcements. Even those who have researched these topics have not considered the multiple possible event dates: the date that online journalists announce player transfers and the date that the club officially announces the player transfer.

2. Research Methodology

The data of the historically adjusted closing prices for each stock and index was taken during the 90-day period before the first event date. The historical data sources include Yahoo Finance and the Wall Street Journal. Samples were randomly selected by conducting a simple random sample from all the players that publicly traded top-flight European teams bought. The event window spans three trading days before the transfer was announced by journalists and three trading days after the club's official announcement. The accrual of excess returns on the given event days will support the semi-strong form of market efficiency, as newly incoming information will become priced into the stock speedily. Meanwhile, if excess returns are created in the days after the event, the semi-strong form of market efficiency will be nullified, as it will take time for this information to be priced into the stock.

The study uses two methods to see the impact of the transfer announcement on the stock price. The first method uses a single-factor model, which only tracks the price of these stocks with the market index, the MSCI World Communication Services 20/35 Capped Index. This index was chosen in preference to the MSCI World Communication Services 35/20 Index because it provides a higher level of diversification in the broader industry due to its buffering mechanism which allows for flexible weighting, preventing dominating components of the Index. After getting the changes in the stock and index prices as percentages, we calculate the intercept, slope, standard error, and r^2 values when the market index and stock prices are the independent and dependent variables respectively. Meanwhile, the second method uses a two-factor model that considers both the MSCI World Communication Services 20/35 Capped Index and the main index in each team's respective country. In this case, the model uses multiple regression to calculate the intercepts, slopes, standard errors, r^2 values, F-Statistics, and the sum of squares for the models.

After this, abnormal returns in the single-factor model are calculated using:

$$AR_{it} = R_{it} - (\alpha + \beta \times R_{m,t}) \text{ where:}$$

- AR_{it} is the abnormal return for security "i" on day "t"
- R_{it} is the actual return of security "i" on day "t"
- α is the intercept coefficient from a regression of security "i" returns on industry returns (estimated during the estimation window).
- β is the beta coefficient from the same regression, representing the sensitivity of security "i" to industry movements.
- $R_{m,t}$ is the industry return on day "t"

Meanwhile, the abnormal returns in a two-factor model are calculated using:

$$AR_{it} = R_{it} - (\alpha + \beta \times R_{m,t} + \gamma \times R_{i,t}) \text{ where:}$$

- AR_{it} is the abnormal return for security "i" at a time "t"
- R_{it} is the actual return of security "i" at time "t"
- α is the security's intercept coefficient (estimated during the estimation window).
- β is the security's beta coefficient (measuring its sensitivity to industry movements).
- $R_{m,t}$ is the industry return at time "t"
- γ is the index's beta coefficient (measuring the sensitivity of the security to industry movements).

- $R_{i,t}$: is the index's return at time "t"

Both the single-factor and two-factor models were used to provide a multi-faceted analytical approach to the event study. The single-factor model allows for the simple control of market risk. Meanwhile, the two-factor model creates a more granular approach that can capture the additional risks in an economy. From there, the t-statistic is calculated and tested at a 5% significance level, and compound abnormal rates were calculated.

When doing event studies for each randomly selected player transfer, three stocks, and indices were used. The stock price of the publicly traded top-flight European team, the MSCI World Communication Services 20/35 Capped Index, and the main index for each team's country were used. Only publicly traded top-flight European teams were selected to be part of the population because of these countries' relatively similar economic conditions and the fact that different markets within the European soccer industry generally have similar growth catalysts and risks. This gave the ability to better control for both economic and market conditions that are not relevant to this study. The MSCI World Communication Services 20/35 Capped Index was used because no index measures the European football market (the STOXX Europe Football index closed in 2020, meaning its performance cannot be used to track transfers in 2024). The main index of a team's respective country was analyzed to control for any national economic fluctuations.

Data was taken from five randomly selected player acquisitions for clubs listed as publicly traded top-flight European teams. Table 1 contains information about the samples taken. Column 1 gives both event dates for each player transfer. Column two shows the name of the transferred player, while Column 3 gives the name of the team buying the player. Column 4 gives the index used to compare the fluctuation in the stock price, while Column 5 gives the index used to track the industry of the soccer club.

Table 1: Transfer Information				
Event Dates	Player Transferred	Buying Team	Buying Team's Largest Domestic Stock Index	Industry Index
June 19th: Media Report July 1st: Club Announcement	Vangelis Pavlidis	Sport Lisboa e Benfica	PSI (PSI20.LS)	MSCI World Communication Services 20/35 Capped Index
July 17th: Media Report July 18th: Club Announcement	Juan Cabal	Juventus Football Club S.p.A.	FTSE MIB	MSCI World Communication Services 20/35 Capped Index
July 12th: Media Report July 13th ¹ : Club Announcement	Ciro Immobile	Besiktas Jimnastik Kulübü	BIST 100 (XU100.IS)	MSCI World Communication Services 20/35 Capped Index
August 12th: Media Report August 13th: Club Announcement	Matthijs De Ligt and Noussair Mazraoui ²	Manchester United Football Club ³	S&P 500 ²	MSCI World Communication Services 20/35 Capped Index
September 2nd: Media Report September 3rd: Club Announcement	Francisco Moura	Futebol Clube do Porto	PSI (PSI20.LS)	MSCI World Communication Services 20/35 Capped Index

2.1 Data Analysis

Table 2 contains descriptive statistics of the samples. This table contained the total number of randomly selected events, the abnormal returns of both single-factor and 2-factor models, the t-statistics of both single and 2-factor models, and standard

errors. This includes the standard error for the single-factor model and the standard error for the market and industry, which are accounted for in the 2-factor model.

Table 2: Descriptive Statistics								
	N	Arithmetic Mean of Single Factor ARs	Arithmetic Mean of 2 Factor ARs	Single-Factor T-Statistic	2-Factor T-Statistic	Single Factor Std. Error	Market Std. Error (2-Factor)	Industry Std. Error (2-Factor)
t_3^1	4	0.85513%	0.78223%	0.06087	0.04753	0.06721	0.78798	0.62944
t_2	5	0.13879%	0.12554%	0.10357	0.06730	0.05733	0.66696	0.56344
t_1	5	0.60254%	0.59120%	0.01285	0.05769	0.05733	0.66696	0.563444
t_0 (Club) ^{1,2}	4	-1.76267%	-1.43647%	0.84473	0.75081	0.02880	0.31219	0.38158
t_0 (Media) ¹	4	3.90160%	3.86502%	0.87175	0.83153	0.06721	0.78798	0.62944
t_1	5	-0.41783%	0.20624%	0.39811	0.37117	0.05733	0.66696	0.563444
t_2^1	4	0.79243%	0.58303%	0.00372	0.14039	0.06579	0.75575	0.62542
t_3	5	-1.27944%	-1.71982%	0.37799	0.52626	0.05733	0.66696	0.563444

After compiling the data from the samples during the event window, a confidence interval was used to determine whether these aggregated abnormal returns were statistically significant. Table 3 determines the impact of the player transfer announcement by using a 95% confidence interval. The total event window period is 8 days, with two event dates.

The null hypothesis of the thesis is that an investor cannot obtain abnormal returns during this event window. At none of these points are the aggregated t-statistics statistically significant at the 95% confidence level. As a result, the semi-strong form of the Efficient Market Hypothesis is not rejected. This means that the market is efficient in reflecting available information on European soccer player transfers. Below is the table with data on respective t-statistics, mean differences from the test value, and significance values.

Table 3: Share price reaction to player transfer announcements							
Test Value = 0							
Date	Average Single-Factor T-Statistic	Average 2-Factor T-Statistic	Df	Mean Difference (Single-Factor)	Mean Difference (2-Factor)	Significance (Single-Factor)	Significance (2-Factor)
t_3^1	0.06087	0.04753	3	0.85513%	0.78223%	0.95529	0.96508
t_2	0.10357	0.06730	4	0.13879%	0.12554%	0.92249	0.94957
t_1	0.01285	0.05769	4	0.60254%	0.59120%	0.99036	0.95676
t_0 (Club) ^{1,2}	0.84473	0.75081	3	-1.76267%	-1.43647%	0.46030	0.50729
t_0 (Media) ¹	0.87175	0.83153	3	3.90160%	3.86502%	0.47526	0.46667
t_1	0.39811	0.37117	4	-0.41783%	0.20624%	0.71088	0.72933
t_2^1	0.00372	0.14039	3	0.79243%	0.58303%	0.99727	0.89725
t_3	0.37799	0.52626	4	-1.27944%	-1.71982%	0.72464	0.62654

The degrees of freedom of each specific t-test used is equal to $n - 1$. Using this method, none of the dates in the event window are statistically significant at the 5% level.

3. Conclusions and Limitations

The purpose of the study is to identify whether the 2024 soccer player transfers had an impact on the stock of the club buying the player. The abnormal returns of these stocks during the event window are not statistically significant at the 5% level. With this being said, the results from this impact study do not only point to this conclusion, as t-statistics of abnormal returns after the event dates tended to be higher than those before the event dates. Both the single-factor and 2-factor models indicate that the abnormal returns of the stocks are all statistically significant at the 50% level on the two event dates. While such a high statistical significance at a 50% level is not a traditional threshold, abnormal returns appeared to be notable on these two dates. These two dates display a higher level of statistical significance when compared to other dates in the event window. Other dates tend to only be significantly above the 85% level.

This event study also rejects the signaling theory and fails to reject Modigliani and Miller's dividend irrelevancy theory since the abnormal returns were not statistically significant. The general conclusion that can be made from these results is that player transfers do not have a significant impact on the returns of a stock on a short-run basis. At the 50% significance level, the semi-strong form of market efficiency would be rejected. This is not the case at the 5% significance level, at which this form of market efficiency is not rejected. The statistical significance of these results can be interpreted differently at different values, which can be useful depending on the goals and motives of those reading this paper.

While the study was able to draw general conclusions regarding this topic, some limitations could have impacted the quality of the study's results. Firstly, the fact that no soccer or sports indices could be used to track the market growth of the very specific European soccer market created issues in creating a model. As a result of this, more broad indices such as the MSCI World Communication Services 20/35 Capped Index had to be used to still track the general communication industry. While this still broadly tracks the European soccer market as part of the media industry, it is not as fitting as an index that is only for soccer. Secondly, the small sample size that was used could impact the results of the study. This smaller study reduced the variability in results, making them potentially less accurate than the ideal sample. The reason for such a small sample was that there were only just over 50 soccer transfers to publicly traded top-flight European teams. As a result, it was important to follow the 10% rule to sample with independence. Lastly, while the study did attempt to control for economic fluctuations in the different countries where players transferred, there will always be variations in the performance of these indicators. Major stock indices can be very good indicators of a country's economic health but are not entirely accurate.

Despite accounting for this in the model, certain confounding variables could have an impact on the results of this study. These include game results and other player transfers influencing the team's stock price. No other permanent transfers occurred during the event windows of Benfica, Besiktas, Manchester United, and FC Porto that could skew the event study results. In the case of Juventus, the team acquired Alessandro Nisci on a free transfer. As a result, the data on Juventus' abnormal returns, mean differences, t-statistics, and significance were omitted on the day of the free transfer to avoid any skewed outcomes. In addition to this, significant news on sponsorship deals could have impacted the given team's share price. Each of the randomly selected teams was assessed to see whether any significant sponsor news came out during either the estimation or event windows, and none was found. Therefore, sponsor news can be ruled out as a significant confounding variable for this specific event study. Lastly, a player or team's popularity in a transfer could have an unmeasured impact on the stocks mentioned in the study. For example, teams or players that are more well-known to the public may impact these stock prices on a larger scale, making their stock price fluctuations more statistically significant.

The different number of days between the given t_0 dates could also correlate with the returns in a way that was not accounted for. For example, there is only one day between the media report date and the club announcement for Juan Cabal's transfer, while there are twelve days between the media report and the club announcement for Vangelis Pavlidis's transfer. While there is no evidence of there being such a correlation, it has not been researched thoroughly enough to confirm or rule it out.

3.1 Recommendations and Future Research Directions

The thesis has the following recommendations:

- This paper recommends investors and financial managers keep a keen view on transfer policies at European soccer teams. Following the latest club announcements and media reports can make them more aware and prepared for these events.
- In addition, investors should be aware of the possibility of information leakage before the event dates. Previous event studies have observed leakage of information that could play an especially important role in this specific type of

analysis. Social media speculation and misinformation, highly popular and volatile in the sports world (Murtagh, 2019), could lead to unexpected abnormal returns during these events.

- Further, it is recommended for investors and financial managers to understand that player transfers could lead to a spike in a soccer team's stock when this transfer is announced. Although this temporary spike can happen, it is not consistently observed. As a result, investors and traders are advised to refrain from using the findings from this study as part of a trading strategy. The lack of highly consistent responses to the previously mentioned events could lead to a less effective strategy.
- While these events may result in a small potential for returns within a very short time window, such as 1-2 days, there is no correlation between these transfer events and increased returns over weeks or months. Consequently, it is not advised to use these player transfers and the findings from this event study as part of a medium to long-term investing strategy.

Several routes for future research could create a better understanding of how player transfers impact a given company's stock price on a short-term scale. Expanding this research to soccer team stocks in other global markets, such as Asia, would help increase the depth of understanding of this subject globally. This method would likely set continent-specific parameters to create a set of similar conditions to get the best results. Another approach to expand the knowledge on this topic would include gathering a higher quantity of data on soccer team transfers for a specific country or team, eliminating potential confounding variables such as macroeconomic conditions and country-specific bank holidays. This method would require a much larger amount of data collection, cleaning, and analysis. Related research could focus on how the creation of social networks has impacted soccer team stock-price sentiment concerning player transfers over time.

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